ENSI – Hybrid Model
Hazard Figures

May 2016

TABLE OF CONTENTS

1 INTRODUCTION

This document contains the full suite of hazard results obtained by combining the SED source characterization (SP1) model with the PRP ground motion (SP2) and site amplification (SP3) models in the form of figures. The figure sets consist of hazard curves, hazard spectra and deaggregation plots.

The numbering of the sections, of the figures, and as a consequence, of the associated tables follows the numbering in the PRP final report. This means that the numbering of the section is discontinuous as the PRP report contains sections that are not present in this report.

The computational setting used to obtain the figures is described here, figure set per figure set.

- **Rock Hazard Curves**: Out of the 99 fractiles calculated, five are shown in these main figures for the horizontal and vertical components. Figures are presented for the nine project spectral frequencies.
- **Rock Uniform Hazard Spectra**: The figures with uniform hazard spectra (UHS) were only produced if the mean hazard existed at all frequencies for the given level of annual probability of exceedance. Any requirement for extrapolation of the data to cover a missing value for a particular level of exceedance probability led to the exclusion of the associated figure. Similarly, in the case of the retained figures, the fractiles were not extrapolated towards the UHS level of probability of exceedance. This means that in a few cases, a few spectra of lower fractiles and of the median do not cover the full frequency range.
- **Soil UHS**: The soil hazard UHS (both for the horizontal and the vertical components) are shown with the vectors of 57 frequencies chosen as to optimally sample the variability of the soil amplification function.
- **Deaggregation Figures**: The size of the bins for deaggregation figures was chosen to be 10 km, 0.5 magnitude unit and 1 epsilon. The last distance bin contains the contributions from all distances larger than 100 km. The distance metric used here is a combination of the distance metrics used by the individual GMPEs considered by the SP2 experts in their model. Nine of the requested 27 combinations of annual probability and spectral frequency were calculated while the deaggregation results for the remaining ones were obtained through interpolation. Besides the marginal distributions shown in each figure, a series of additional figures show the mean magnitude, distance and epsilon as functions of the annual probability of exceedance for given frequencies.

2 BEZNAU

2.1 Beznau, Rock Hazard, Horizontal Component, Surface

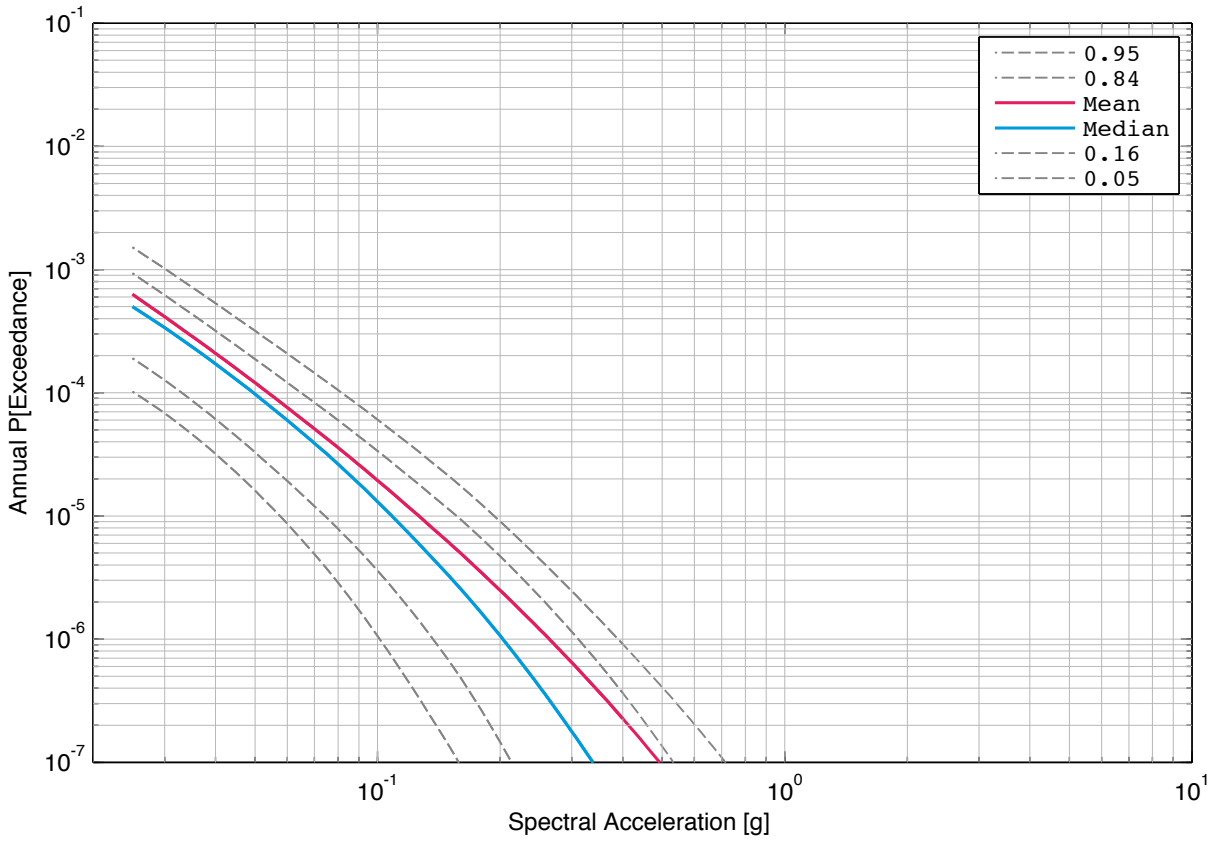

Fig. 2-1.1: Beznau, horizontal component, rock, mean hazard and fractiles, 0.5 Hz.

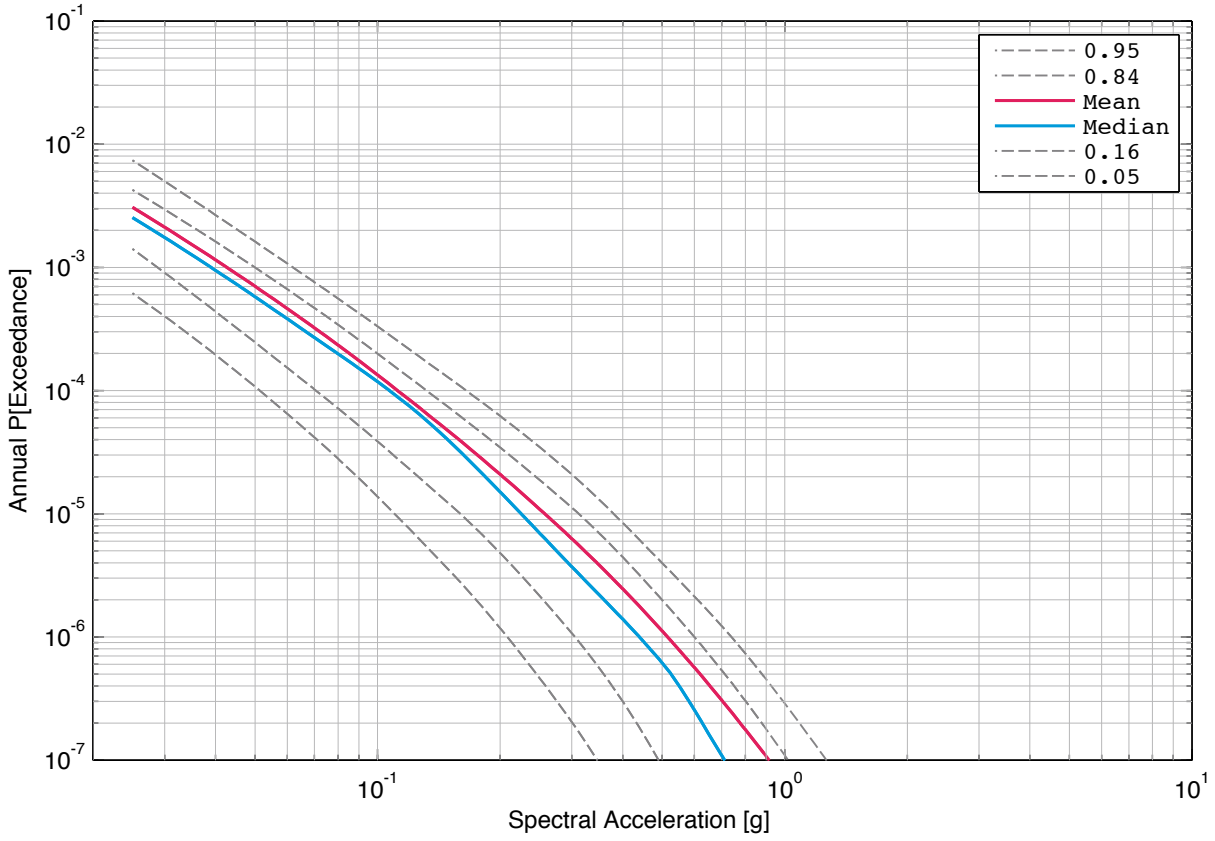

Fig. 2-1.2: Beznau, horizontal component, rock, mean hazard and fractiles, 1 Hz.

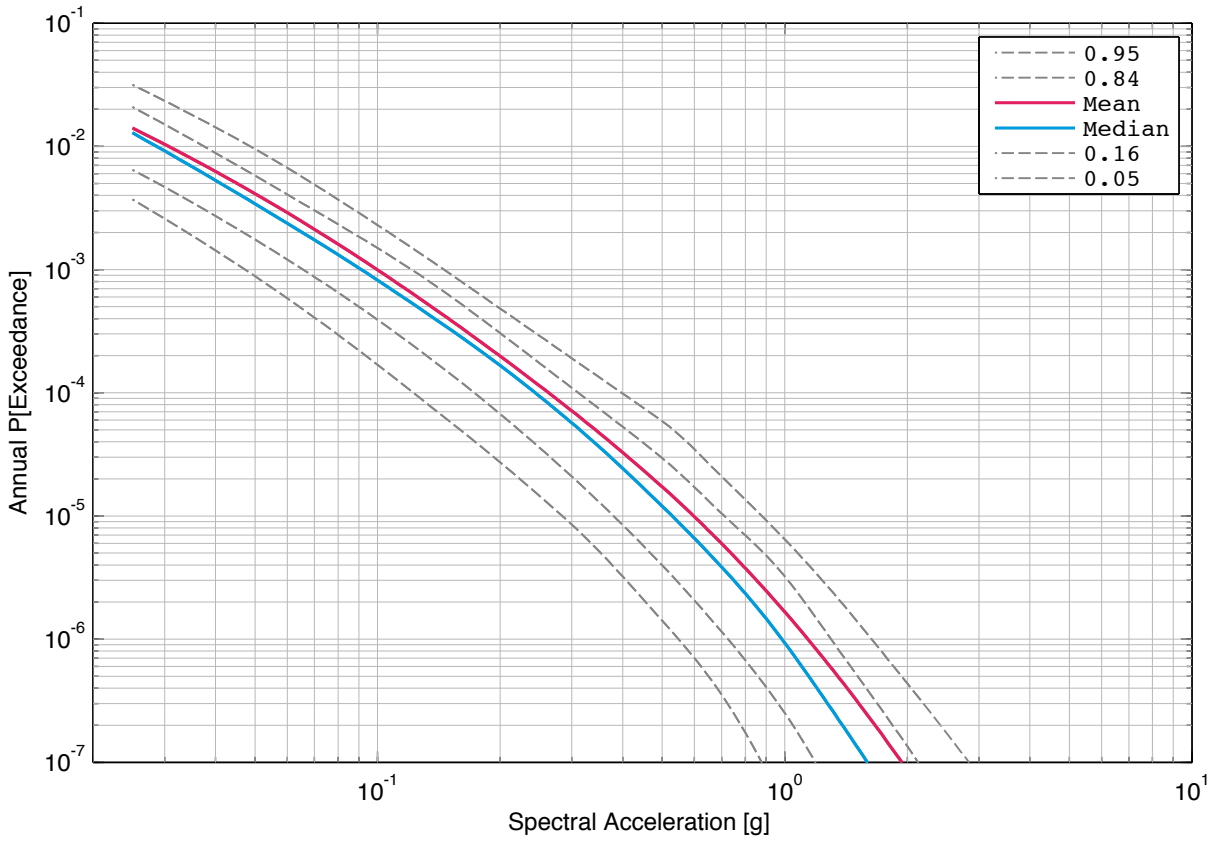

Fig. 2-1.3: Beznau, horizontal component, rock, mean hazard and fractiles, 2.5 Hz.

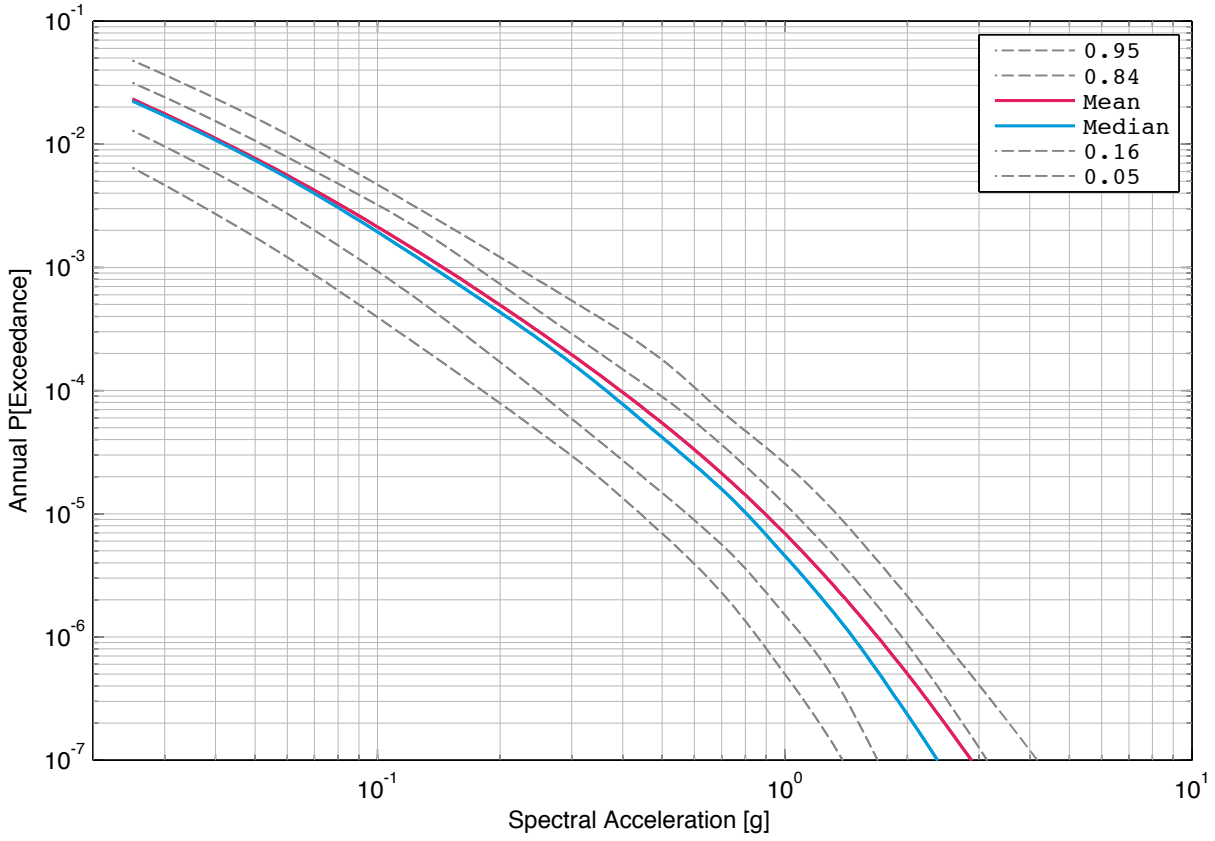

Fig. 2-1.4: Beznau, horizontal component, rock, mean hazard and fractiles, 5 Hz.

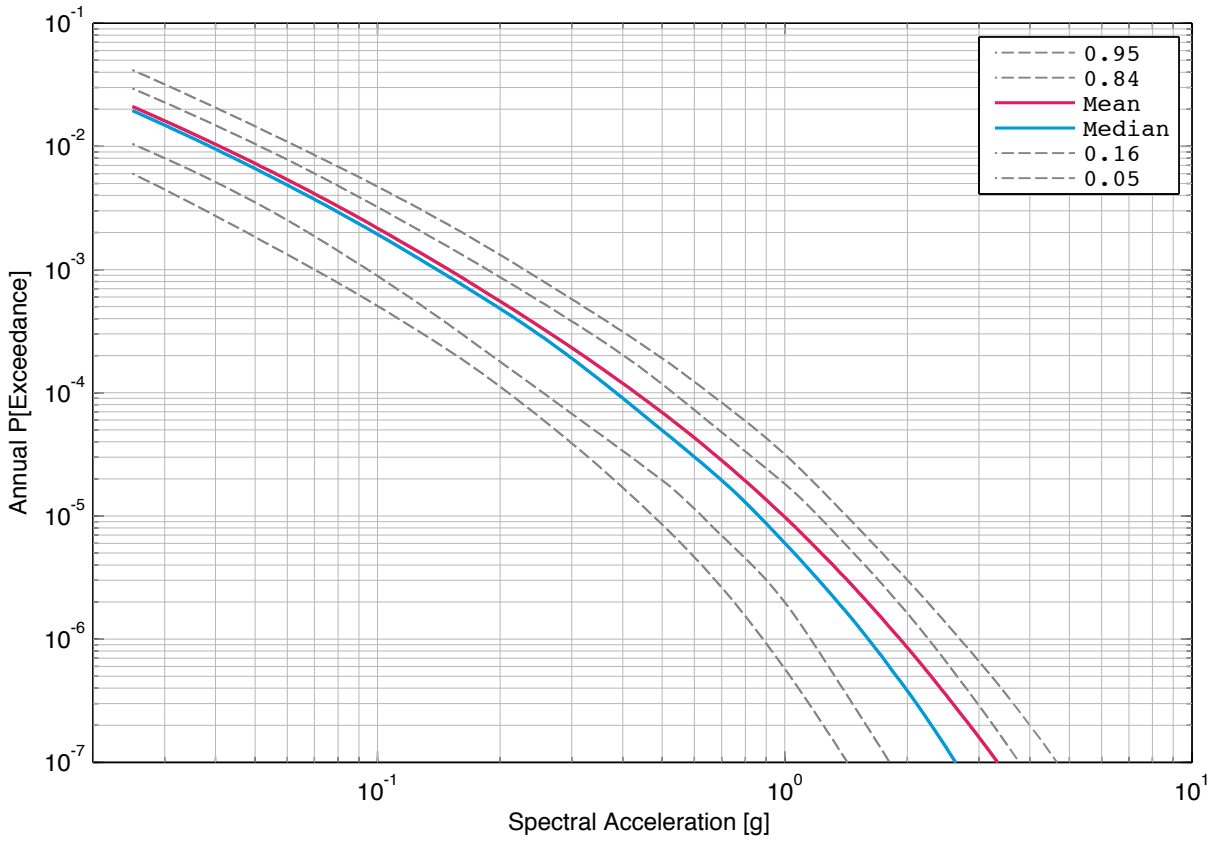

Fig. 2-1.5: Beznau, horizontal component, rock, mean hazard and fractiles, 10 Hz.

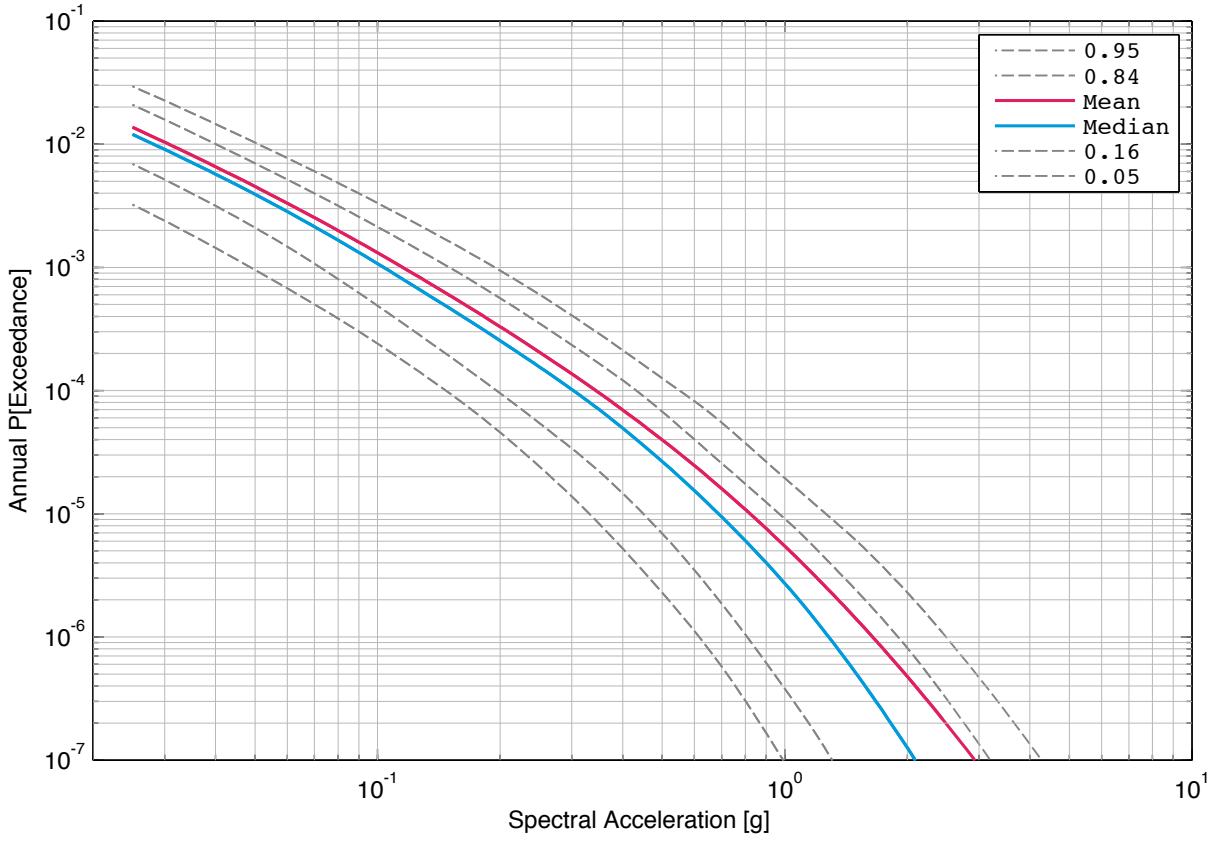

Fig. 2-1.6: Beznau, horizontal component, rock, mean hazard and fractiles, 20 Hz.

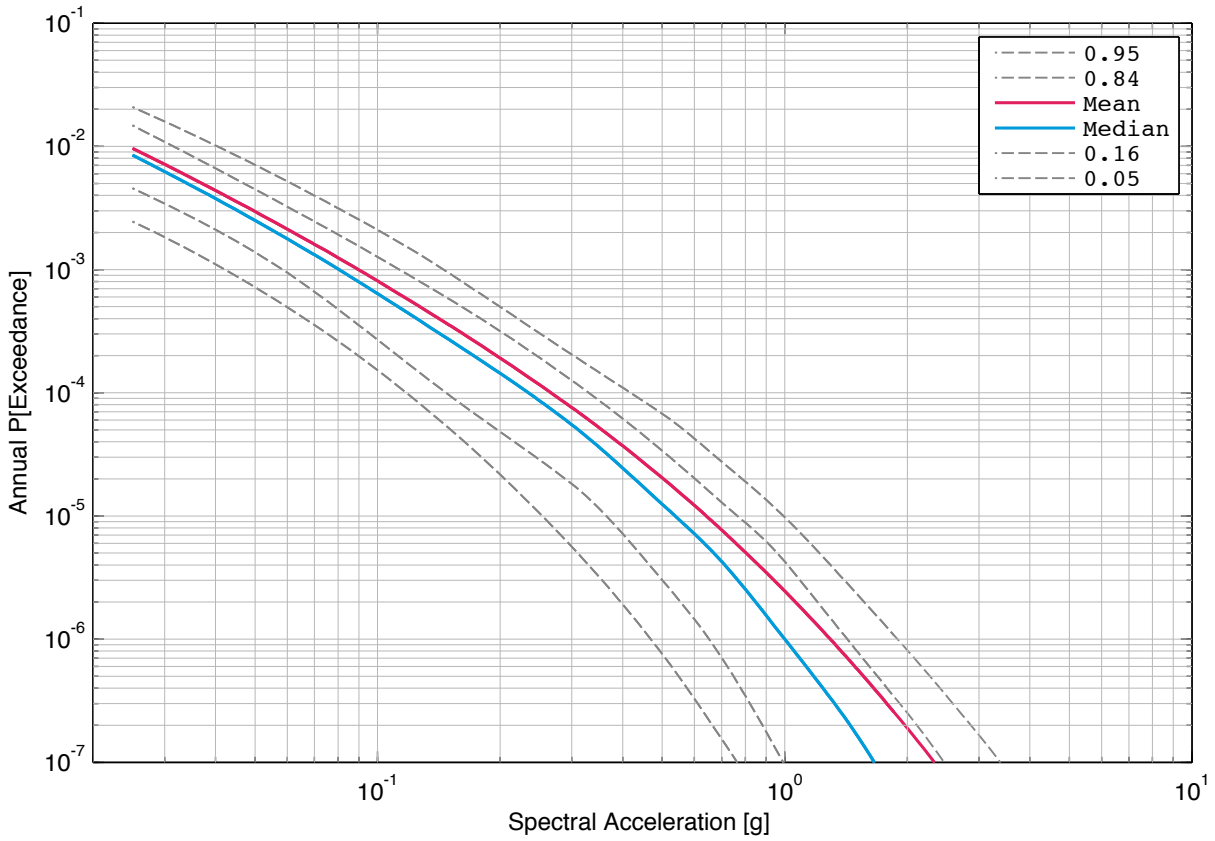

Fig. 2-1.7: Beznau, horizontal component, rock, mean hazard and fractiles, 33 Hz.

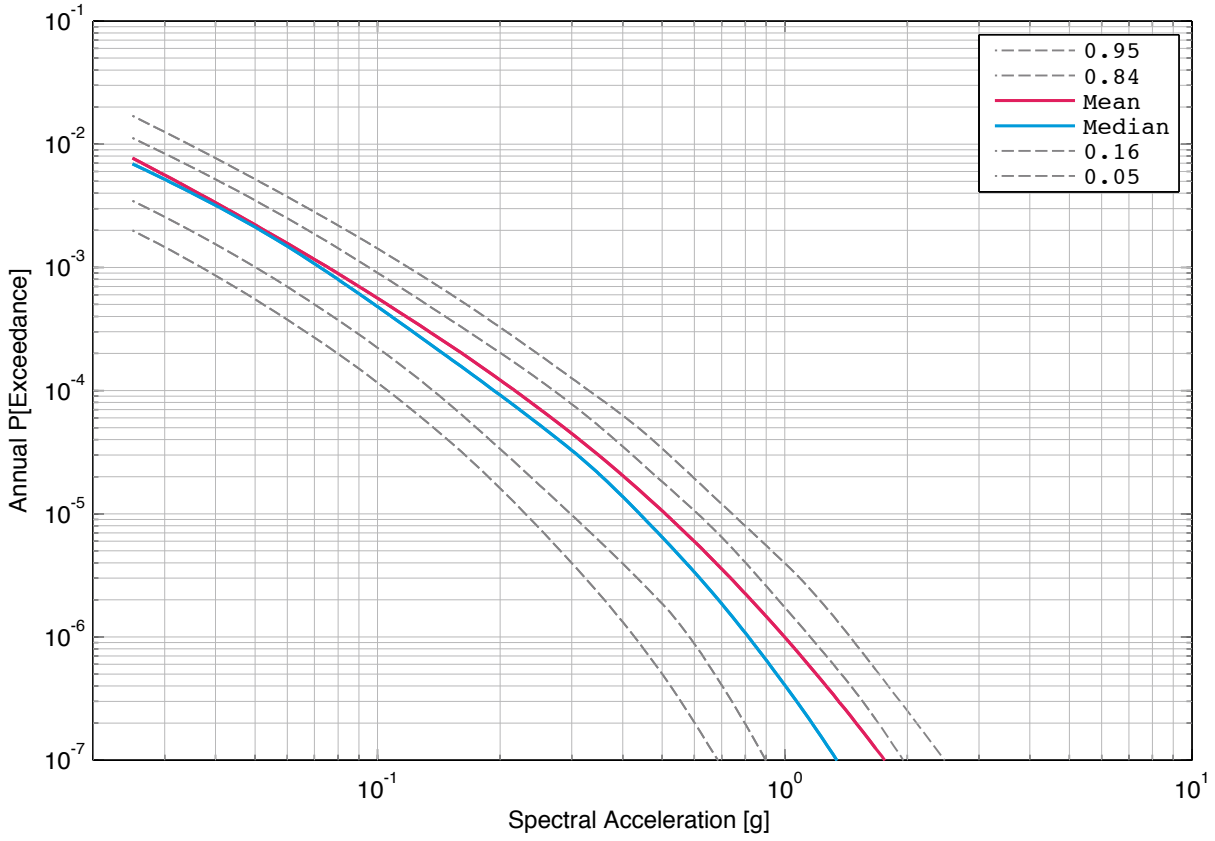

Fig. 2-1.8: Beznau, horizontal component, rock, mean hazard and fractiles, 50 Hz.

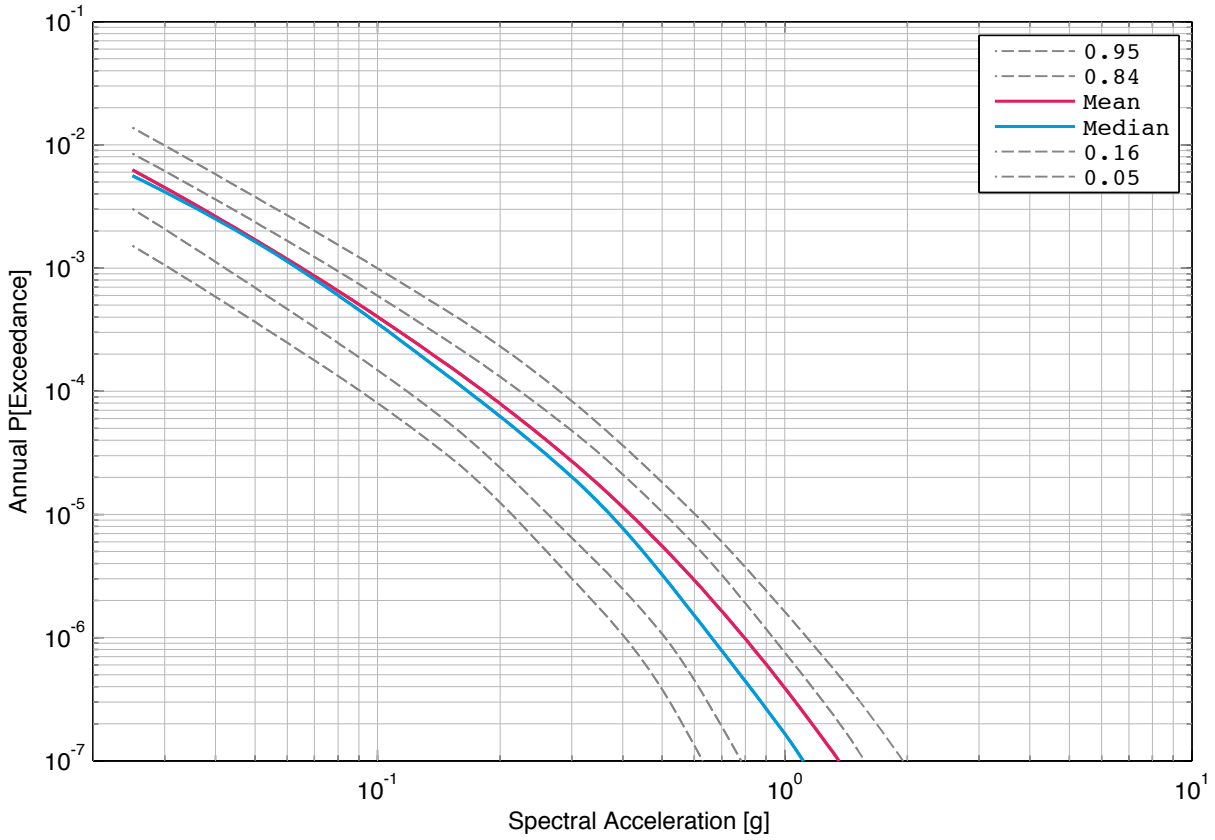

Fig. 2-1.9: Beznau, horizontal component, rock, mean hazard and fractiles, 100 Hz.

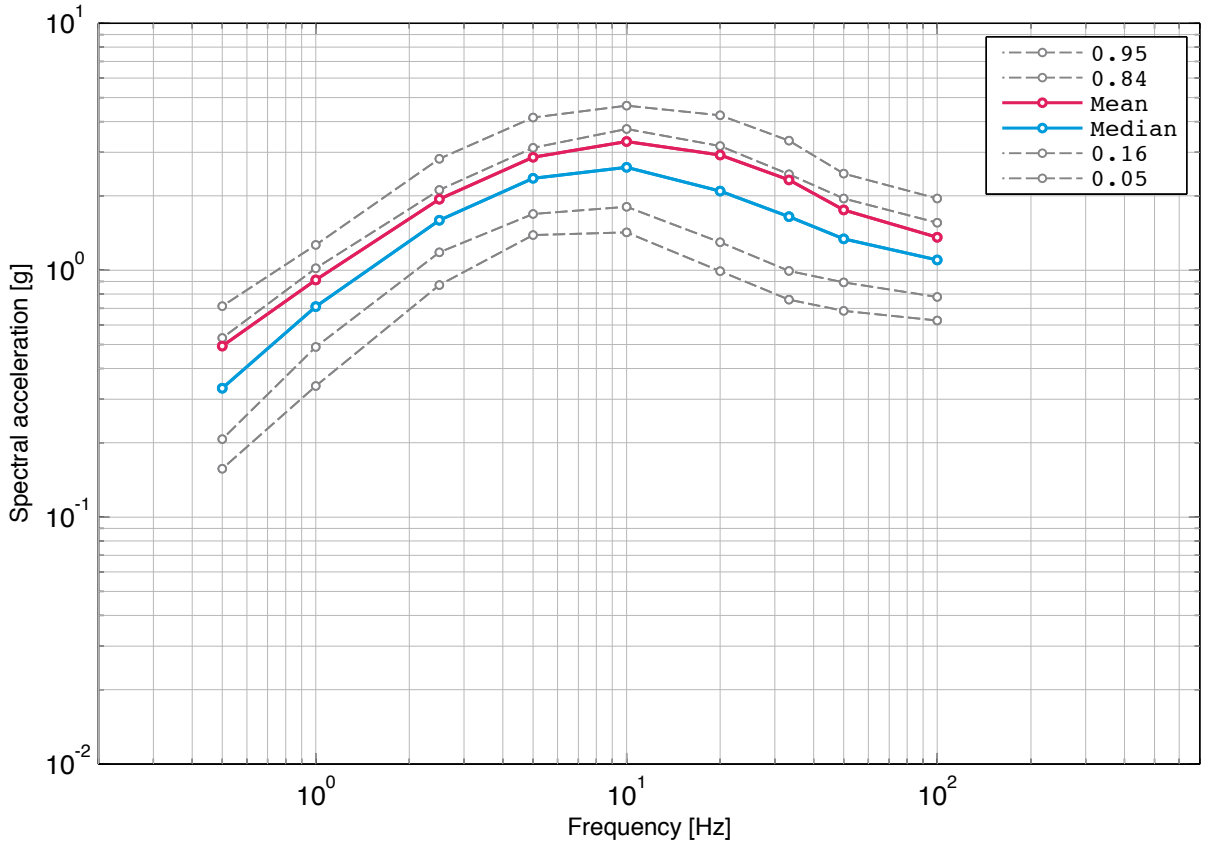

Fig. 2-1.10: Beznau, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-07 and 5% damping.

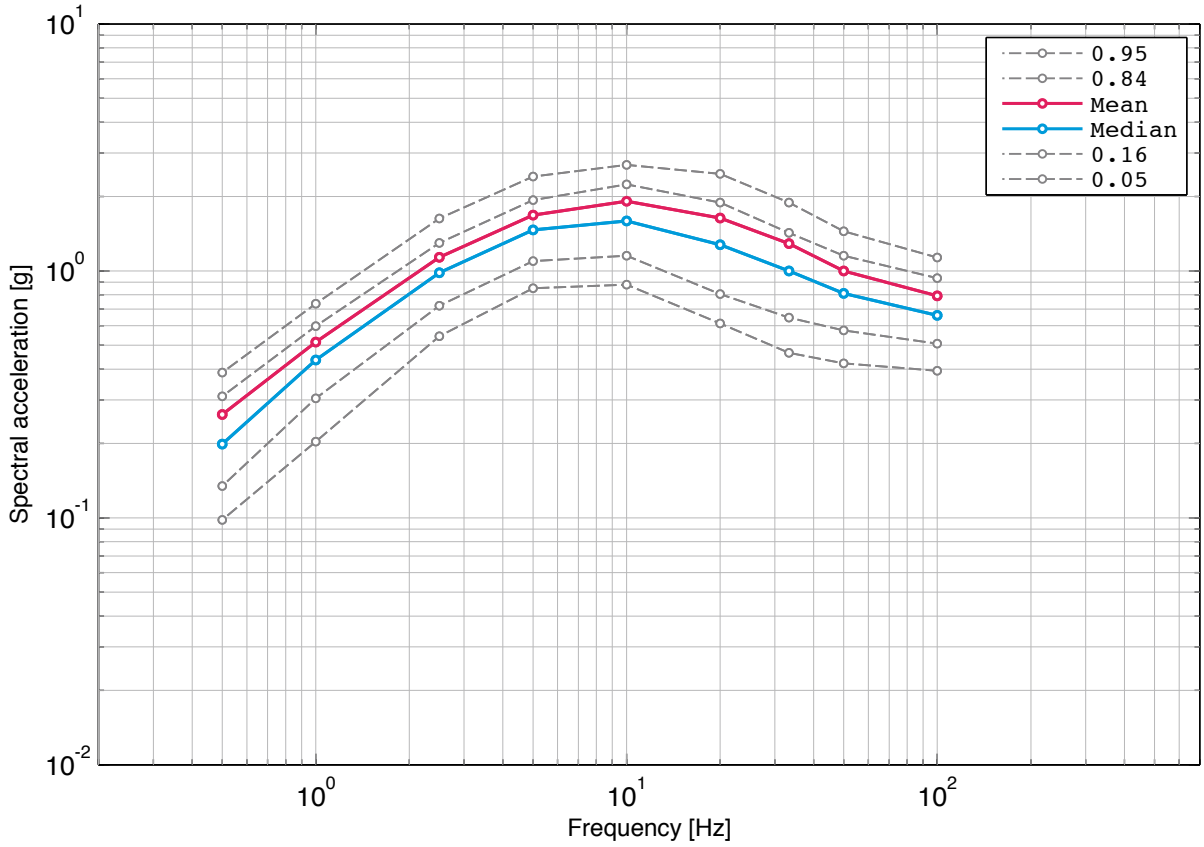

Fig. 2-1.11: Beznau, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-06 and 5% damping.

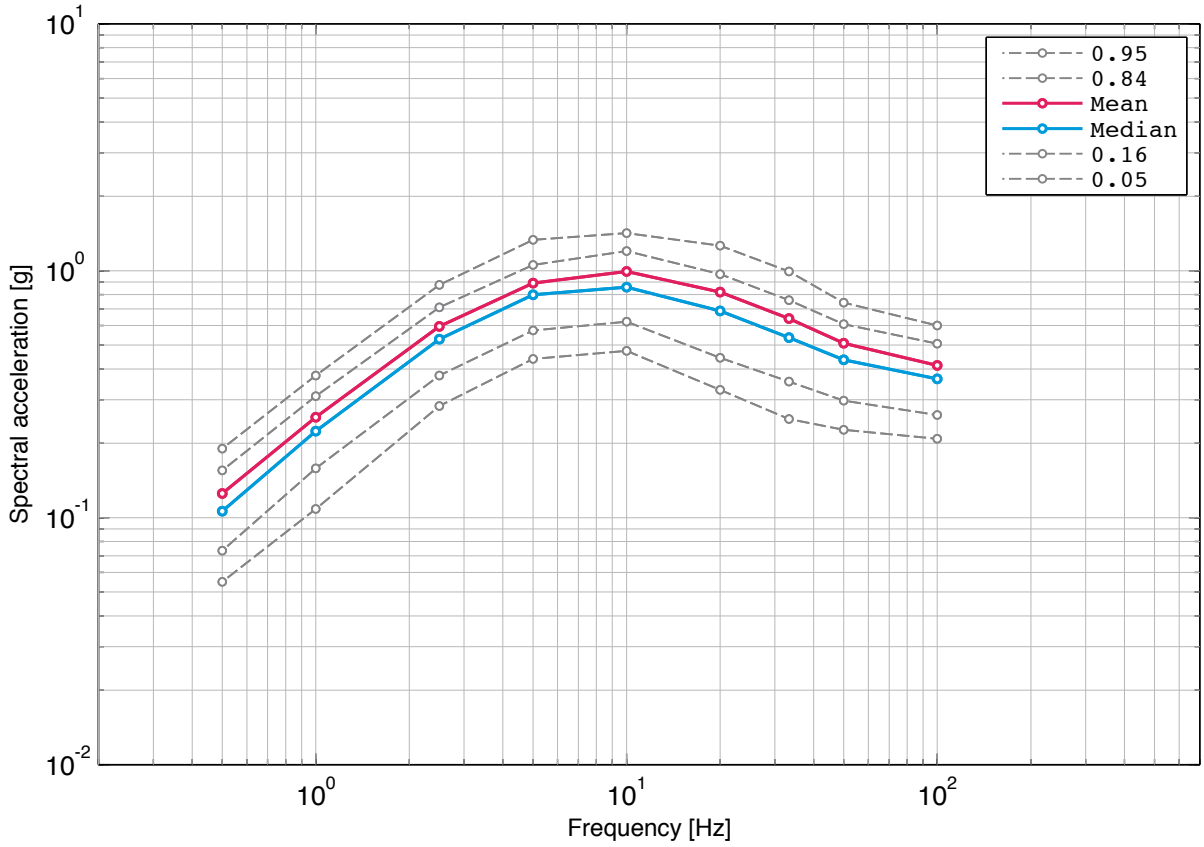

Fig. 2-1.12: Beznau, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-05 and 5% damping.

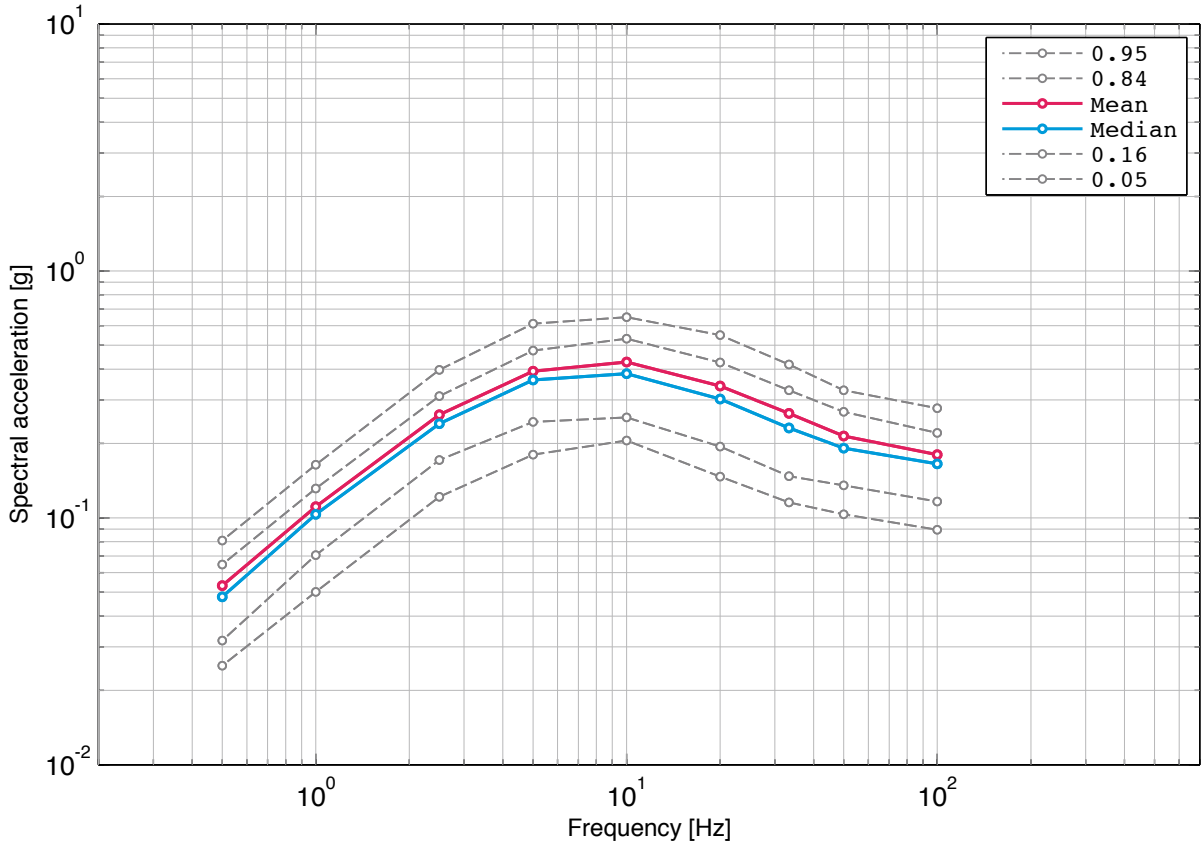

Fig. 2-1.13: Beznau, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-04 and 5% damping.

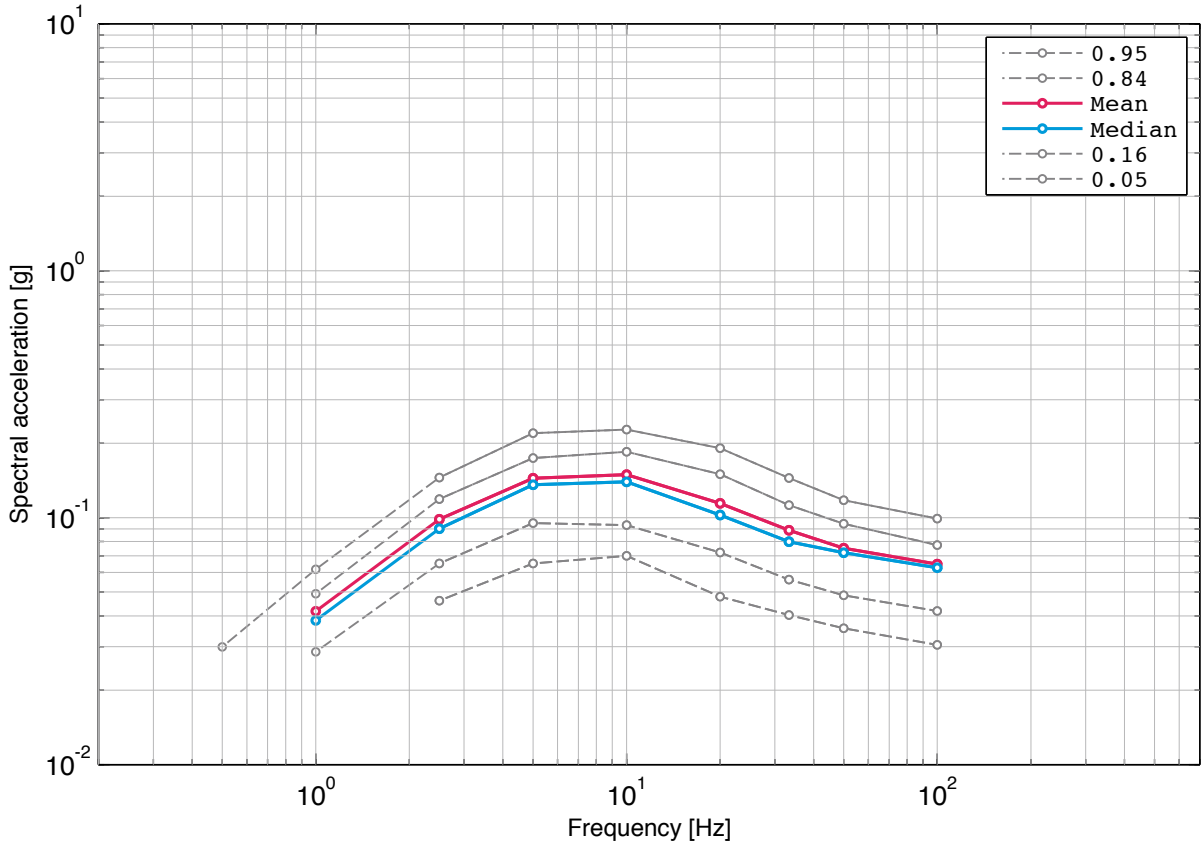

Fig. 2-1.14: Beznau, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-03 and 5% damping.

2.2 Beznau, Soil Hazard, Horizontal Component, Surface

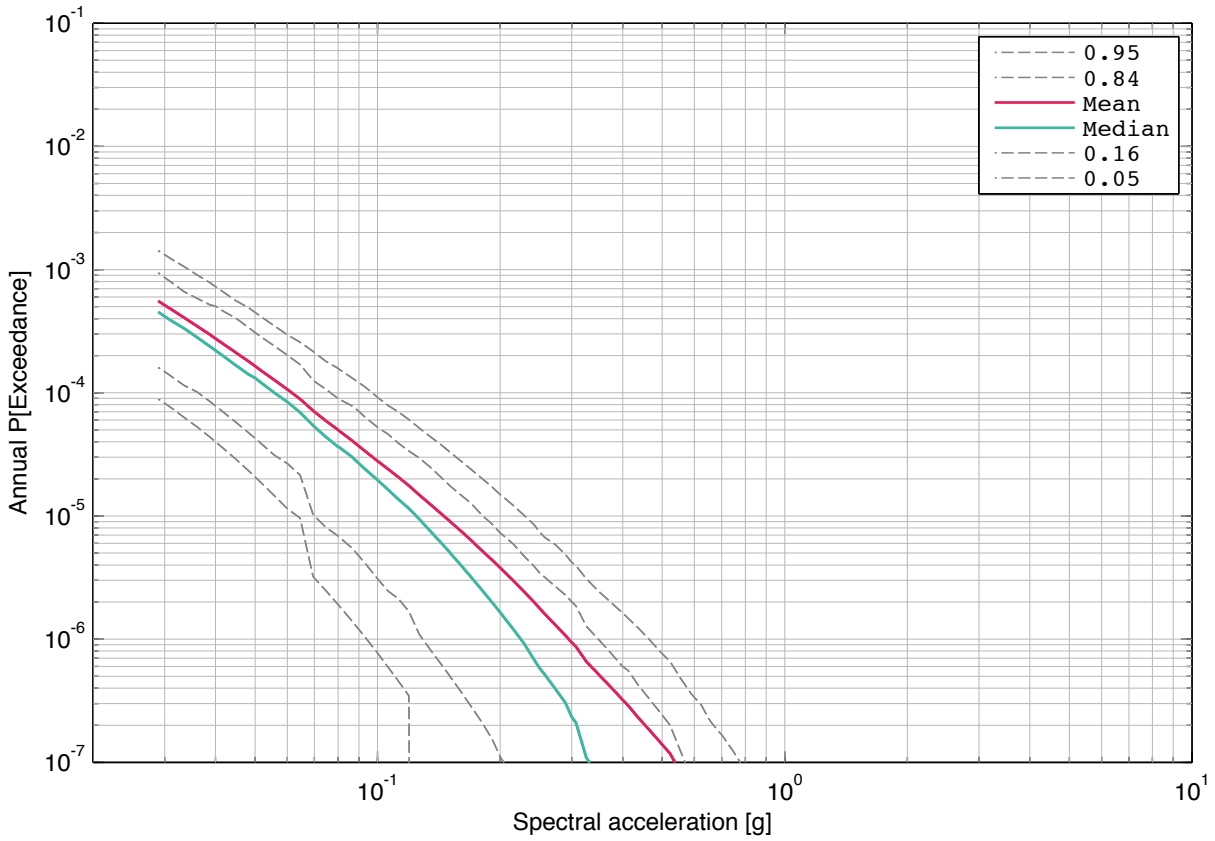

Fig. 2-2.1: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 0.5 Hz.

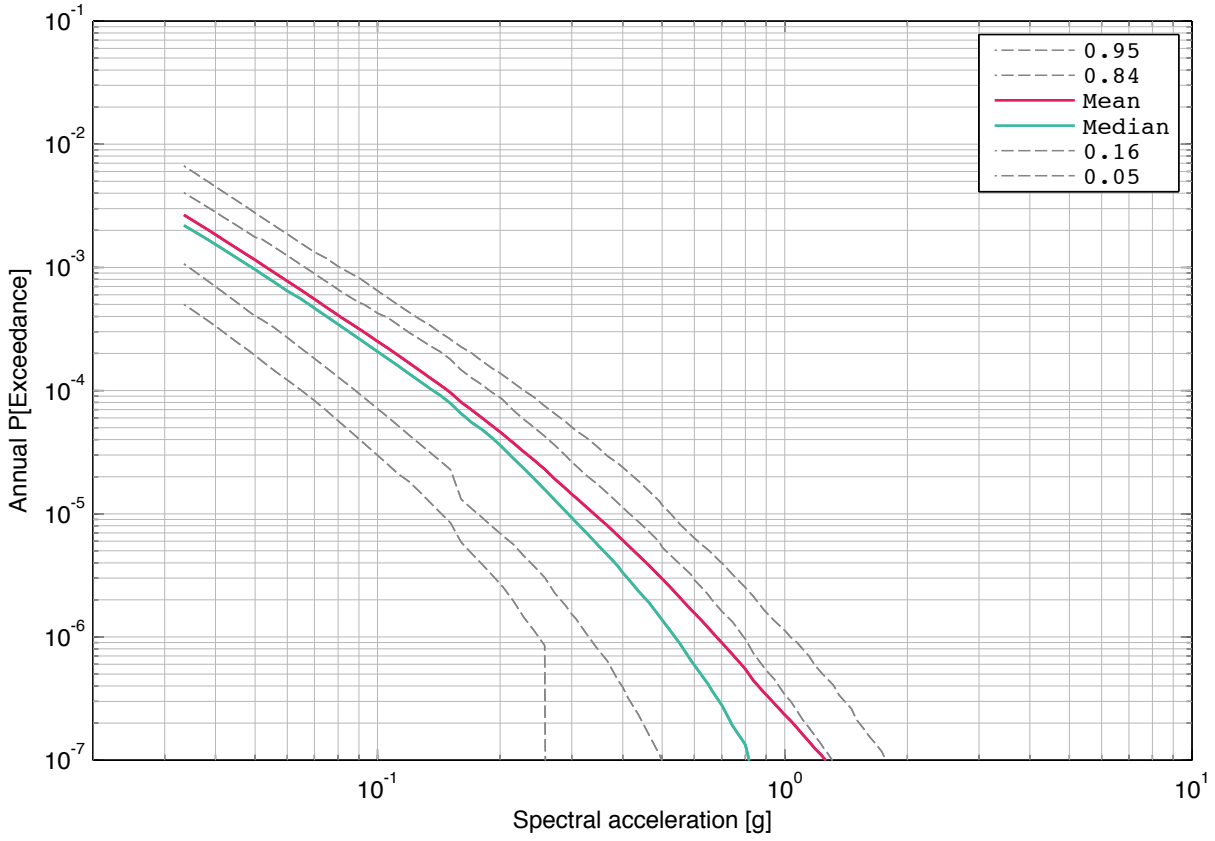

Fig. 2-2.2: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 1 Hz.

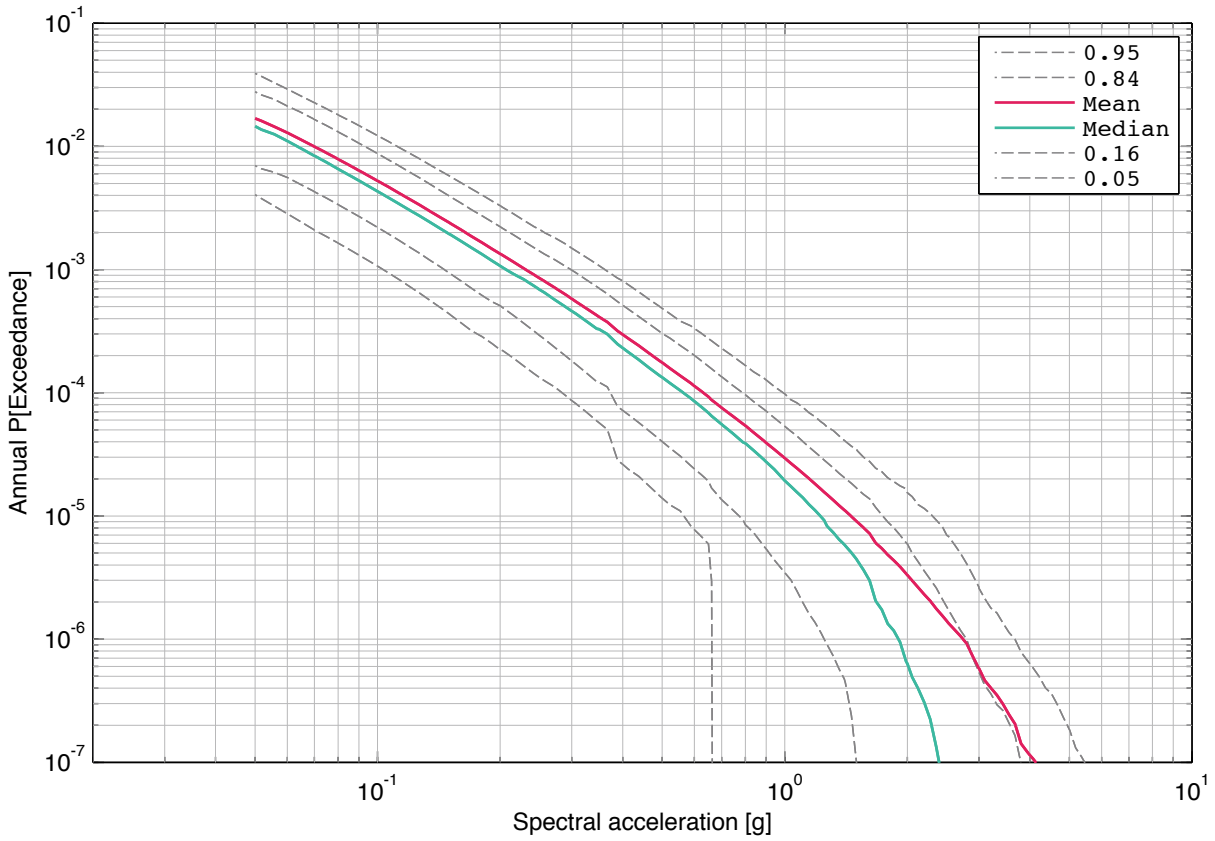

Fig. 2-2.3: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 2.5 Hz.

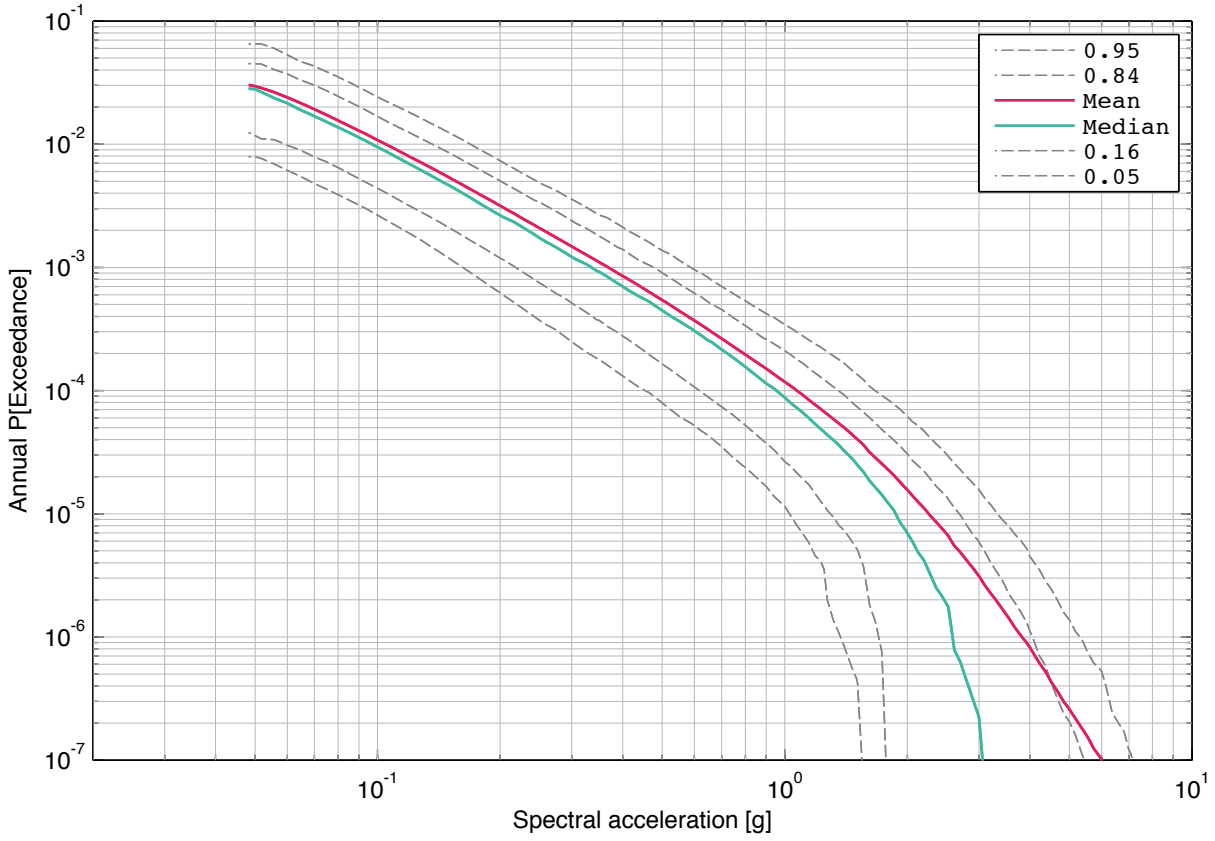

Fig. 2-2.4: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 5 Hz.

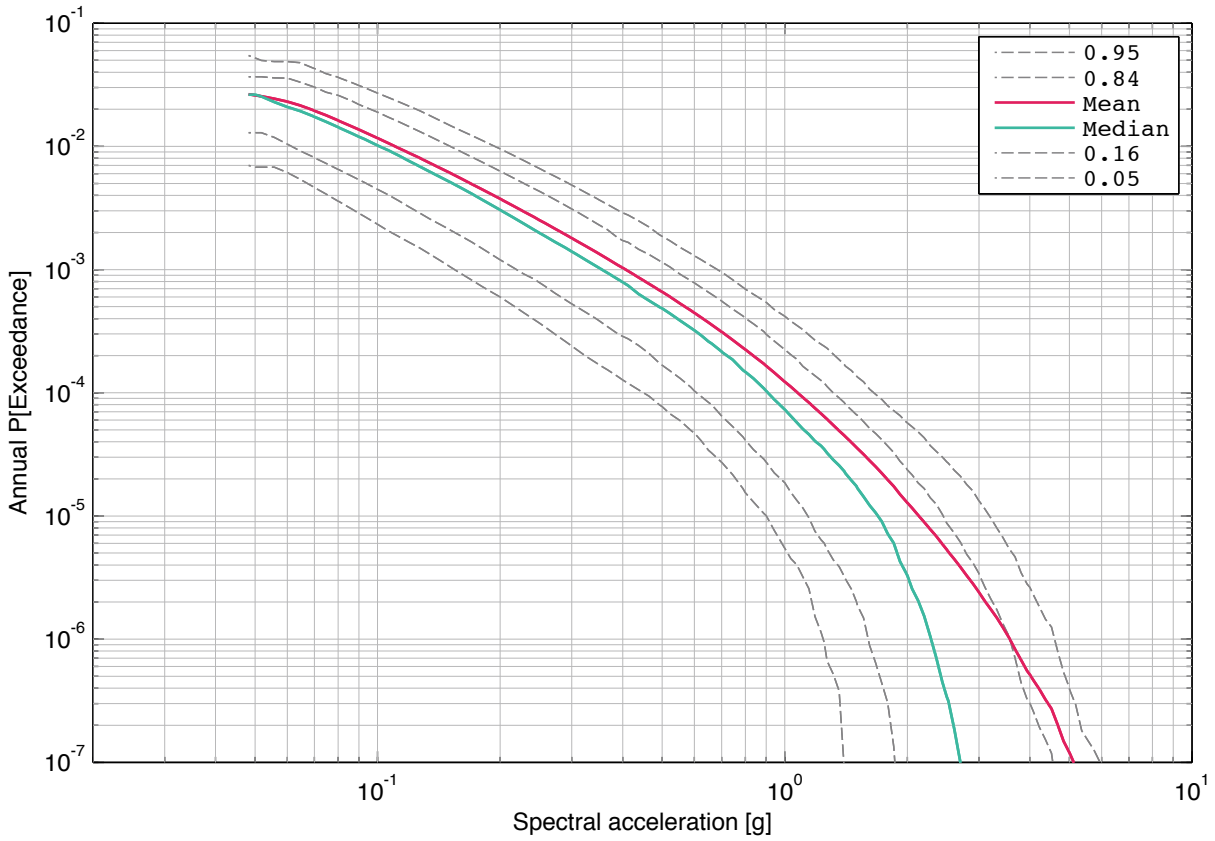

Fig. 2-2.5: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 10 Hz.

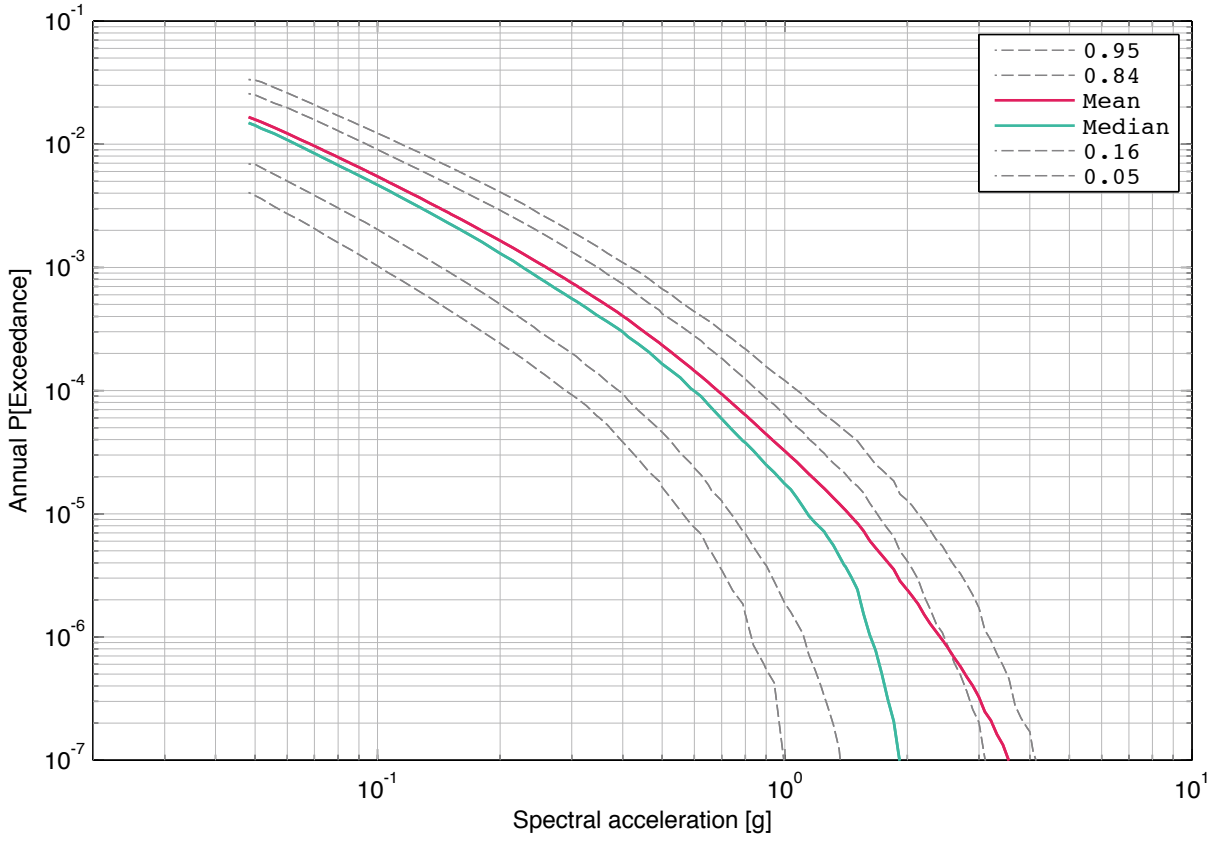

Fig. 2-2.6: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 20 Hz.

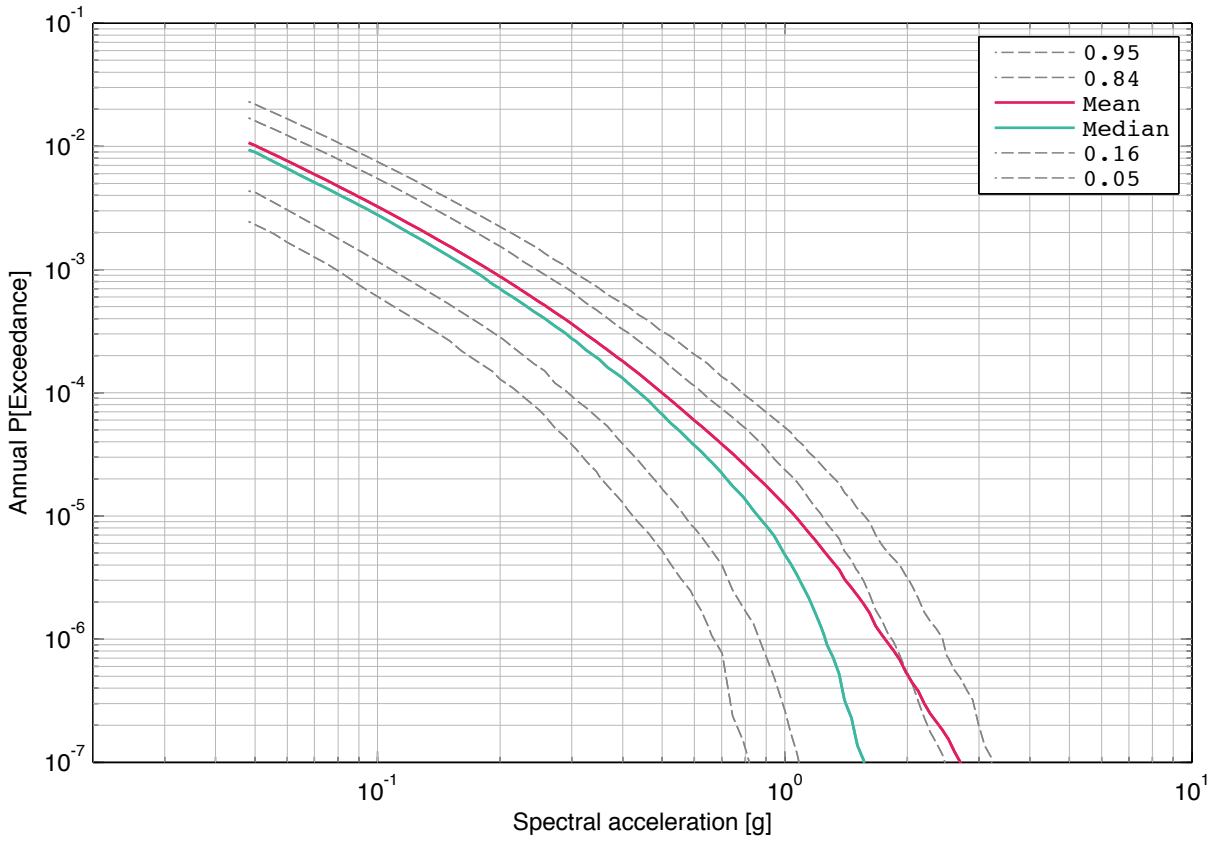

Fig. 2-2.7: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 33 Hz.

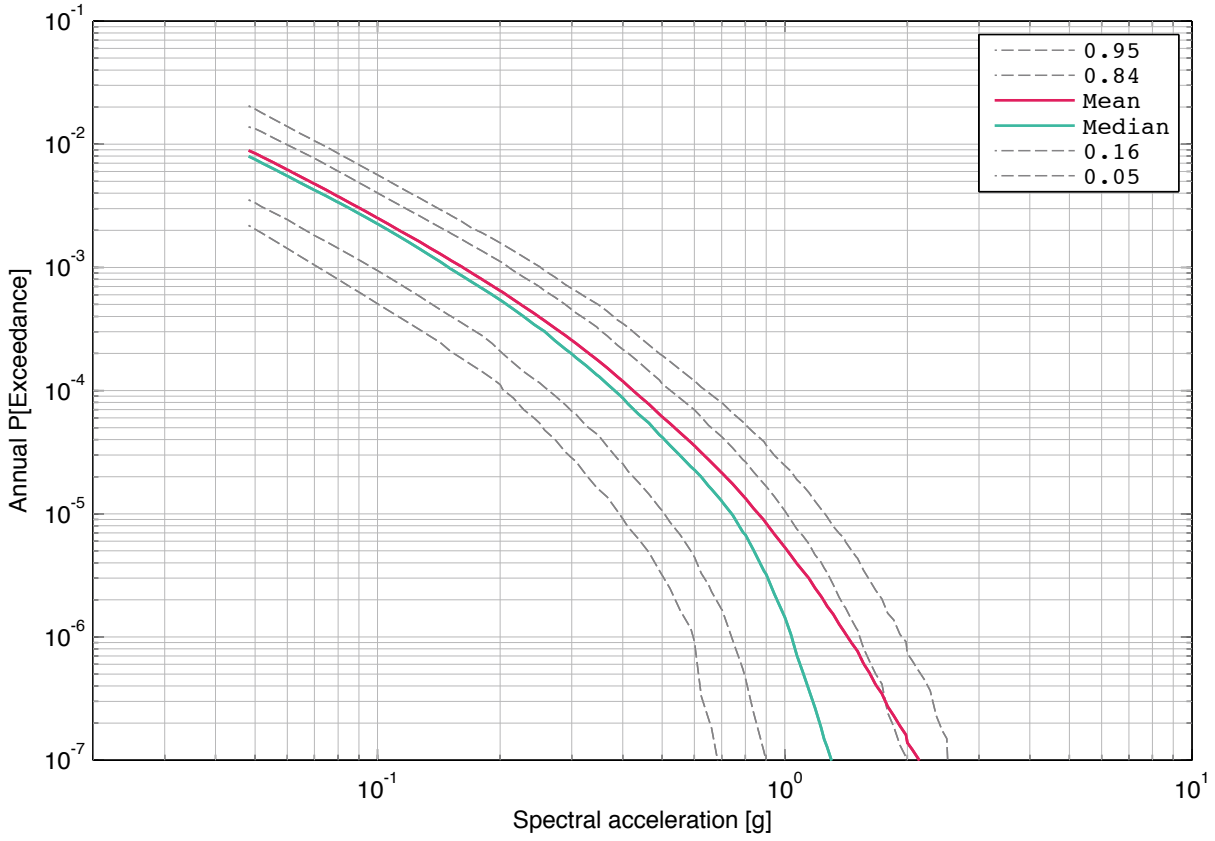

Fig. 2-2.8: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 50 Hz.

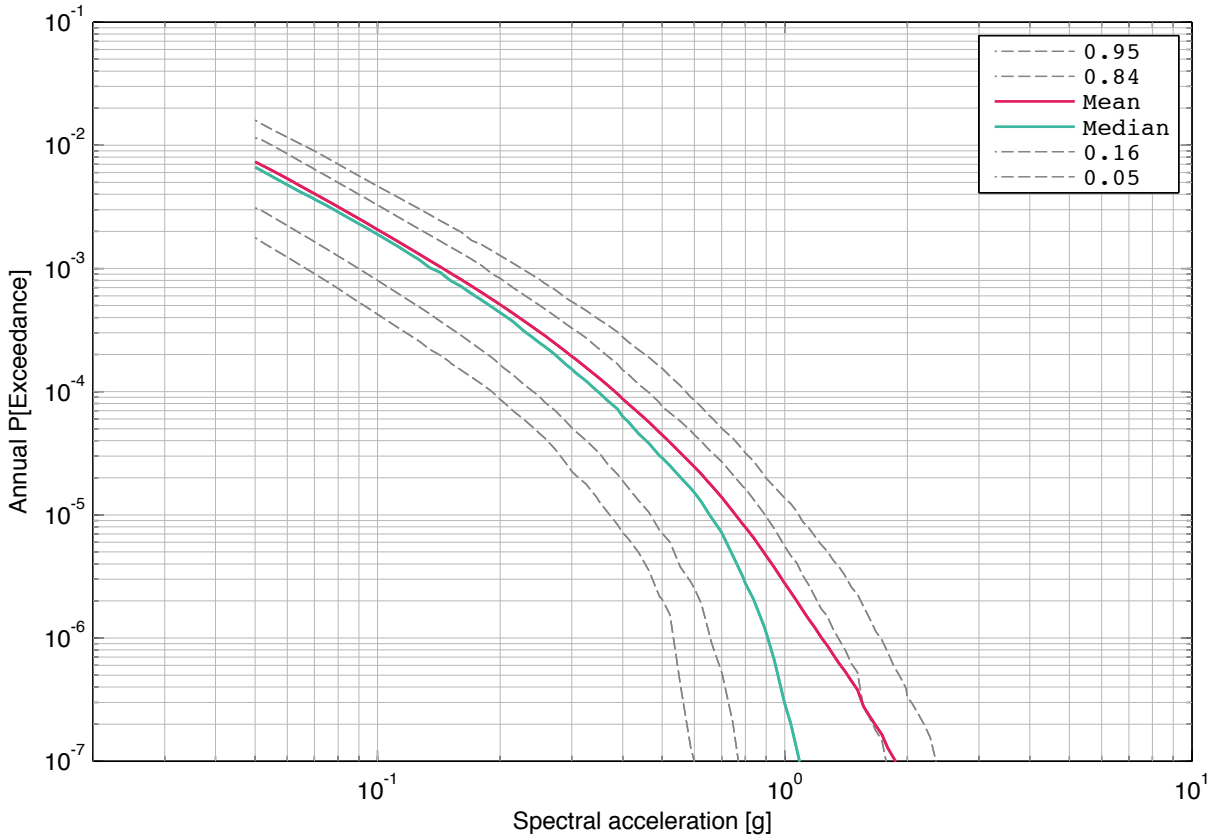

Fig. 2-2.9: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 100 Hz.

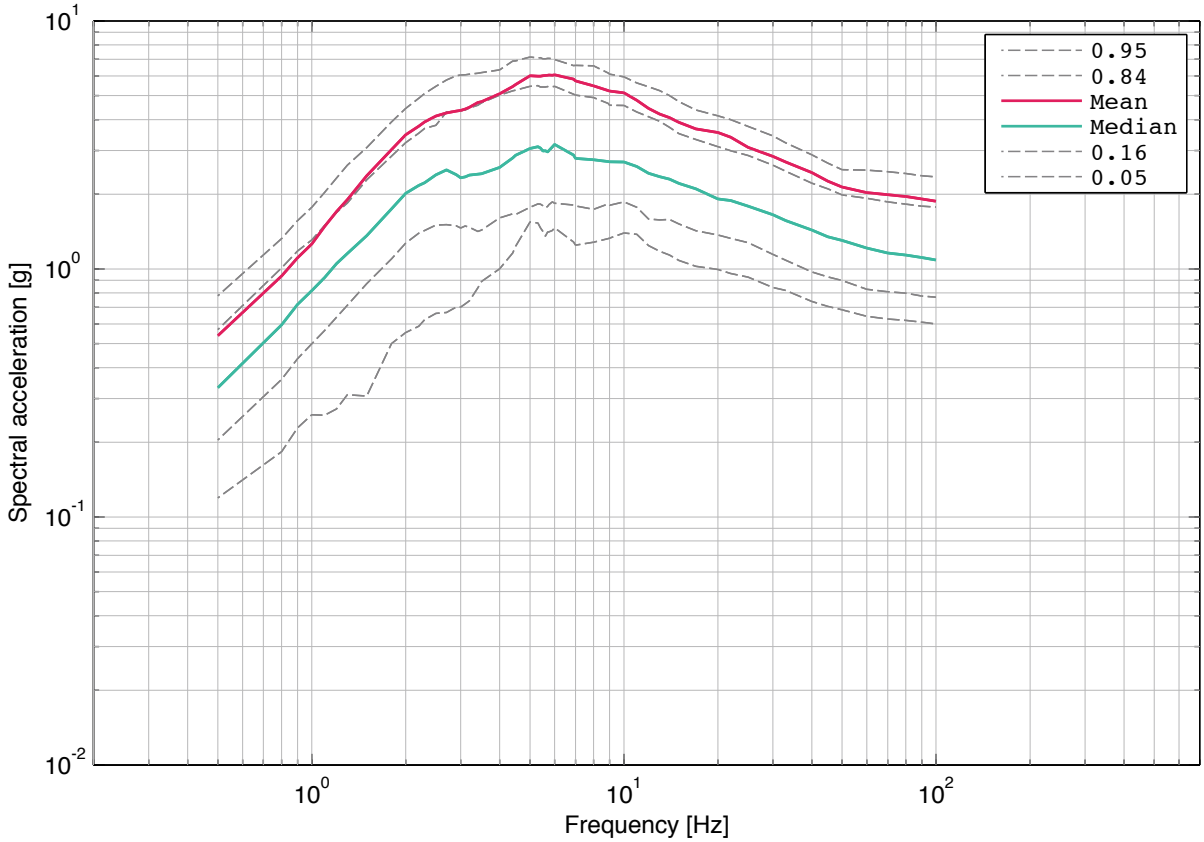

Fig. 2-2.10: Beznau, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

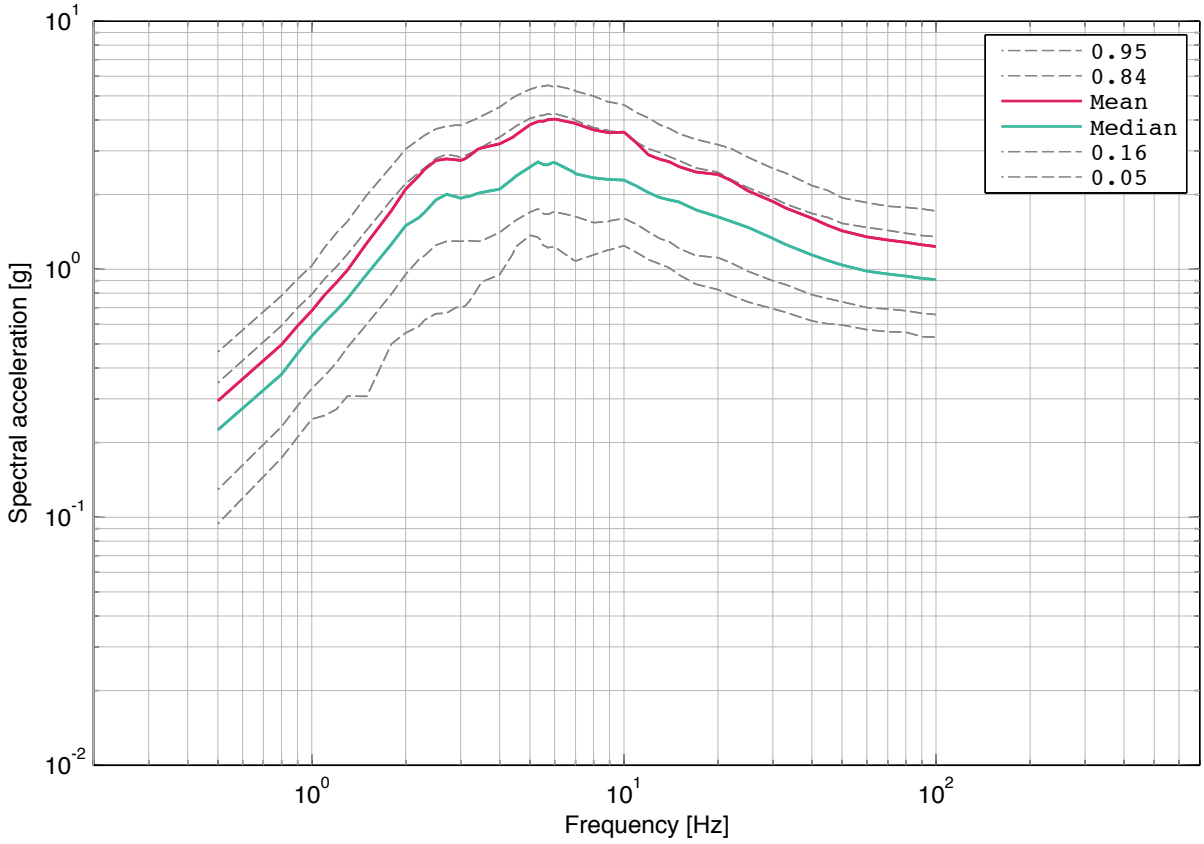

Fig. 2-2.11: Beznau, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

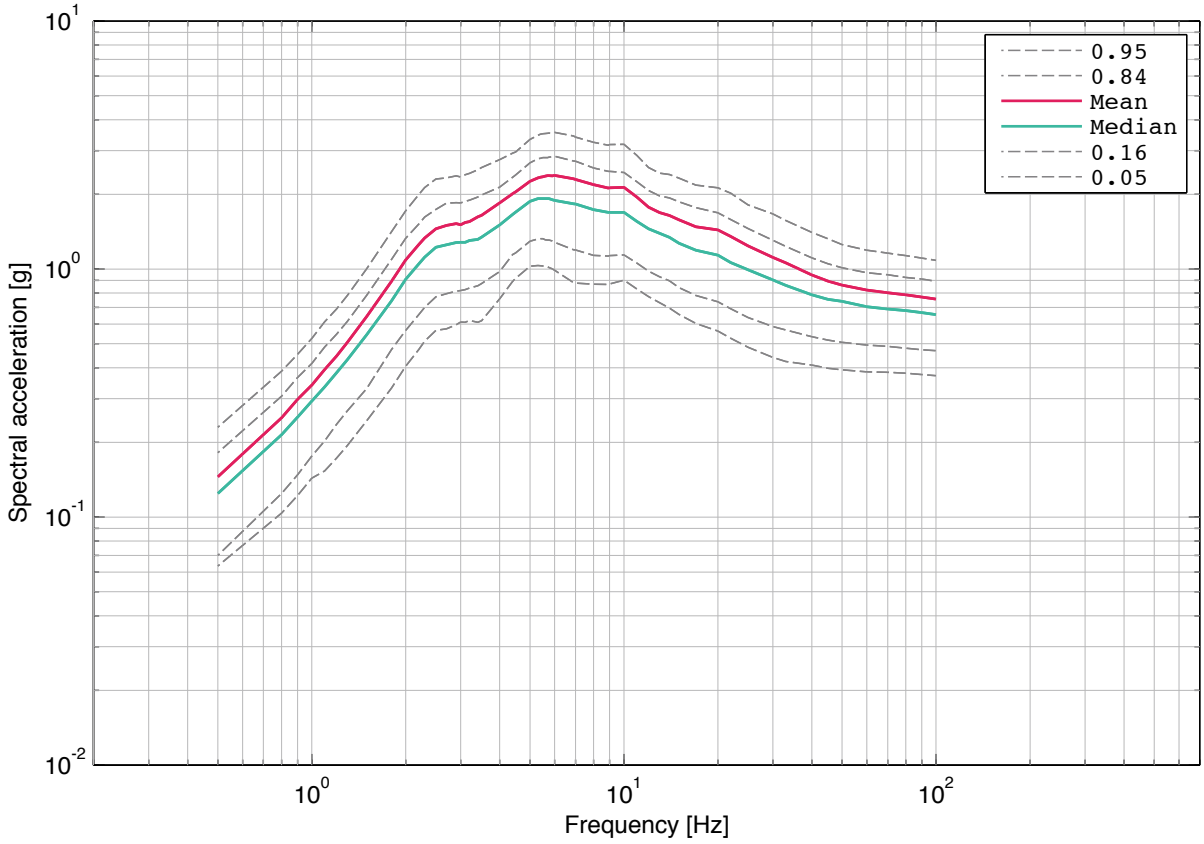

Fig. 2-2.12: Beznau, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

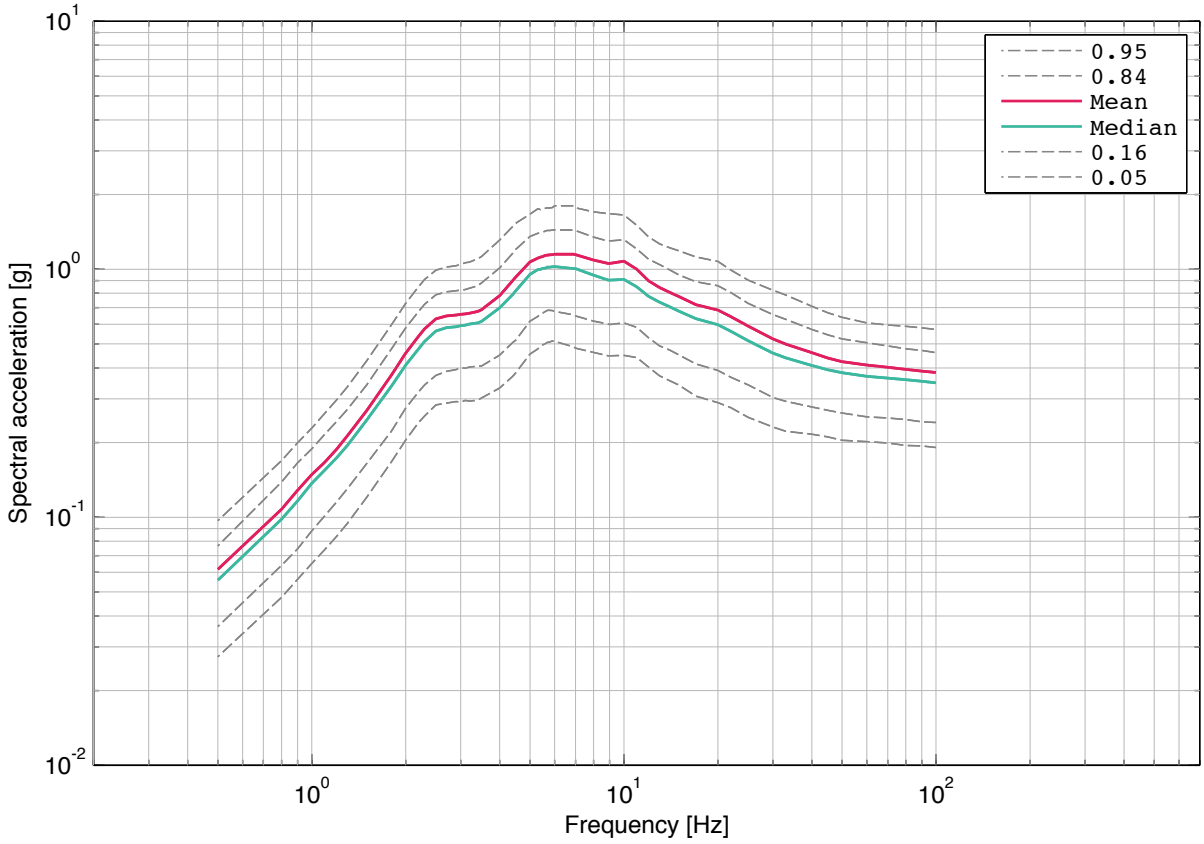

Fig. 2-2.13: Beznau, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

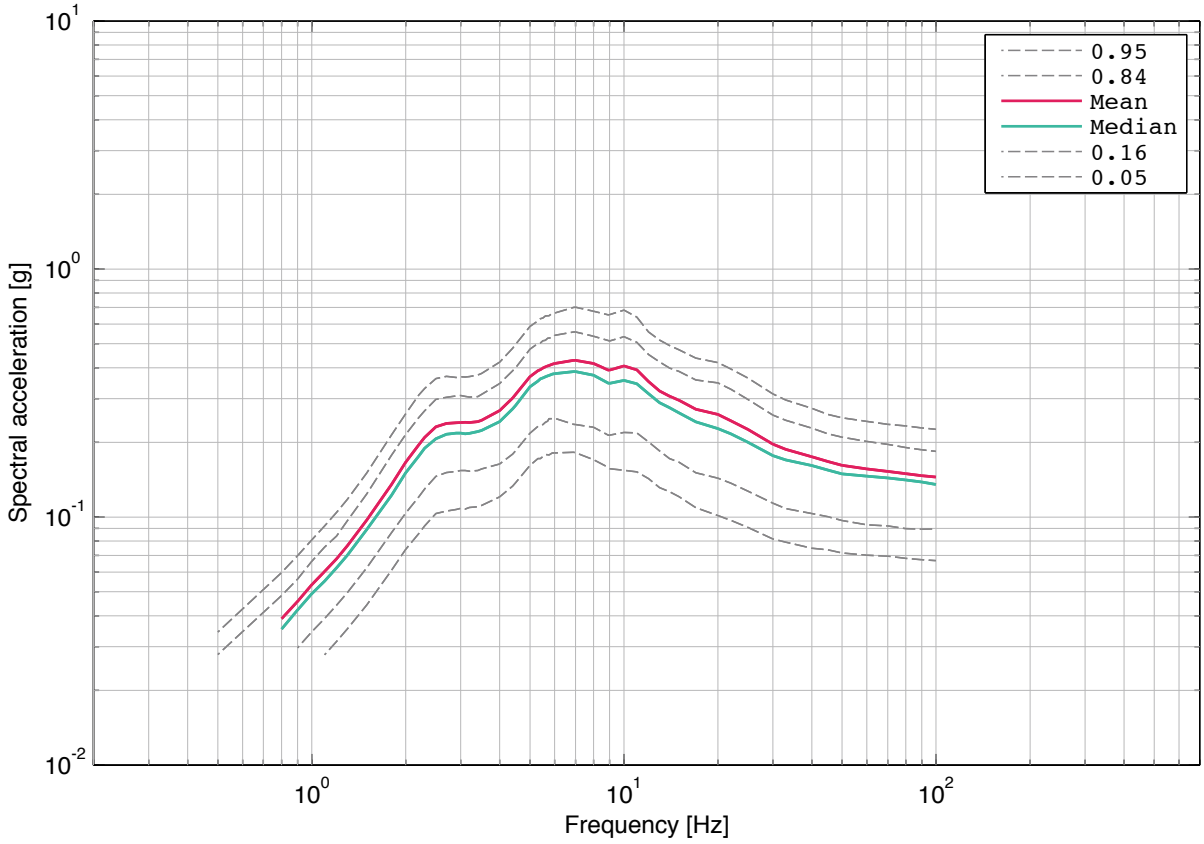

Fig. 2-2.14: Beznau, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

2.3 Beznau, Soil Hazard, Horizontal Component, -15 m

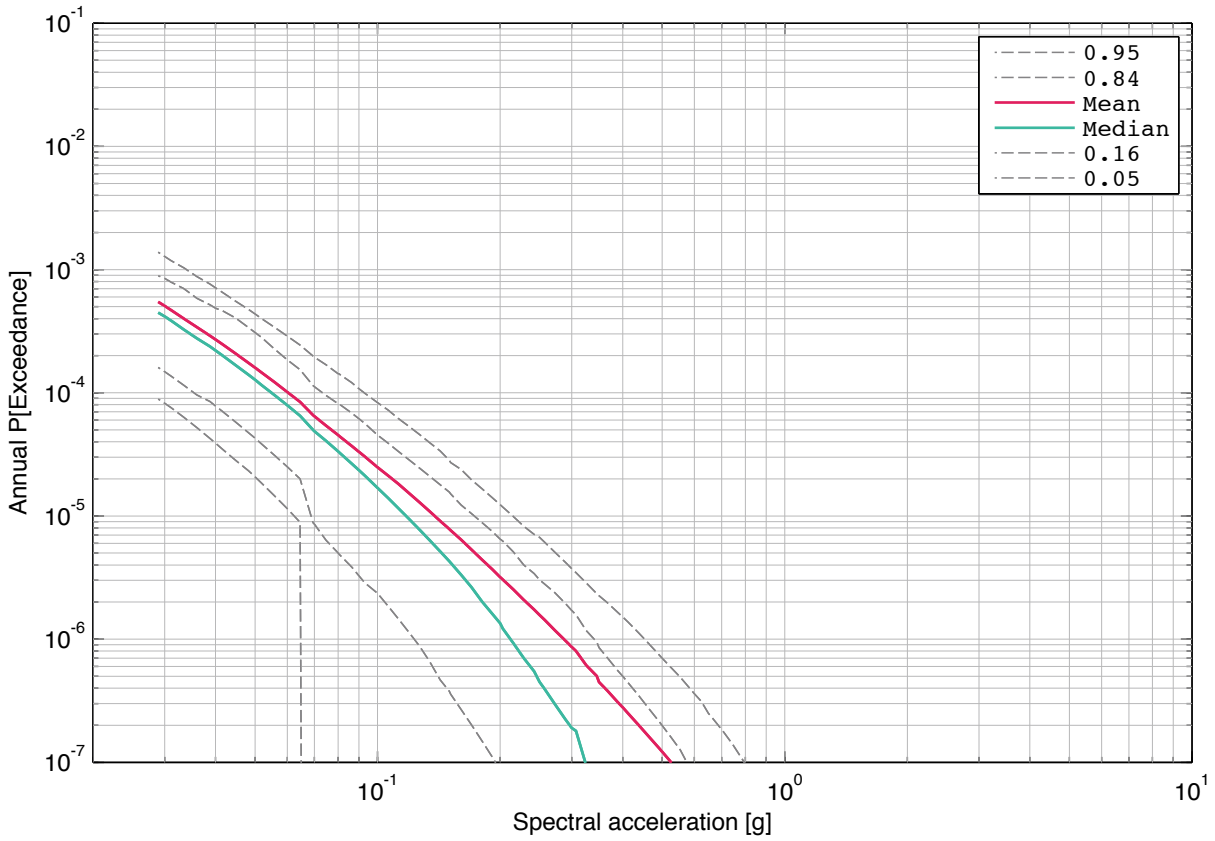

Fig. 2-3.1: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 0.5 Hz.

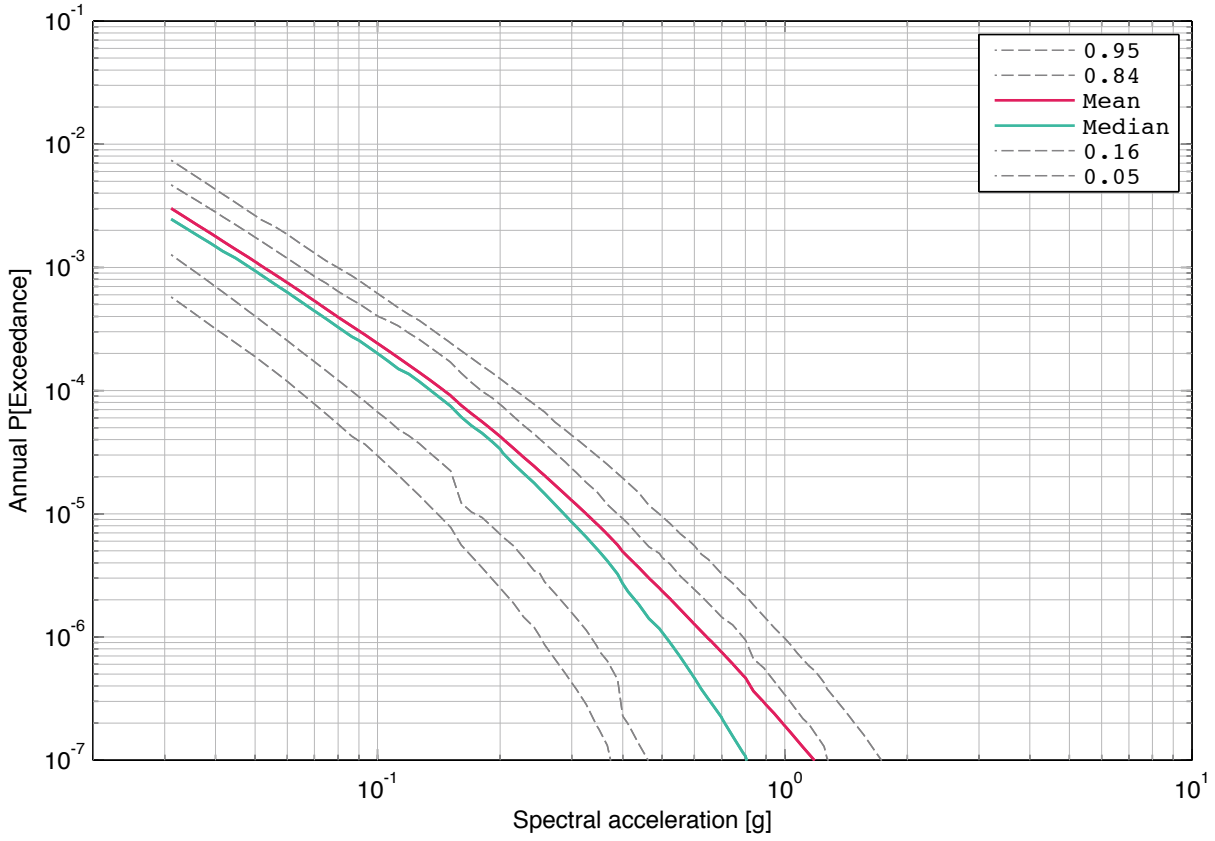

Fig. 2-3.2: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 1 Hz.

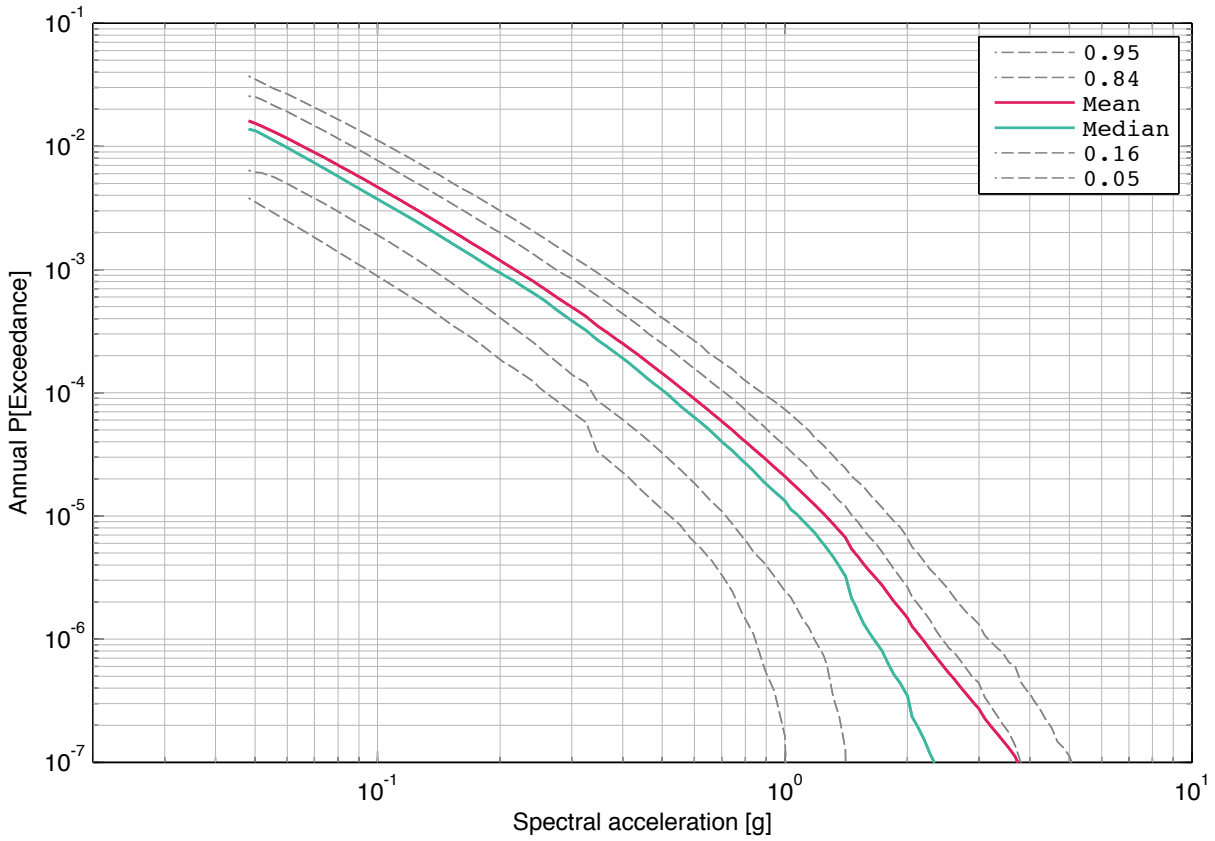

Fig. 2-3.3: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 2.5 Hz.

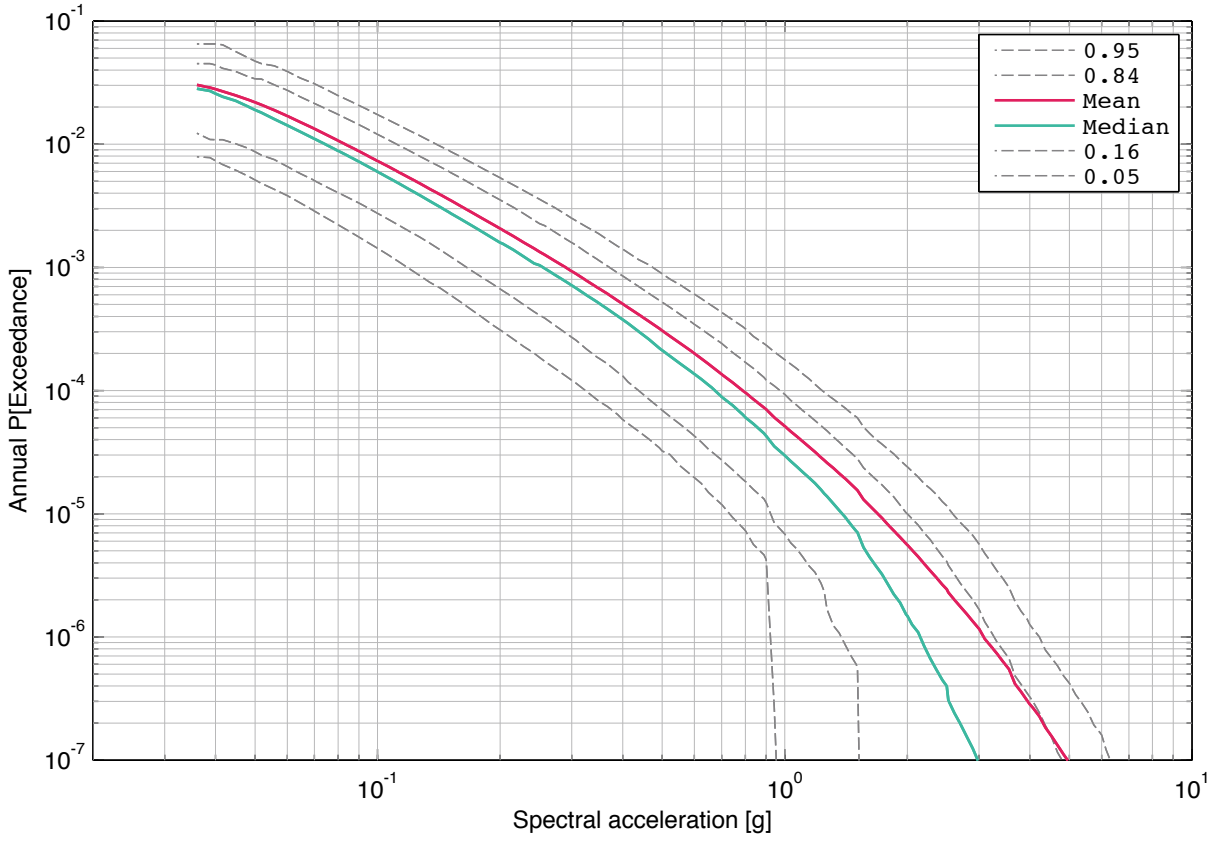

Fig. 2-3.4: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 5 Hz.

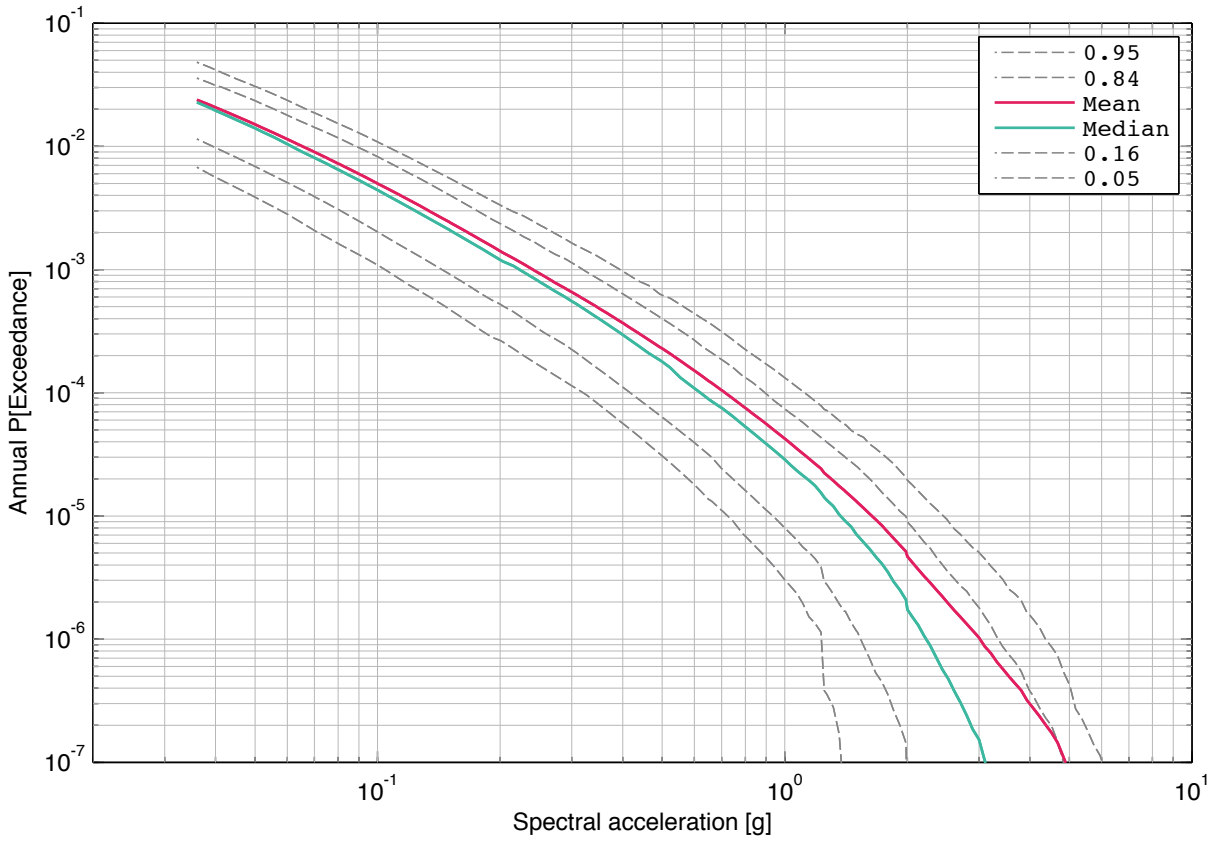

Fig. 2-3.5: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 10 Hz.

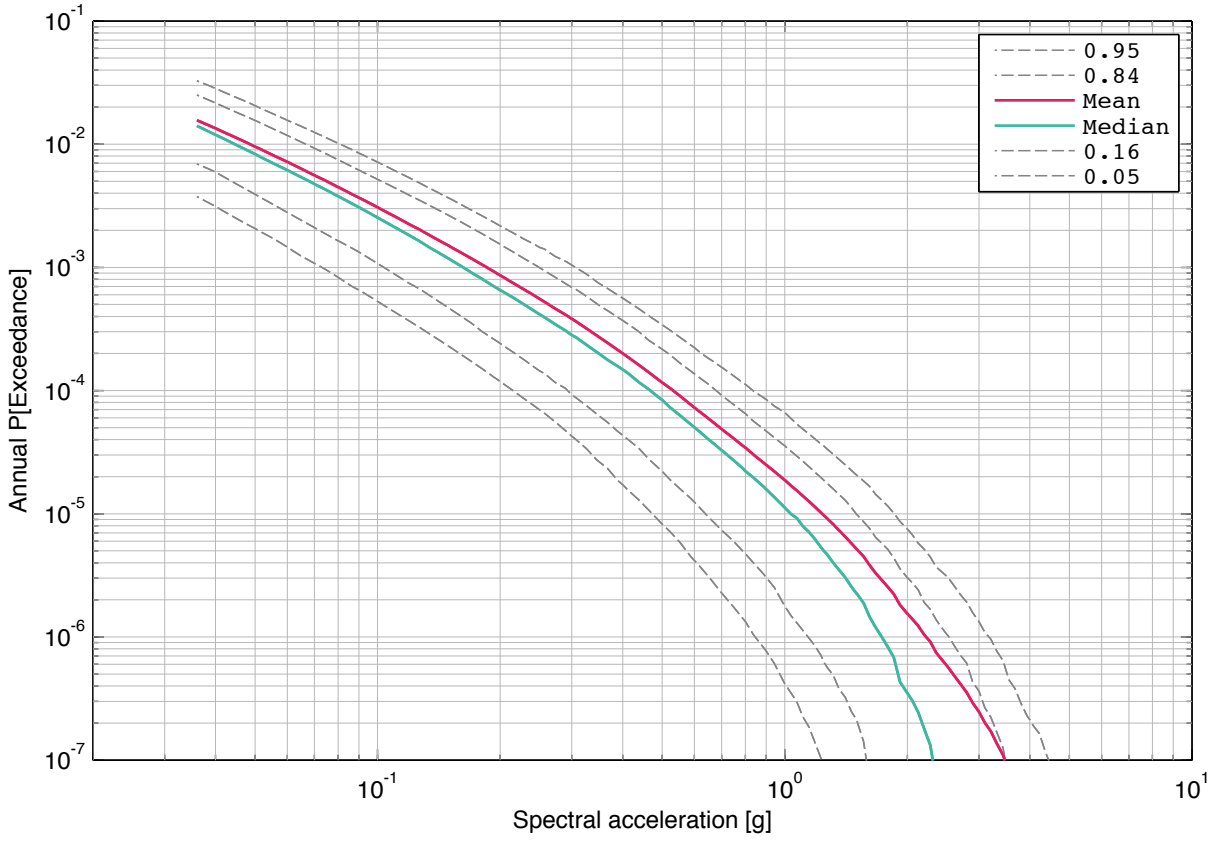

Fig. 2-3.6: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 20 Hz.

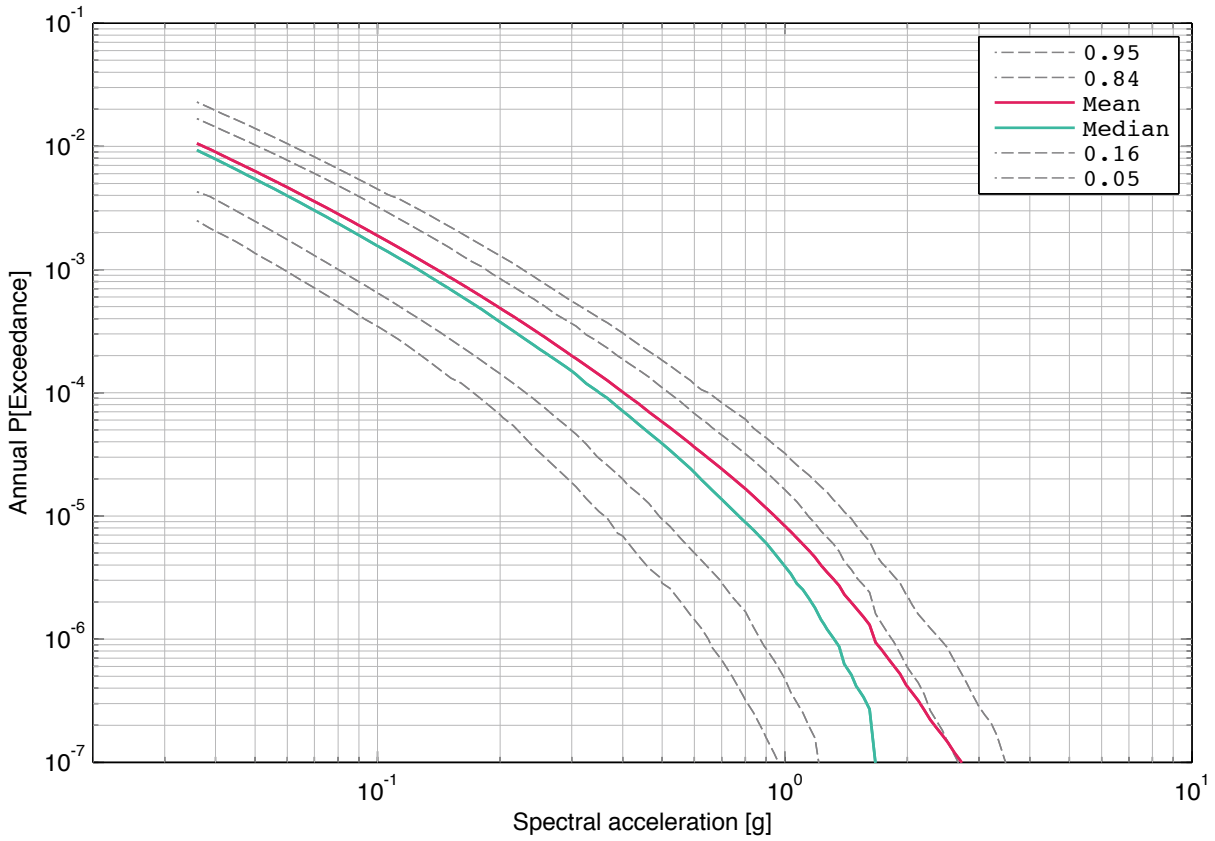

Fig. 2-3.7: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 33 Hz.

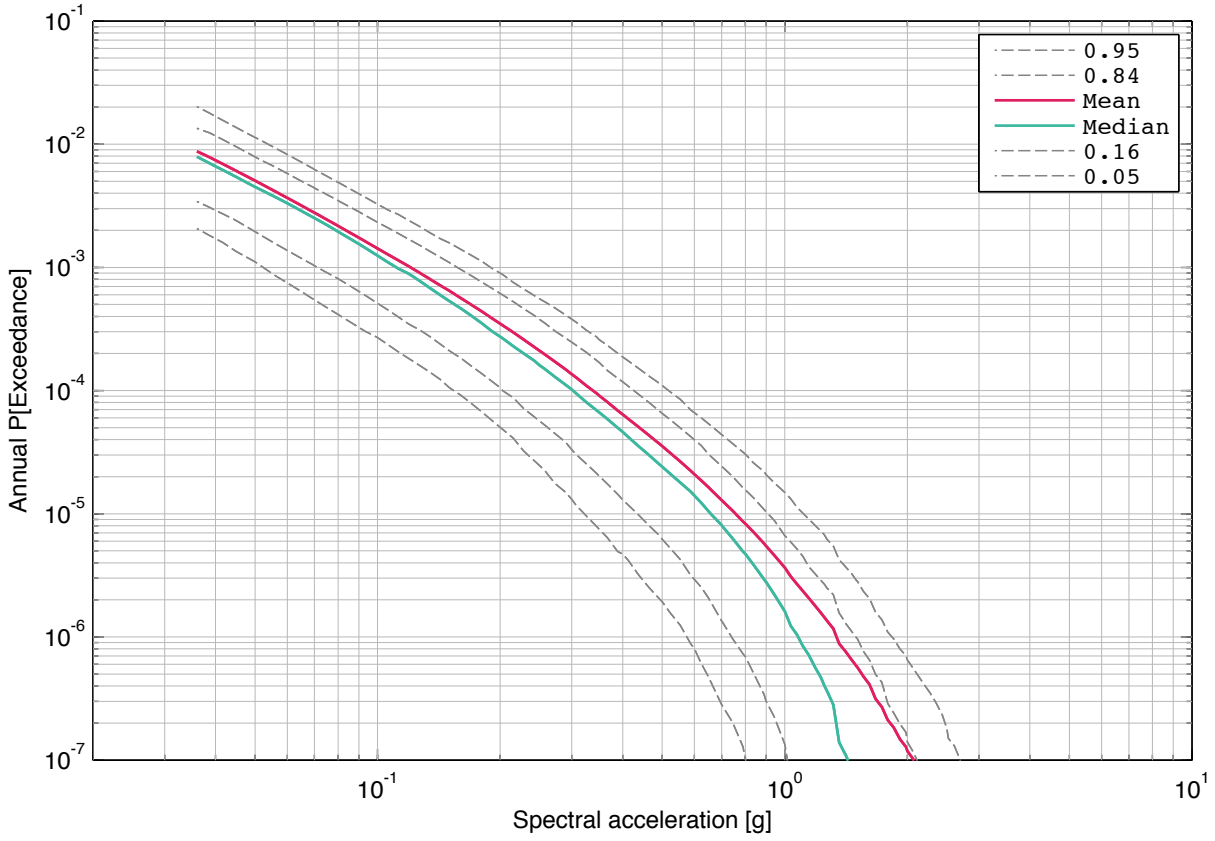

Fig. 2-3.8: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 50 Hz.

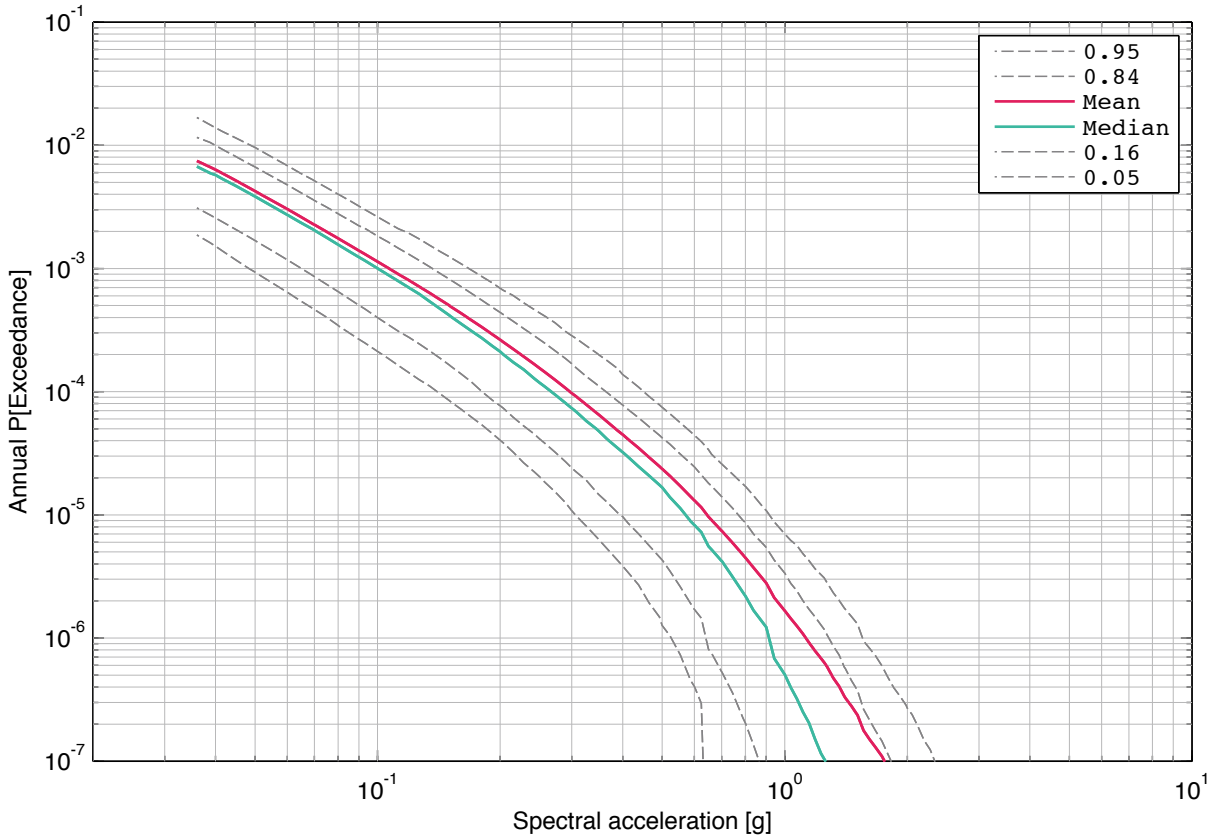

Fig. 2-3.9: Beznau, horizontal component, soil, -15 m, mean hazard and fractiles, 100 Hz.

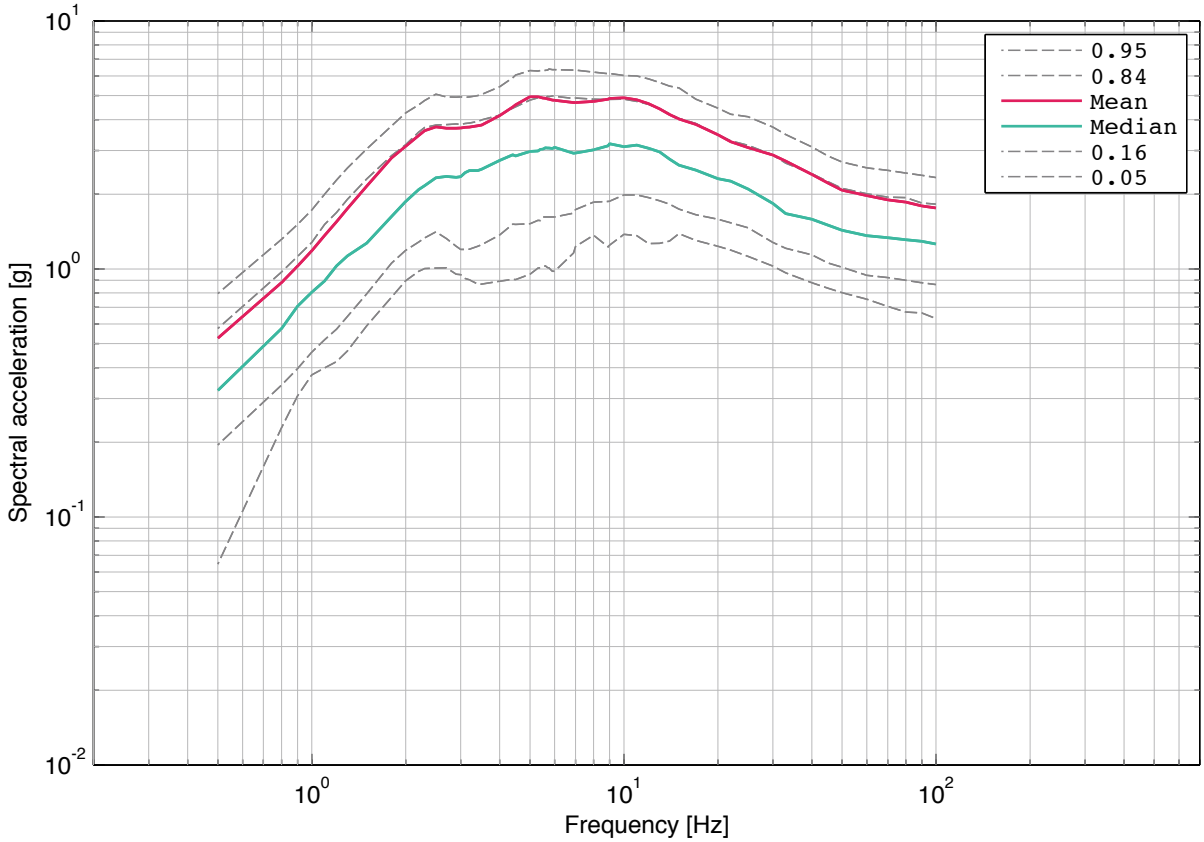

Fig. 2-3.10: Beznau, horizontal component, soil, -15 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

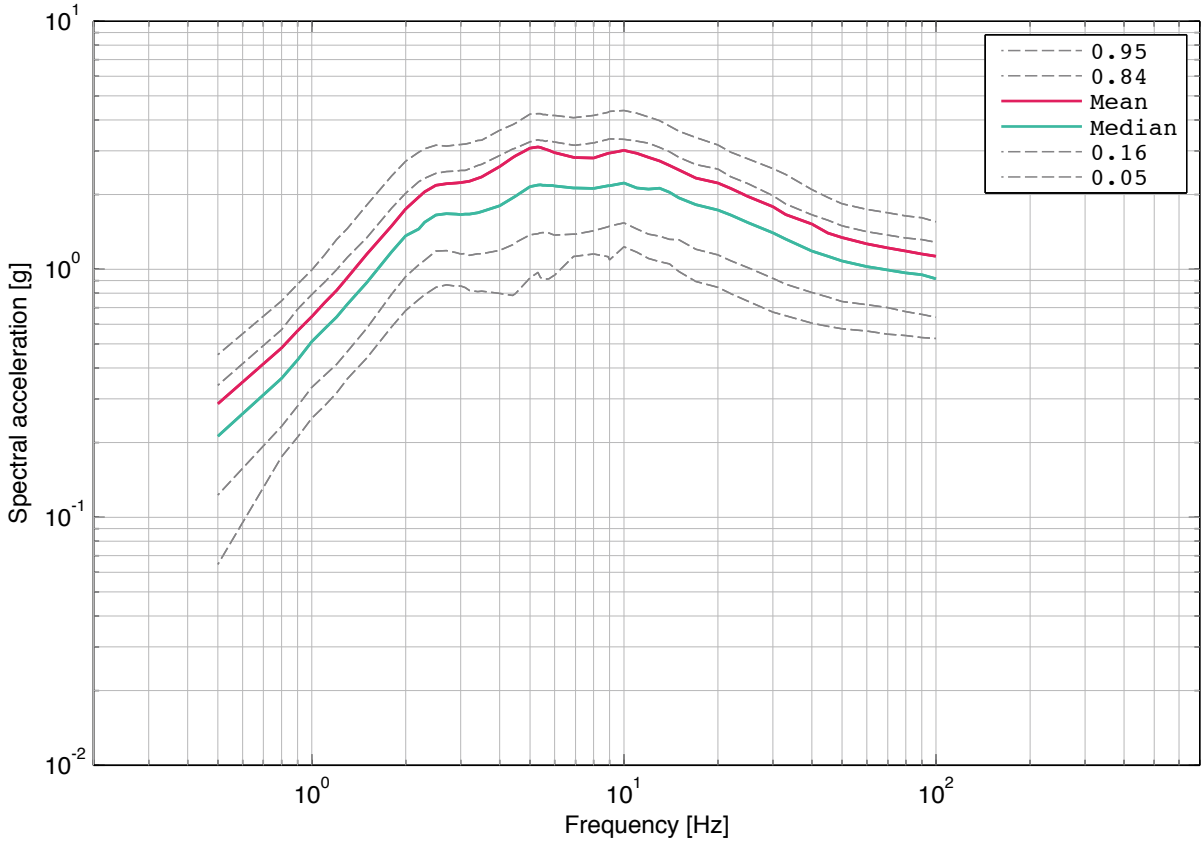

Fig. 2-3.11: Beznau, horizontal component, soil, -15 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

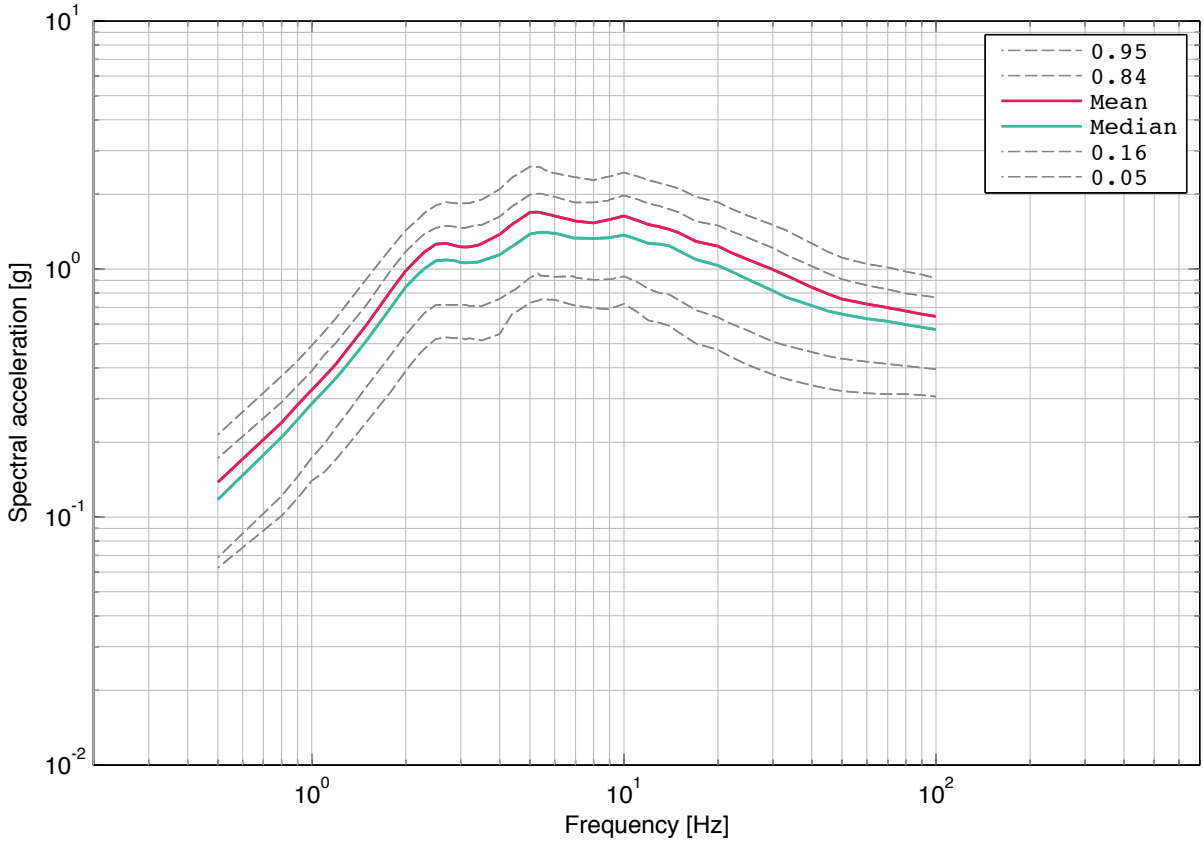

Fig. 2-3.12: Beznau, horizontal component, soil, -15 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

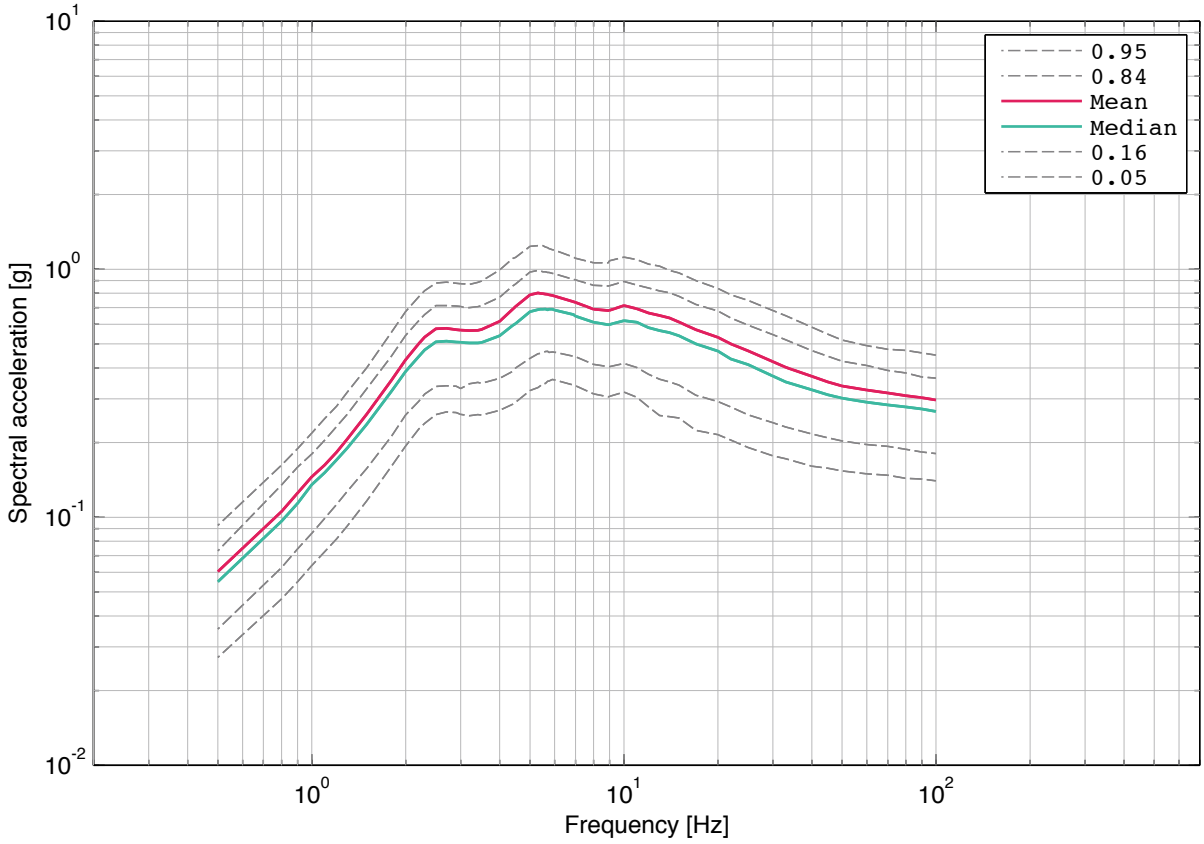

Fig. 2-3.13: Beznau, horizontal component, soil, -15 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

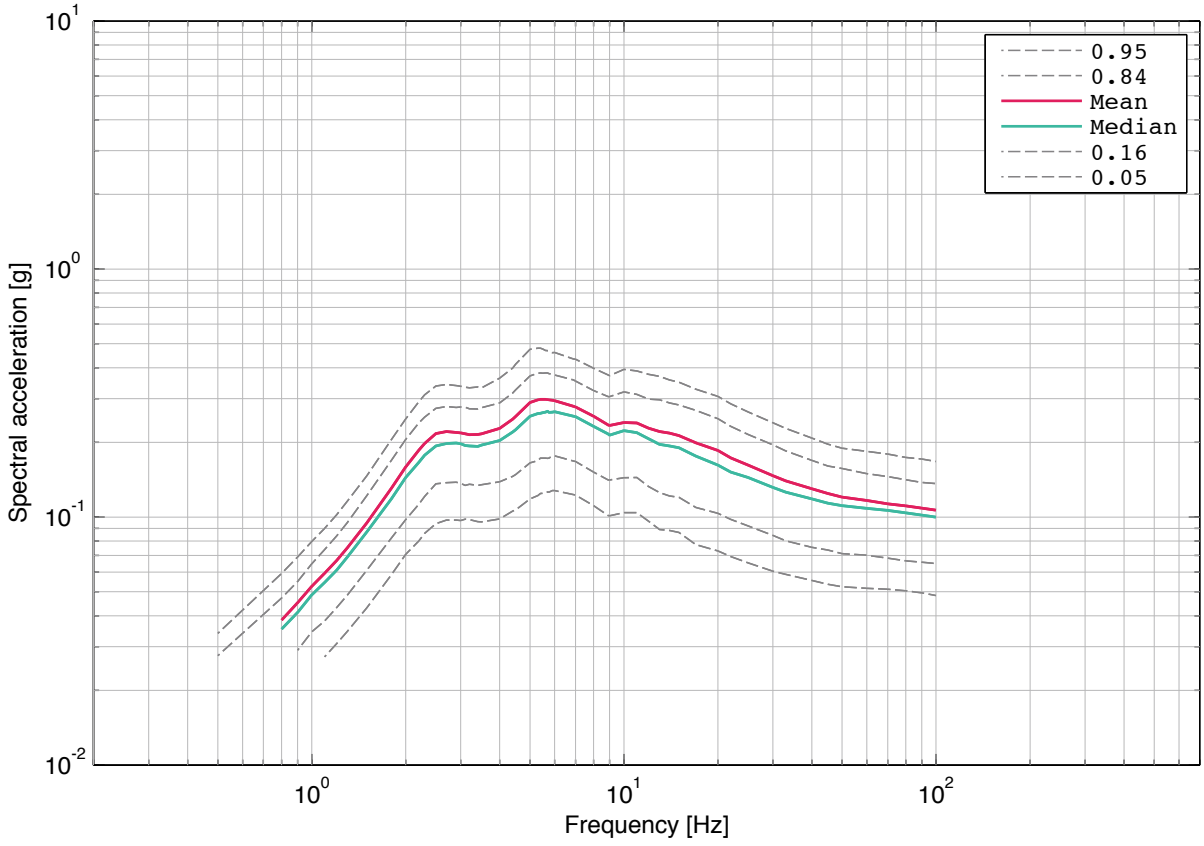

Fig. 2-3.14: Beznau, horizontal component, soil, -15 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

2.4 Beznau, Rock Hazard Deaggregation, Horizontal Component, Surface

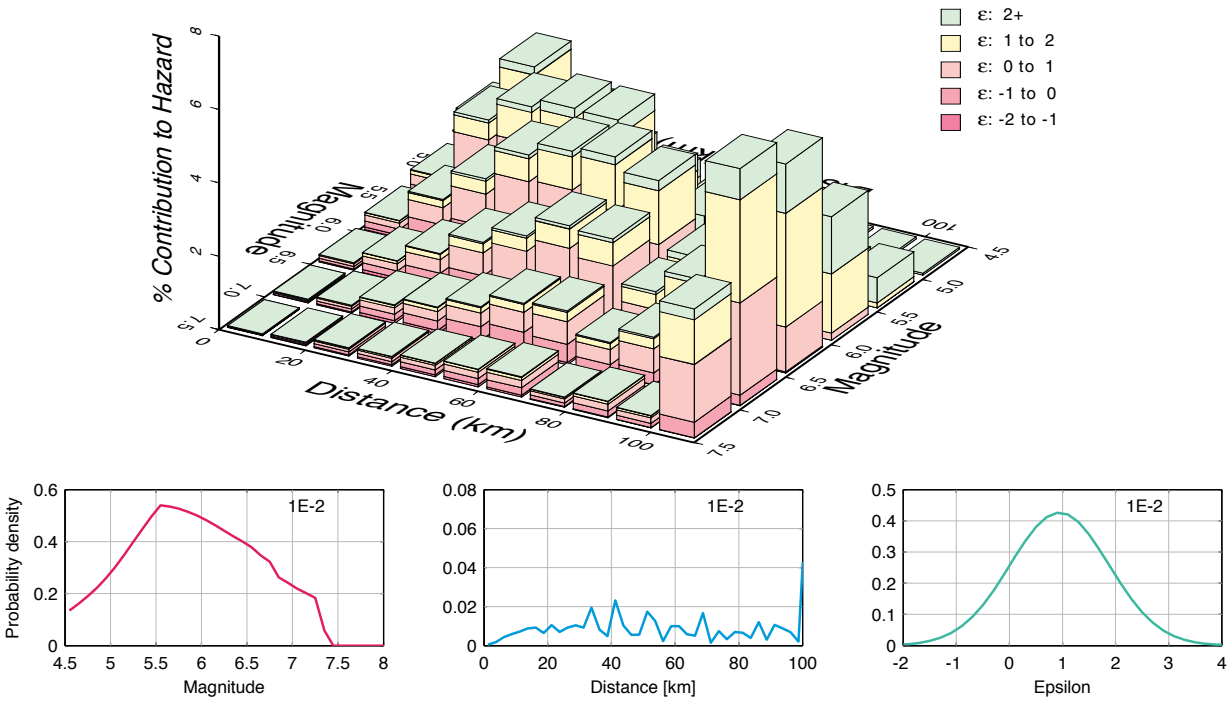

Fig. 2-4.1: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 5 Hz.

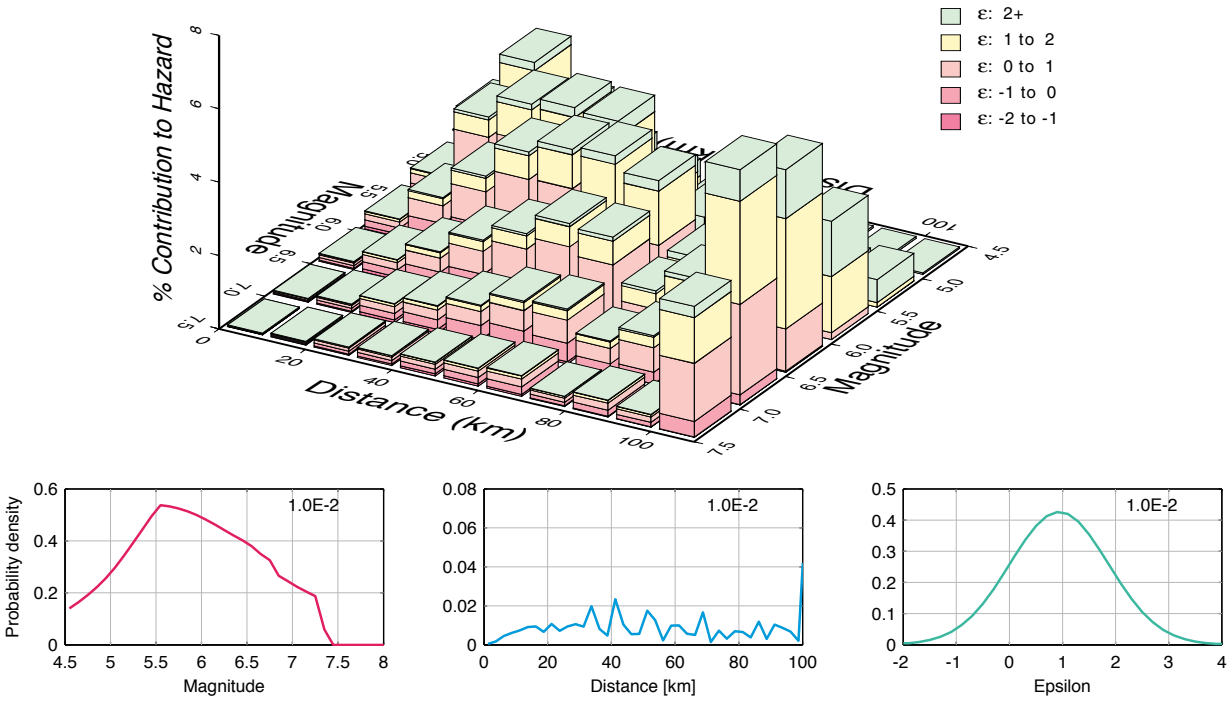

Fig. 2-4.2: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-02, 10 Hz.

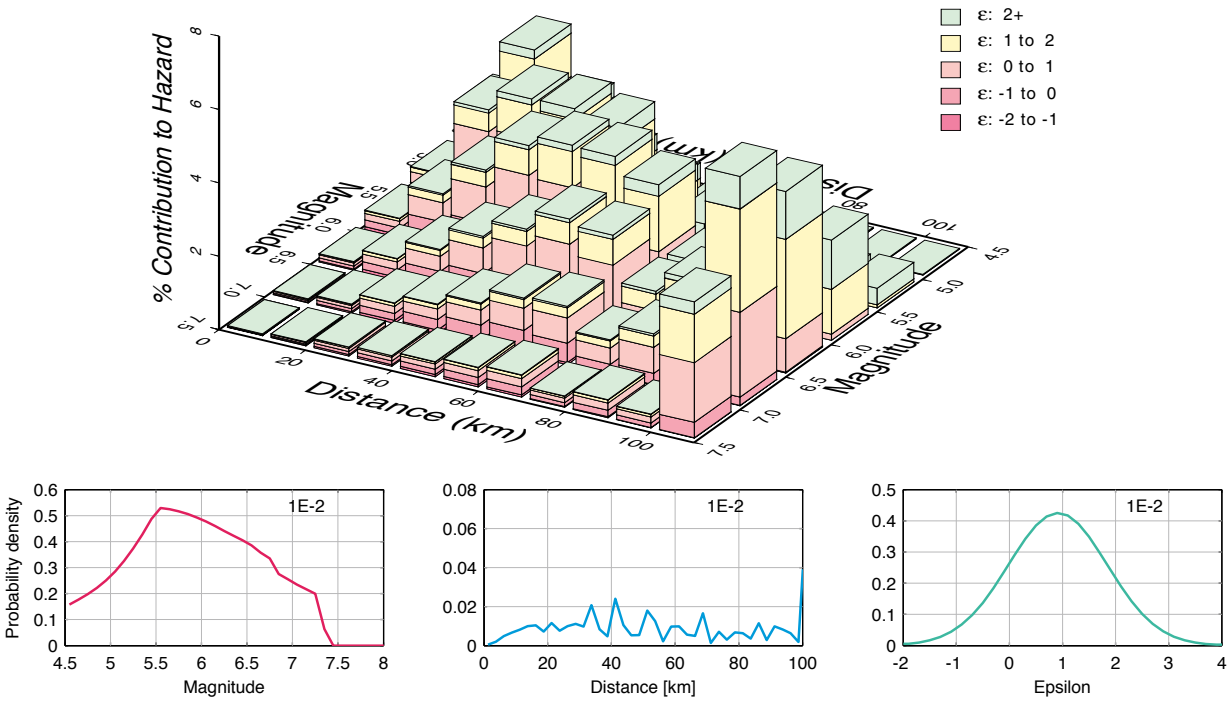

Fig. 2-4.3: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 100 Hz.

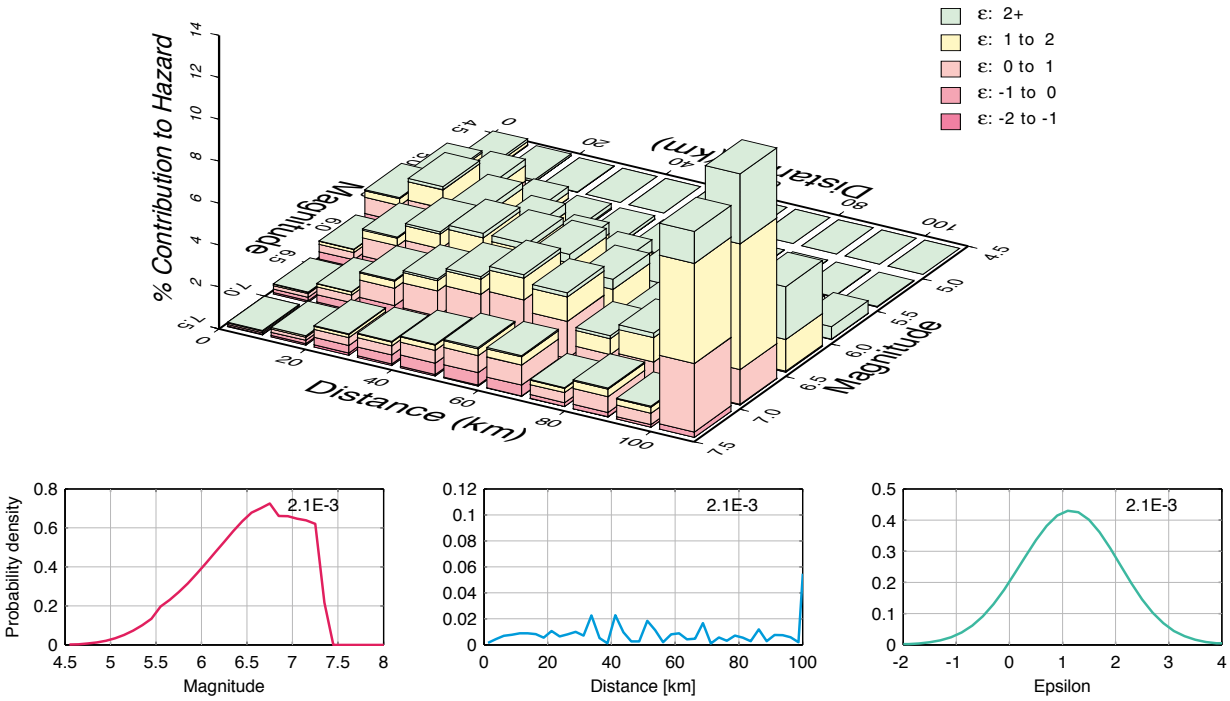

Fig. 2-4.4: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 1 Hz.

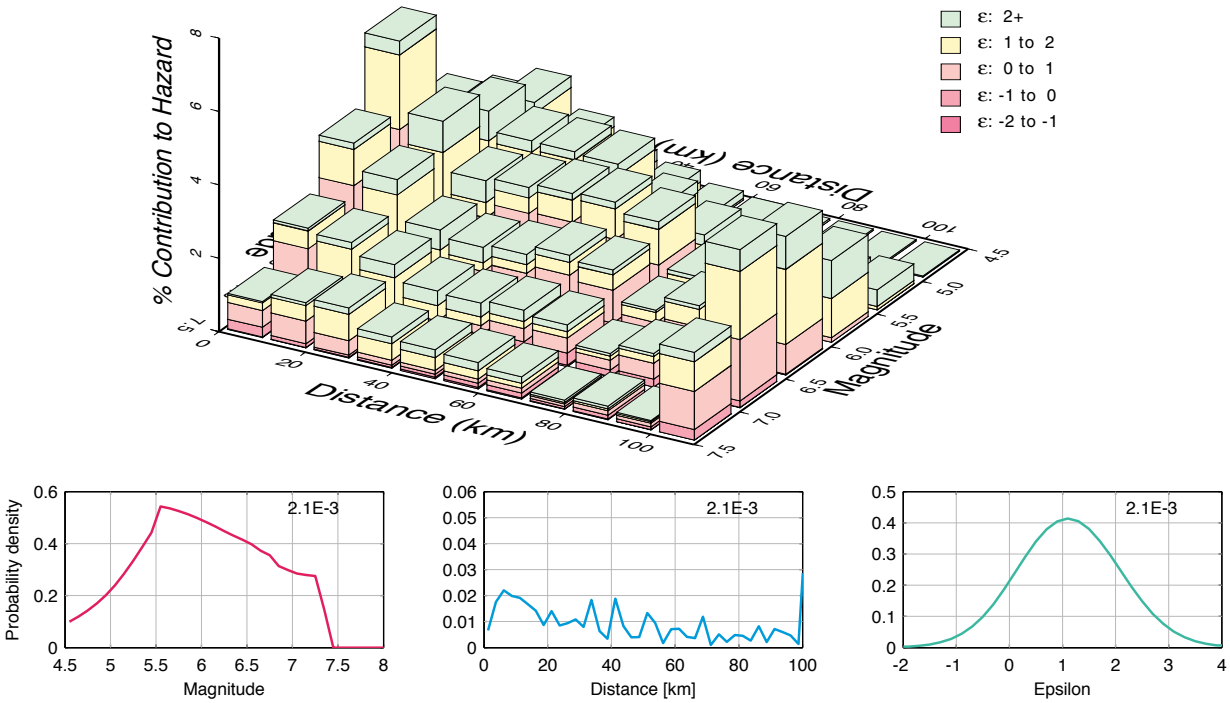

Fig. 2-4.5: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 5 Hz.

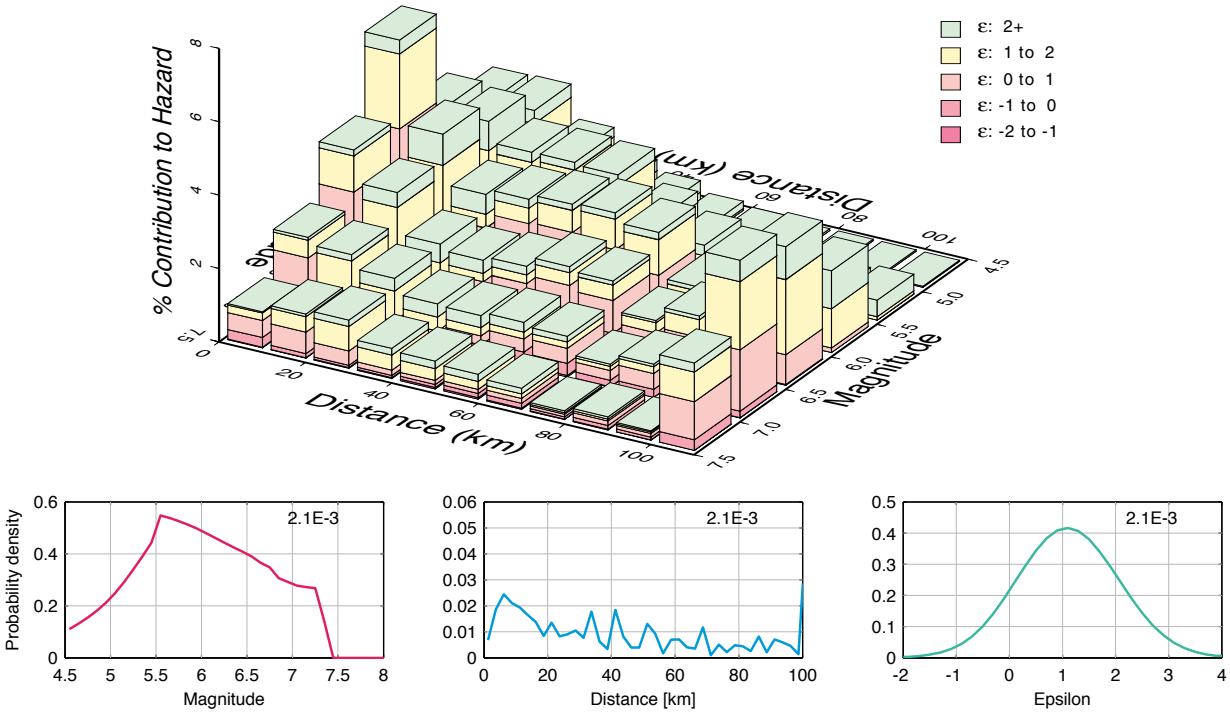

Fig. 2-4.6: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 10 Hz.

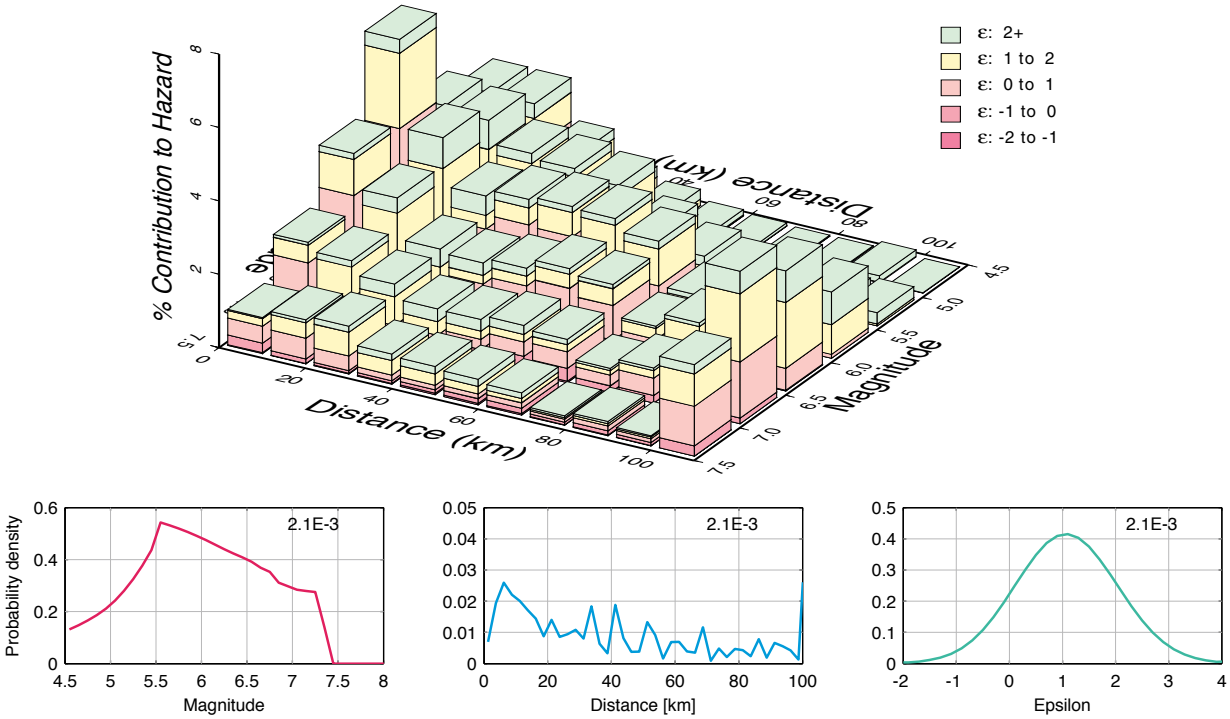

Fig. 2-4.7: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 100 Hz.

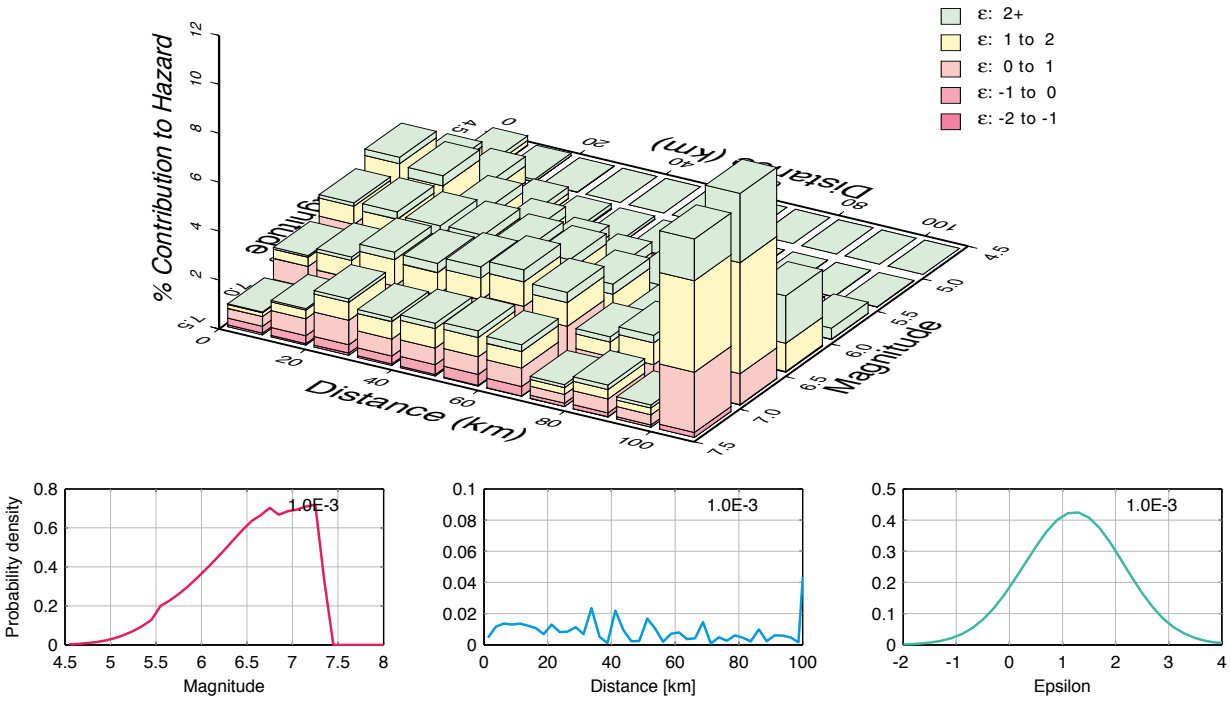

Fig. 2-4.8: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 1 Hz.

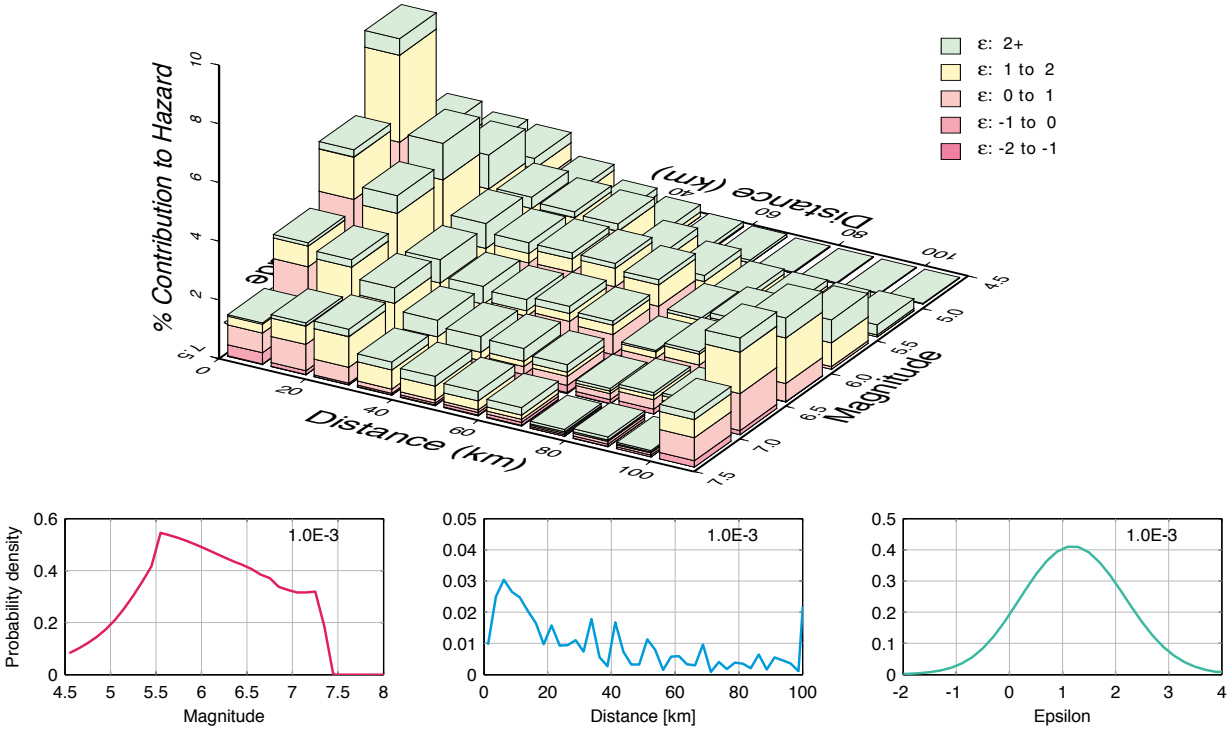

Fig. 2-4.9: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 5 Hz.

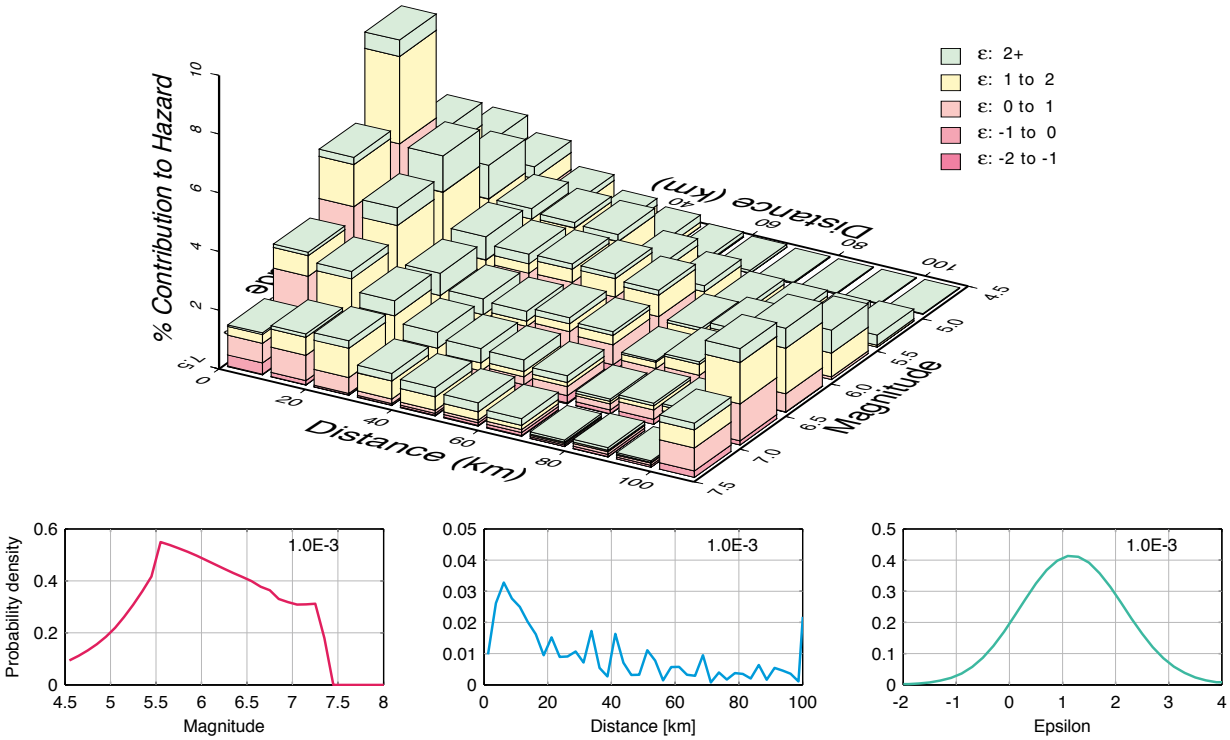

Fig. 2-4.10: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 10 Hz.

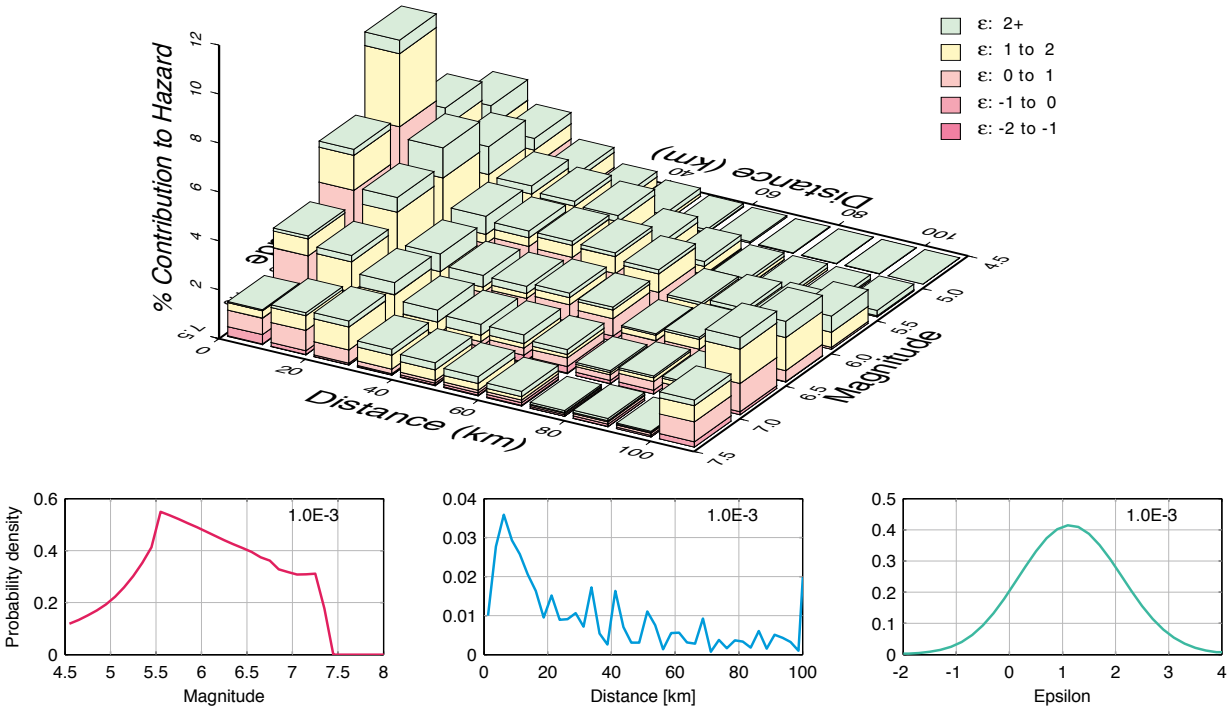

Fig. 2-4.11: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 100 Hz.

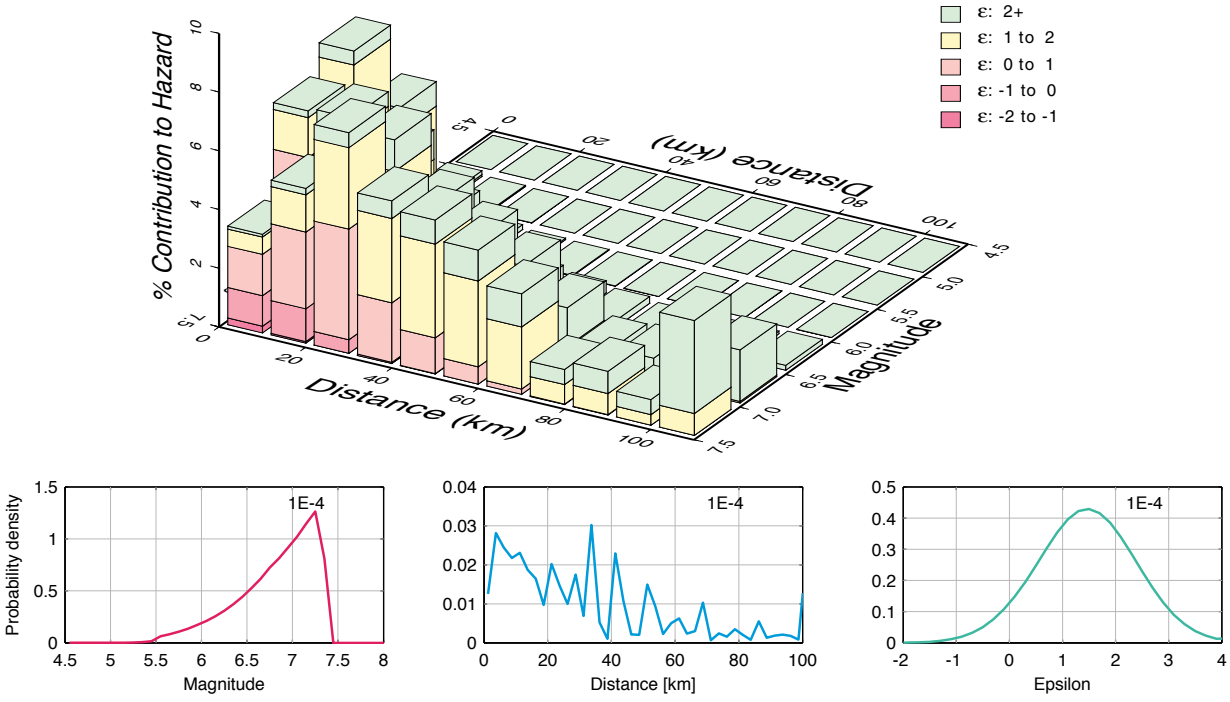

Fig. 2-4.12: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 0.5 Hz.

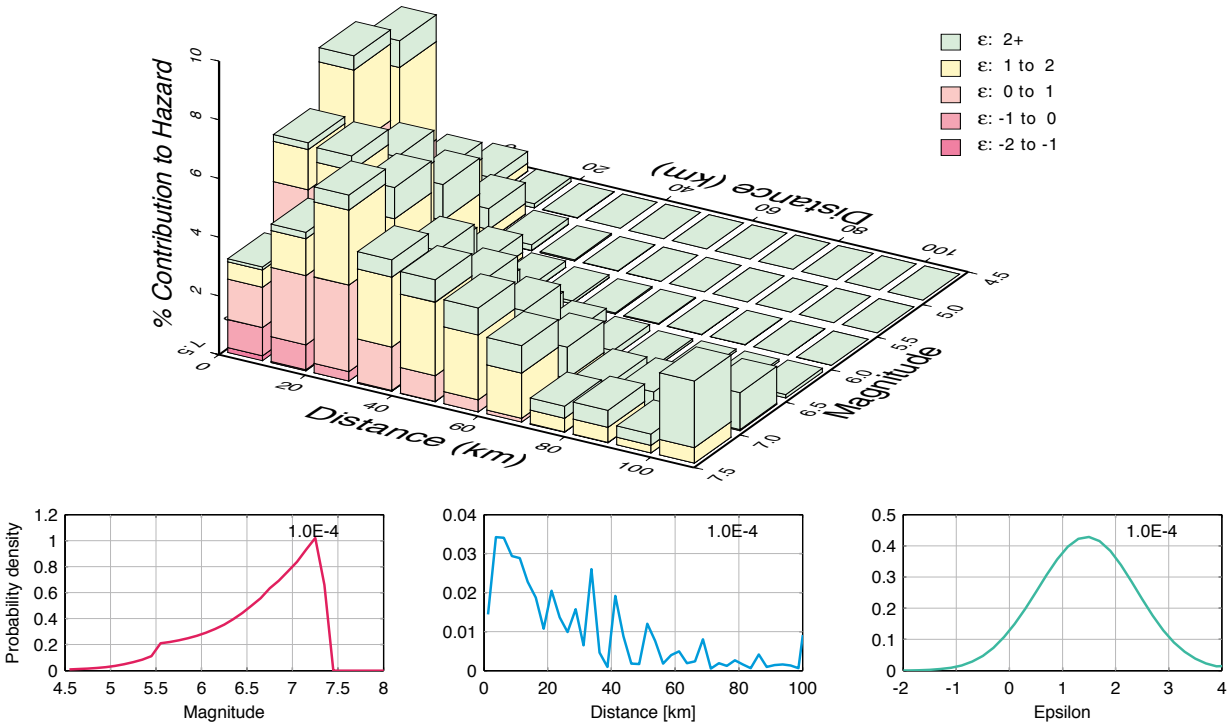

Fig. 2-4.13: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 1 Hz.

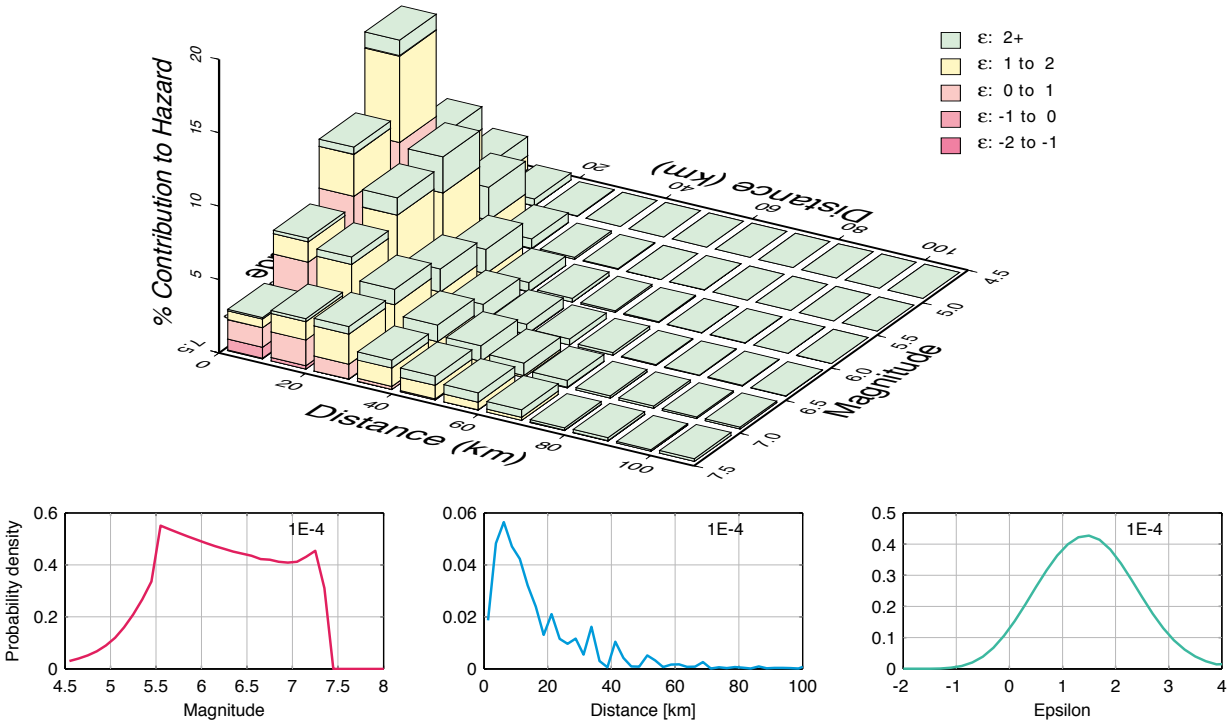

Fig. 2-4.14: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 5 Hz.

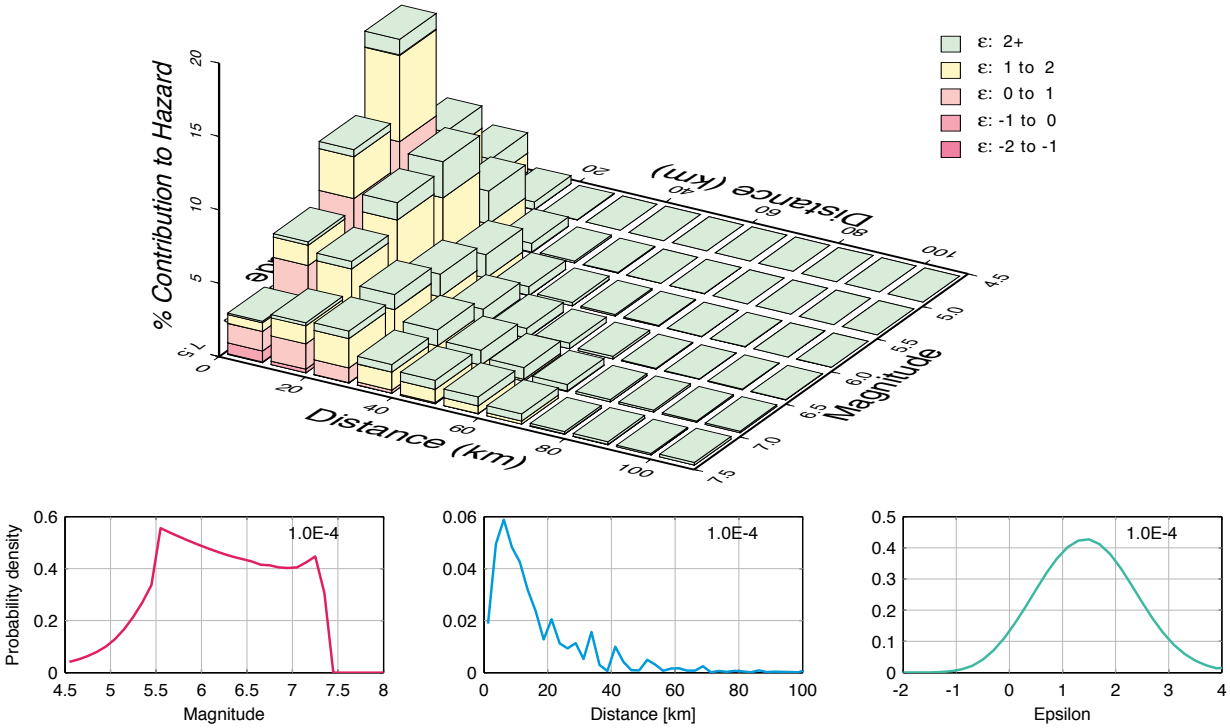

Fig. 2-4.15: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 10 Hz.

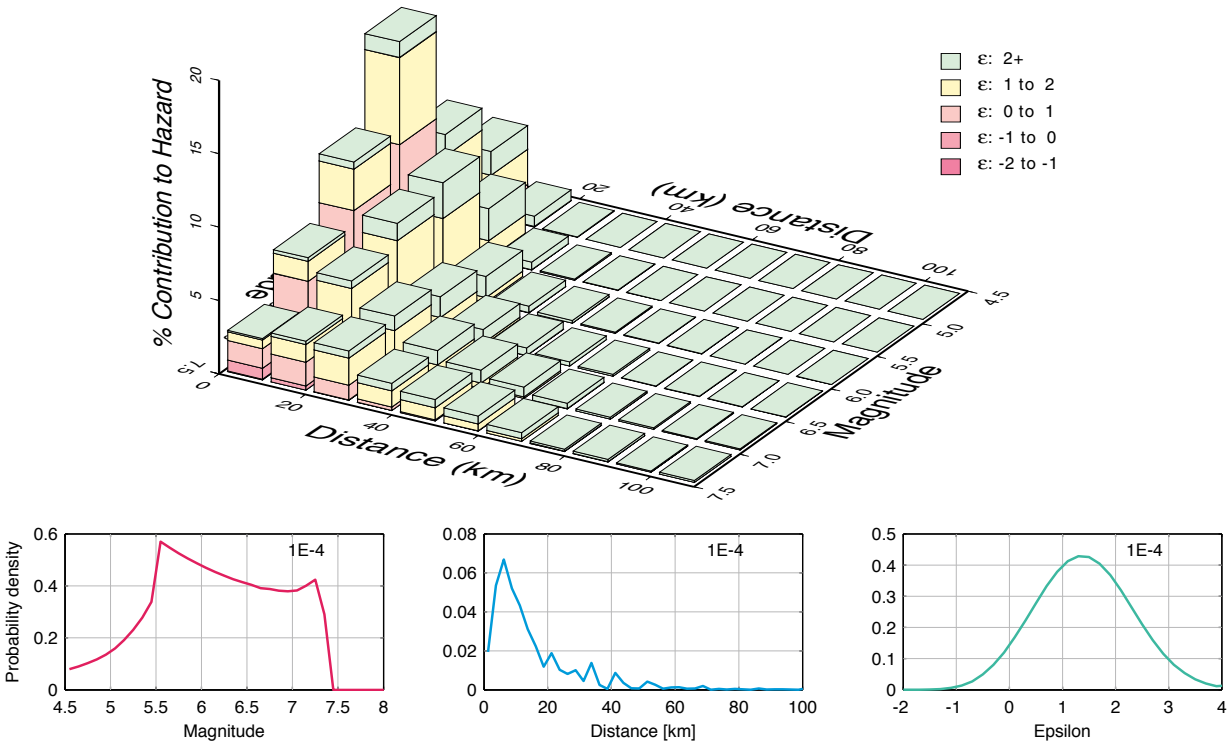

Fig. 2-4.16: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 100 Hz.

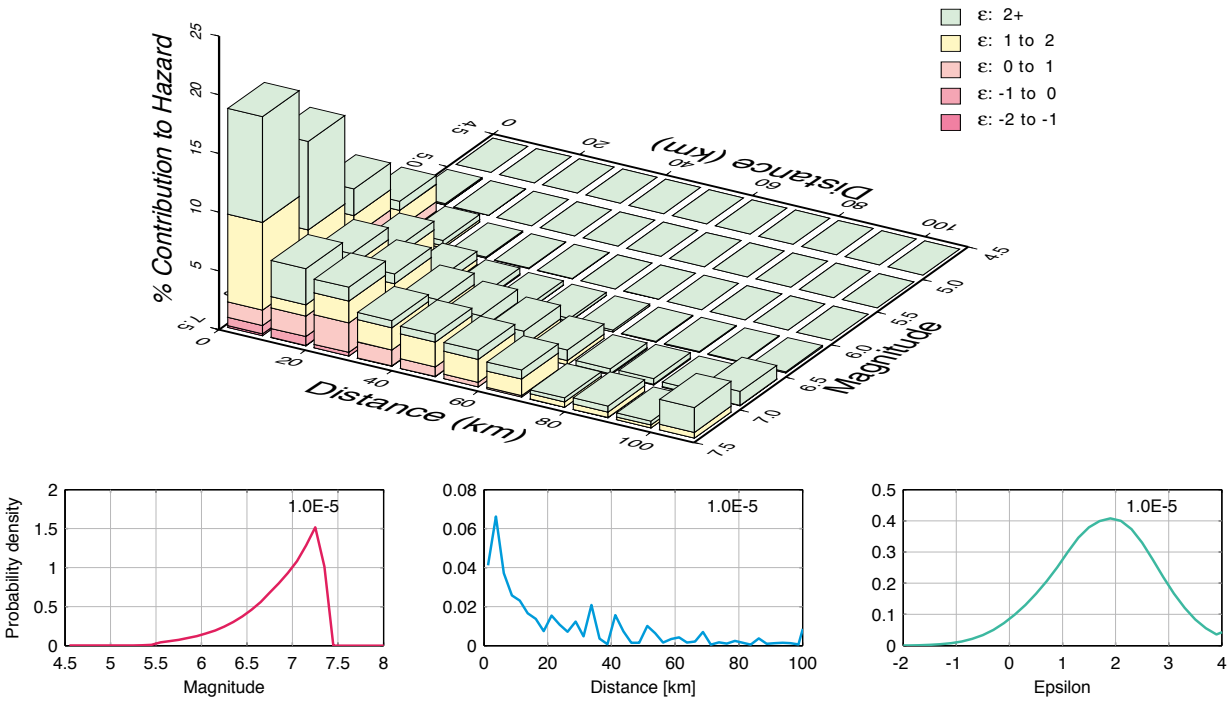

Fig. 2-4.17: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 0.5 Hz.

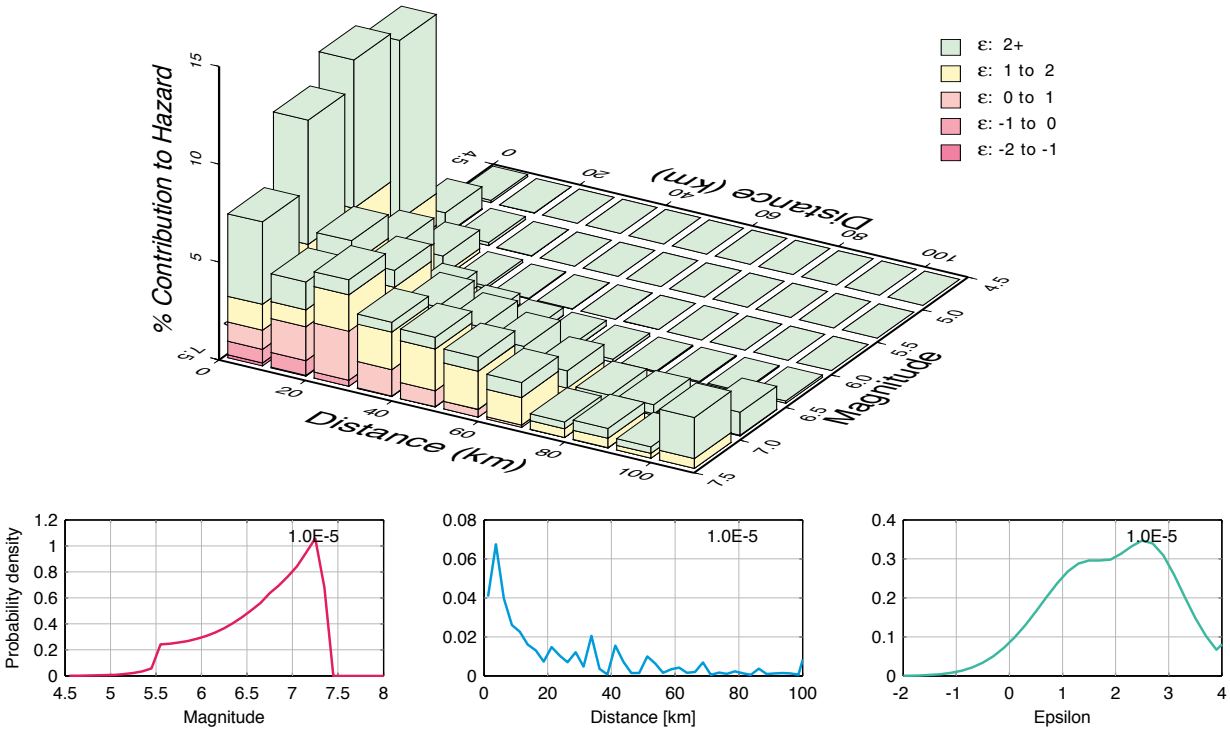

Fig. 2-4.18: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 1 Hz.

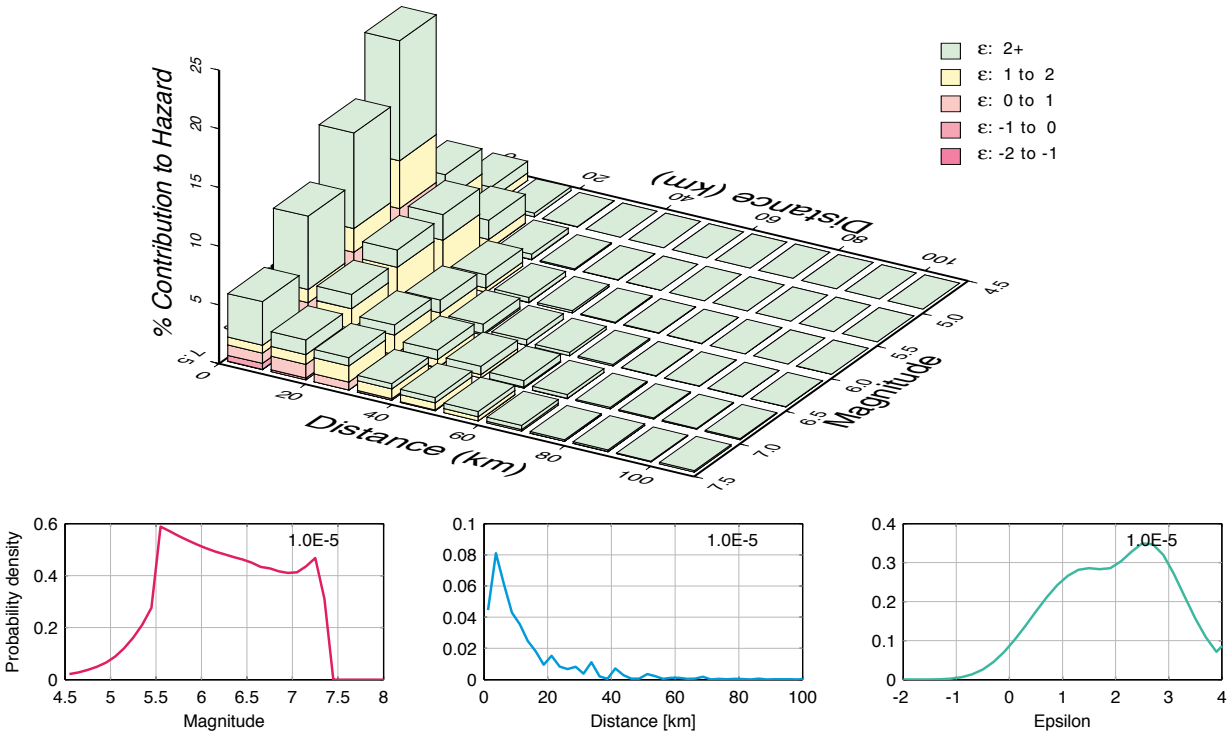

Fig. 2-4.19: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 5 Hz.

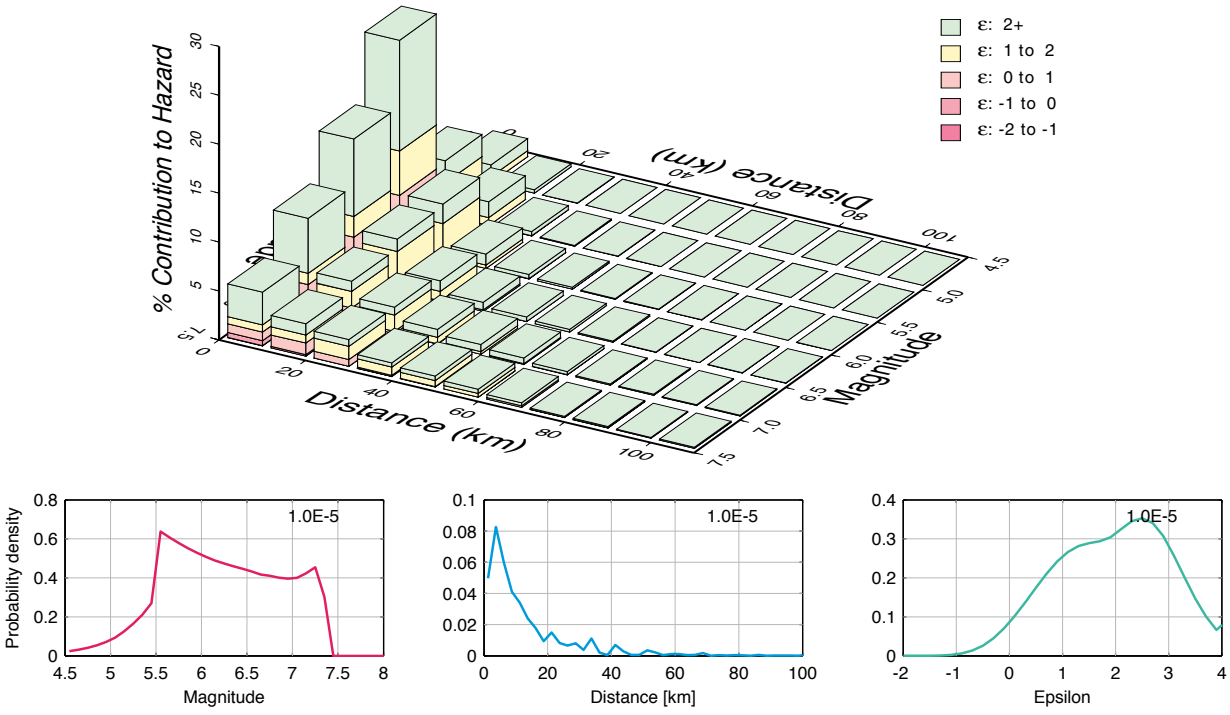

Fig. 2-4.20: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 10 Hz.

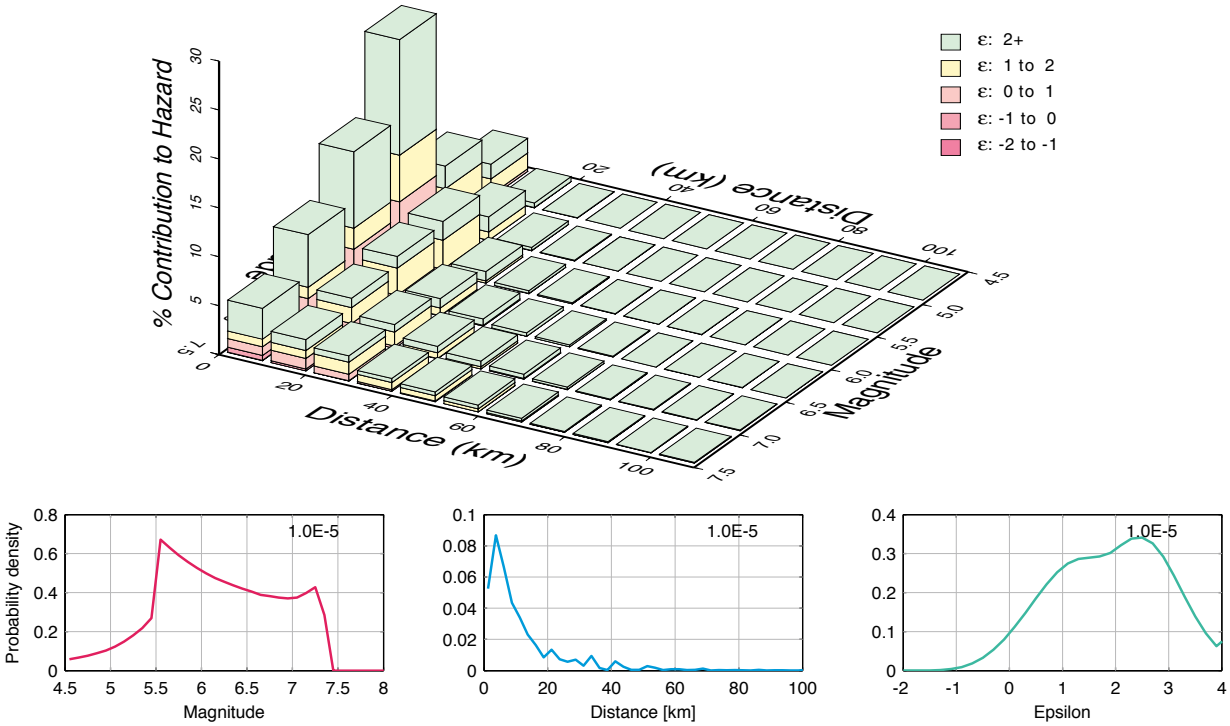

Fig. 2-4.21: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 100 Hz.

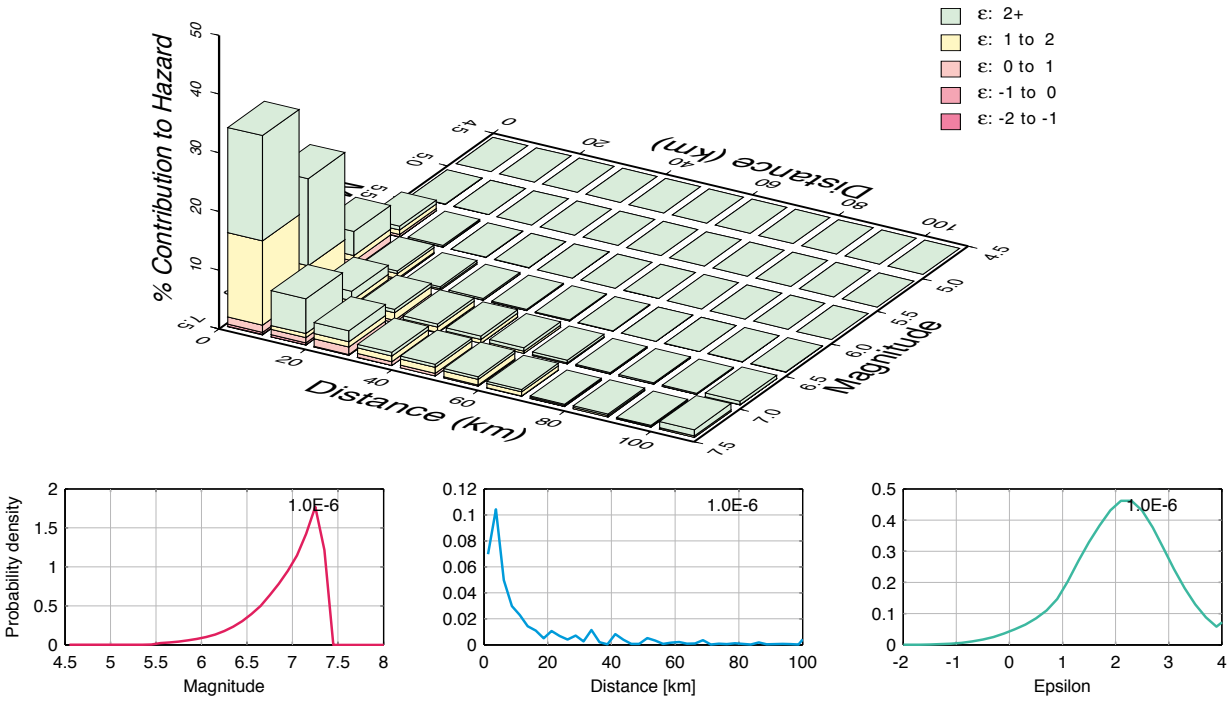

Fig. 2-4.22: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 0.5 Hz.

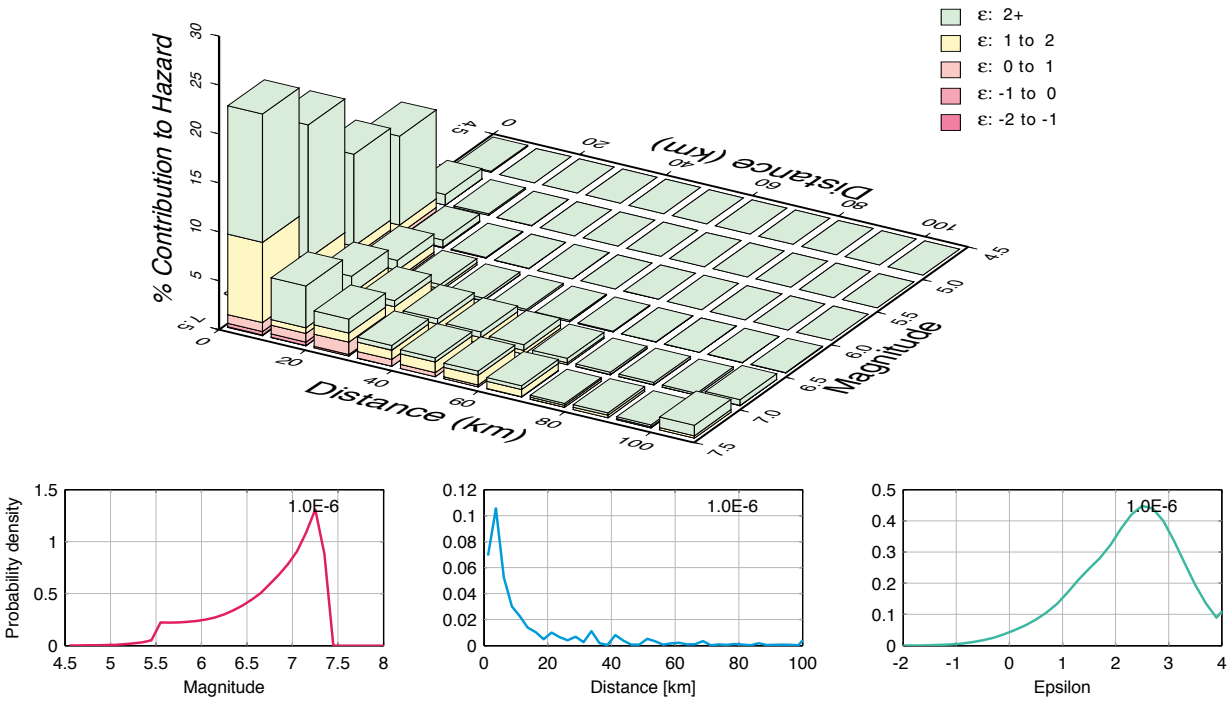

Fig. 2-4.23: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 1 Hz.

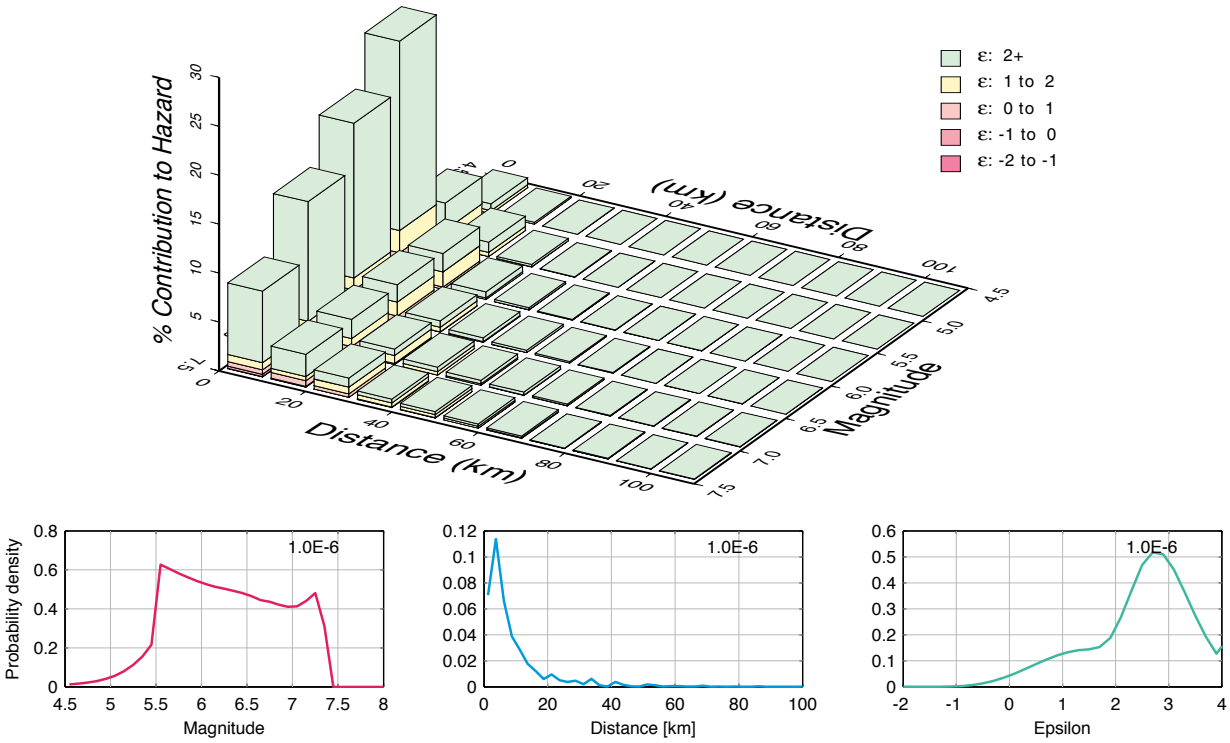

Fig. 2-4.24: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 5 Hz.

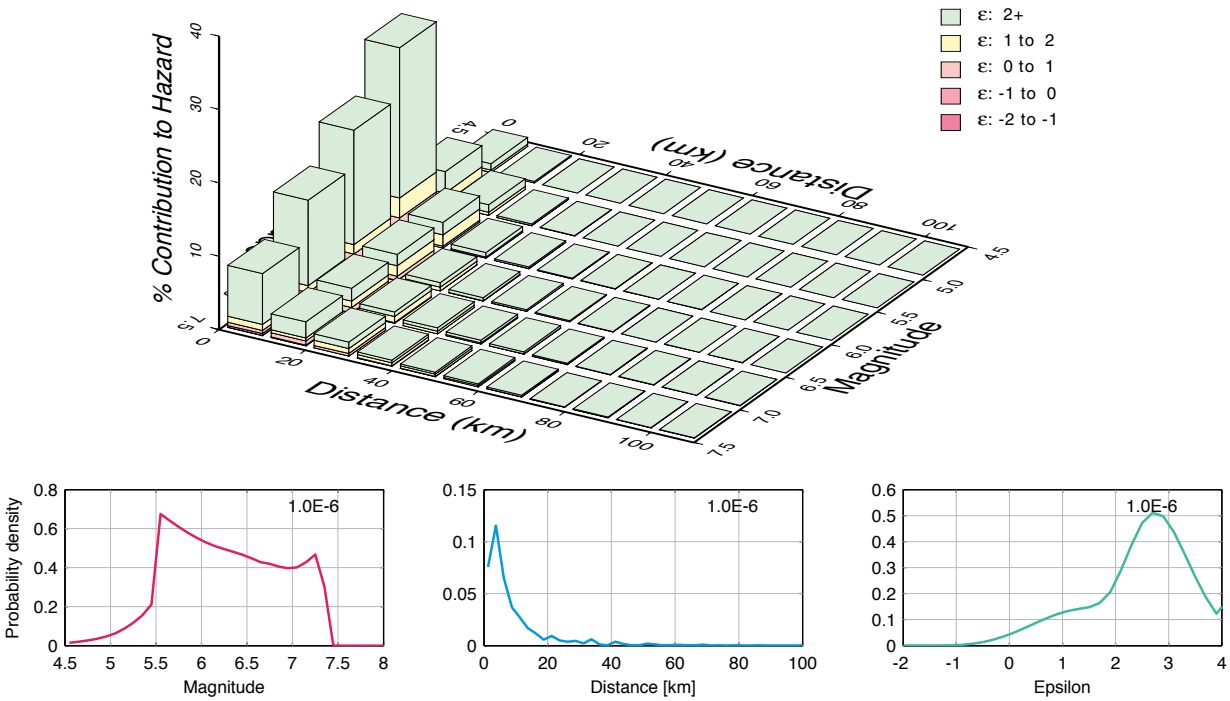

Fig. 2-4.25: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 10 Hz.

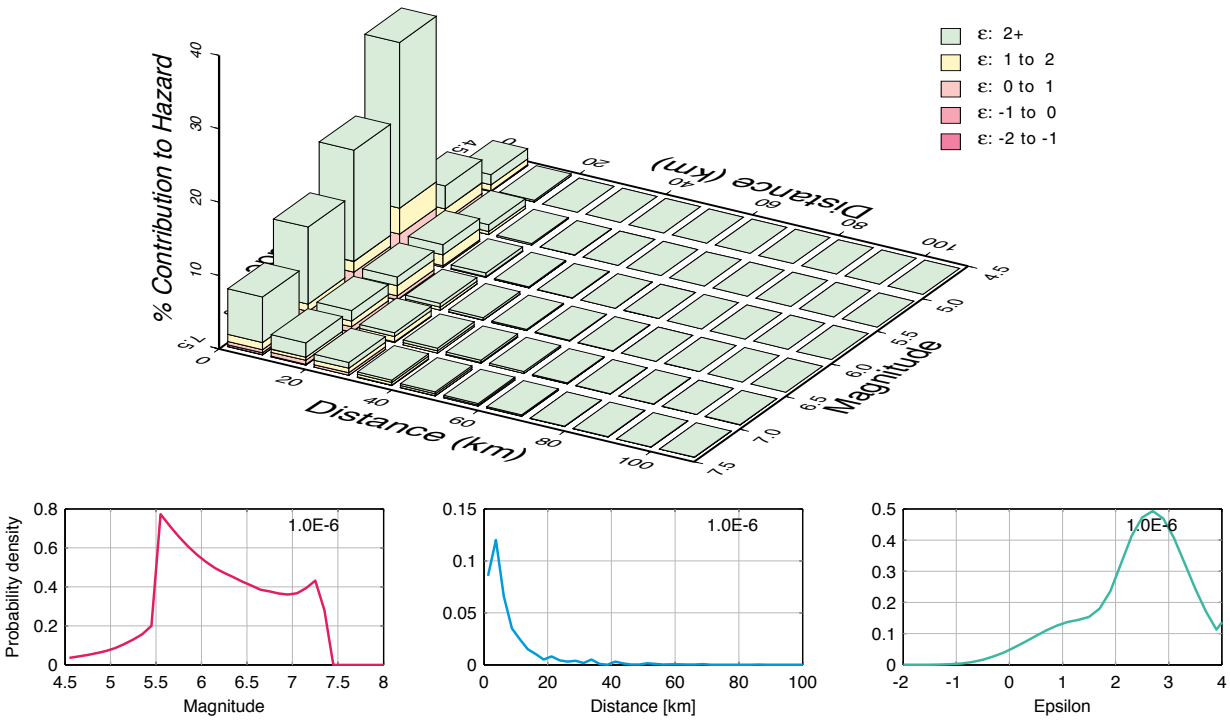

Fig. 2-4.26: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 100 Hz.

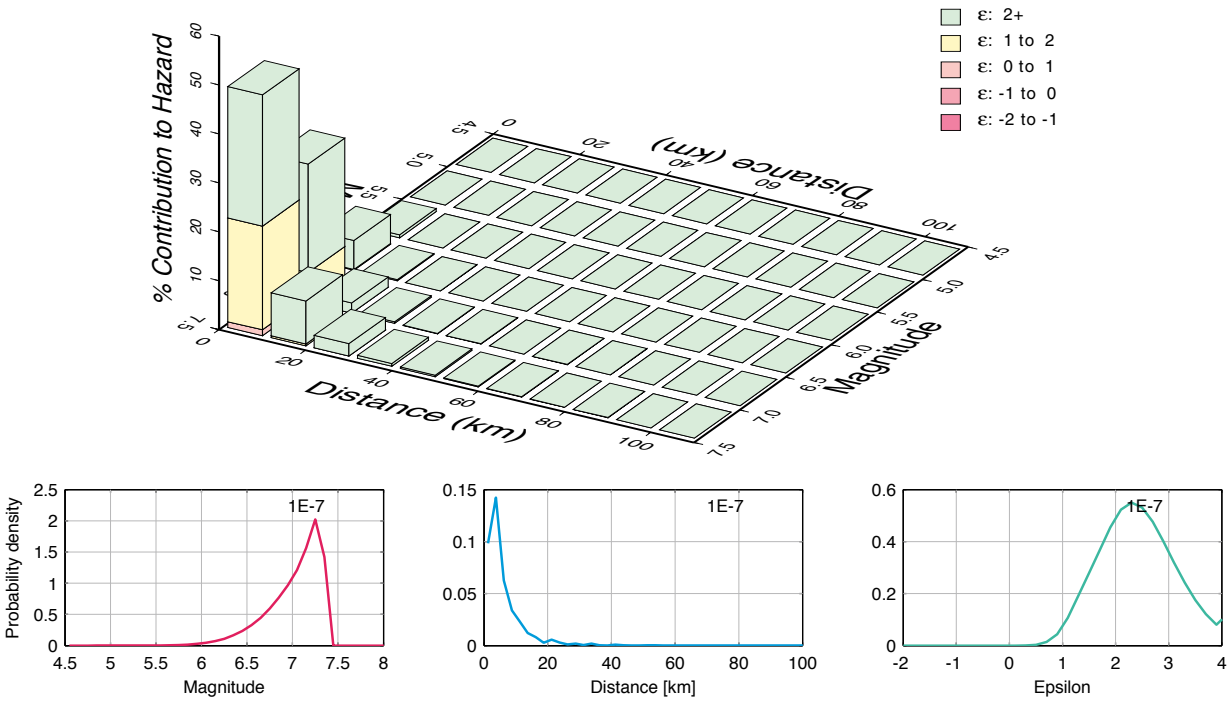

Fig. 2-4.27: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 0.5 Hz.

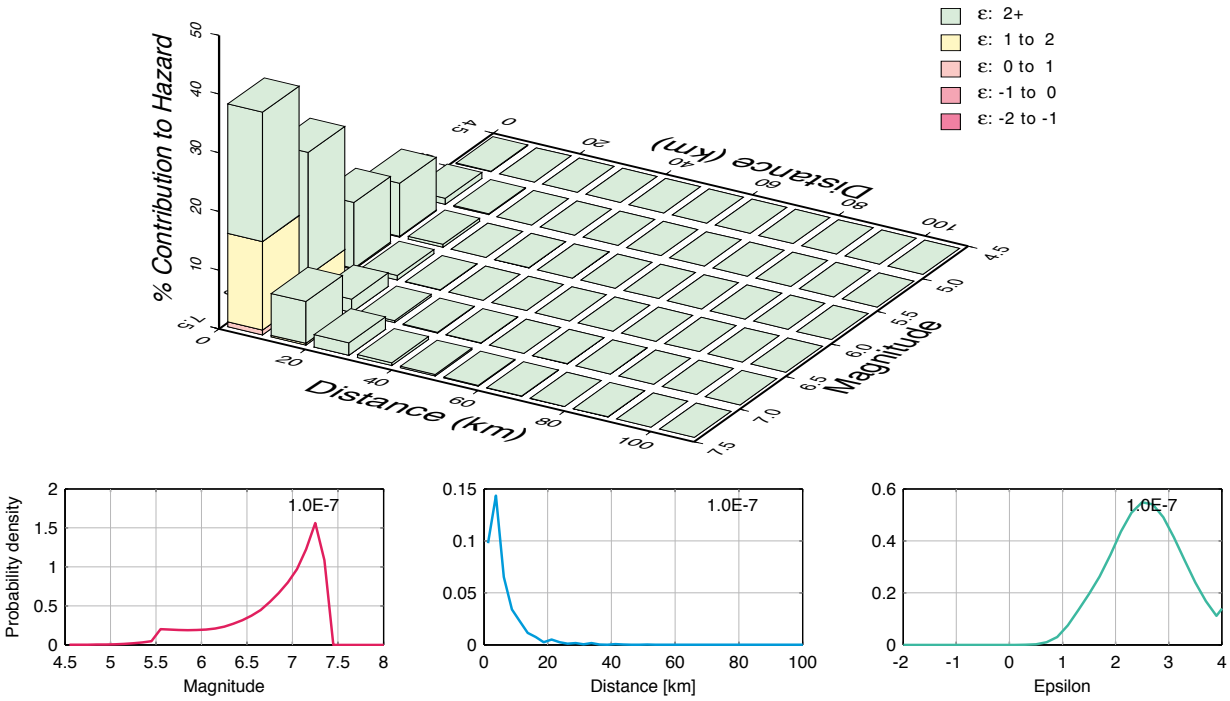

Fig. 2-4.28: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 1 Hz.

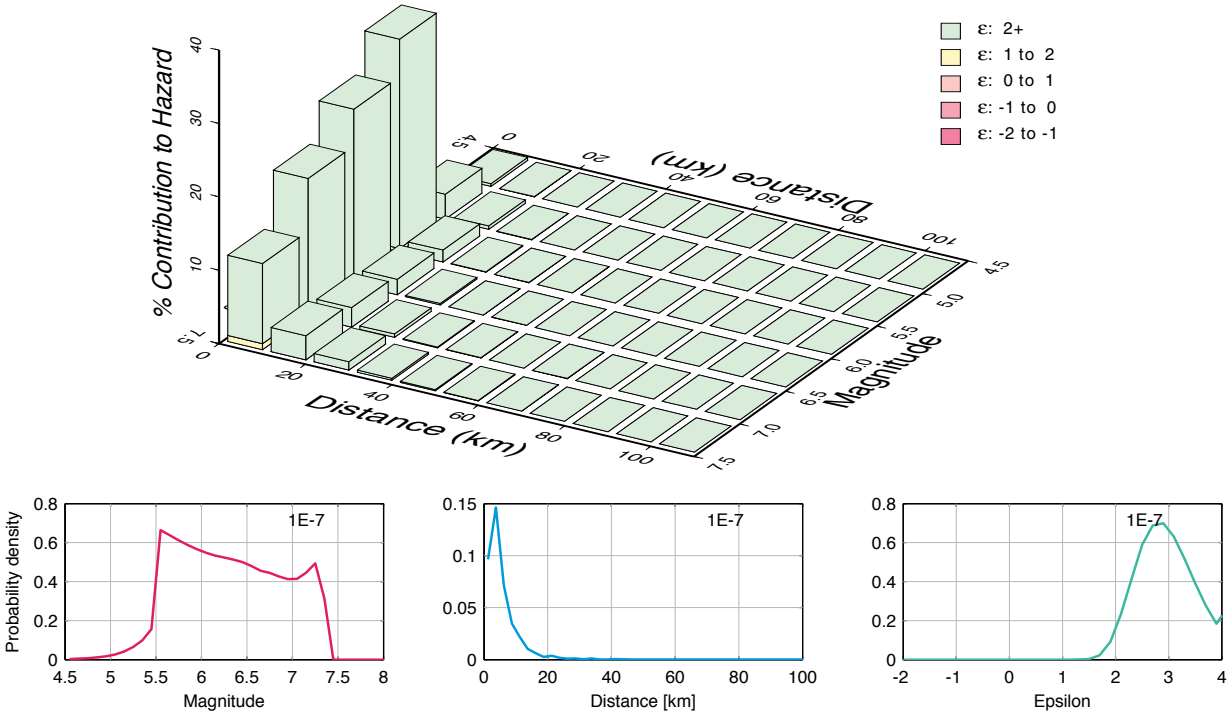

Fig. 2-4.29: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 5 Hz.

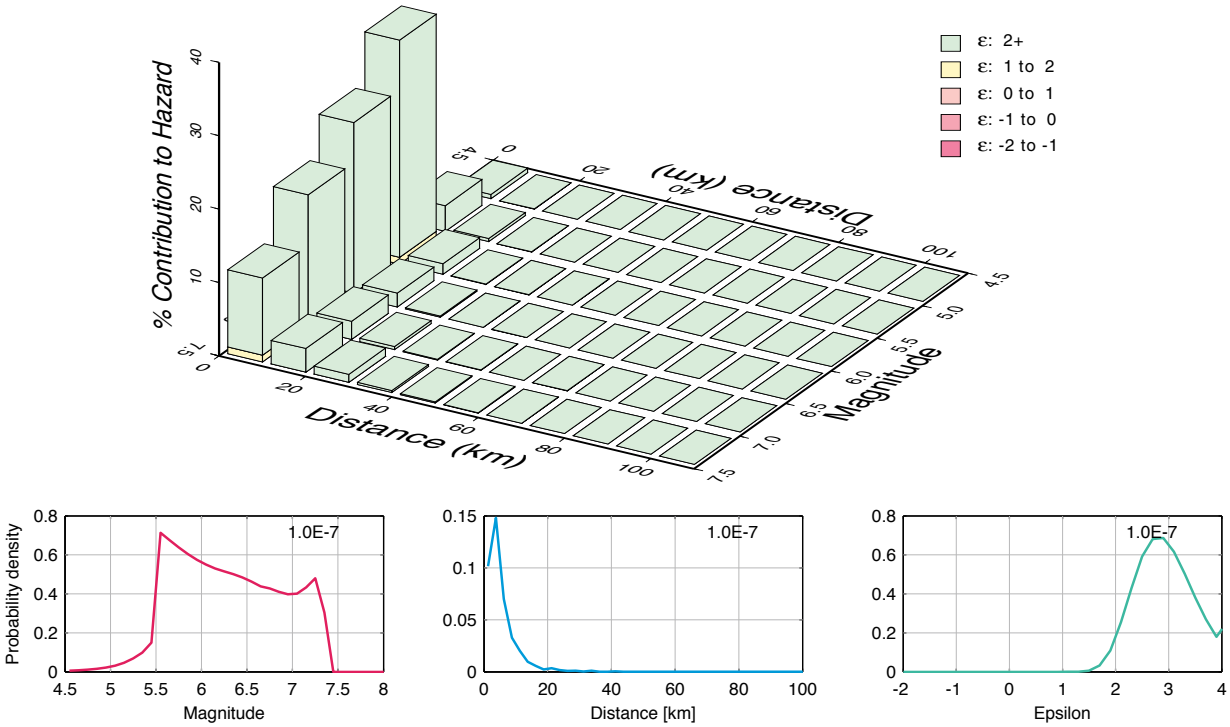

Fig. 2-4.30: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 10 Hz.

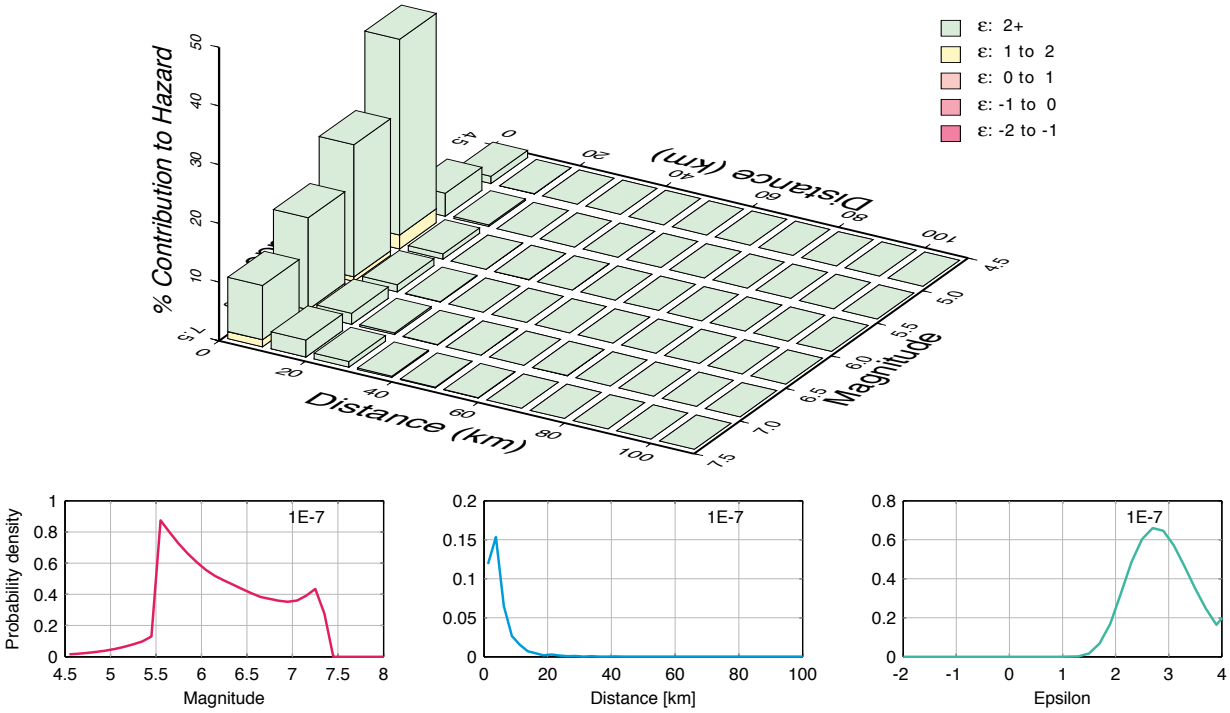

Fig. 2-4.31: Beznau, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 100 Hz.

2.5 Beznau, Horizontal Component, Mean $M - R - \varepsilon$

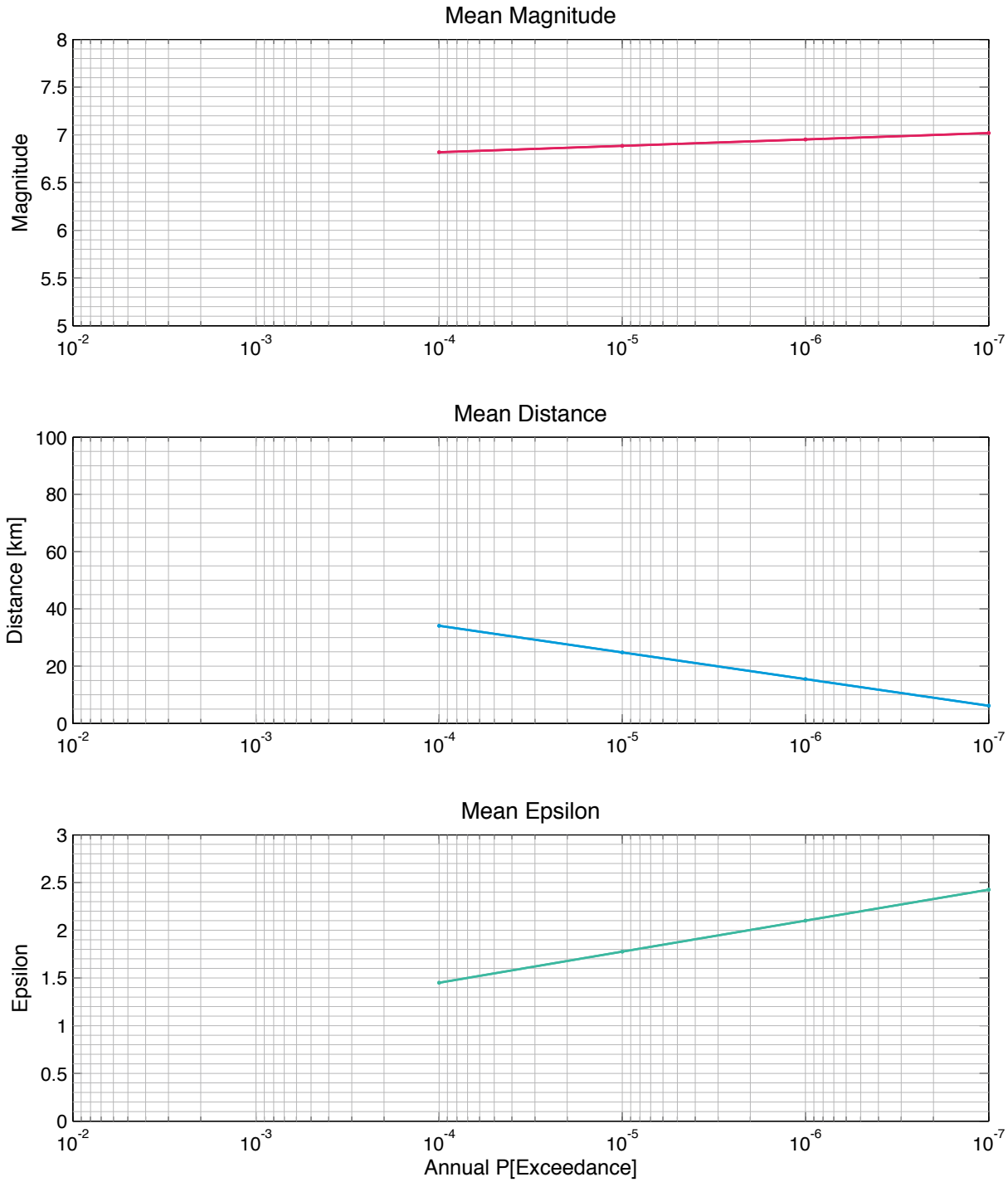

Fig. 2-5.1: Beznau, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 0.5 Hz.

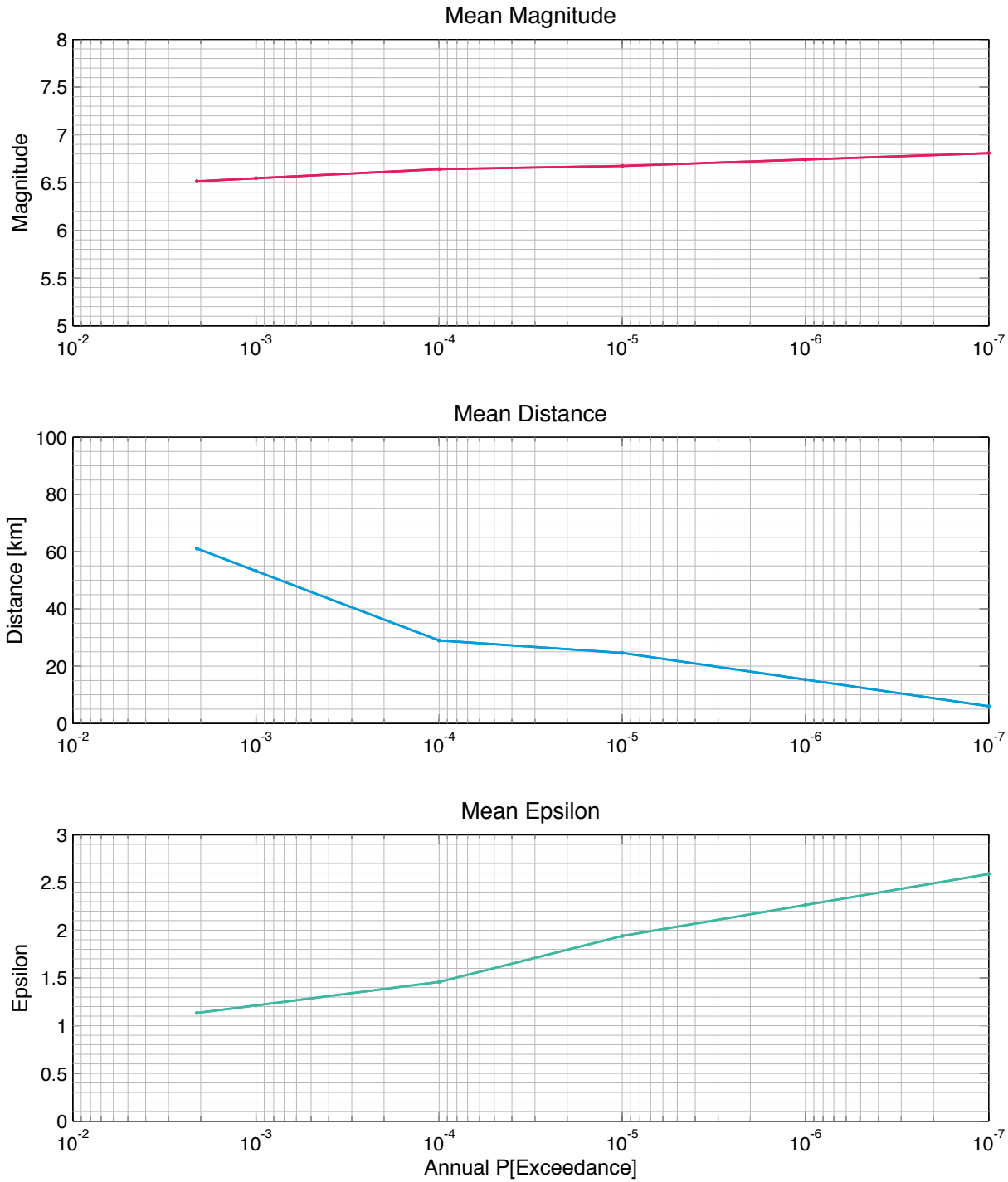

Fig. 2-5.2: Beznau, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 1 Hz.

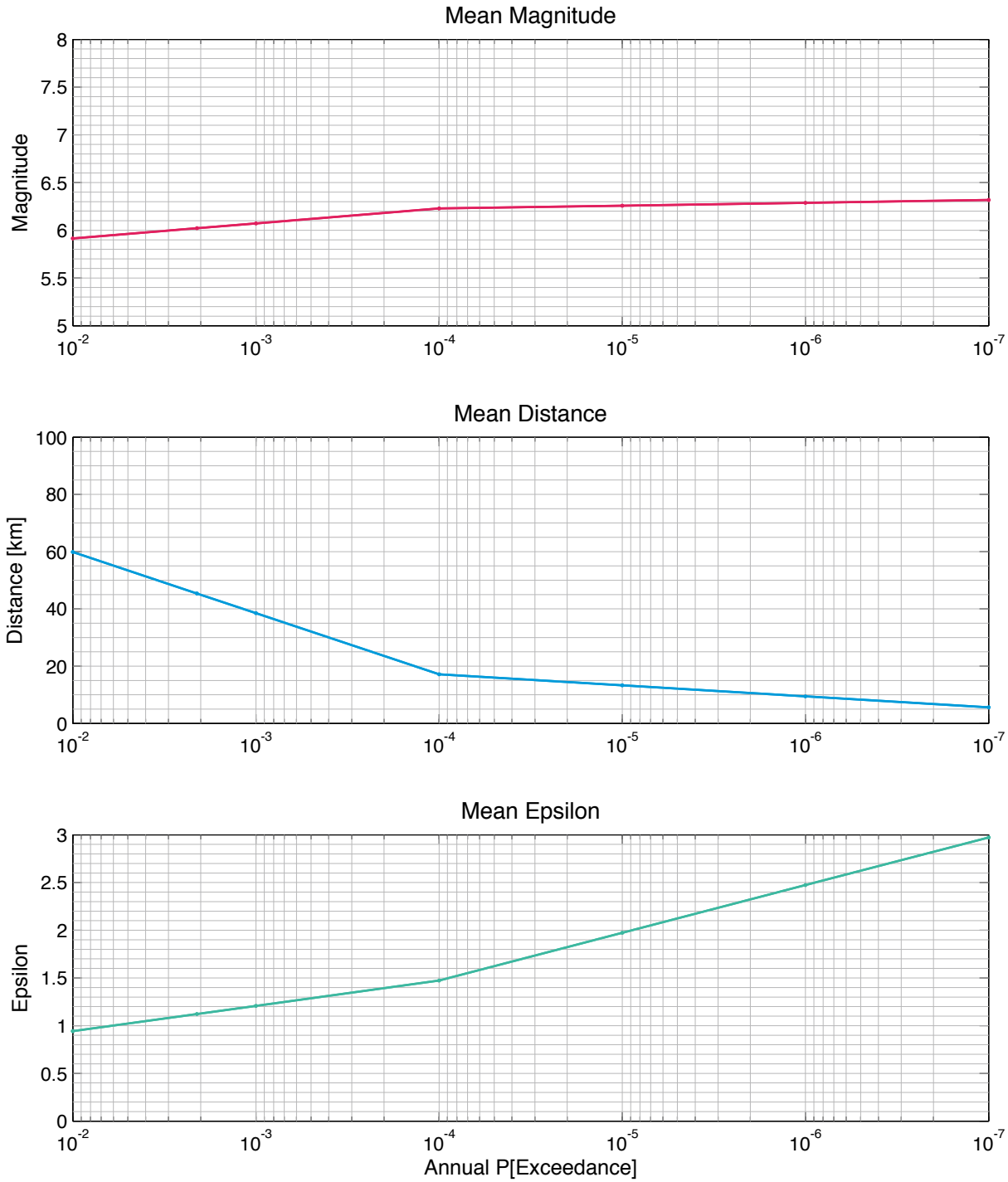

Fig. 2-5.3: Beznau, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 5 Hz.

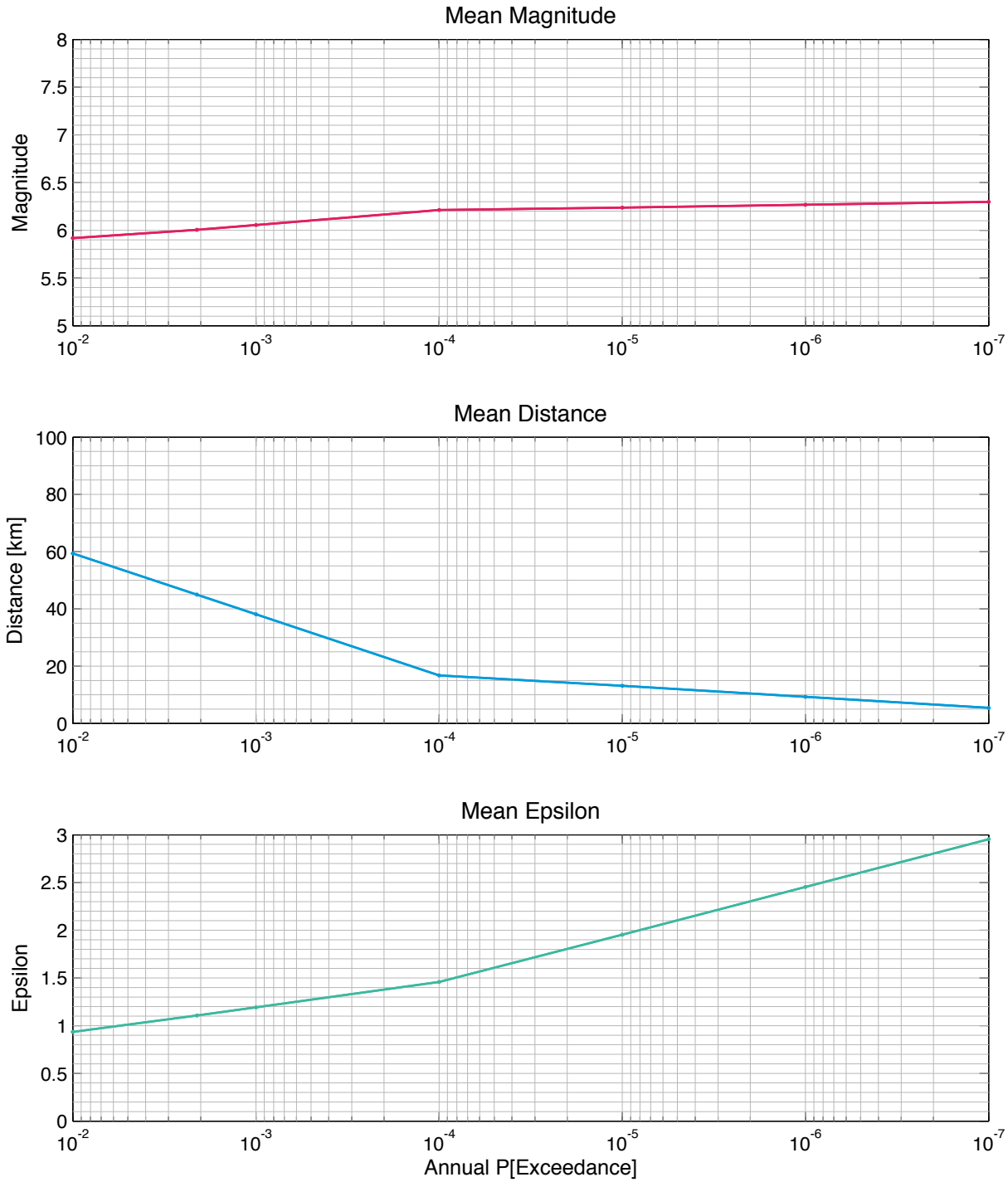

Fig. 2-5.4: Beznau, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 10 Hz.

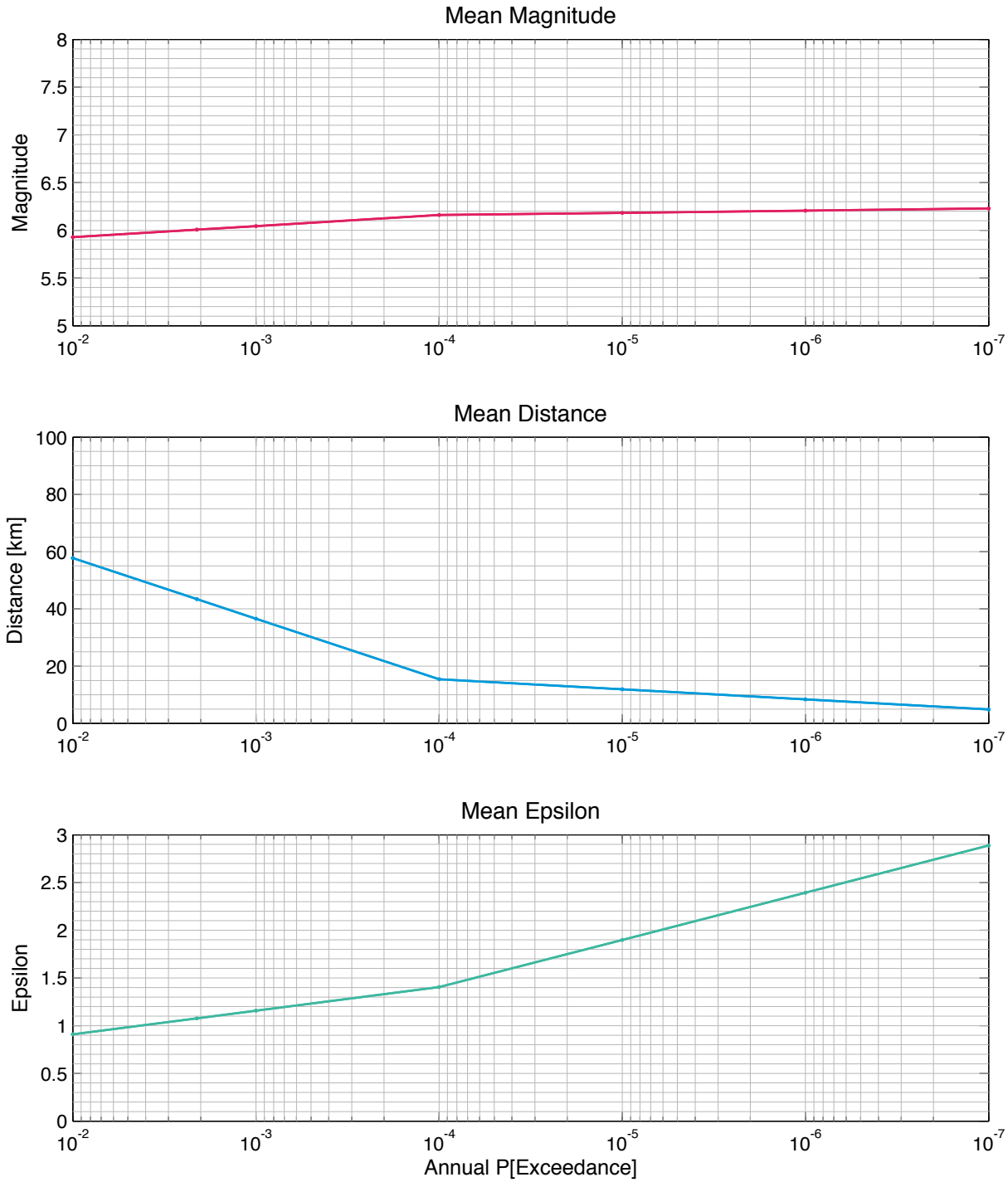

Fig. 2-5.5: Beznau, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 100 Hz.

2.10 Beznau, Rock Hazard, Vertical Component, Surface

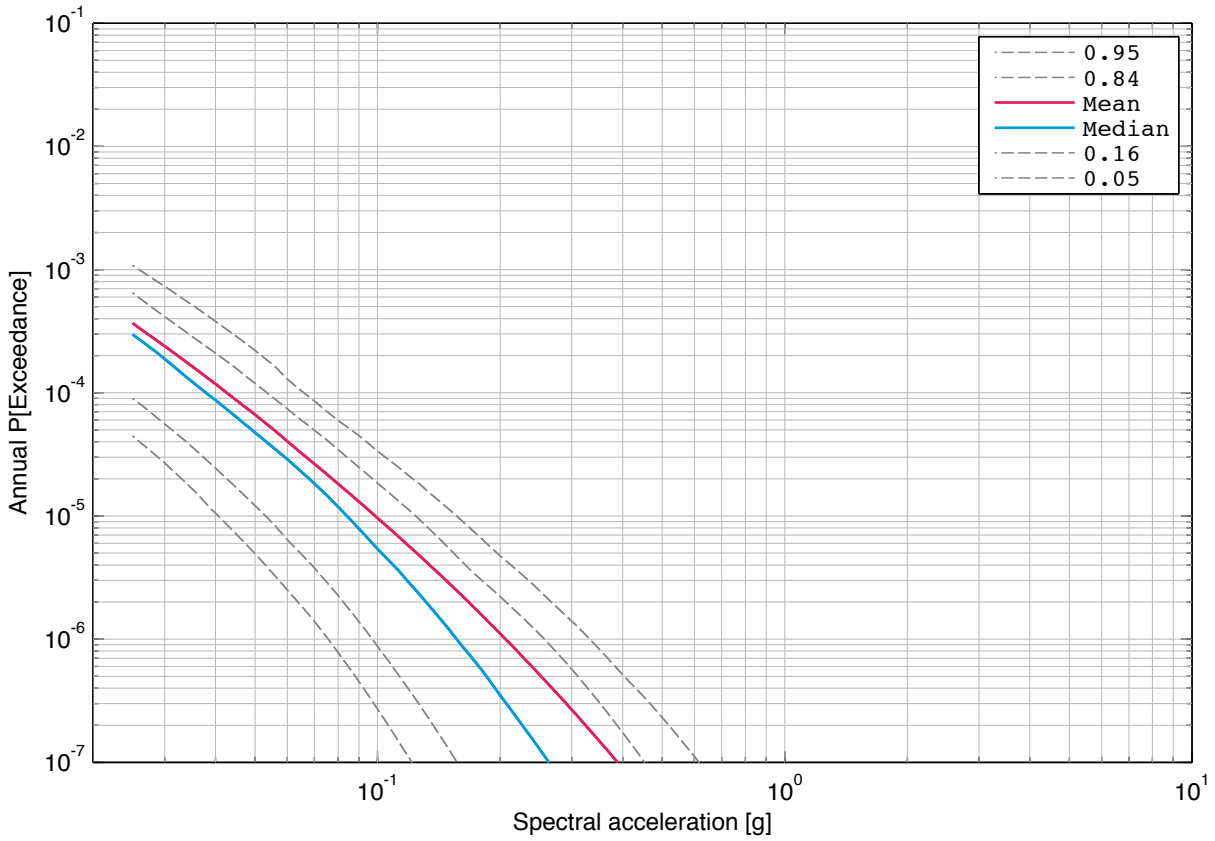

Fig. 2-10.1: Beznau, vertical component, rock, mean hazard and fractiles, 0.5 Hz.

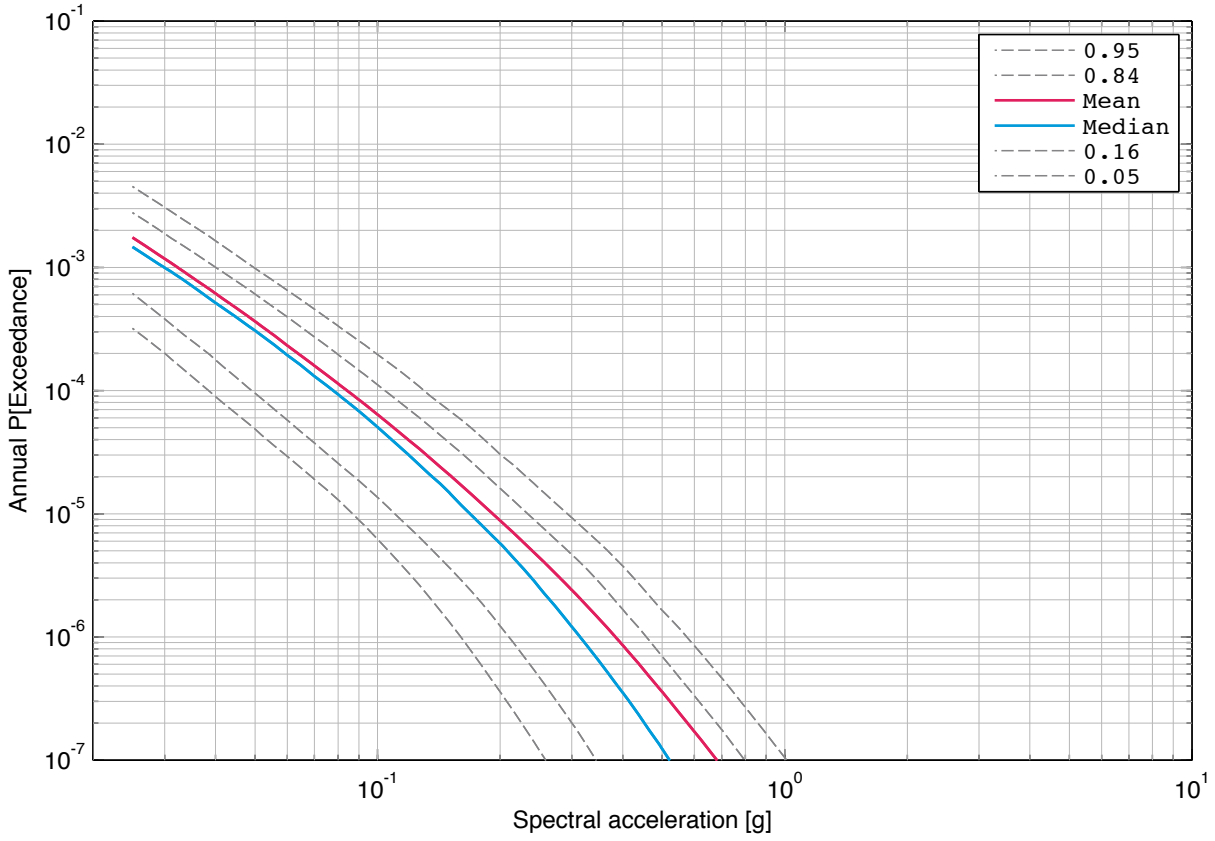

Fig. 2-10.2: Beznau, vertical component, rock, mean hazard and fractiles, 1 Hz.

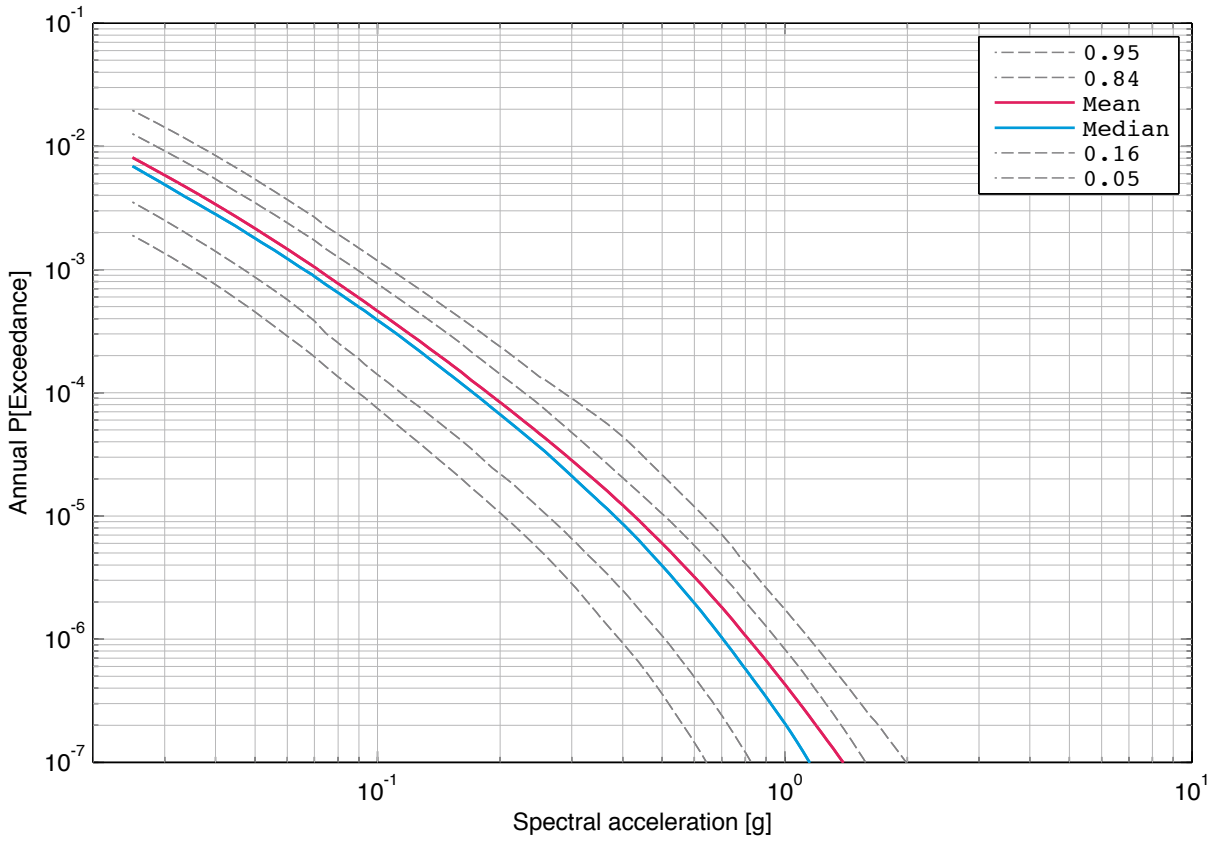

Fig. 2-10.3: Beznau, vertical component, rock, mean hazard and fractiles, 2.5 Hz.

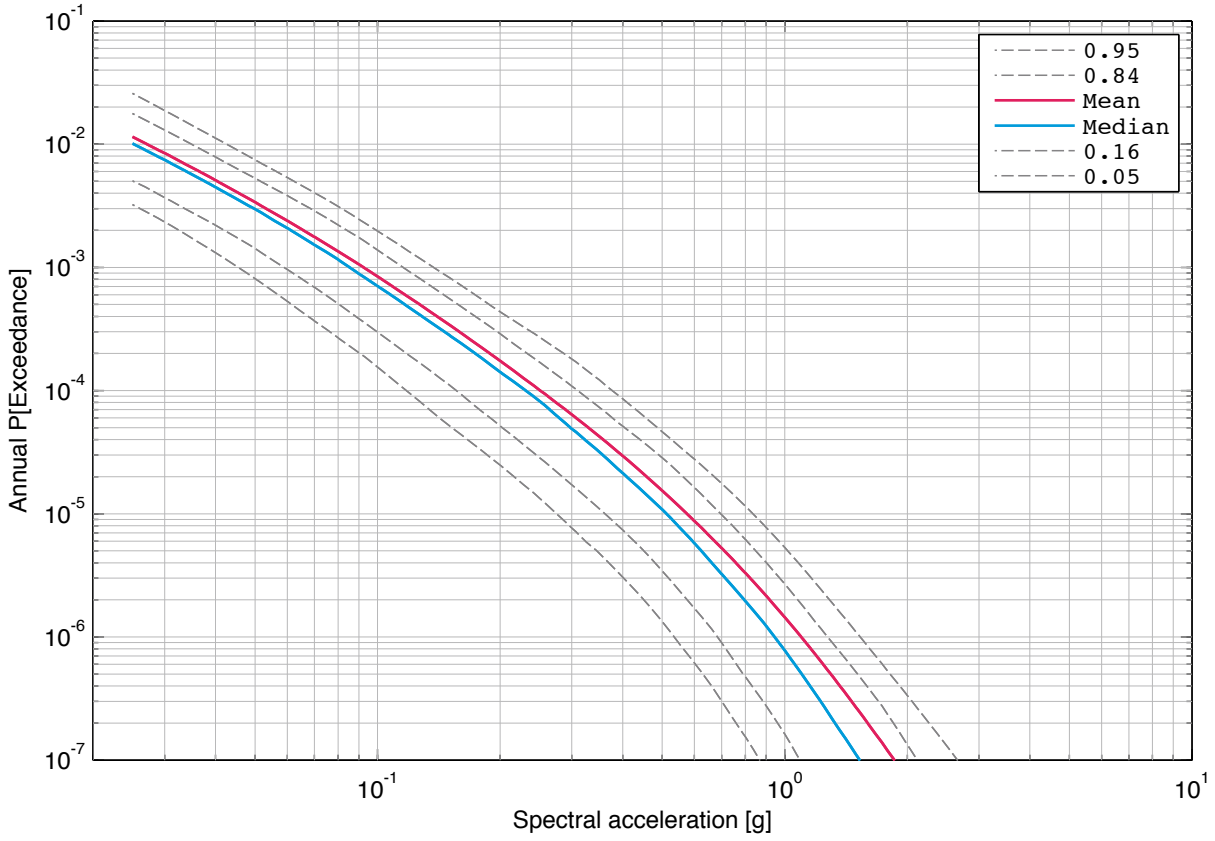

Fig. 2-10.4: Beznau, vertical component, rock, mean hazard and fractiles, 5 Hz.

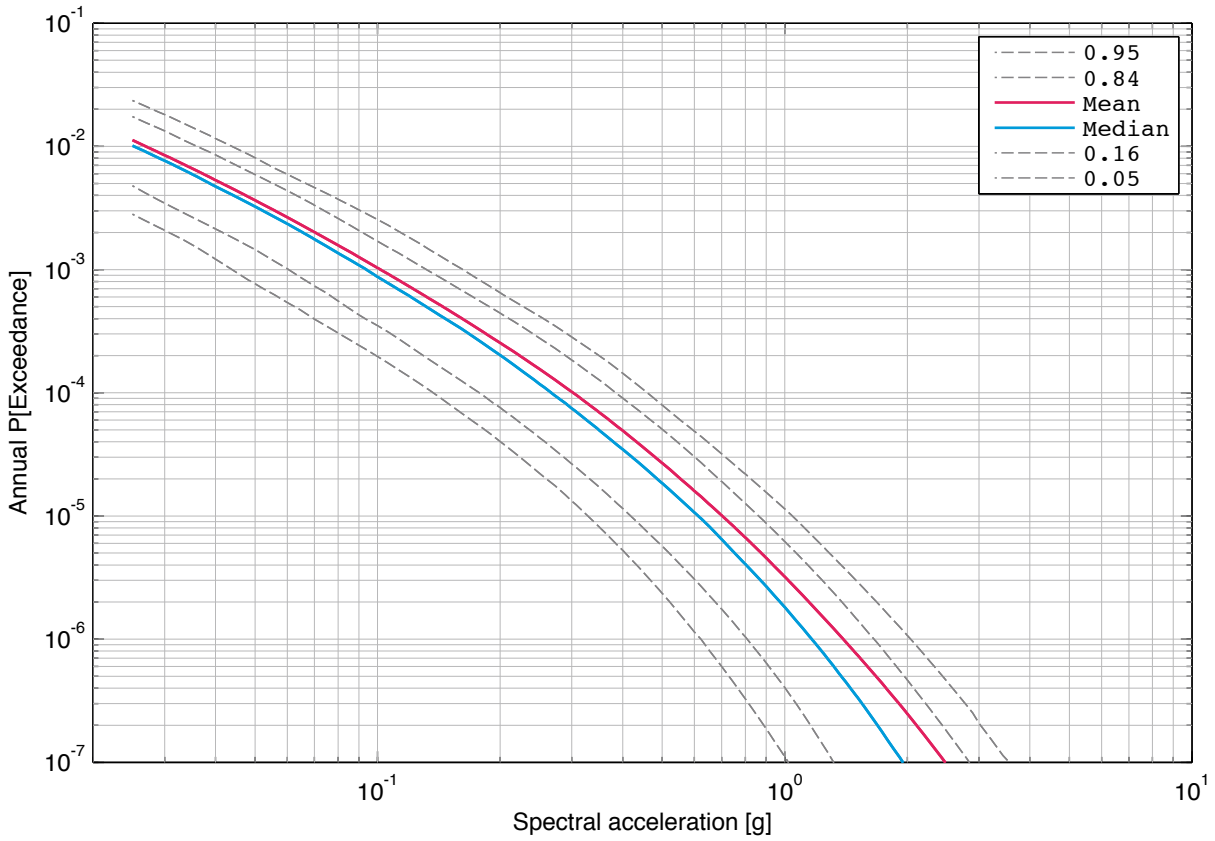

Fig. 2-10.5: Beznau, vertical component, rock, mean hazard and fractiles, 10 Hz.

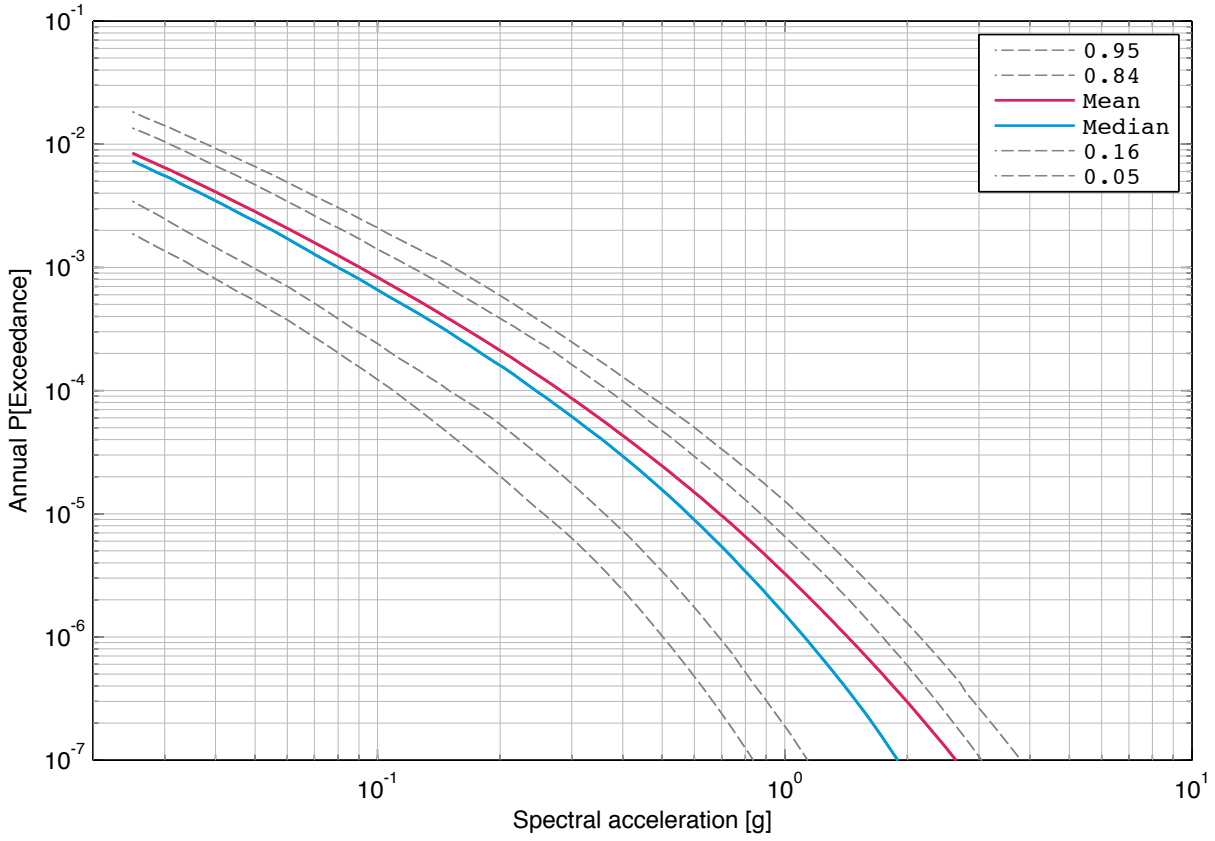

Fig. 2-10.6: Beznau, vertical component, rock, mean hazard and fractiles, 20 Hz.

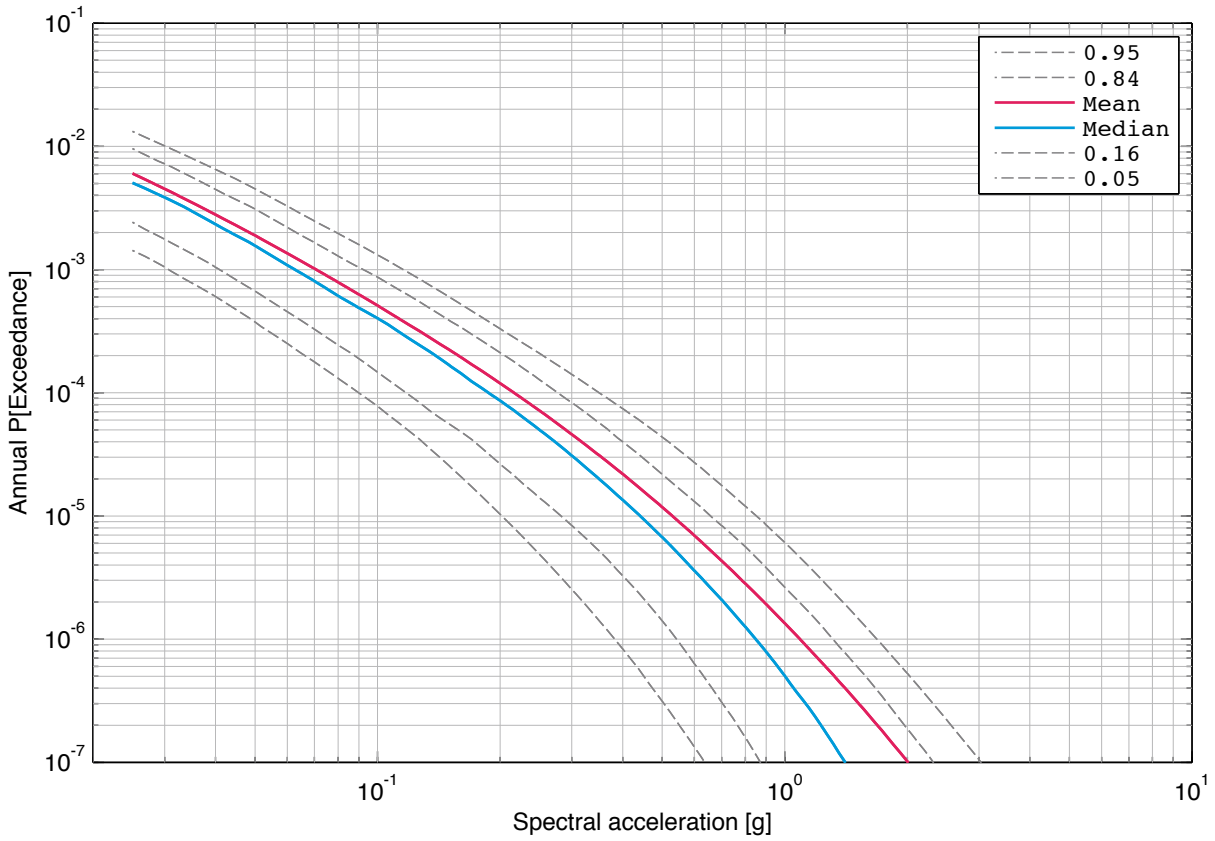

Fig. 2-10.7: Beznau, vertical component, rock, mean hazard and fractiles, 33 Hz.

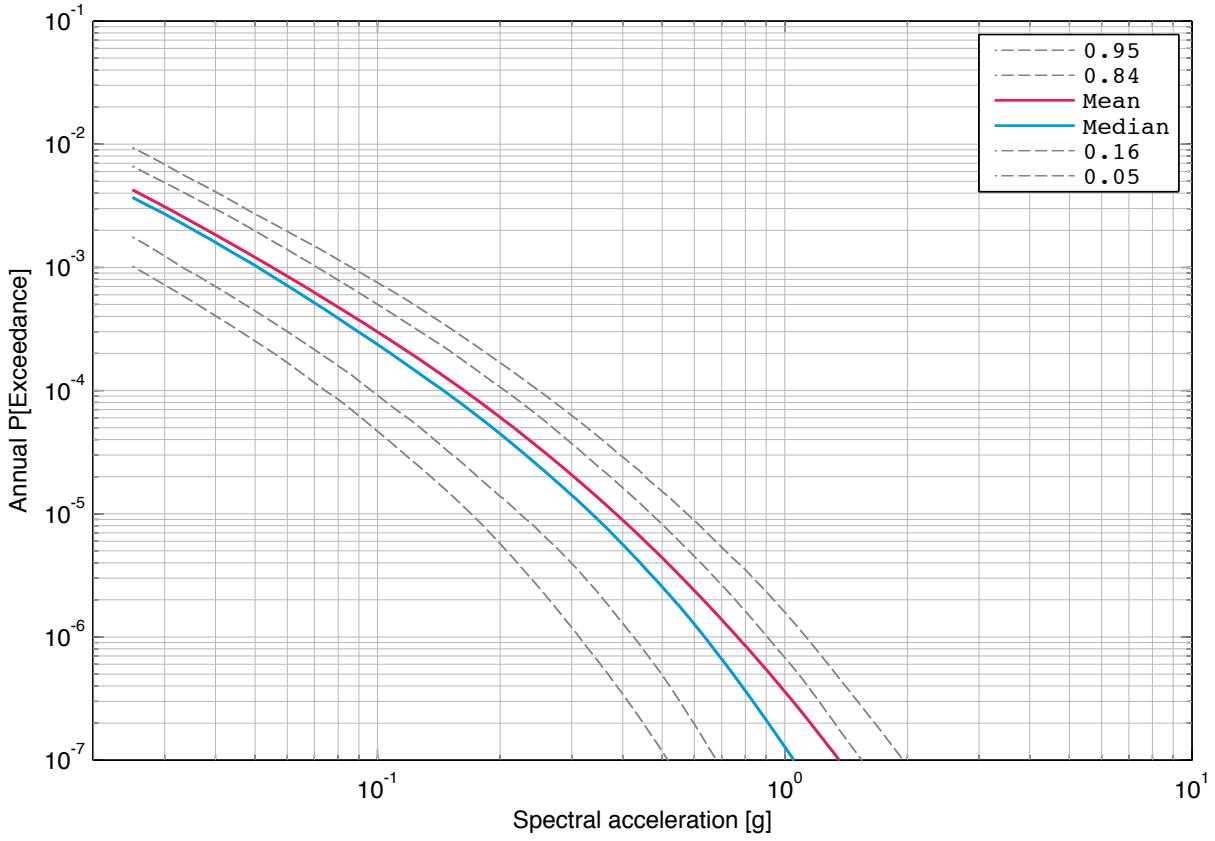

Fig. 2-10.8: Beznau, vertical component, rock, mean hazard and fractiles, 50 Hz.

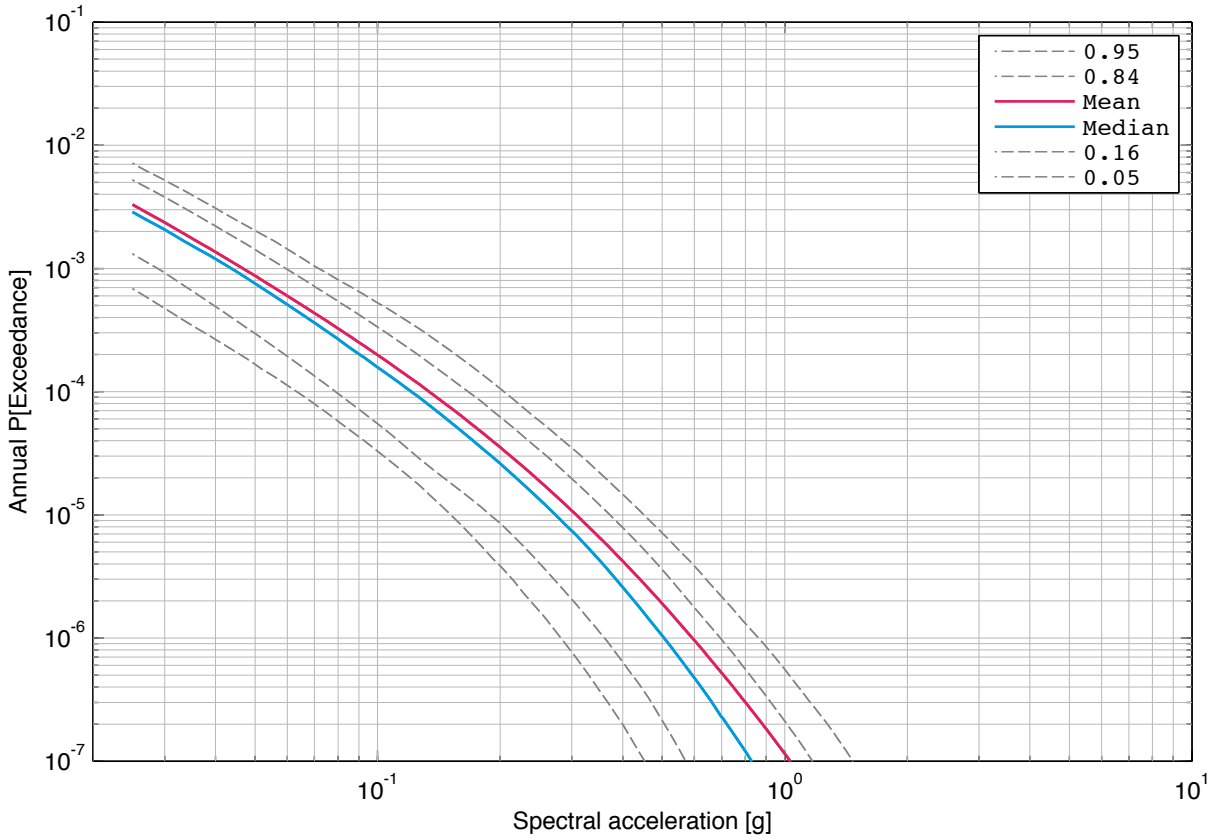

Fig. 2-10.9: Beznau, vertical component, rock, mean hazard and fractiles, 100 Hz.

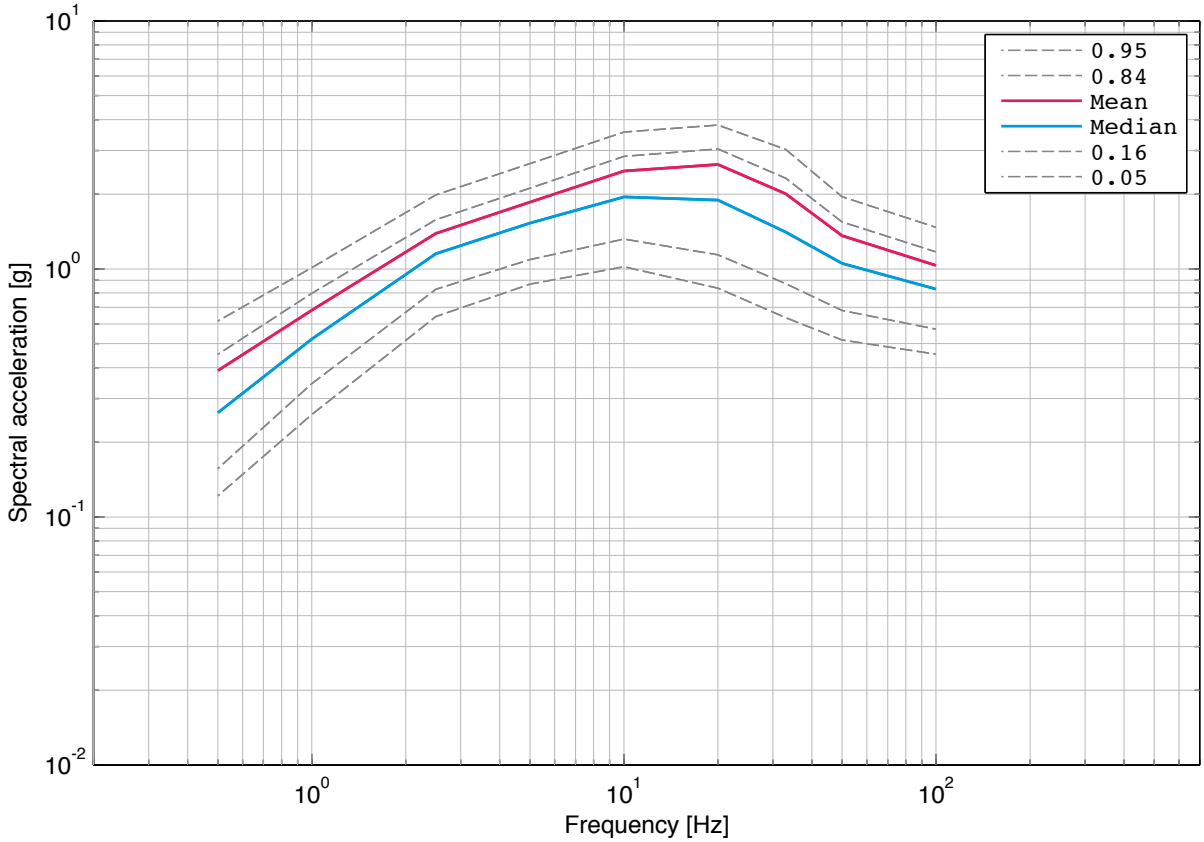

Fig. 2-10.10: Beznau, vertical component, rock, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

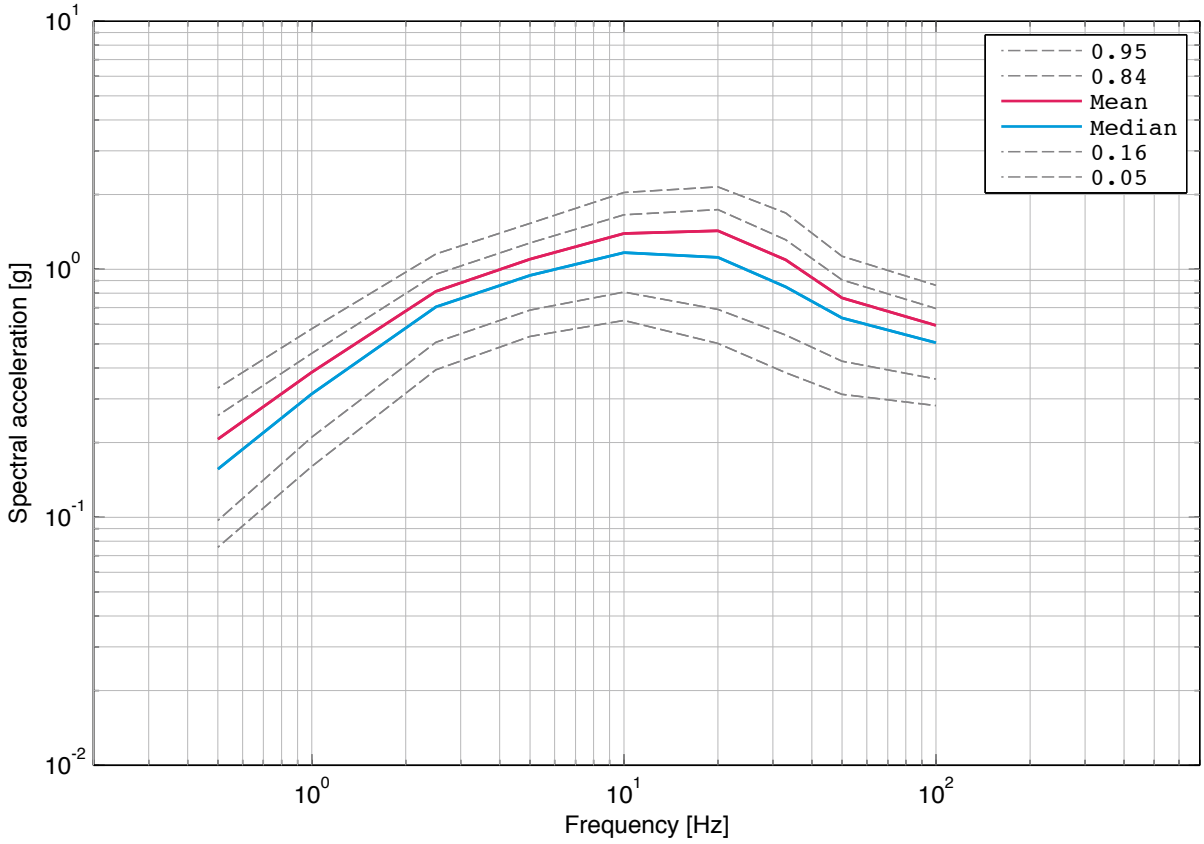

Fig. 2-10.11: Beznau, vertical component, rock, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

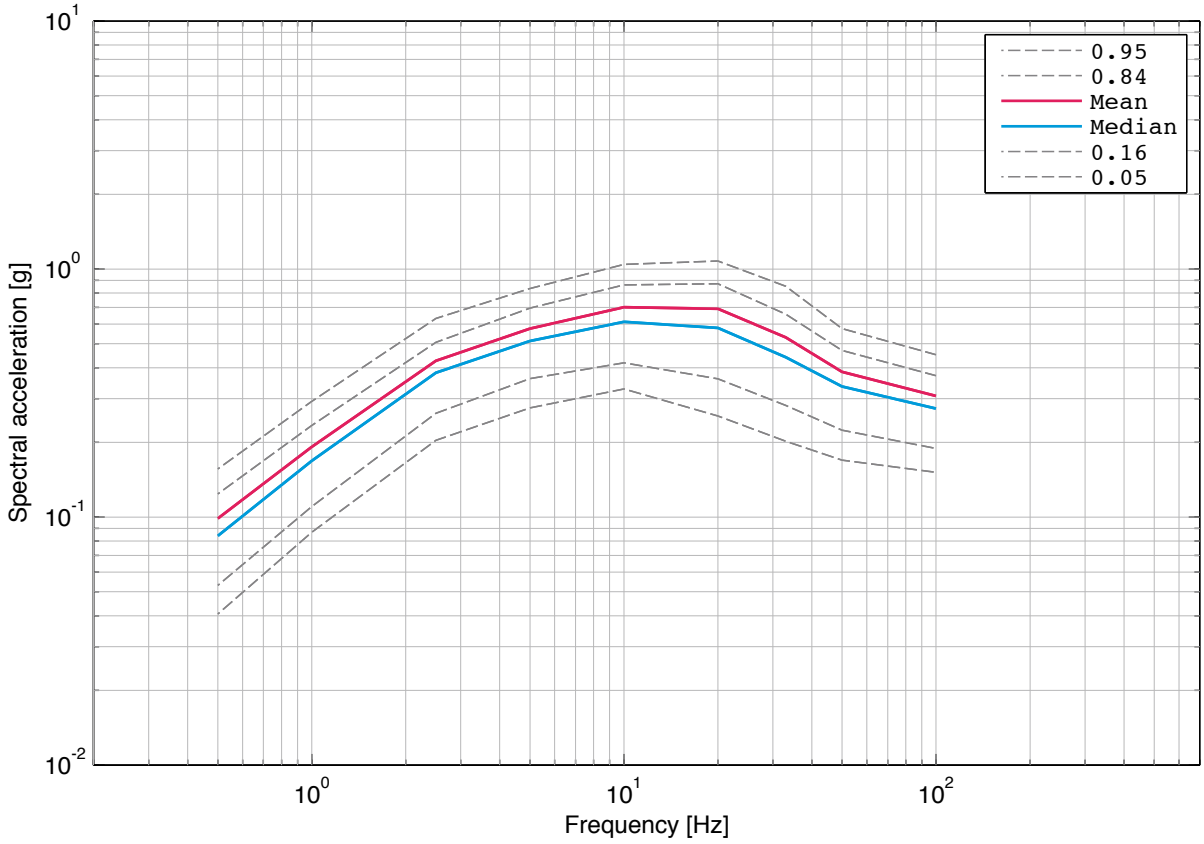

Fig. 2-10.12: Beznau, vertical component, rock, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

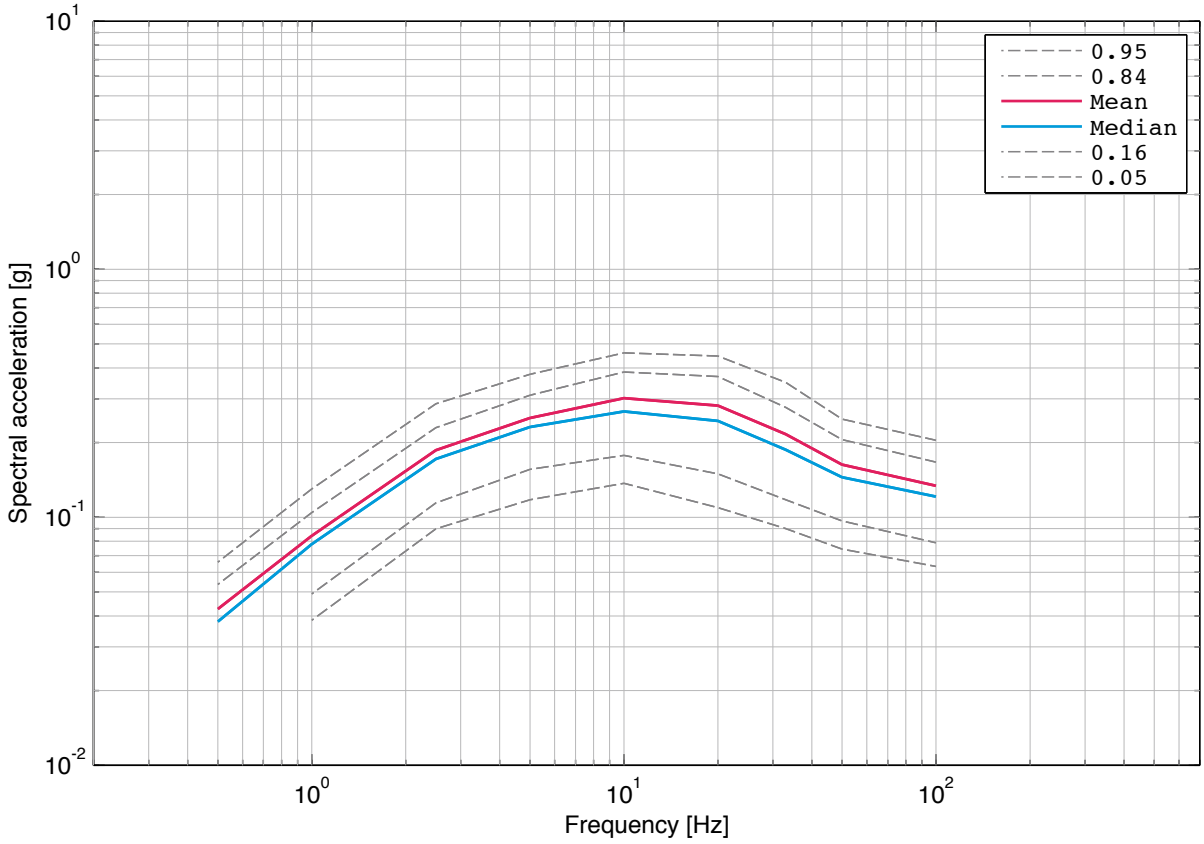

Fig. 2-10.13: Beznau, vertical component, rock, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

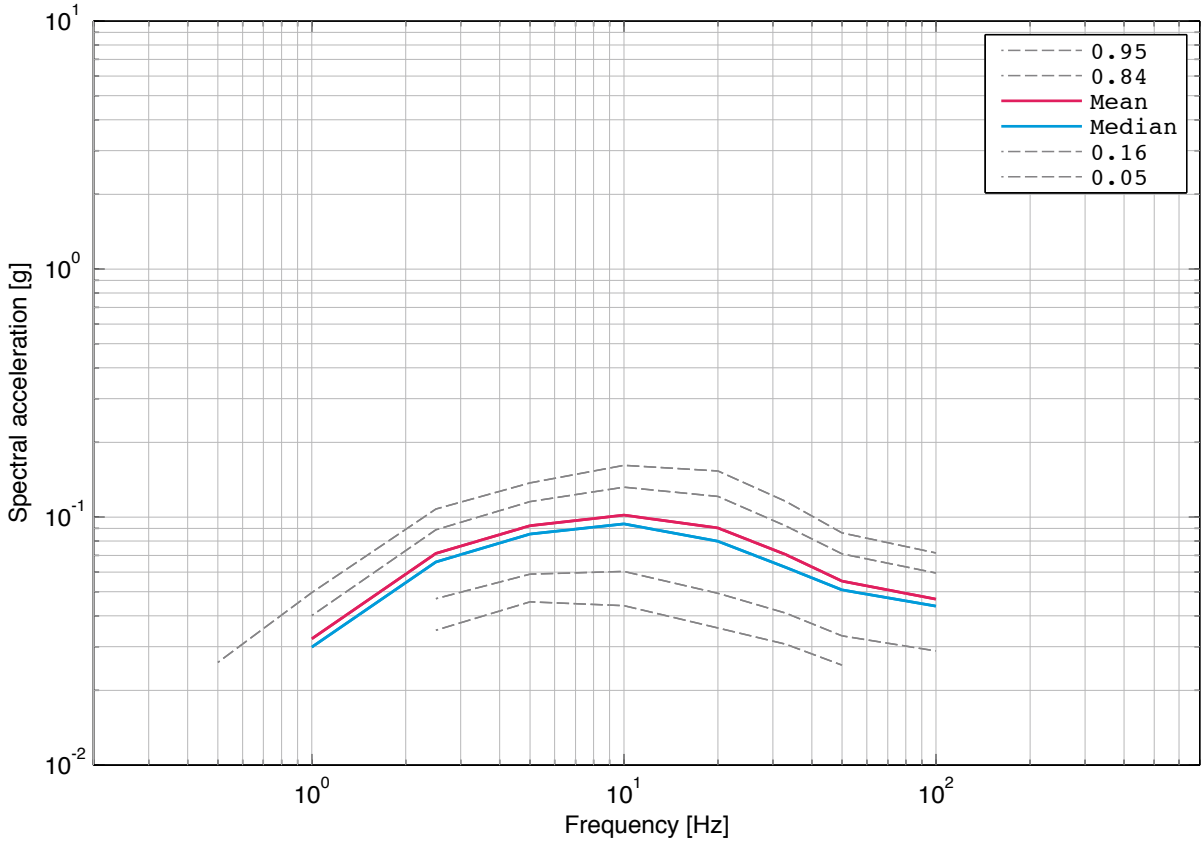

Fig. 2-10.14: Beznau, vertical component, rock, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

2.11 Beznau, Soil Hazard, Vertical Component, Surface

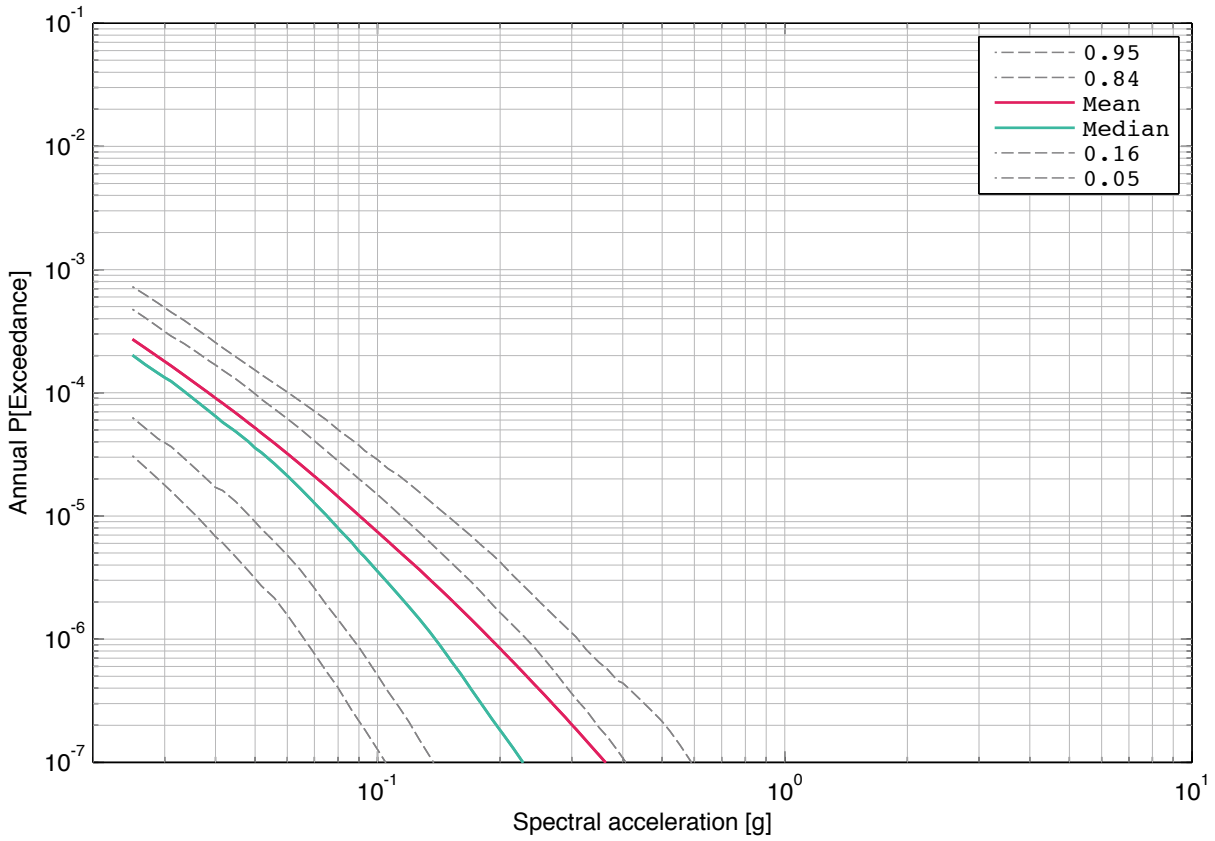

Fig. 2-11.1: Beznau, vertical component, soil, surface, mean hazard and fractiles, 0.5 Hz.

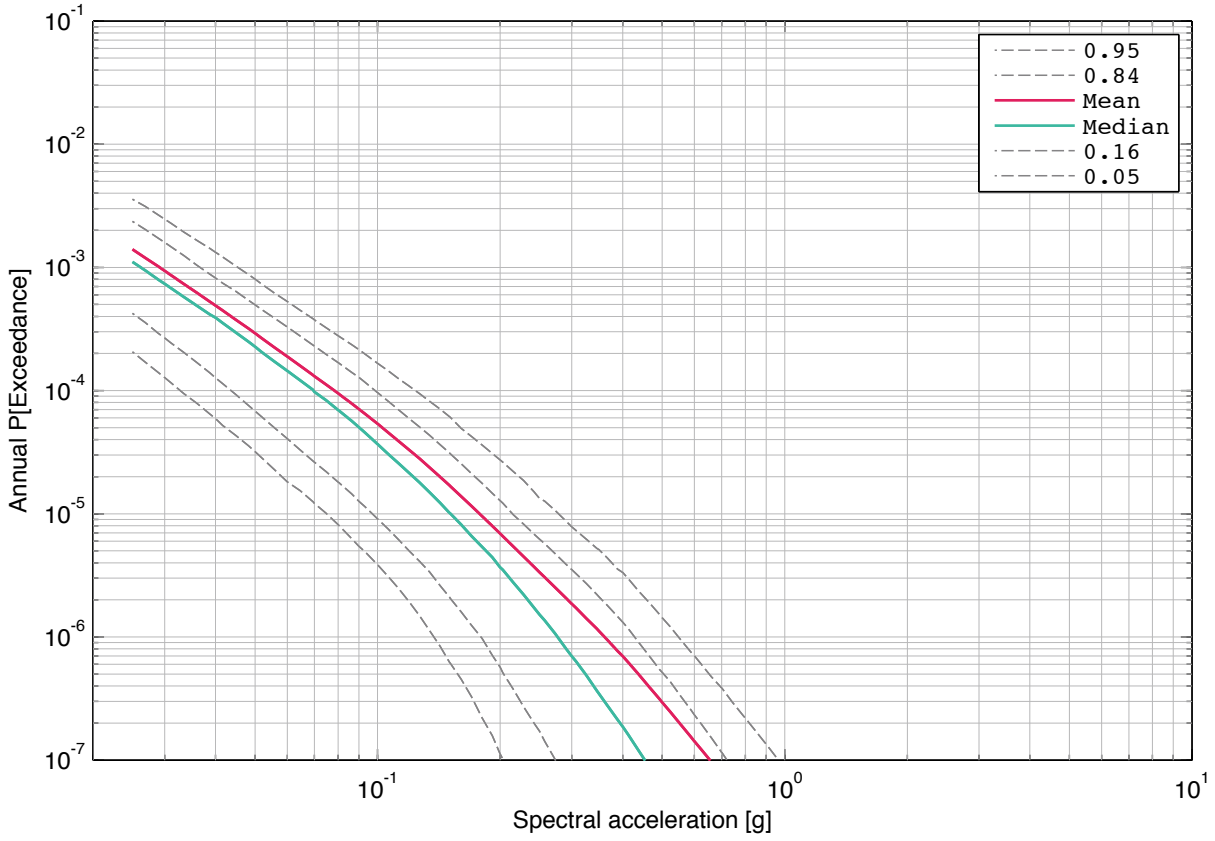

Fig. 2-11.2: Beznau, vertical component, soil, surface, mean hazard and fractiles, 1 Hz.

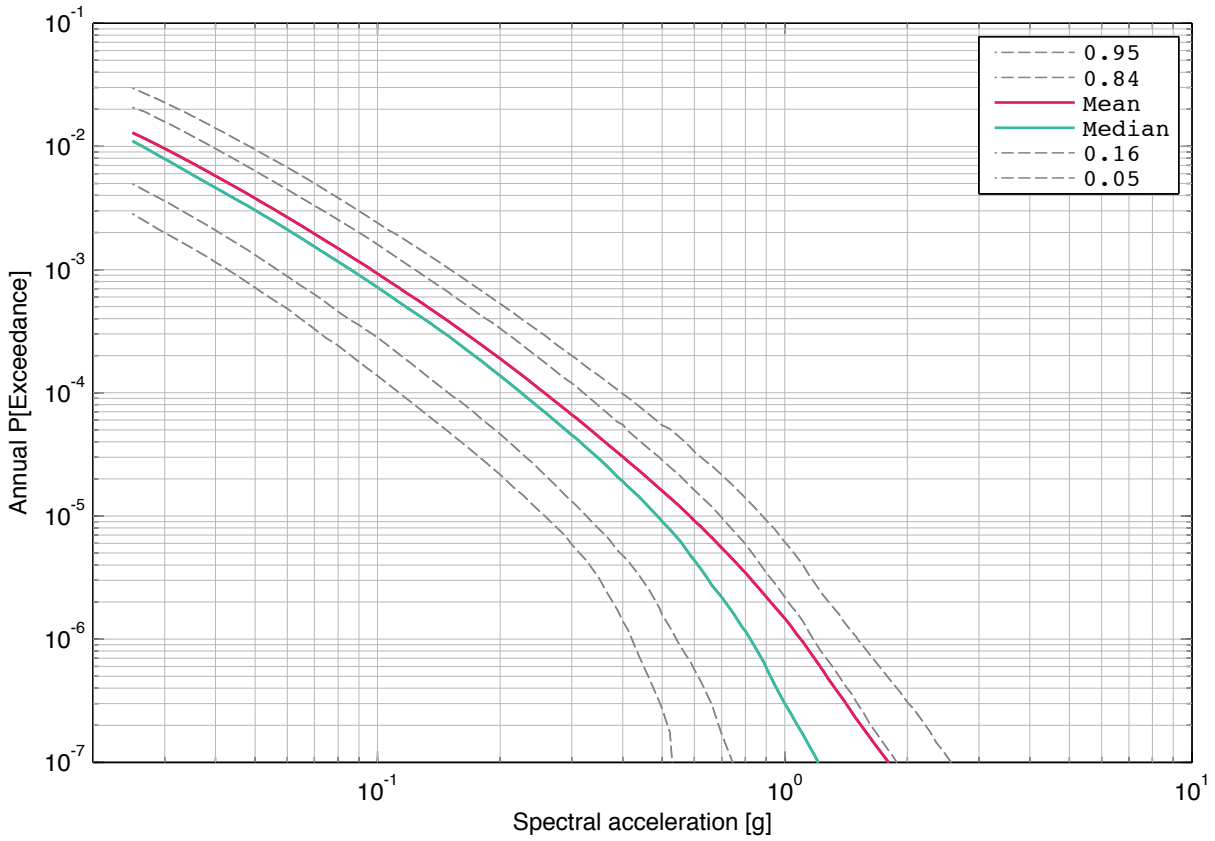

Fig. 2-11.3: Beznau, vertical component, soil, surface, mean hazard and fractiles, 2.5 Hz.

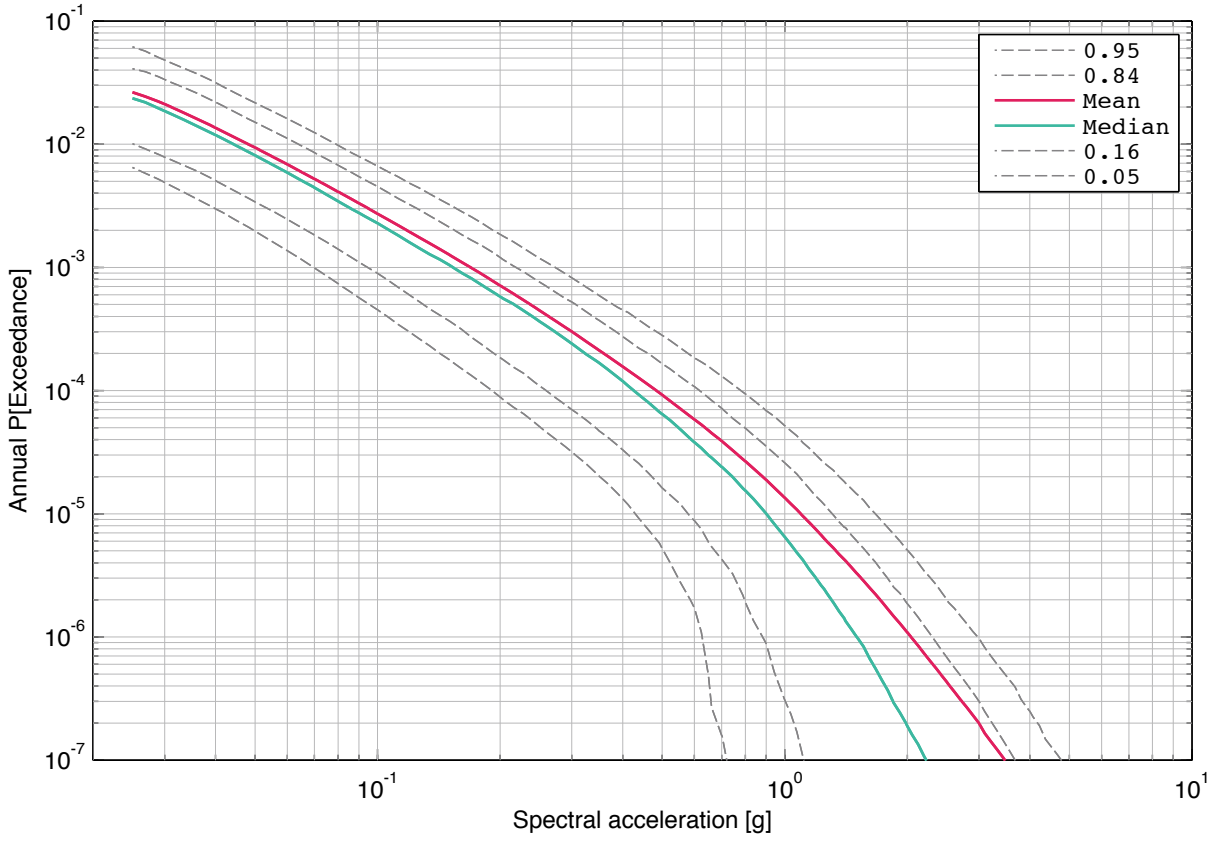

Fig. 2-11.4: Beznau, vertical component, soil, surface, mean hazard and fractiles, 5 Hz.

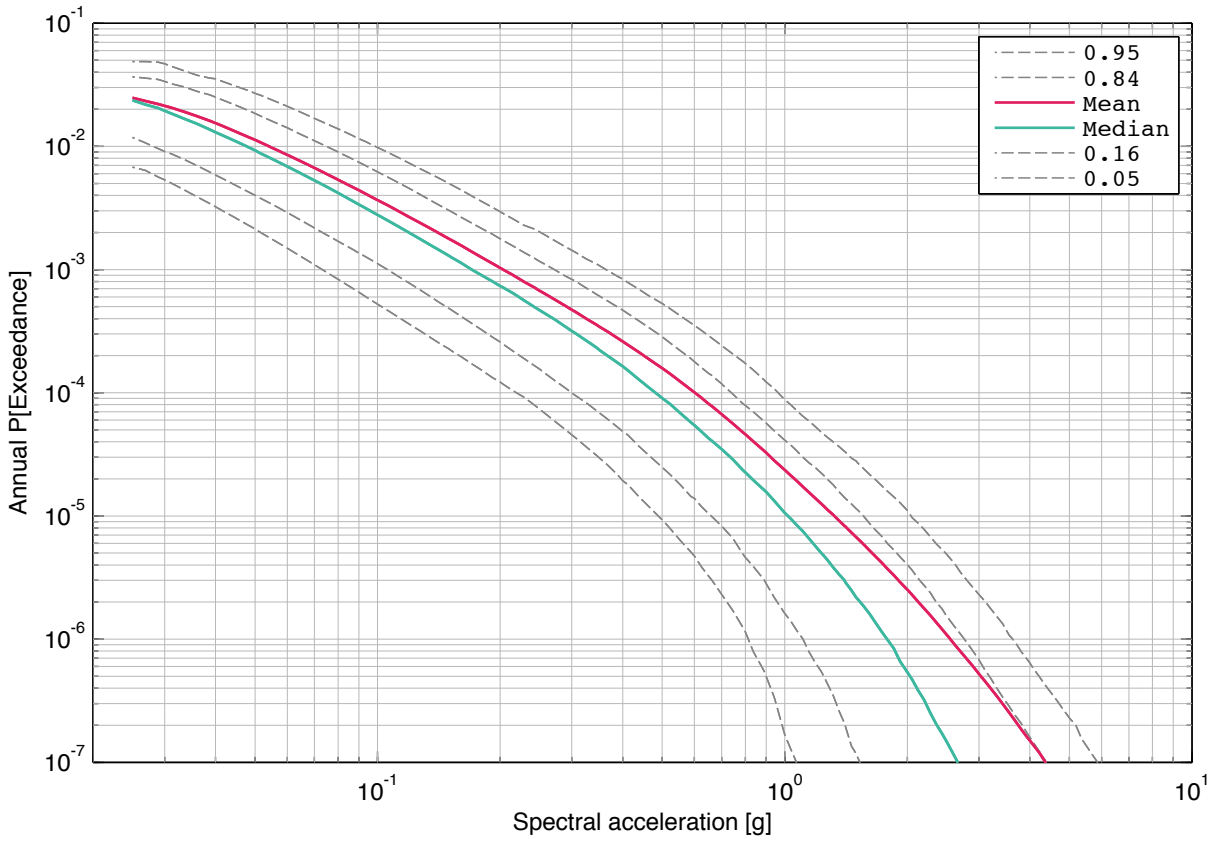

Fig. 2-11.5: Beznau, vertical component, soil, surface, mean hazard and fractiles, 10 Hz.

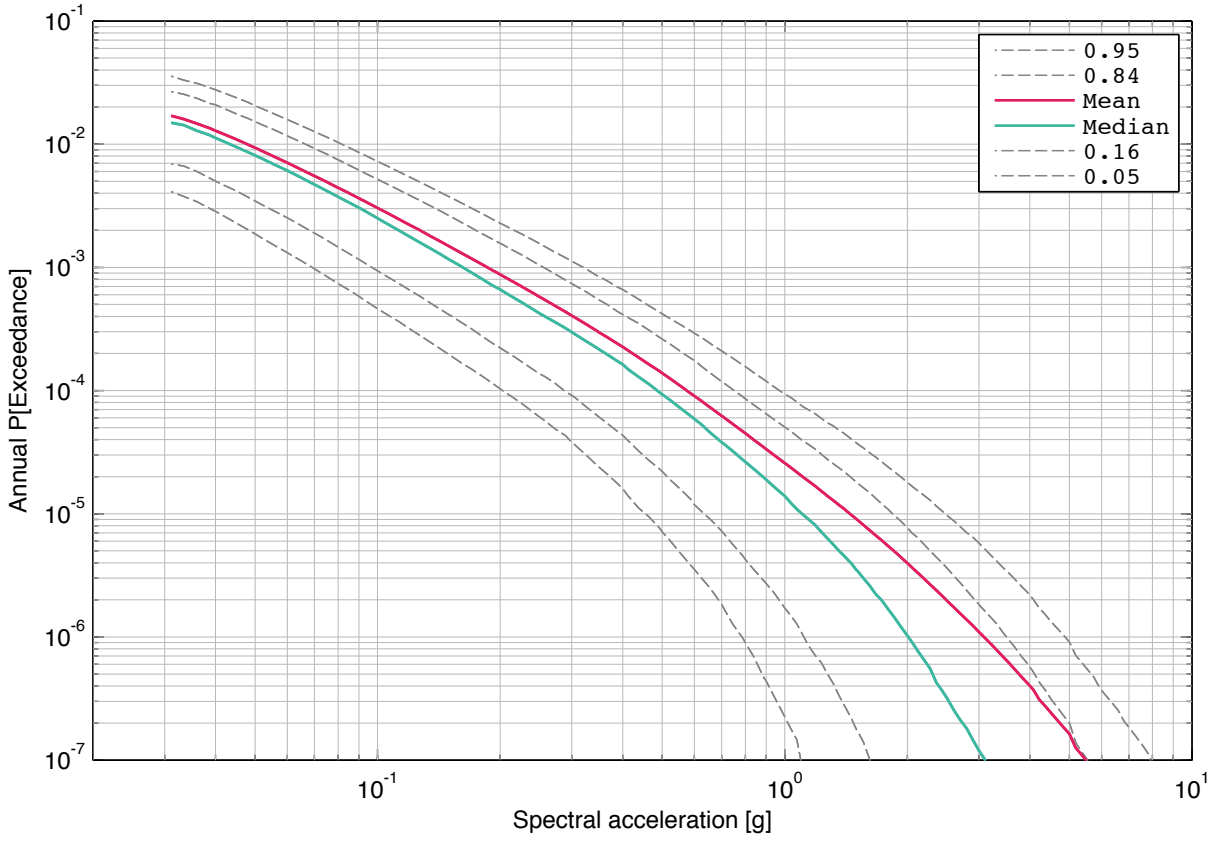

Fig. 2-11.6: Beznau, vertical component, soil, surface, mean hazard and fractiles, 20 Hz.

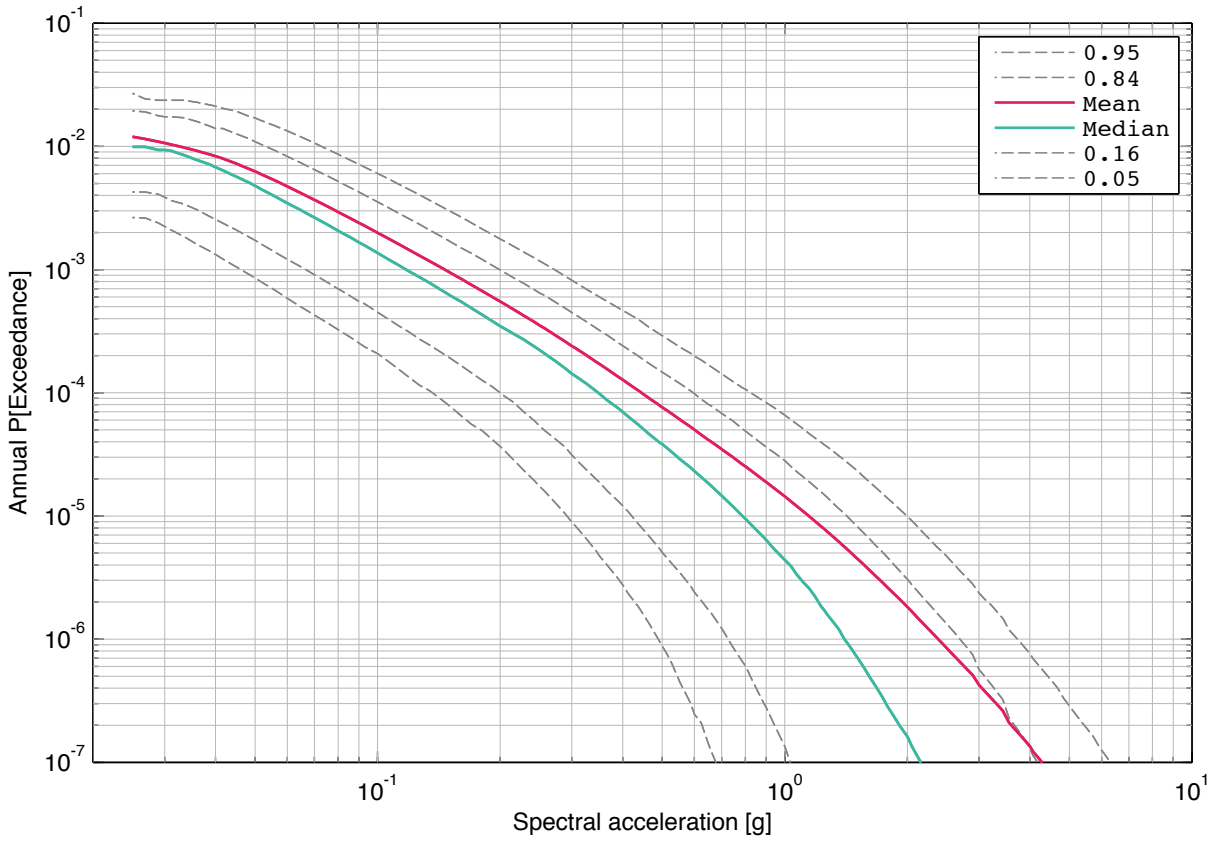

Fig. 2-11.7: Beznau, vertical component, soil, surface, mean hazard and fractiles, 33 Hz.

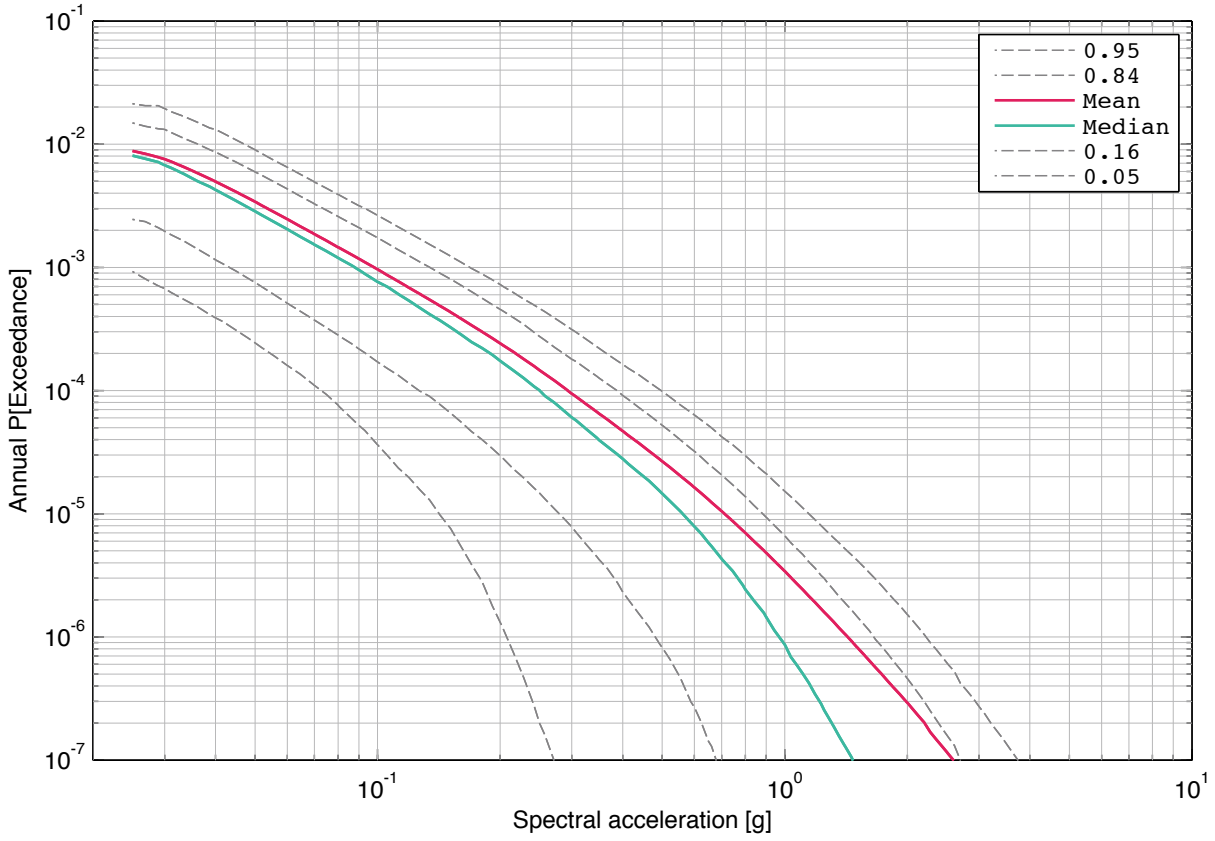

Fig. 2-11.8: Beznau, vertical component, soil, surface, mean hazard and fractiles, 50 Hz.

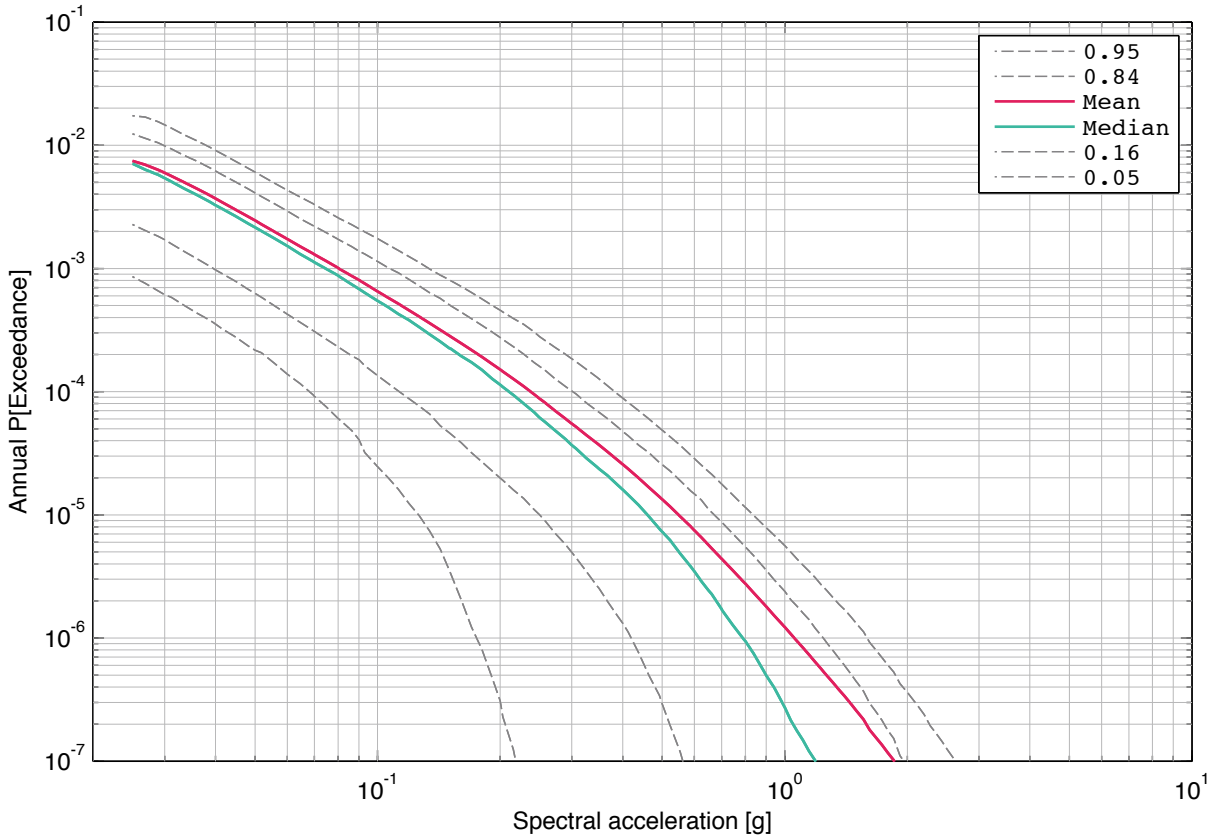

Fig. 2-11.9: Beznau, vertical component, soil, surface, mean hazard and fractiles, 100 Hz.

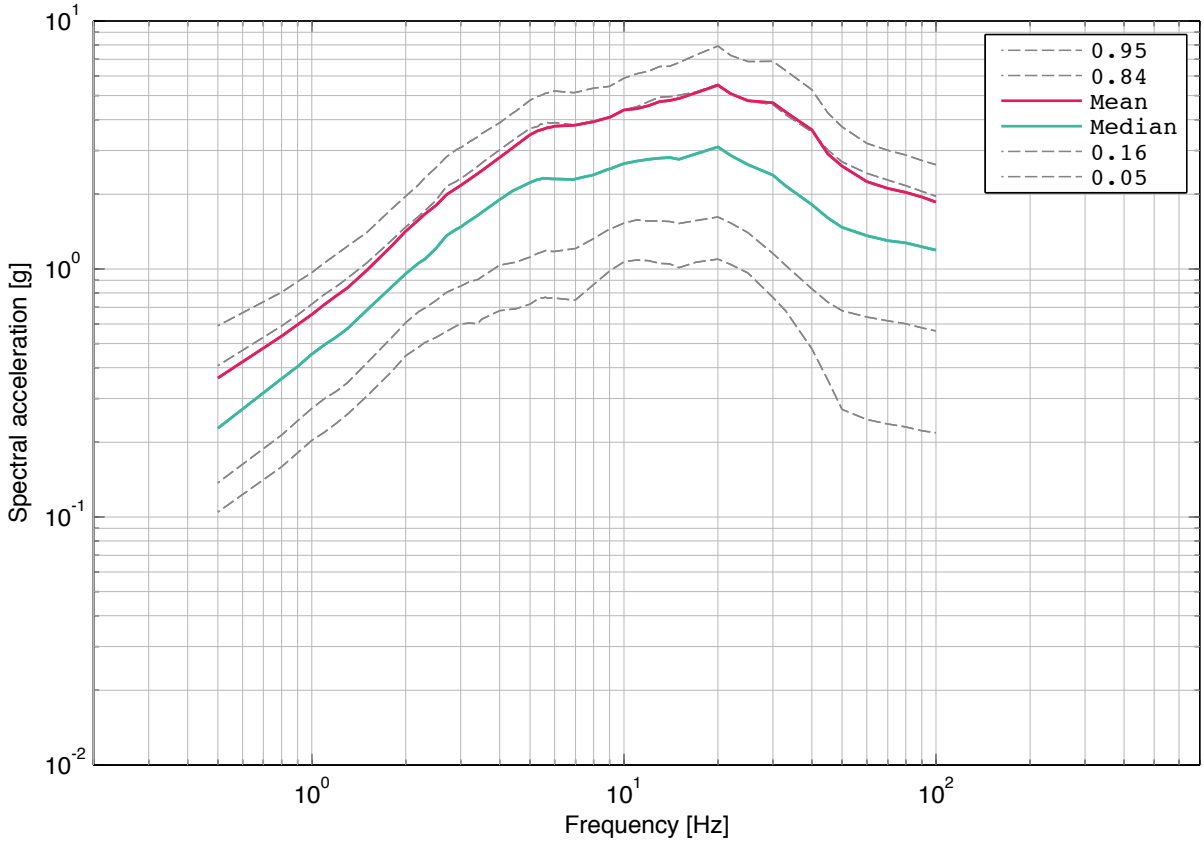

Fig. 2-11.10: Beznau, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-07 and 5% damping.

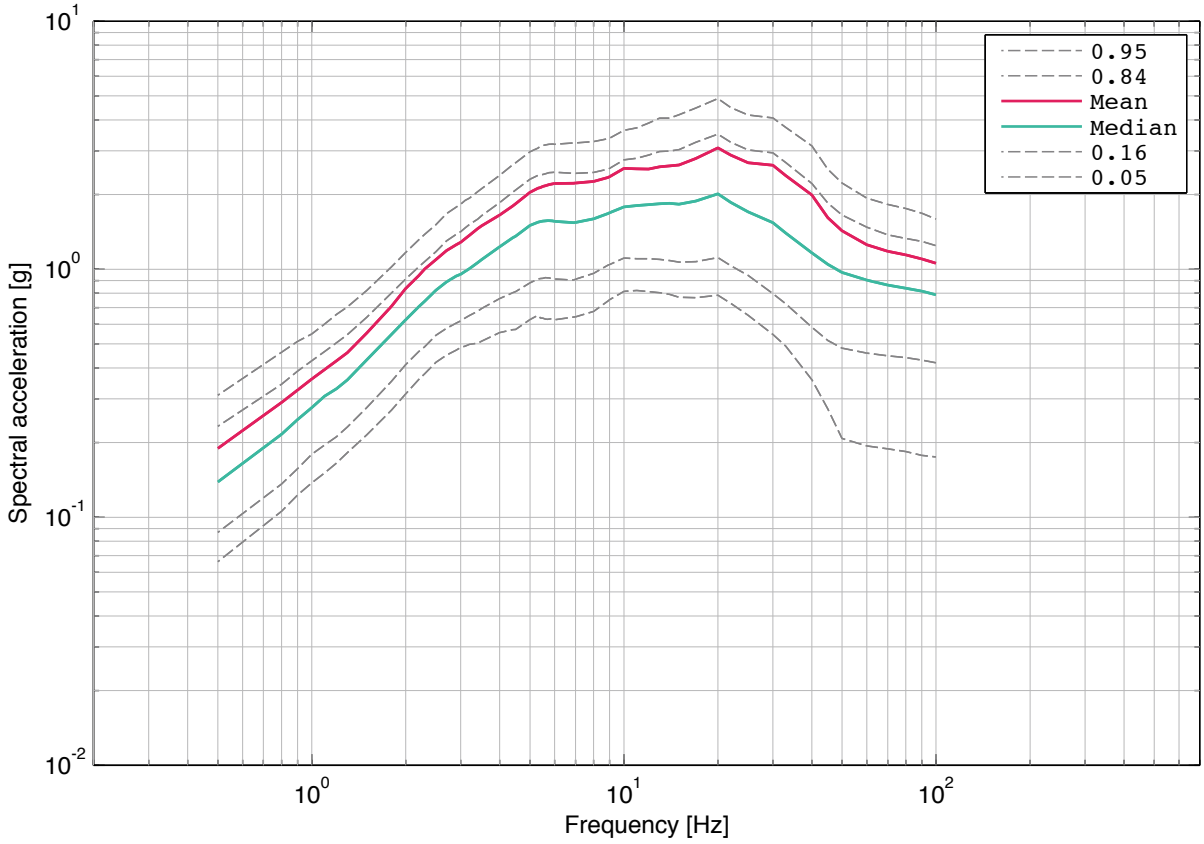

Fig. 2-11.11: Beznau, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-06 and 5% damping.

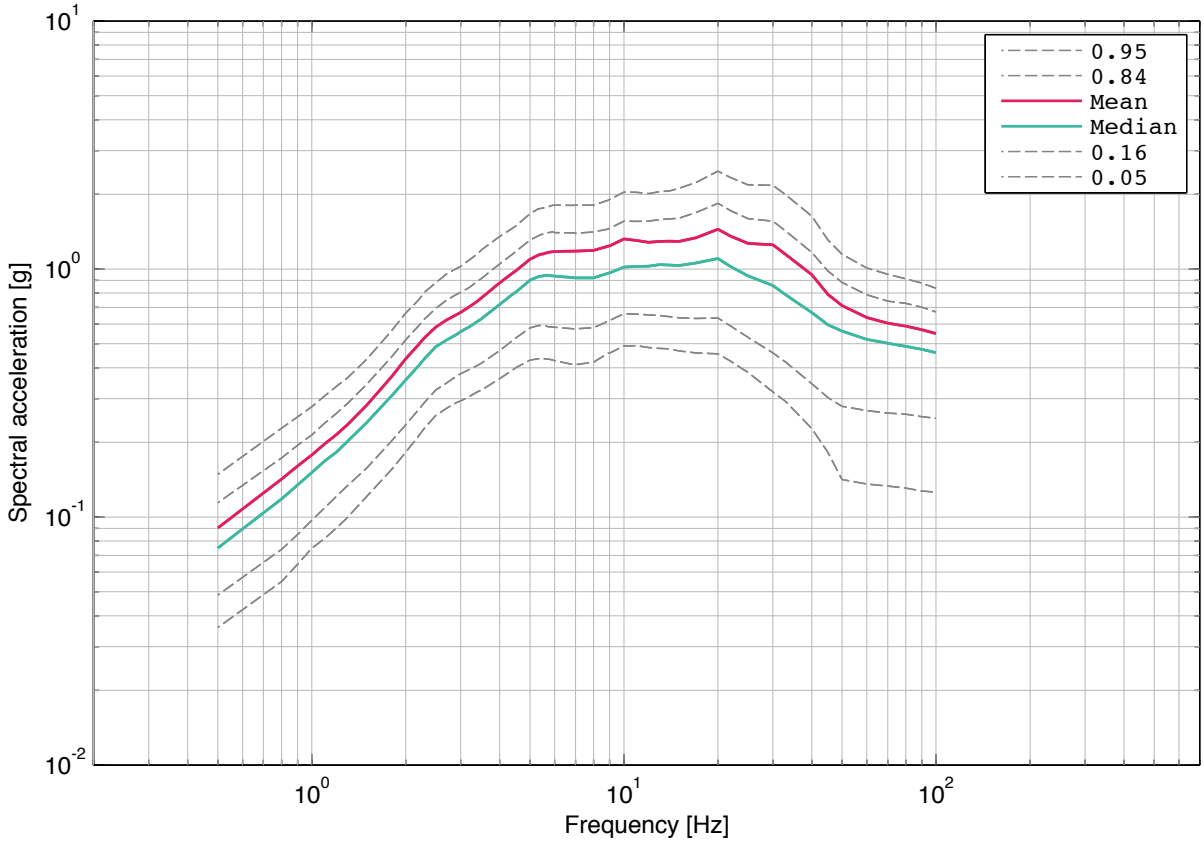

Fig. 2-11.12: Beznau, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-05 and 5% damping.

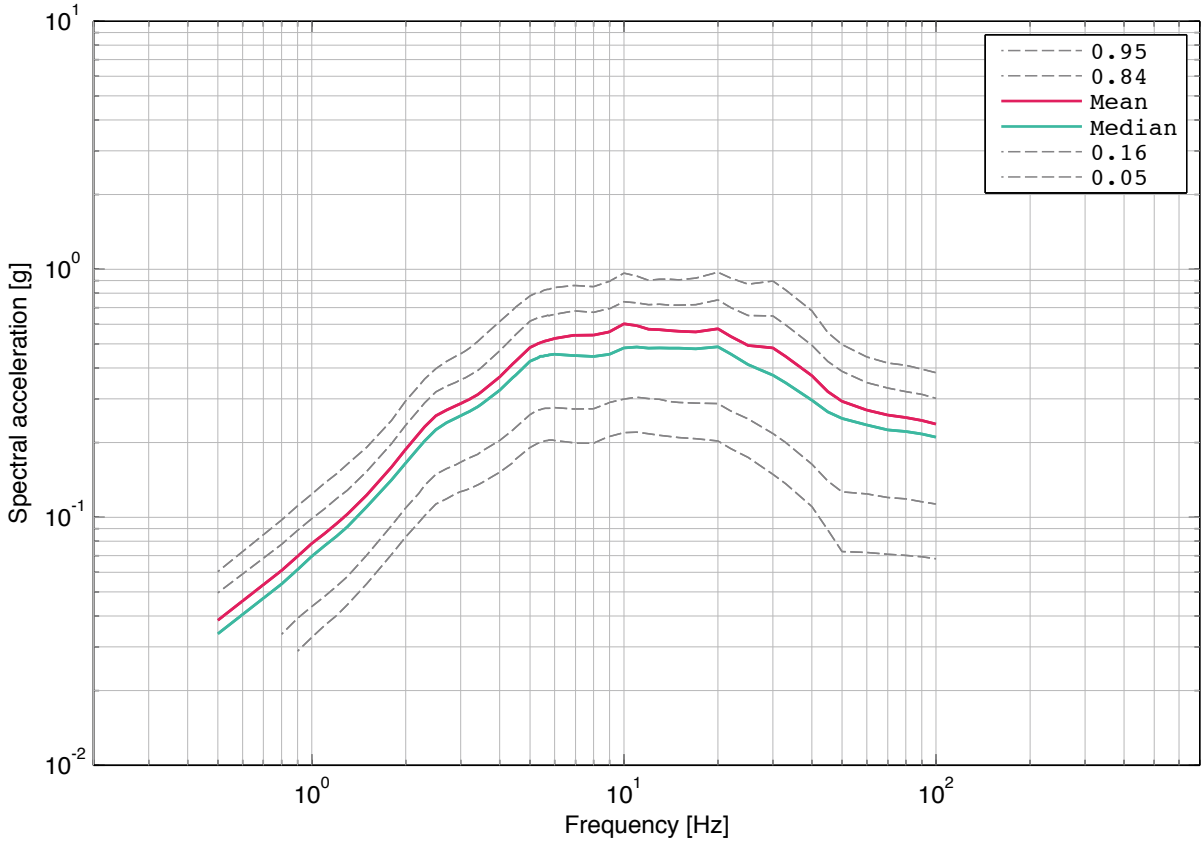

Fig. 2-11.13: Beznau, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-04 and 5% damping.

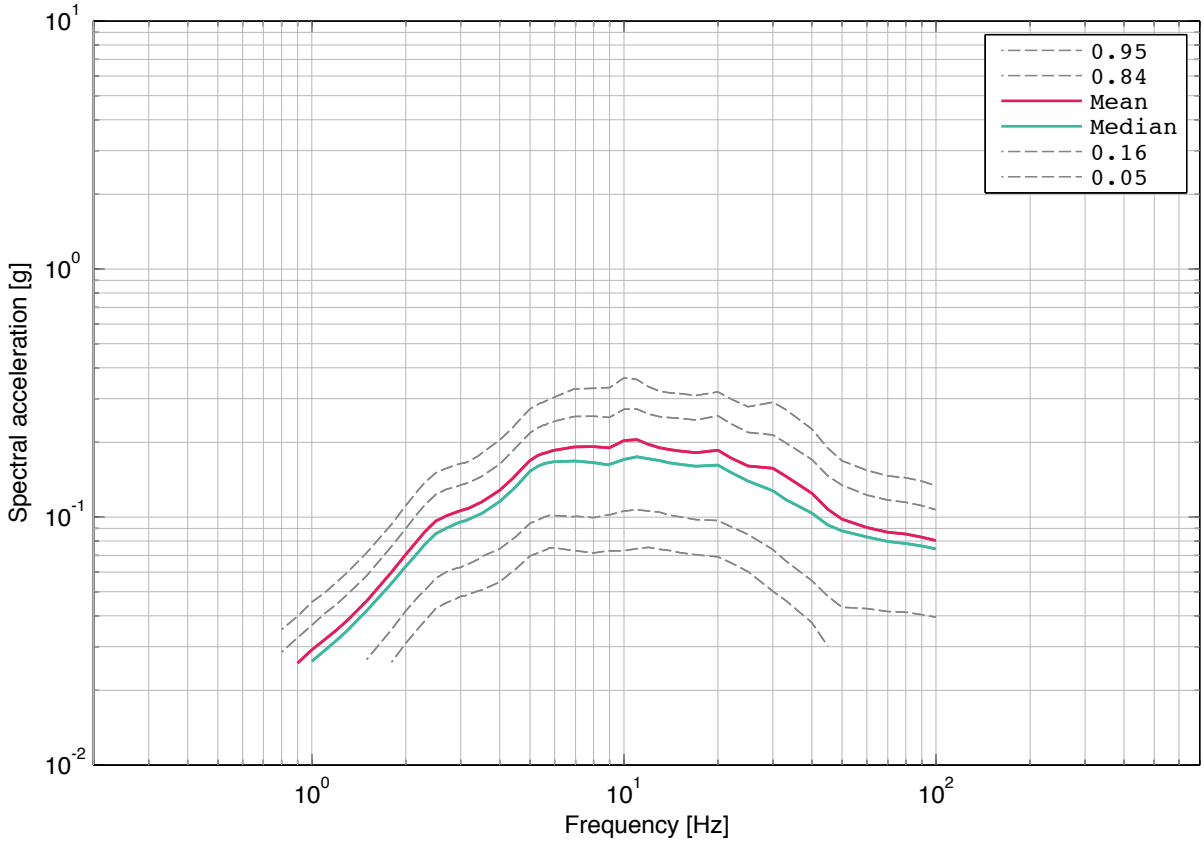

Fig. 2-11.14: Beznau, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-03 and 5% damping.

2.12 Beznau, Soil Hazard, Vertical Component, -15 m

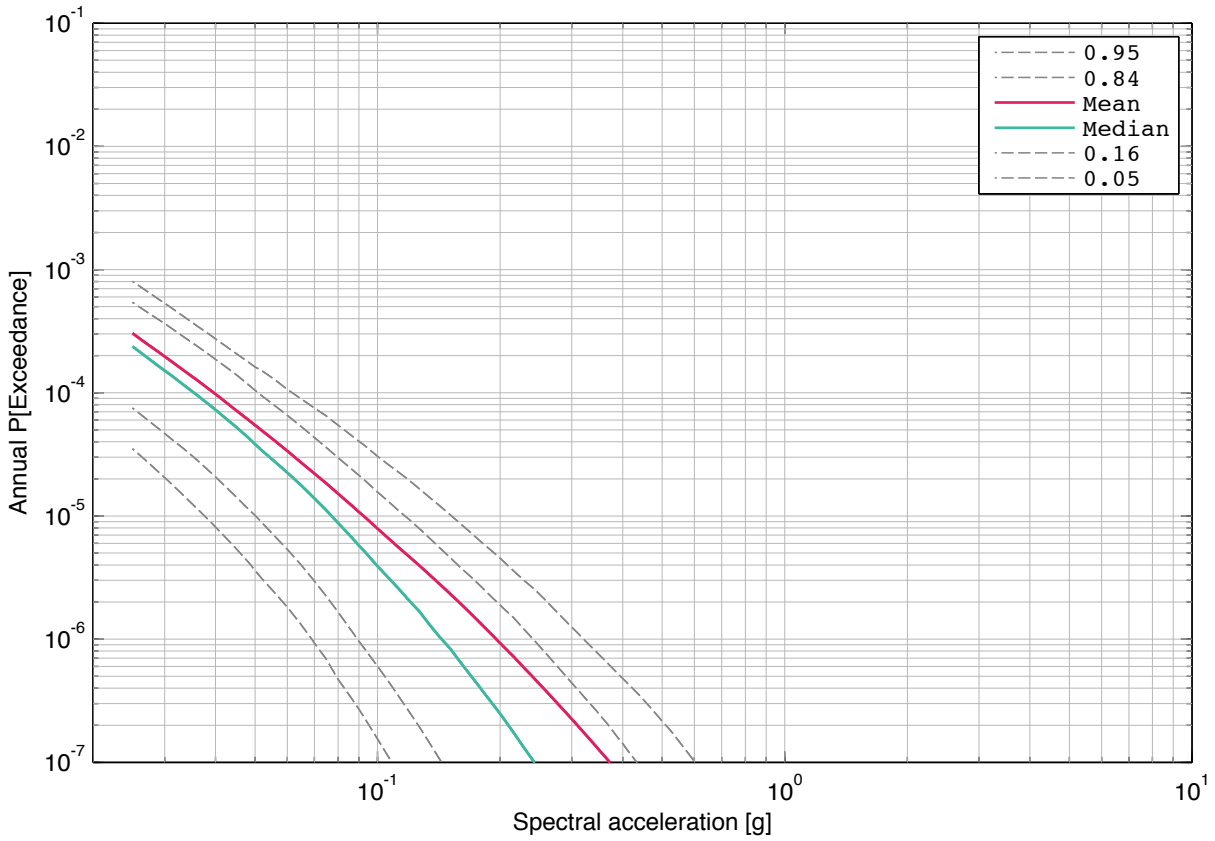

Fig. 2-12.1: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 0.5 Hz.

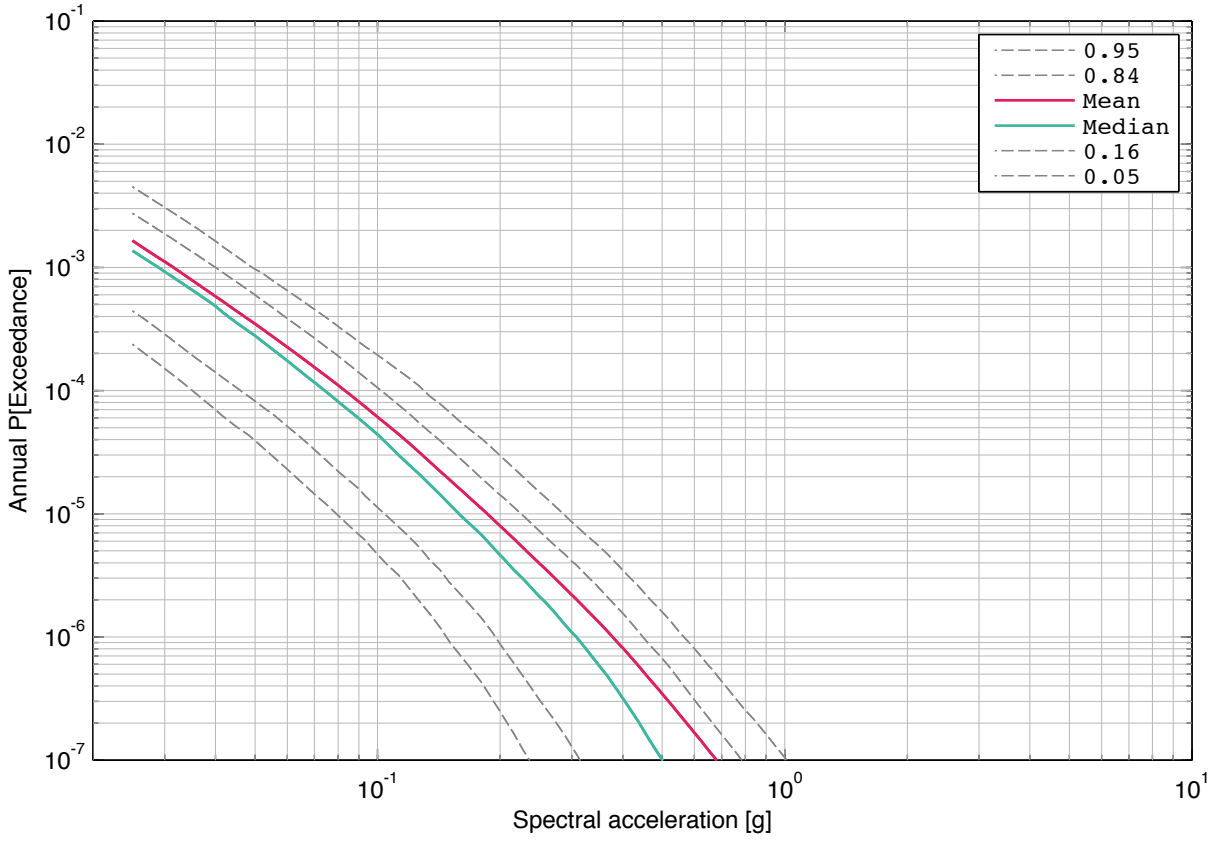

Fig. 2-12.2: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 1 Hz.

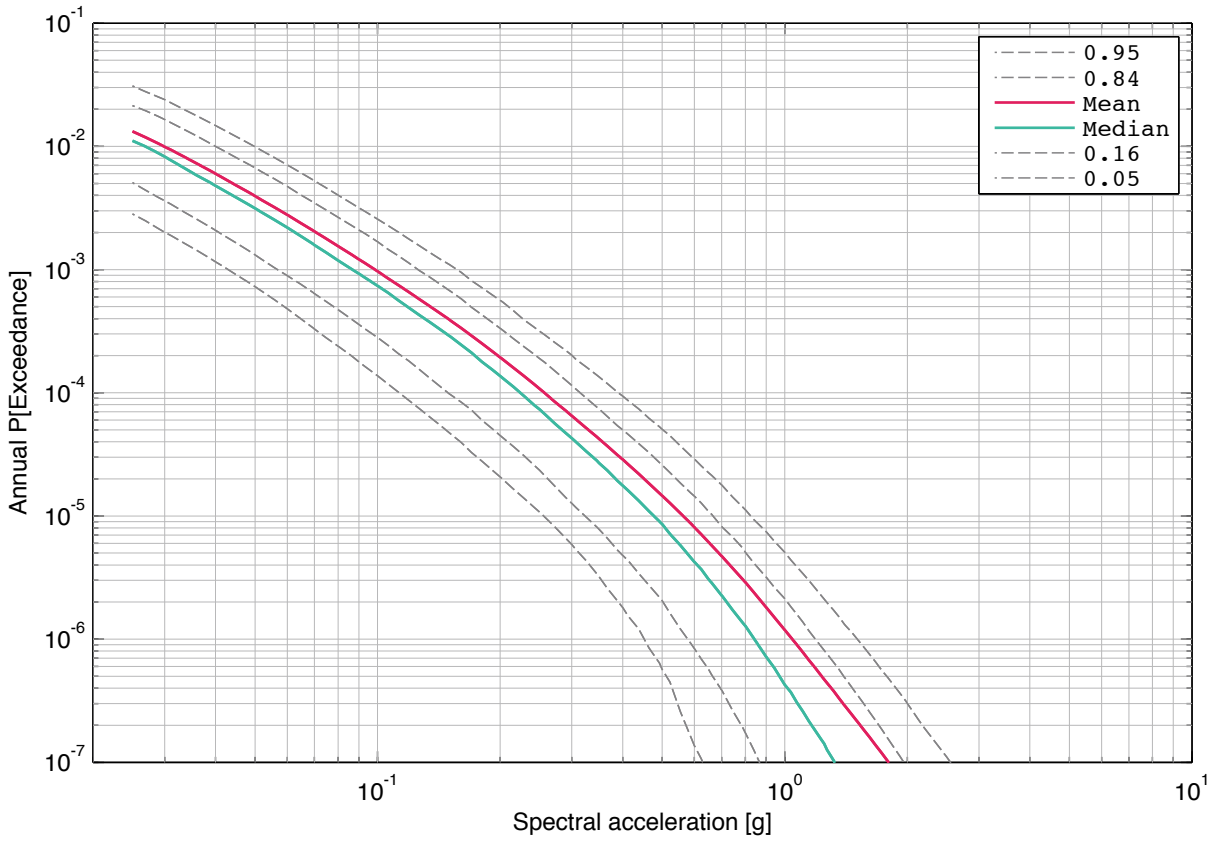

Fig. 2-12.3: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 2.5 Hz.

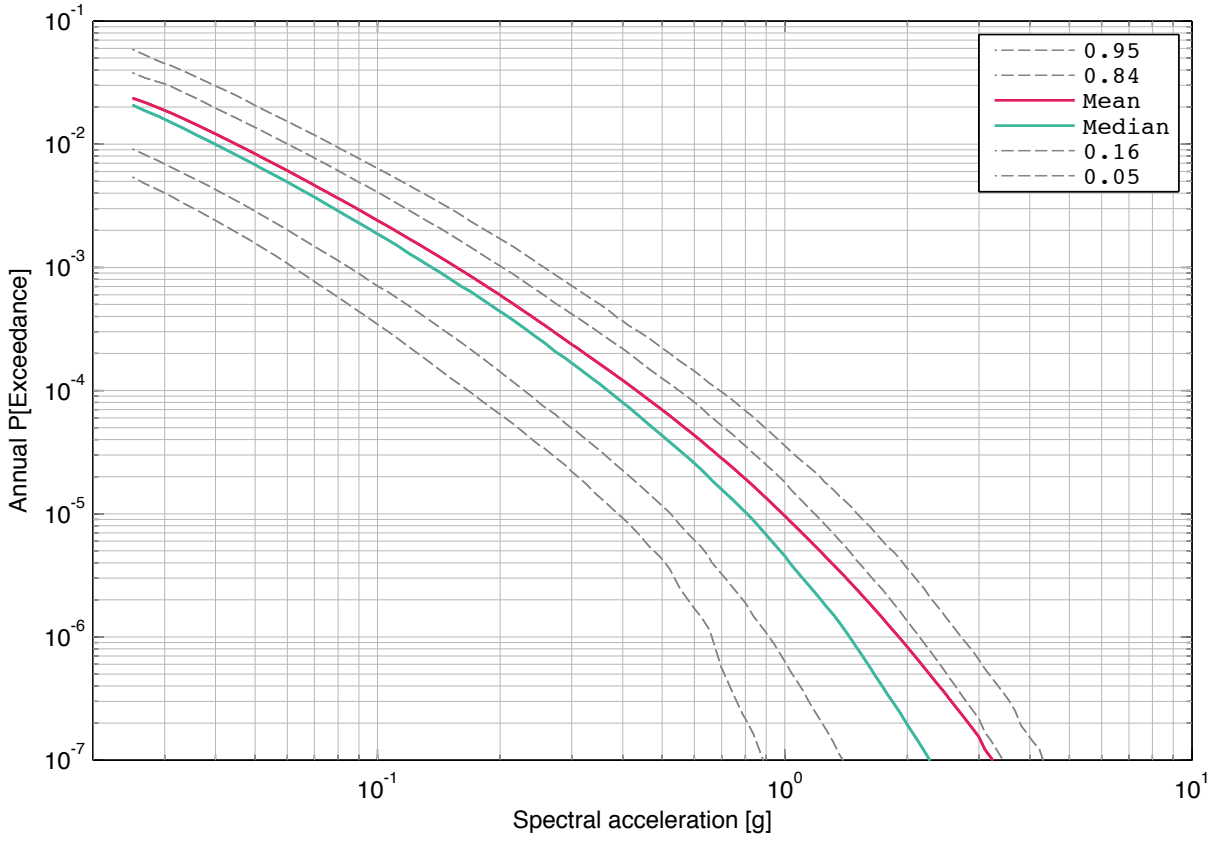

Fig. 2-12.4: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 5 Hz.

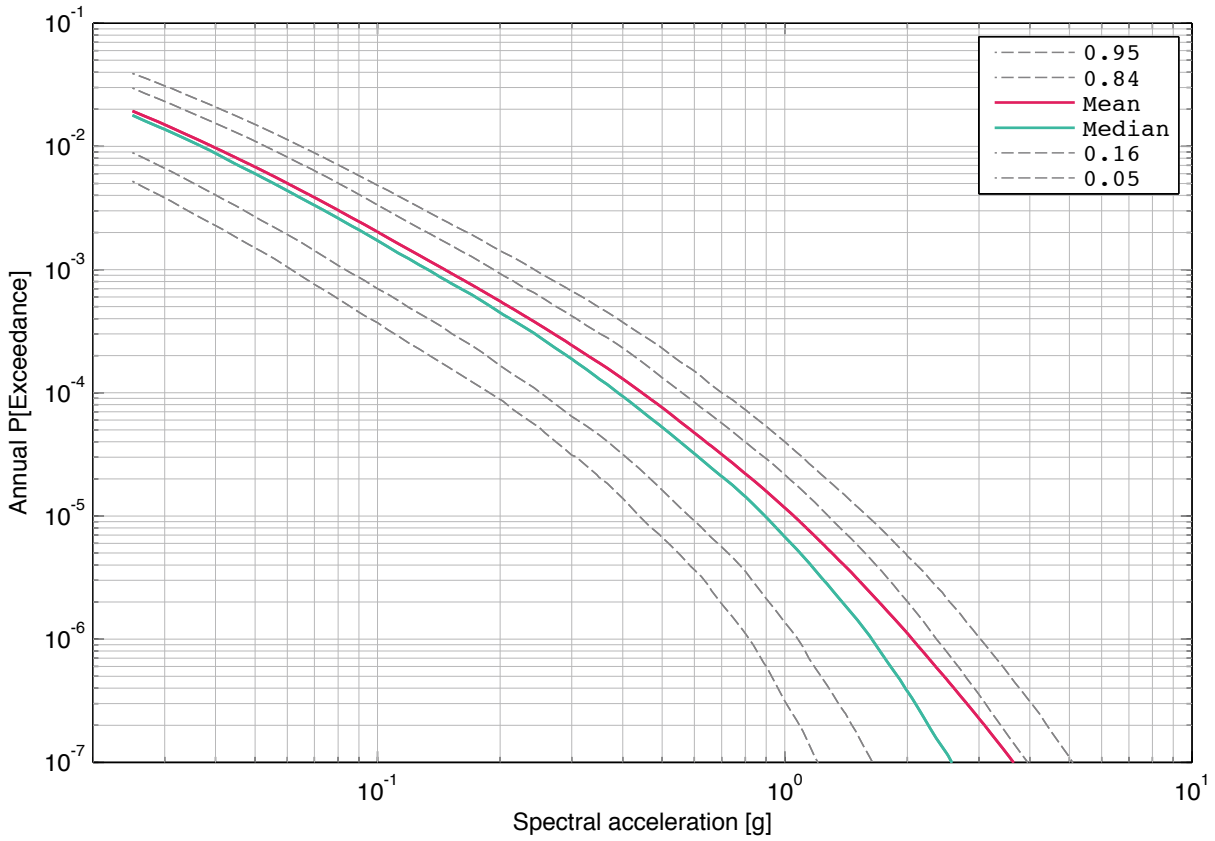

Fig. 2-12.5: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 10 Hz.

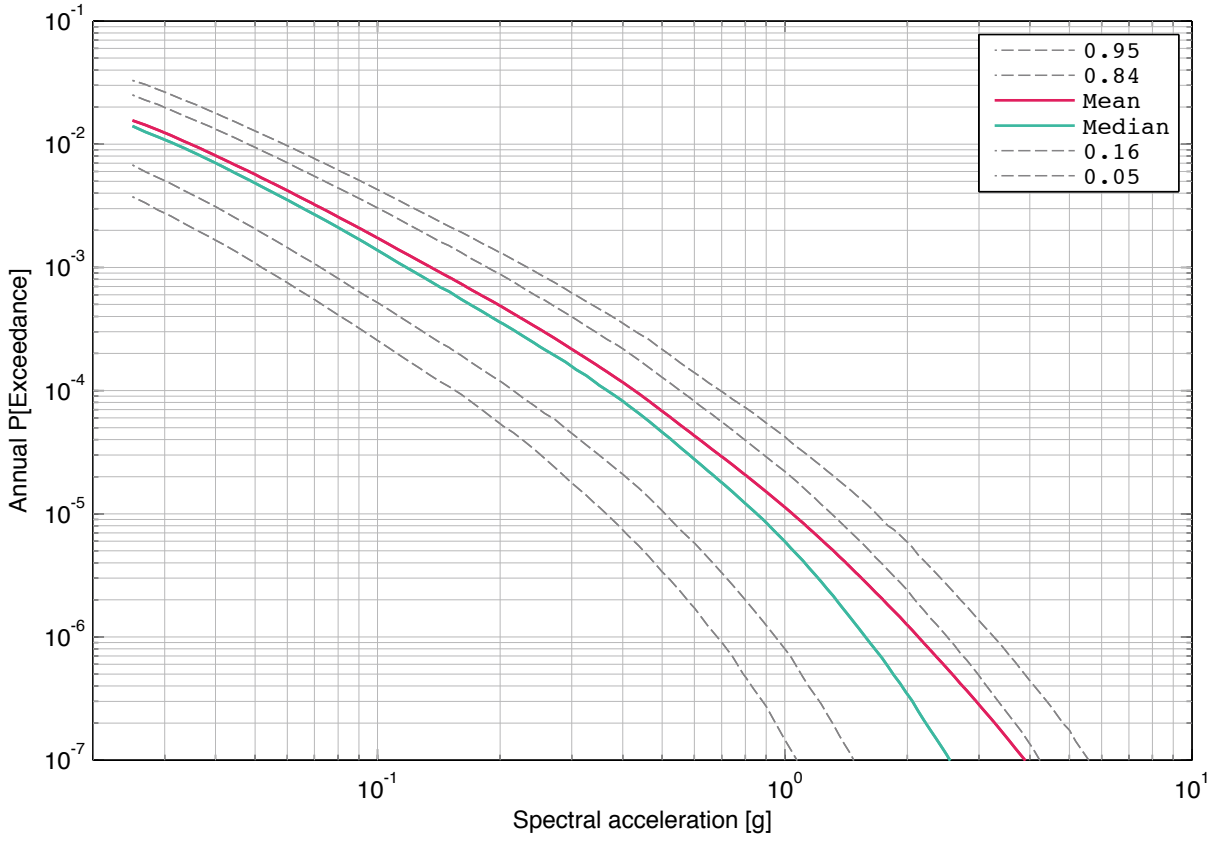

Fig. 2-12.6: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 20 Hz.

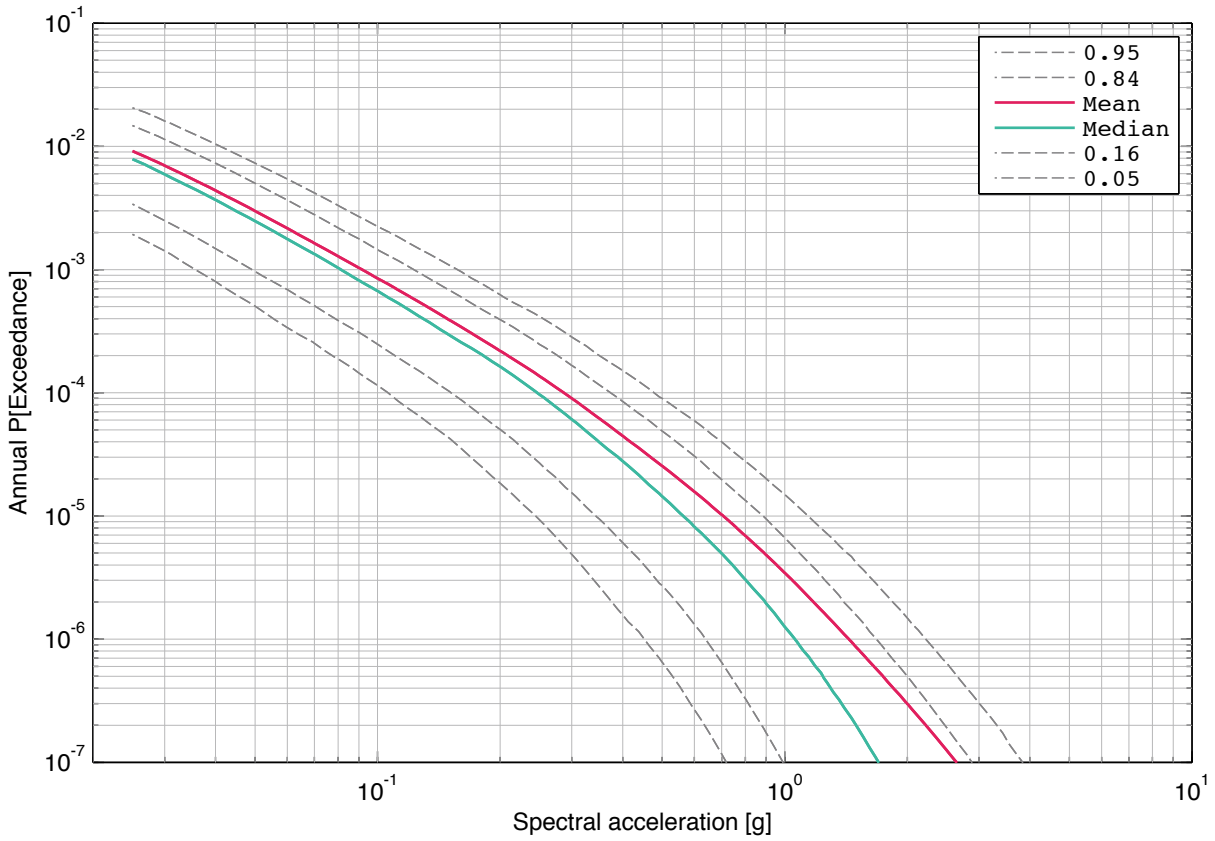

Fig. 2-12.7: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 33 Hz.

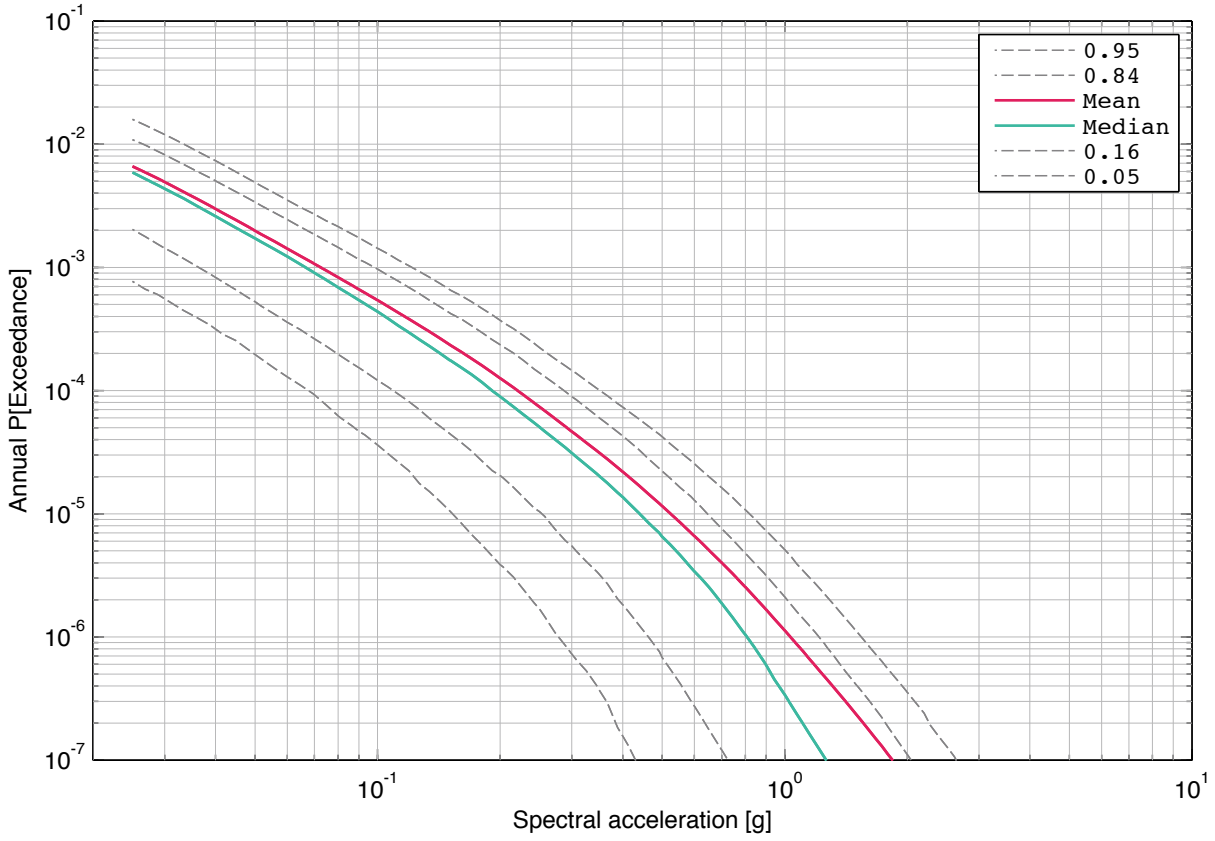

Fig. 2-12.8: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 50 Hz.

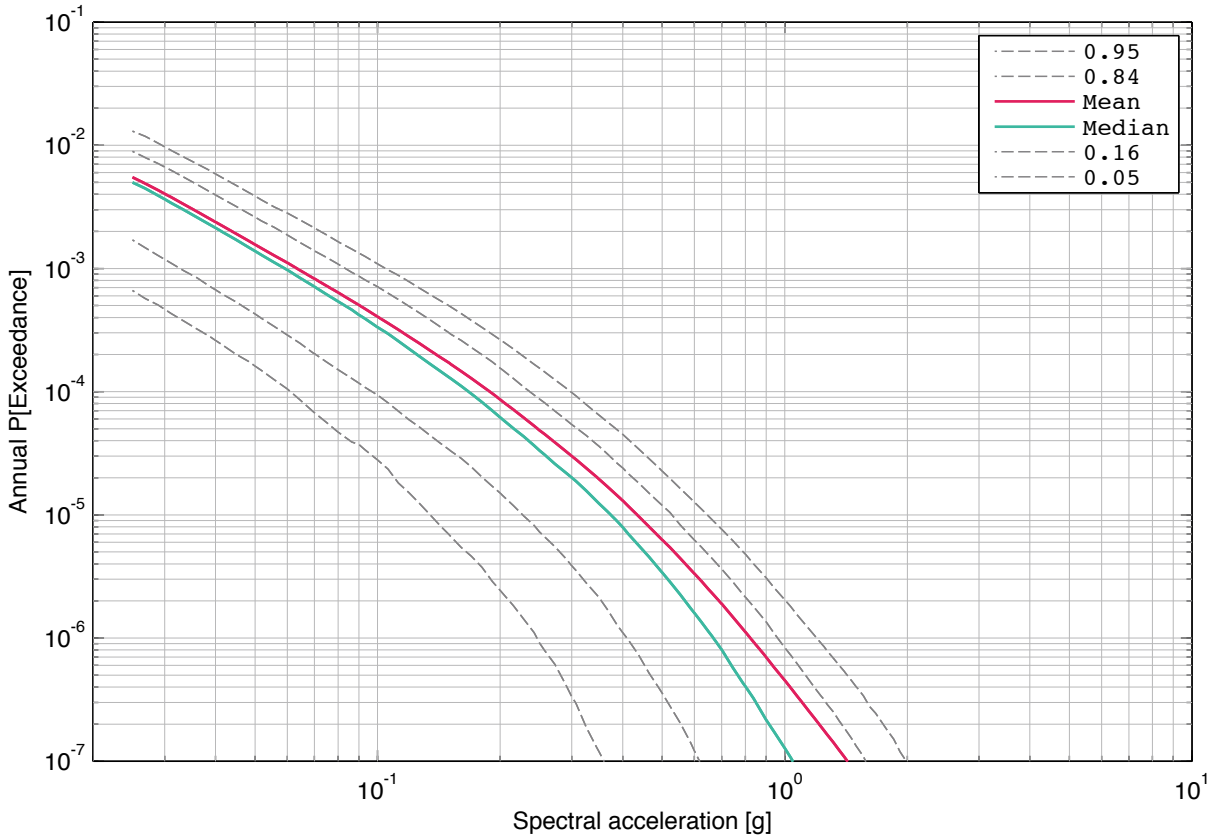

Fig. 2-12.9: Beznau, vertical component, soil, -15 m, mean hazard and fractiles, 100 Hz.

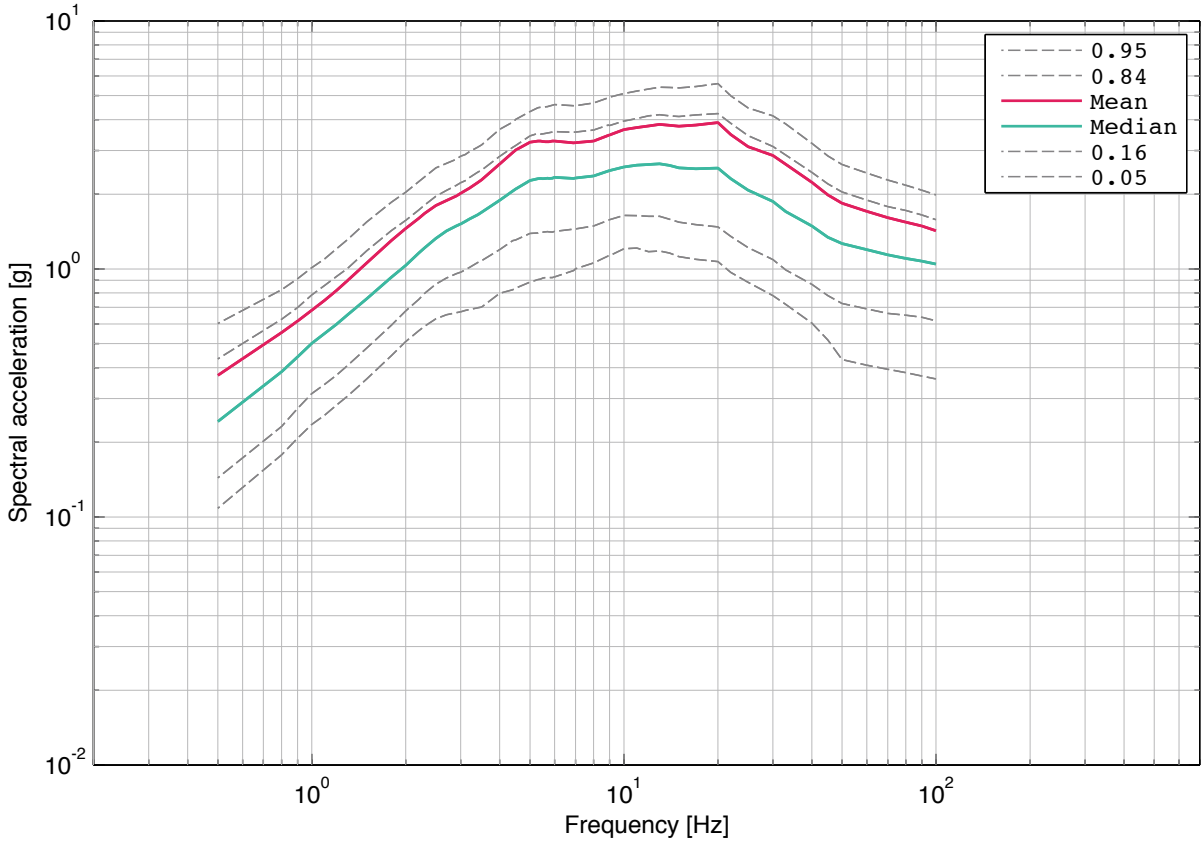

Fig. 2-12.10: Beznau, vertical component, soil, -15 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

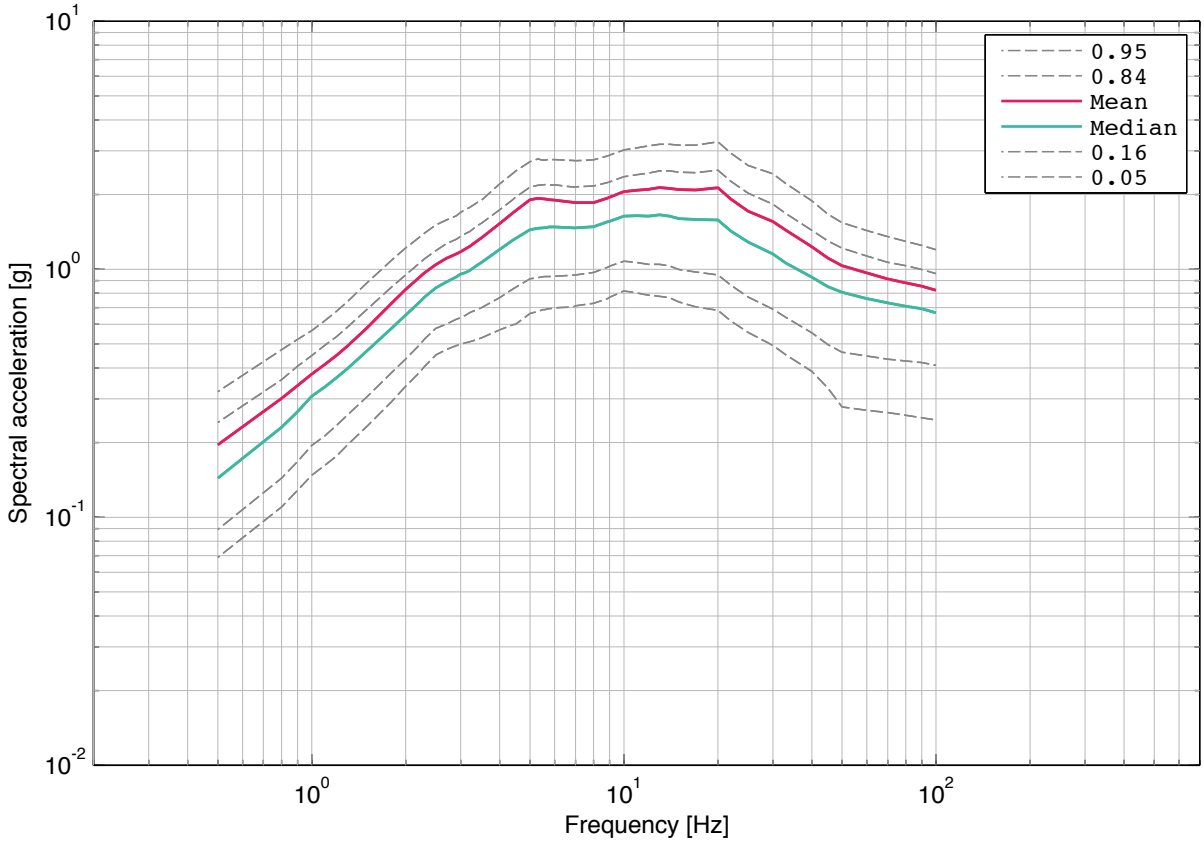

Fig. 2-12.11: Beznau, vertical component, soil, -15 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

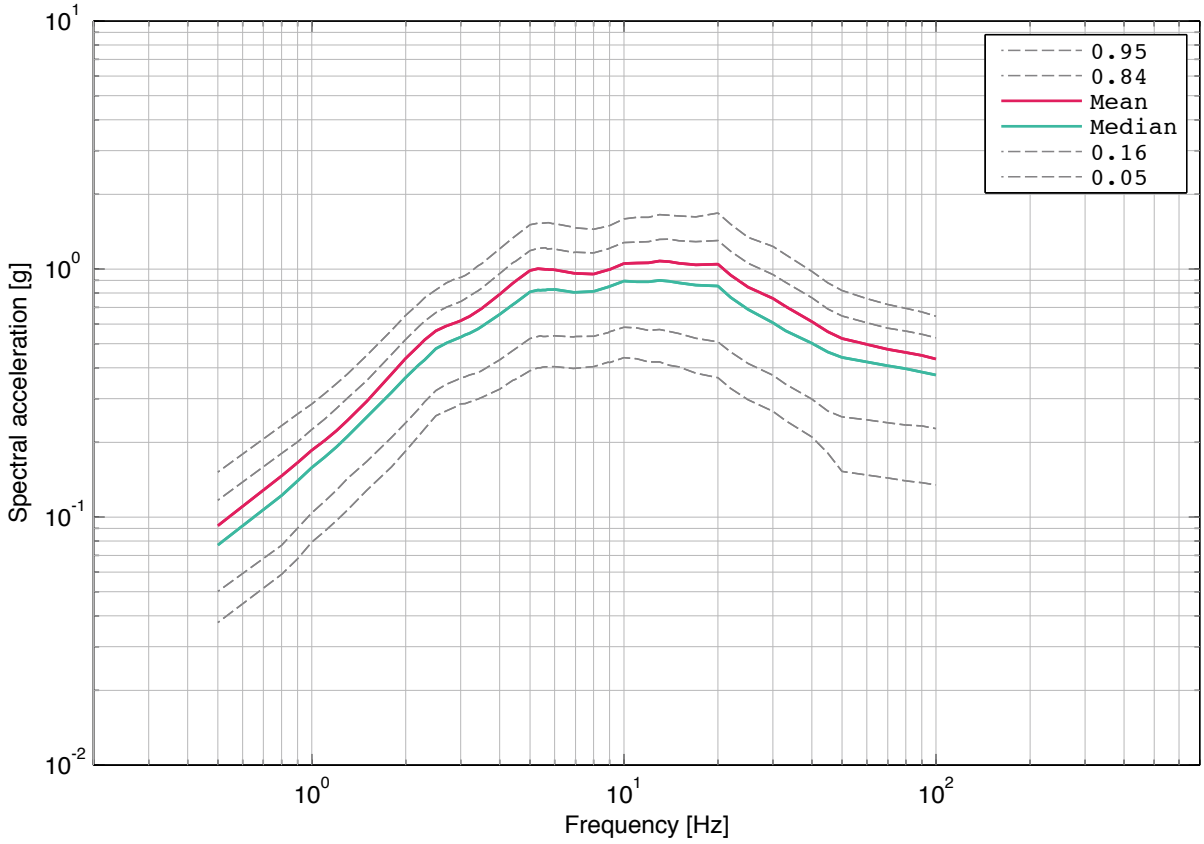

Fig. 2-12.12: Beznau, vertical component, soil, -15 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

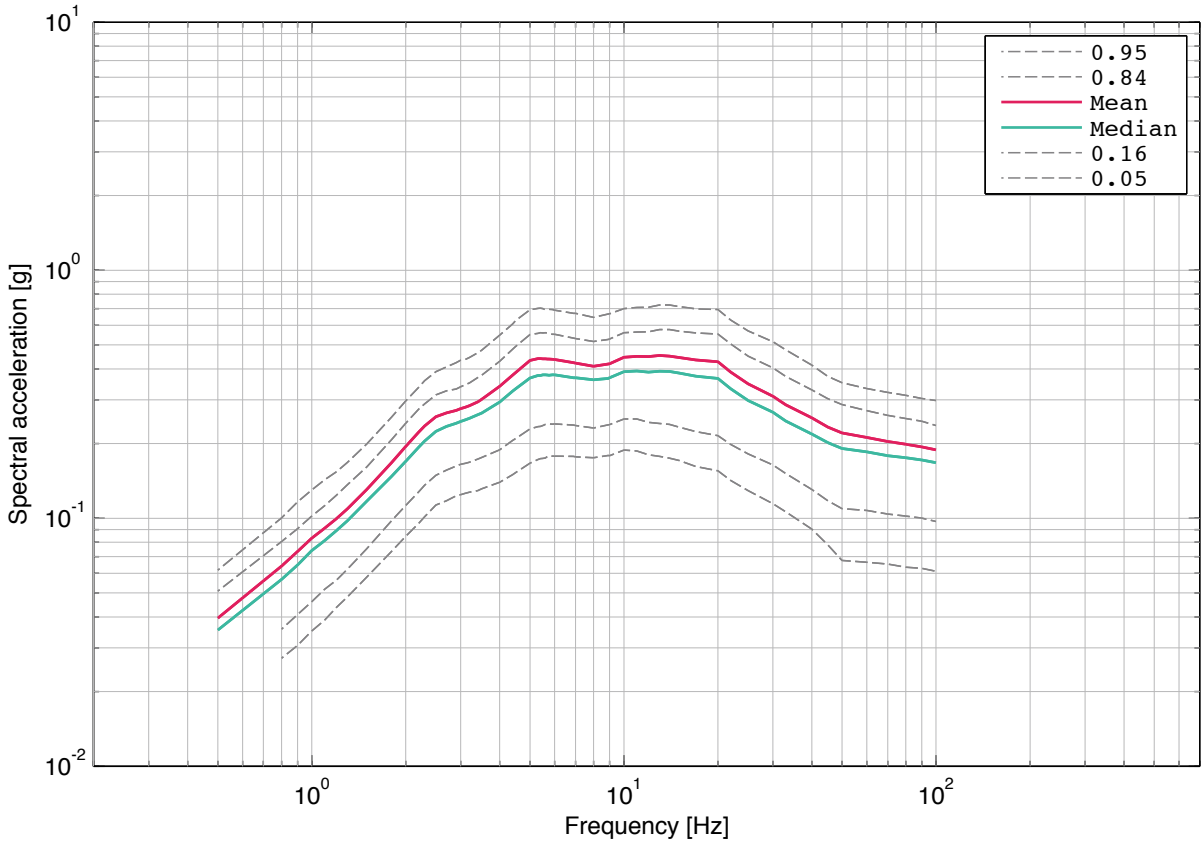

Fig. 2-12.13: Beznau, vertical component, soil, -15 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

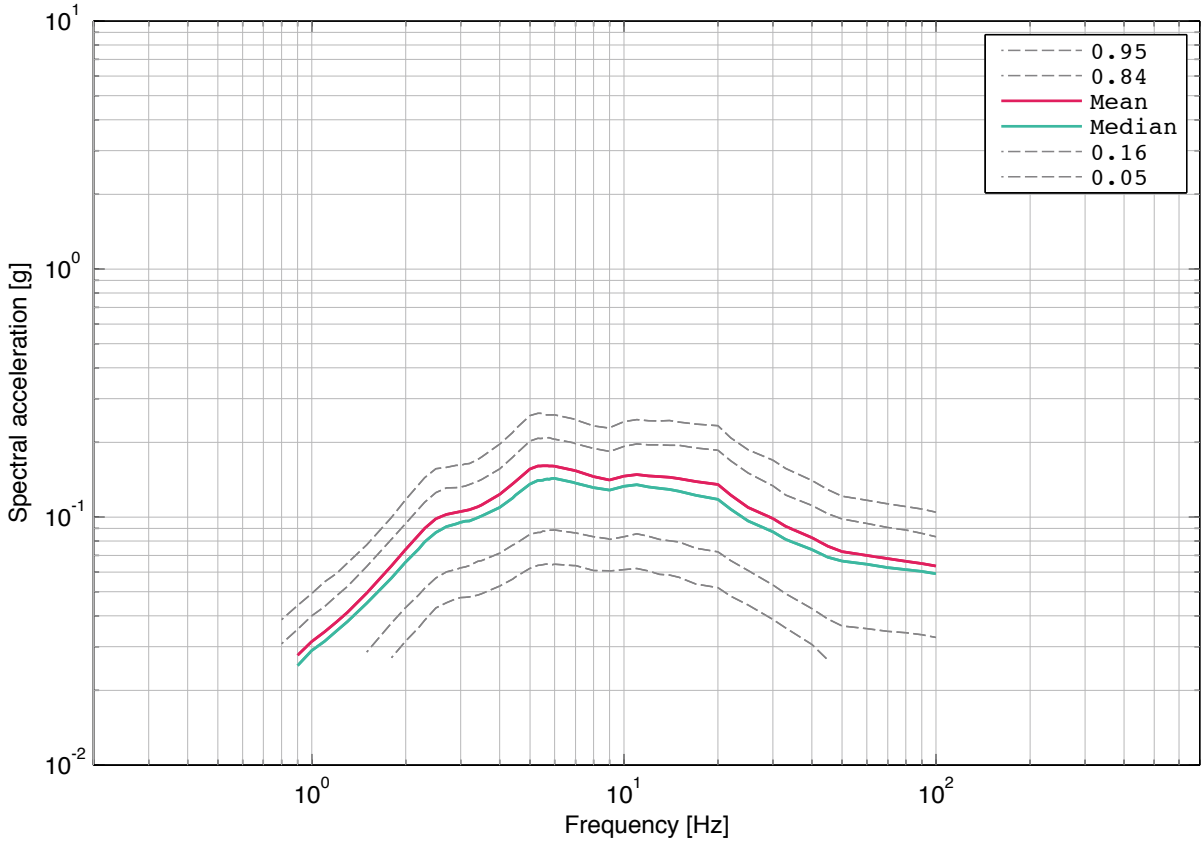

Fig. 2-12.14: Beznau, vertical component, soil, -15 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

3 GÖSGEN

3.1 Gösgen, Rock Hazard, Horizontal Component, Surface

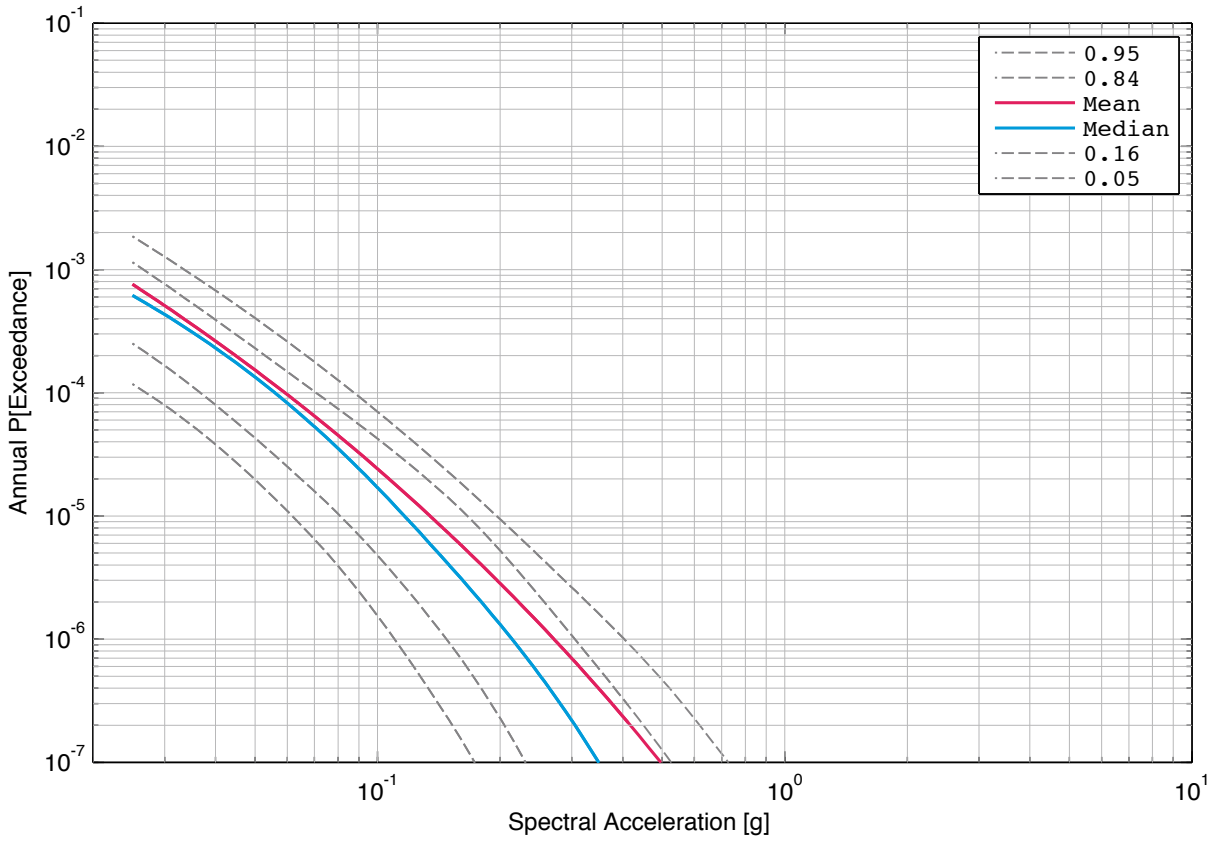

Fig. 3-1.1: Gösgen, horizontal component, rock, mean hazard and fractiles, 0.5 Hz.

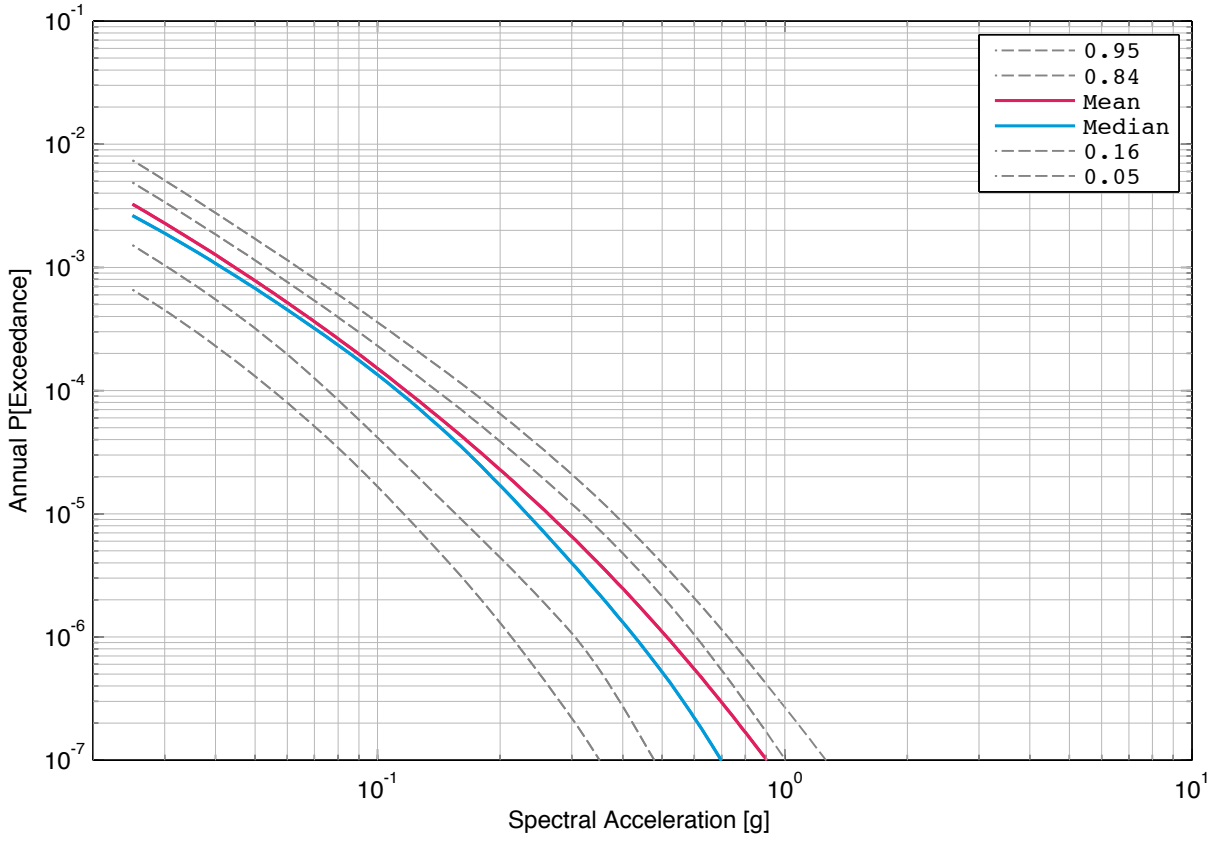

Fig. 3-1.2: Gösgen, horizontal component, rock, mean hazard and fractiles, 1 Hz.

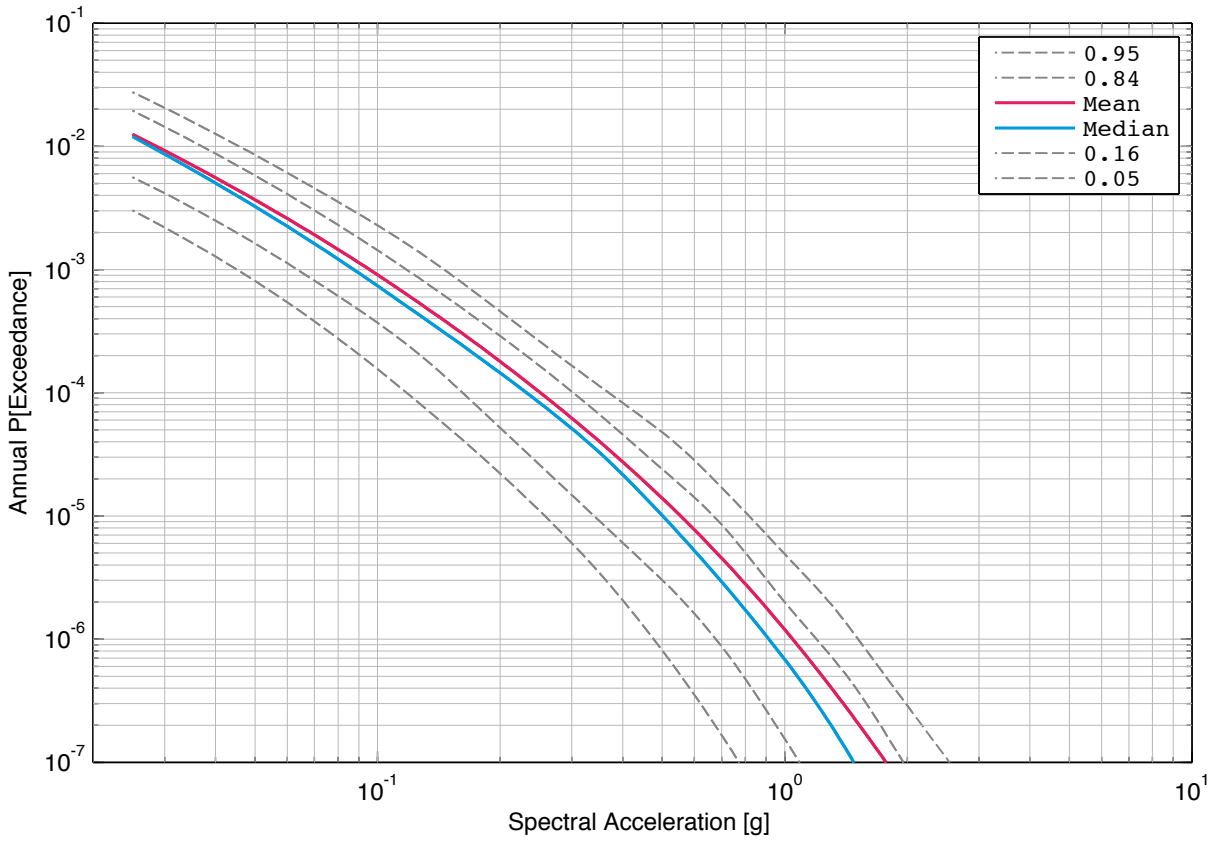

Fig. 3-1.3: Gösgen, horizontal component, rock, mean hazard and fractiles, 2.5 Hz.

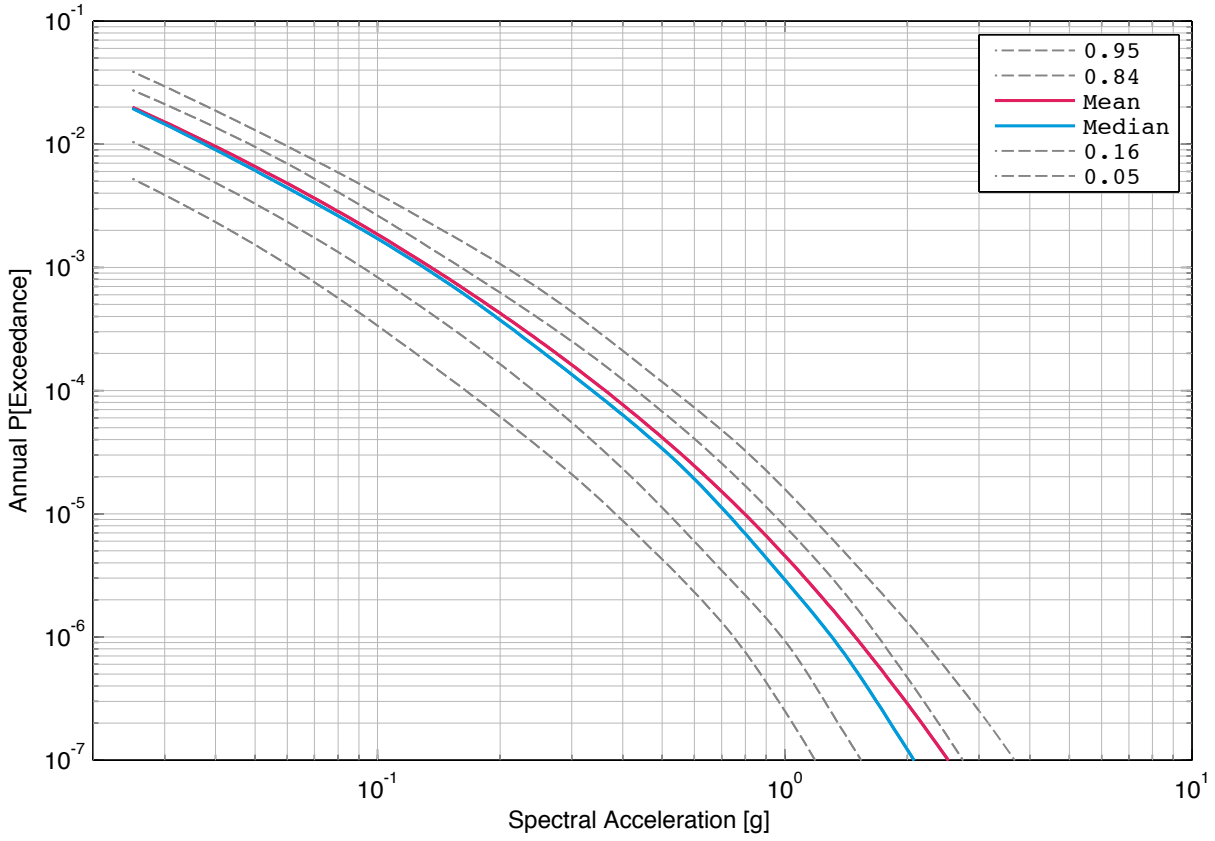

Fig. 3-1.4: Gösgen, horizontal component, rock, mean hazard and fractiles, 5 Hz.

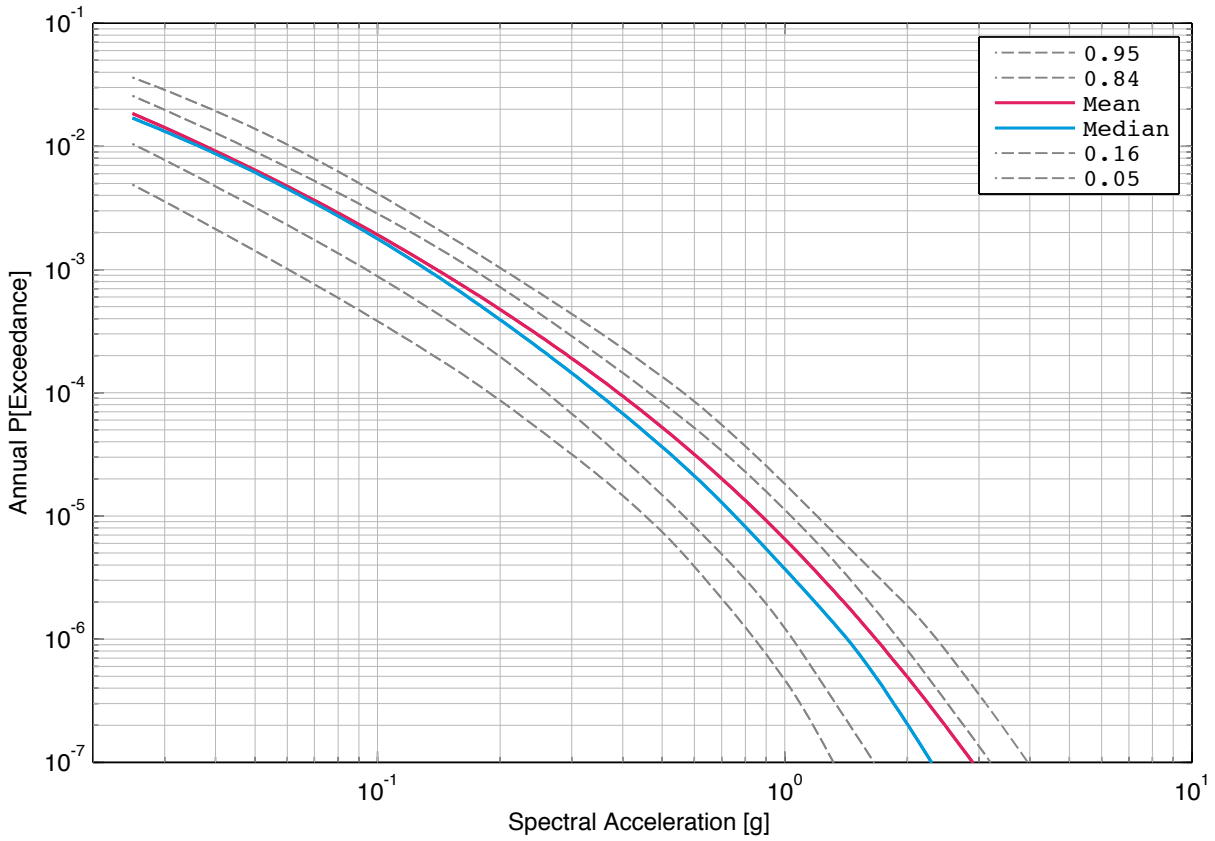

Fig. 3-1.5: Gösgen, horizontal component, rock, mean hazard and fractiles, 10 Hz.

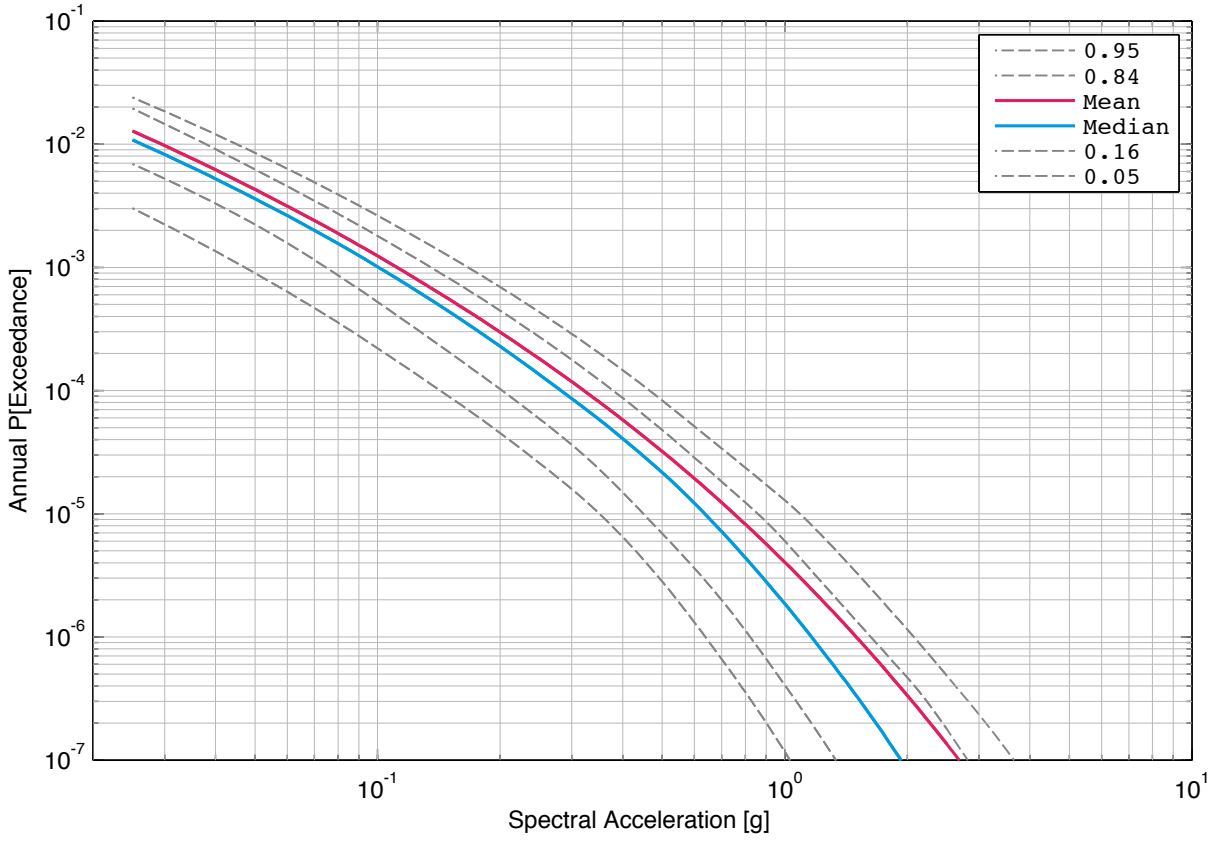

Fig. 3-1.6: Gösgen, horizontal component, rock, mean hazard and fractiles, 20 Hz.

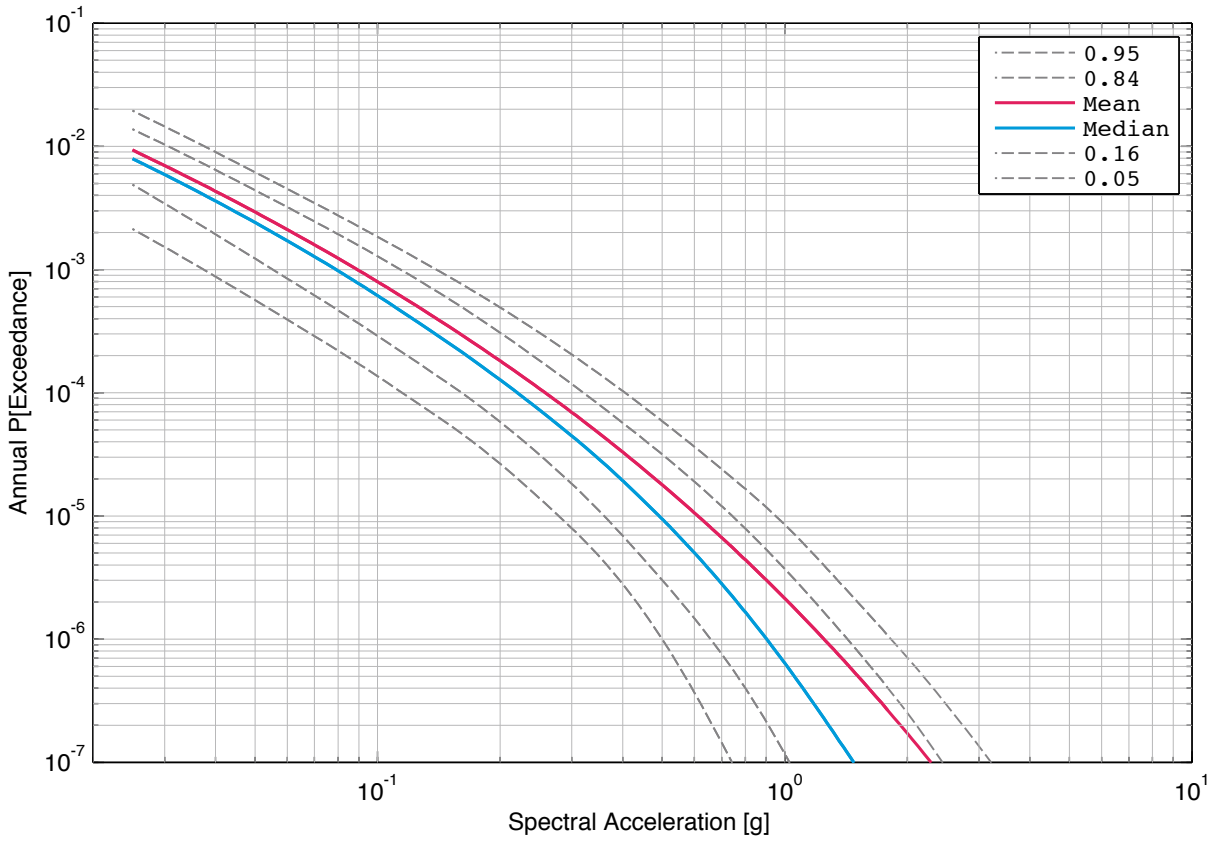

Fig. 3-1.7: Gösgen, horizontal component, rock, mean hazard and fractiles, 33 Hz.

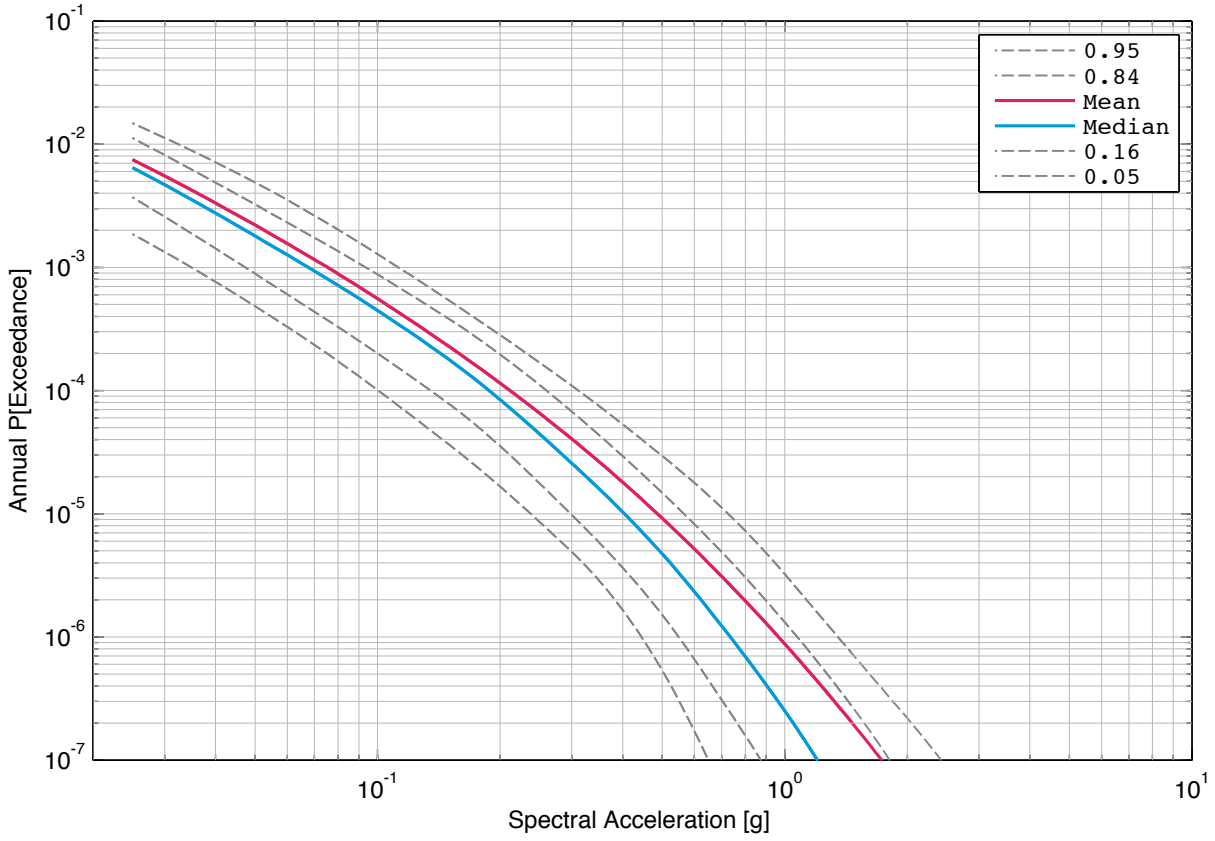

Fig. 3-1.8: Gösgen, horizontal component, rock, mean hazard and fractiles, 50 Hz.

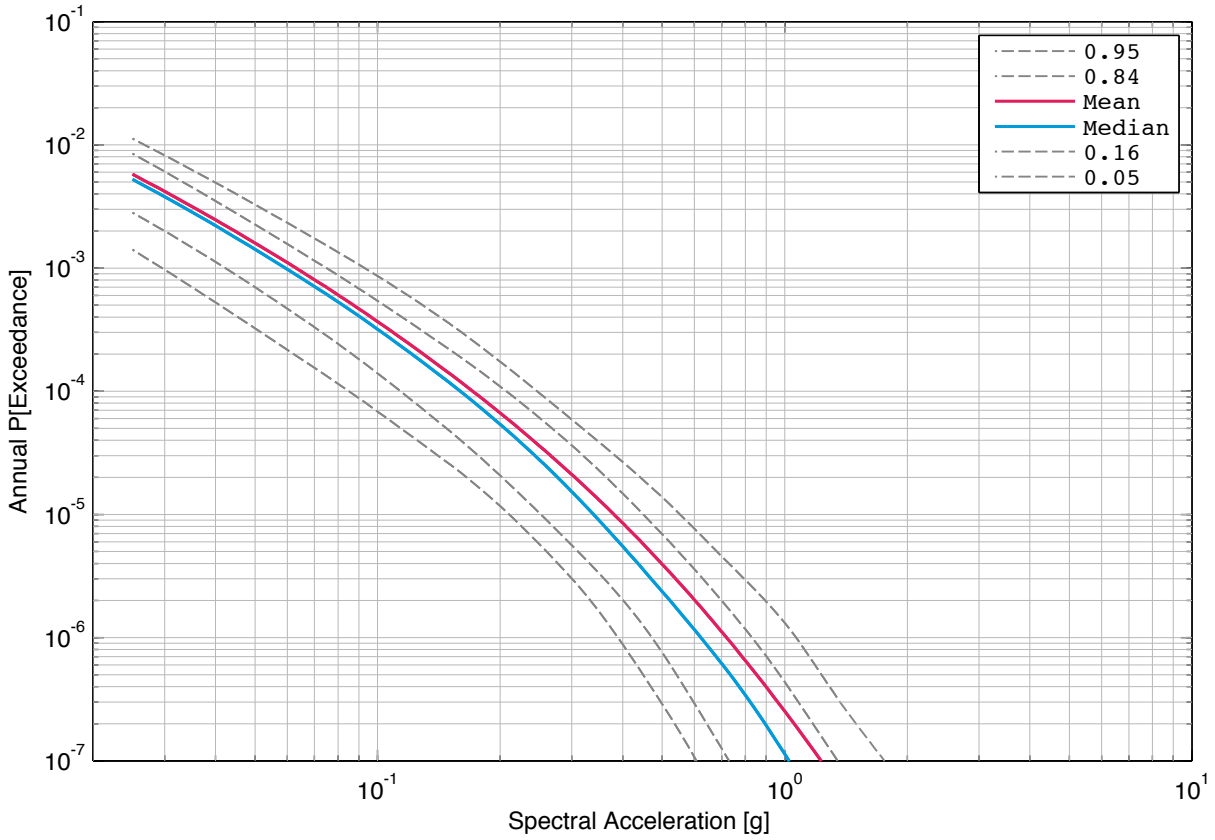

Fig. 3-1.9: Gösgen, horizontal component, rock, mean hazard and fractiles, 100 Hz.

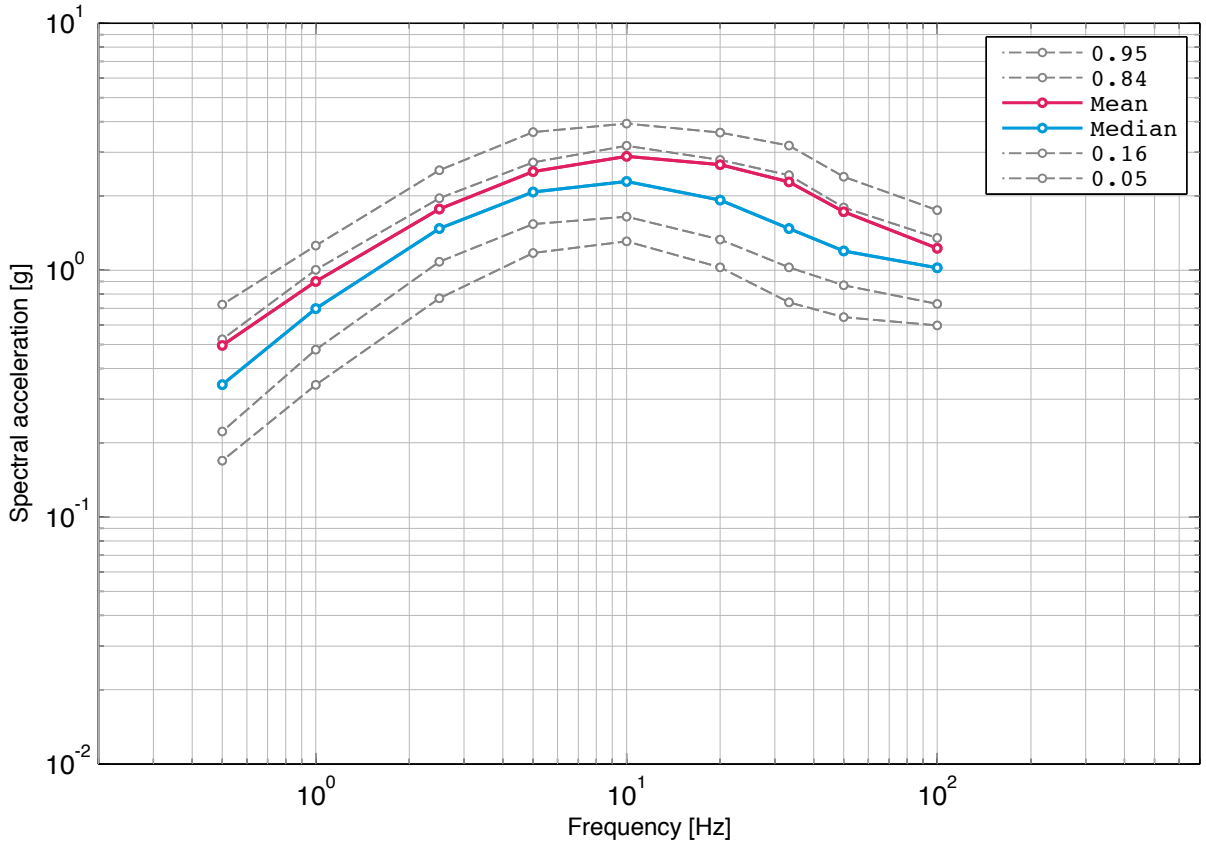

Fig. 3-1.10: Gösgen, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-07 and 5% damping.

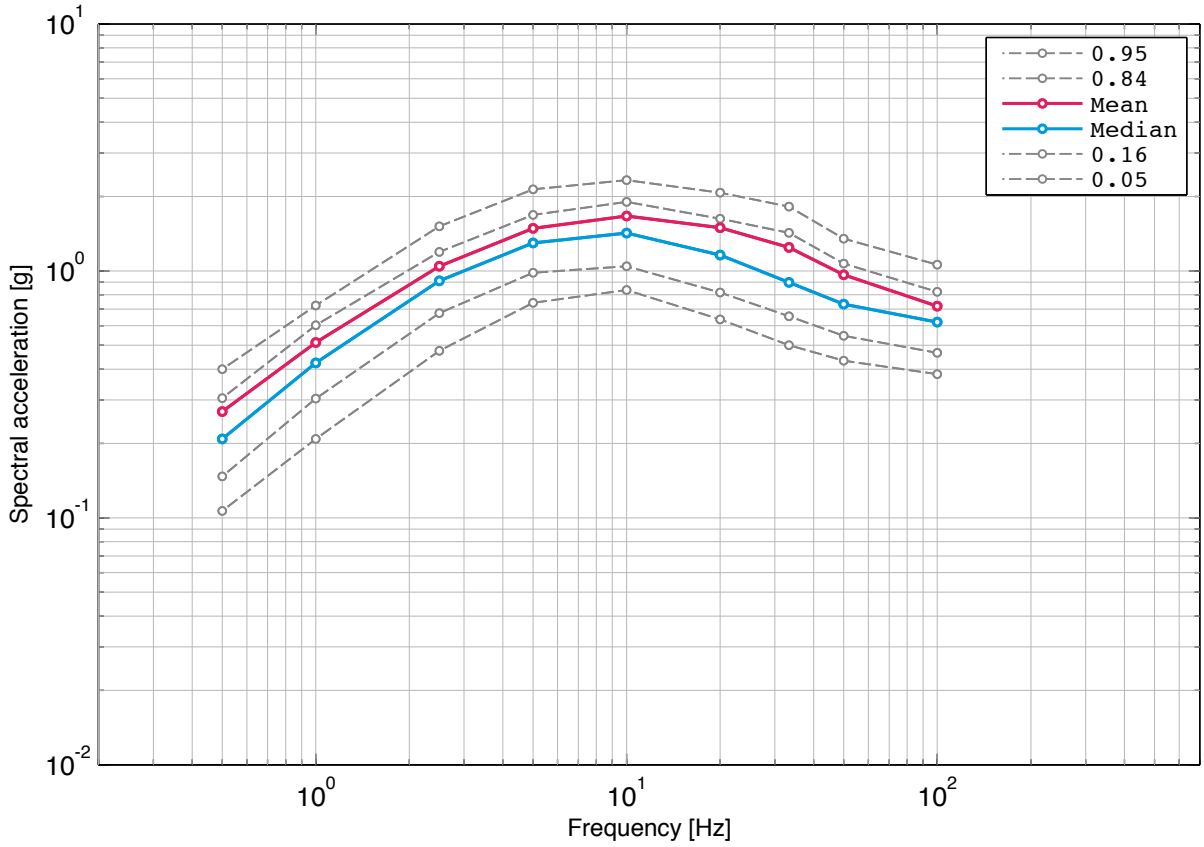

Fig. 3-1.11: Gösgen, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-06 and 5% damping.

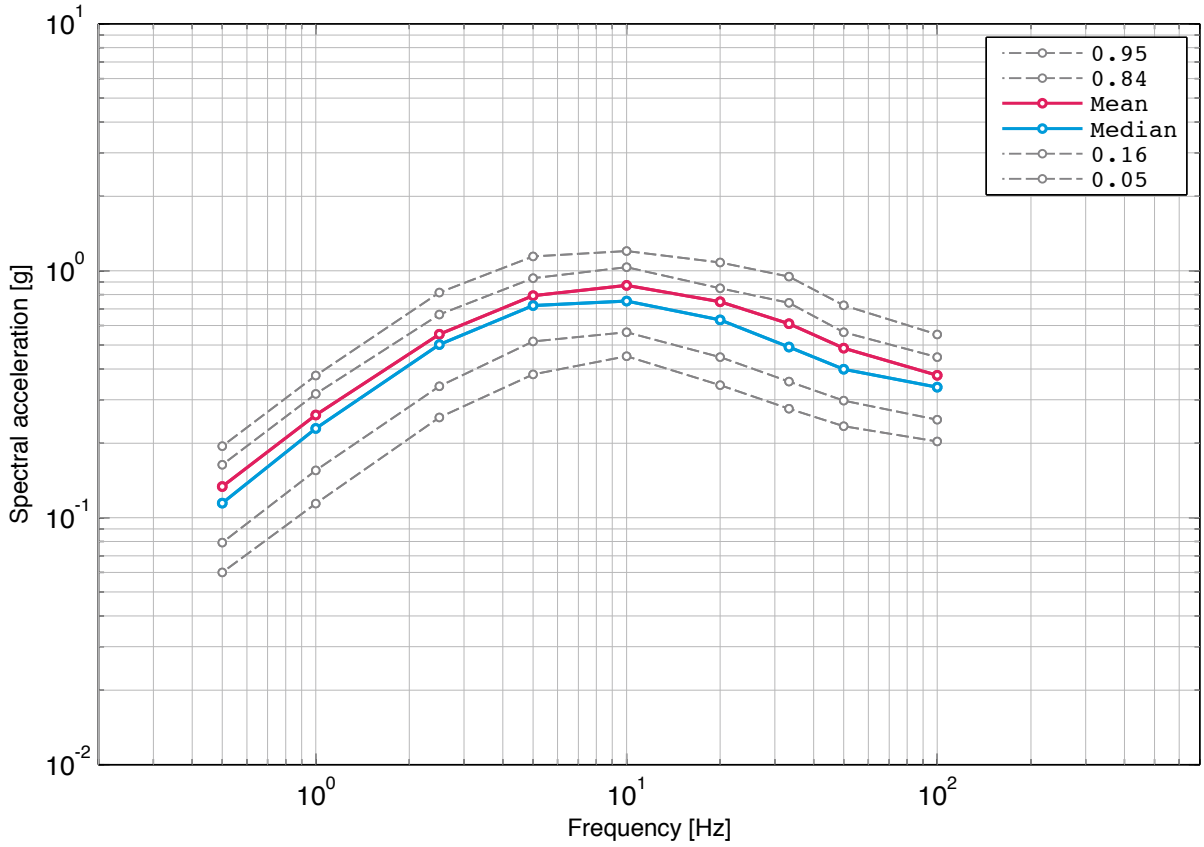

Fig. 3-1.12: Gösgen, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-05 and 5% damping.

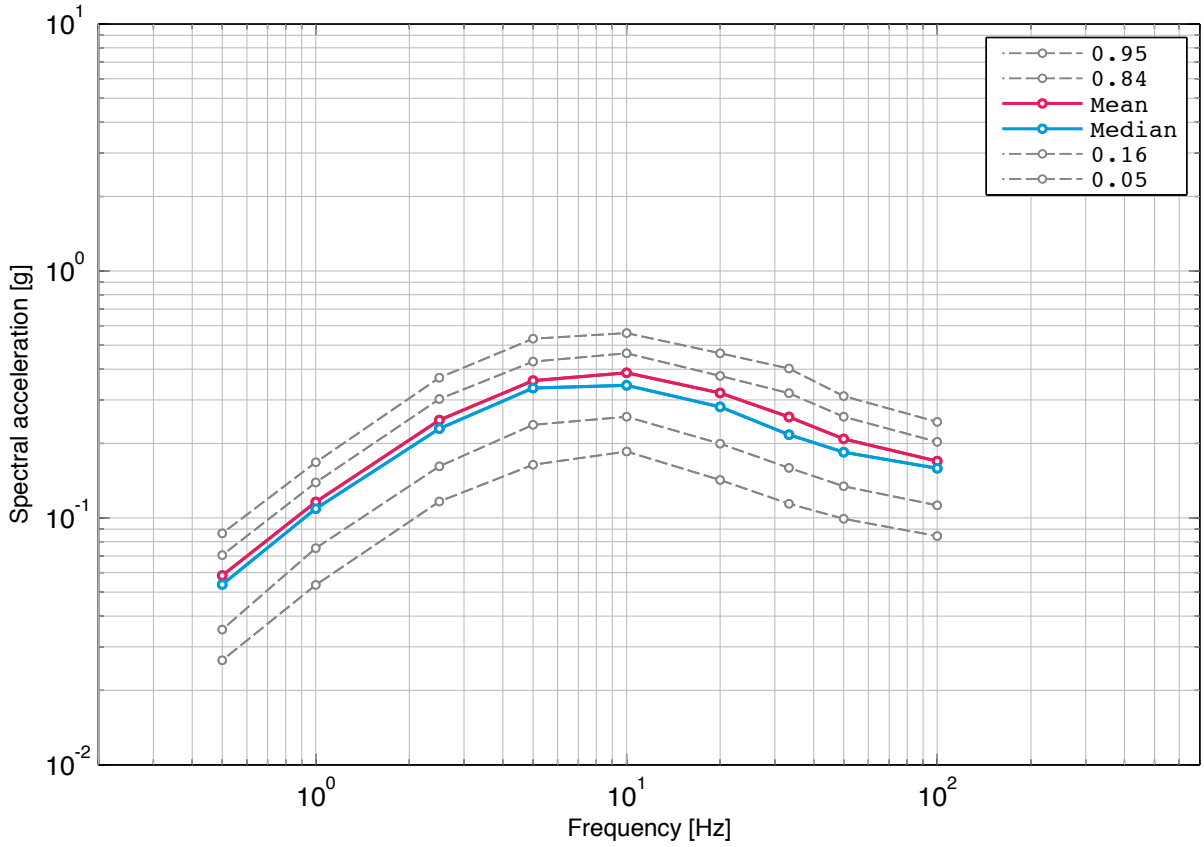

Fig. 3-1.13: Gösgen, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-04 and 5% damping.

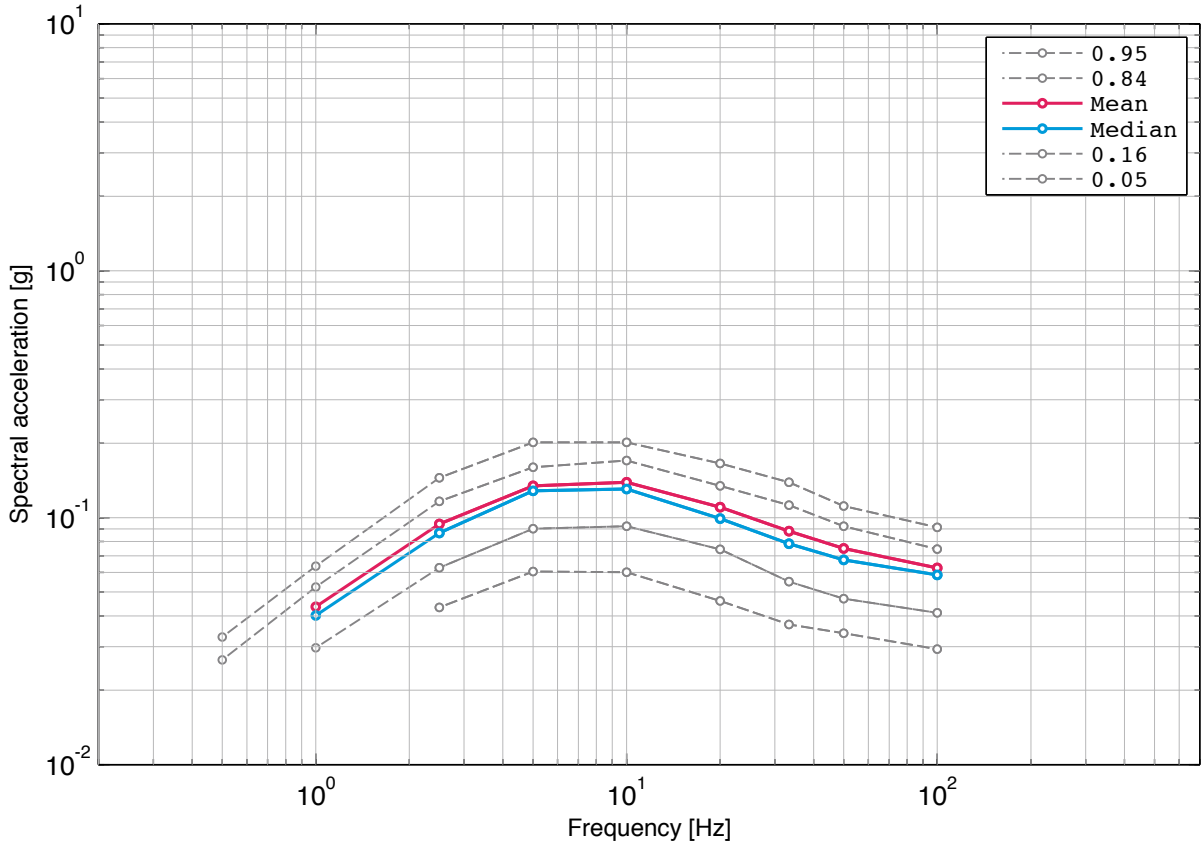

Fig. 3-1.14: Gösgen, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-03 and 5% damping.

3.2 Gösgen, Soil Hazard, Horizontal Component, Surface

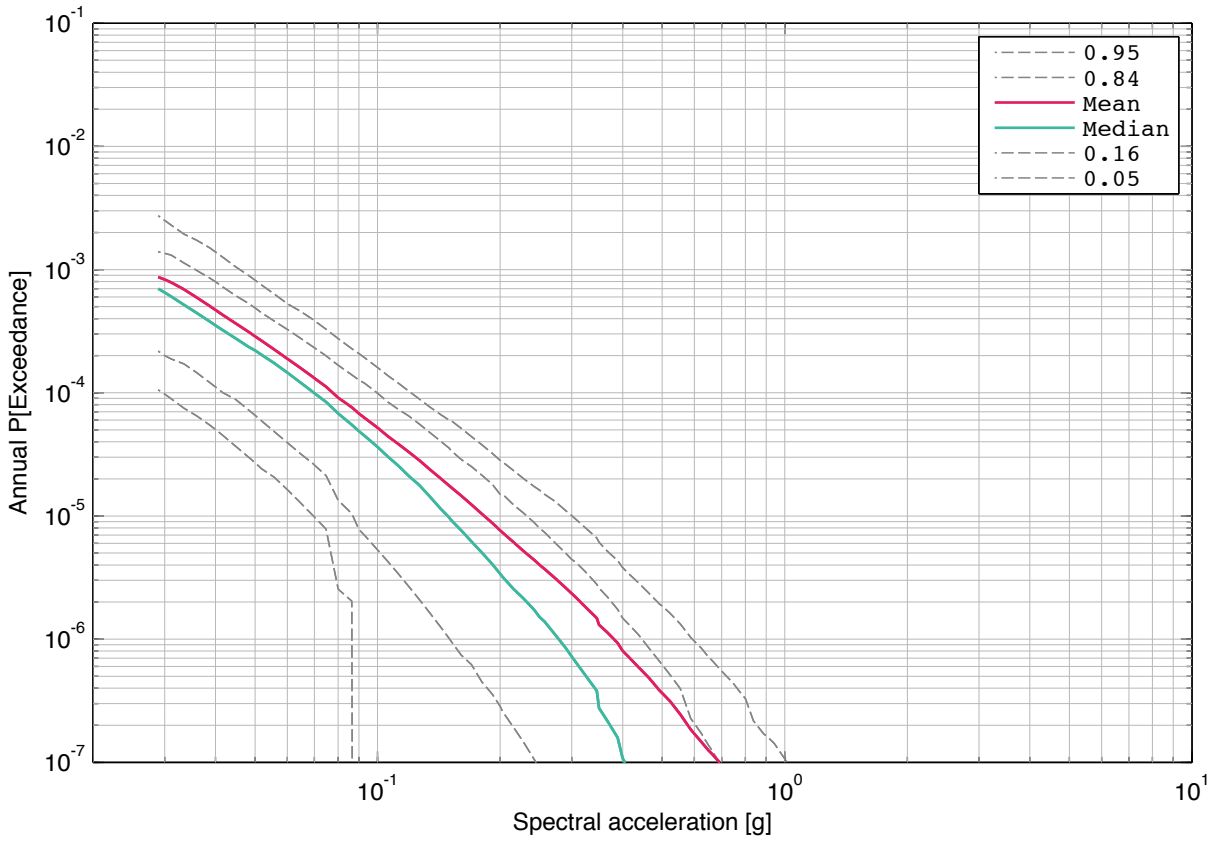

Fig. 3-2.1: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 0.5 Hz.

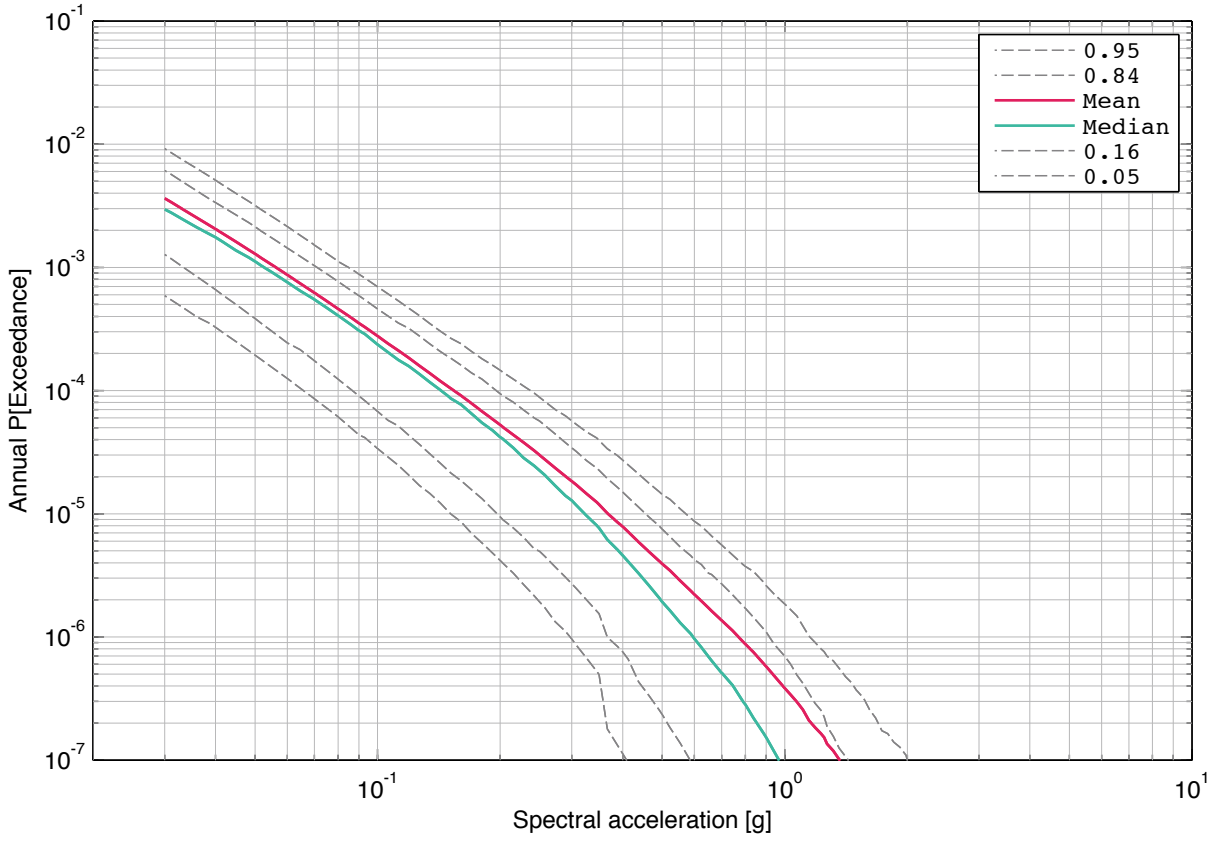

Fig. 3-2.2: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 1 Hz.

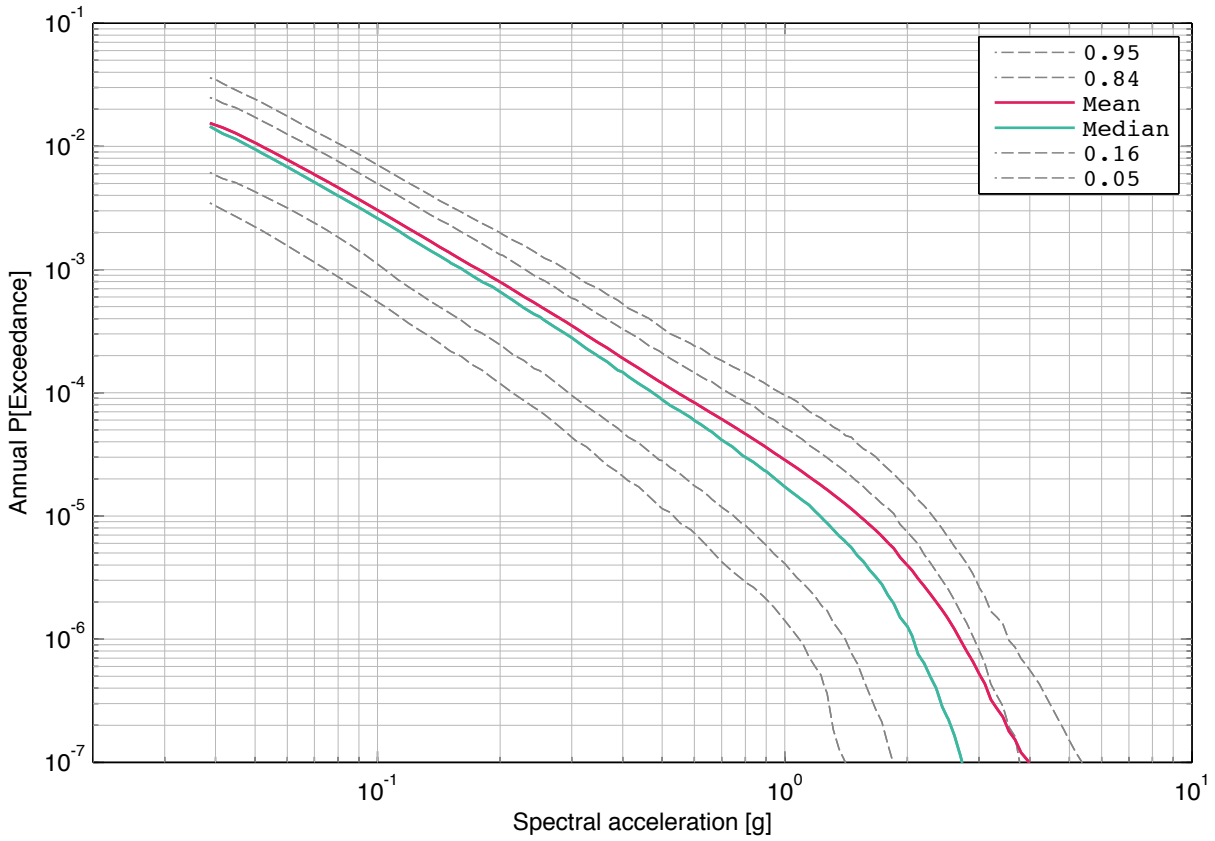

Fig. 3-2.3: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 2.5 Hz.

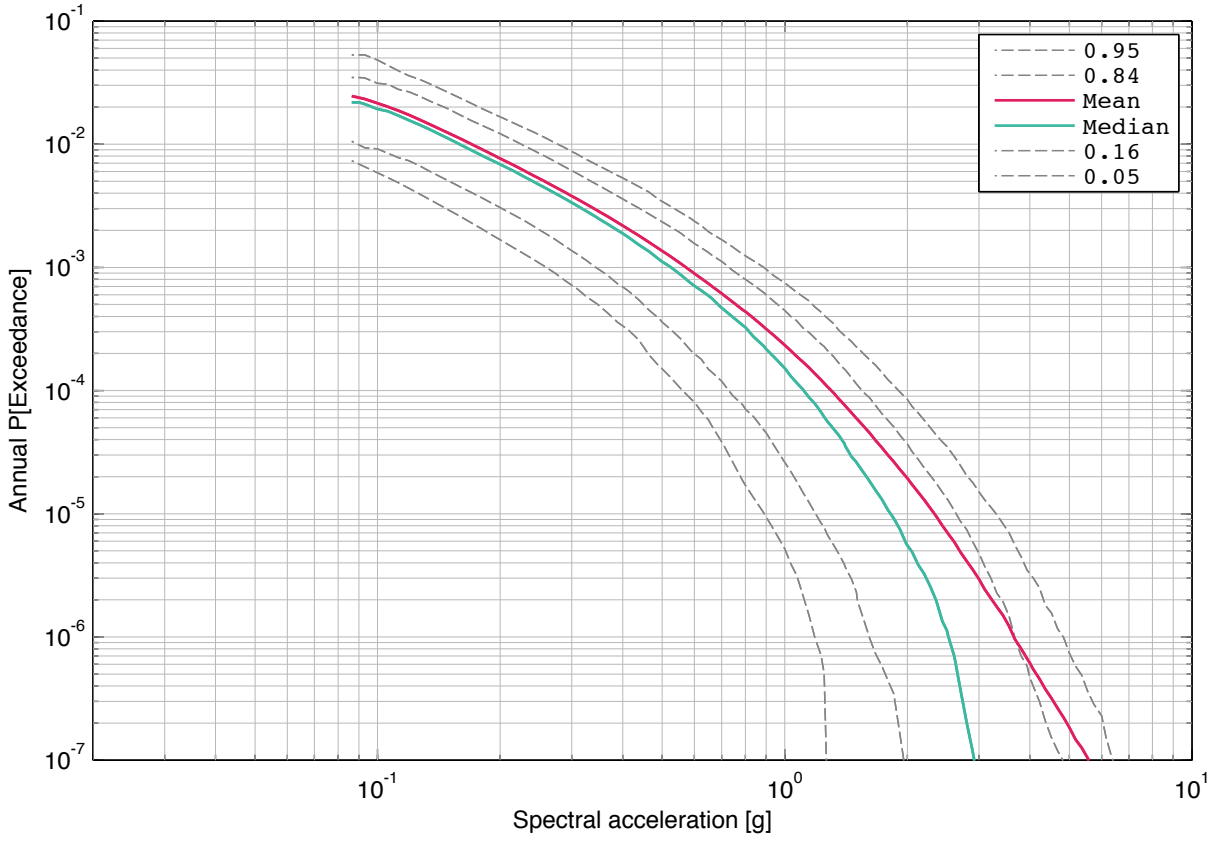

Fig. 3-2.4: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 5 Hz.

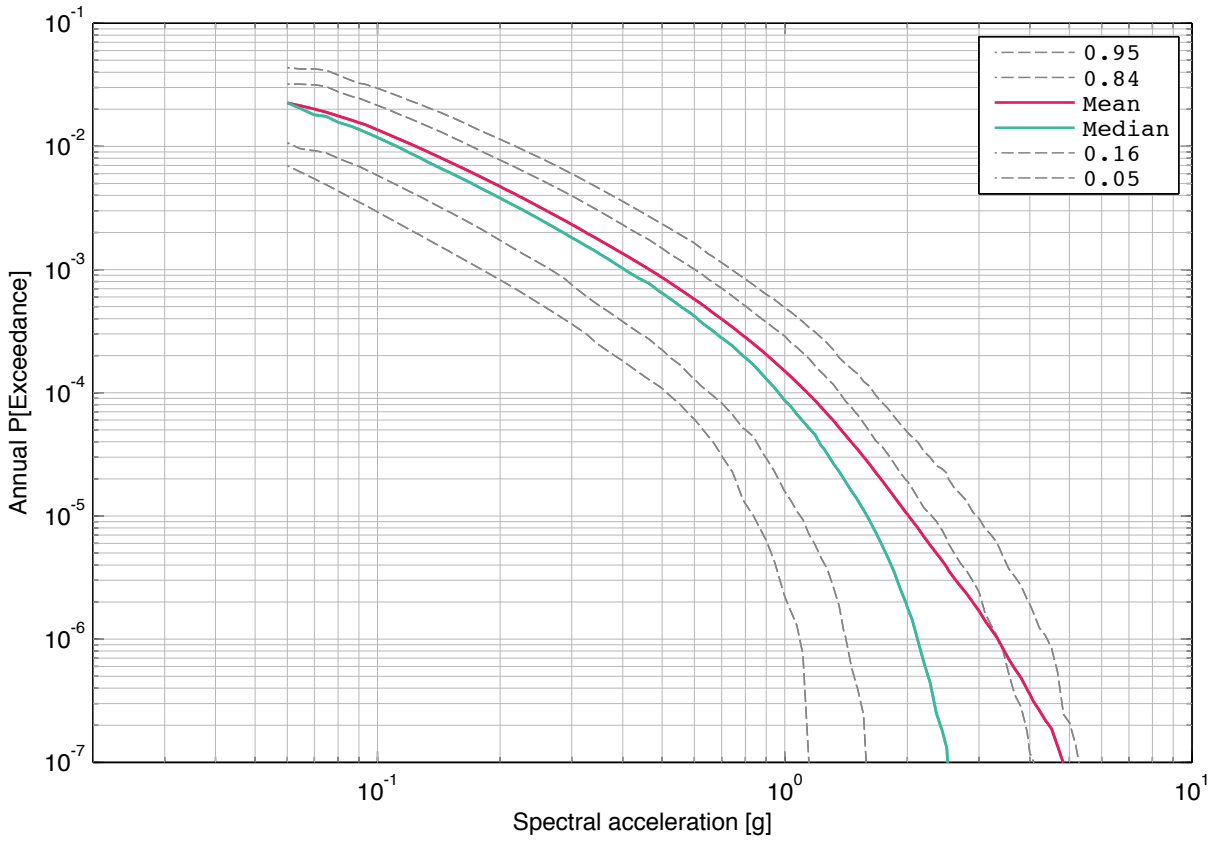

Fig. 3-2.5: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 10 Hz.

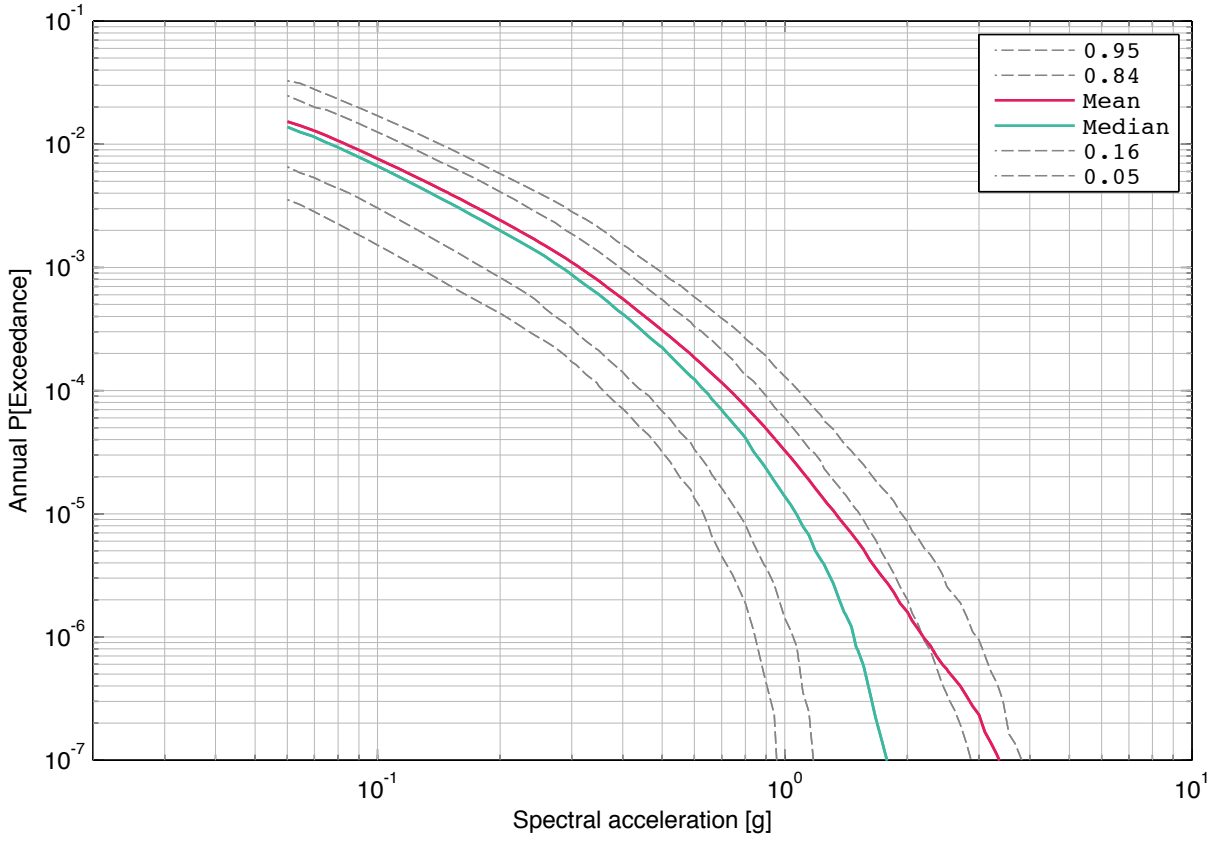

Fig. 3-2.6: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 20 Hz.

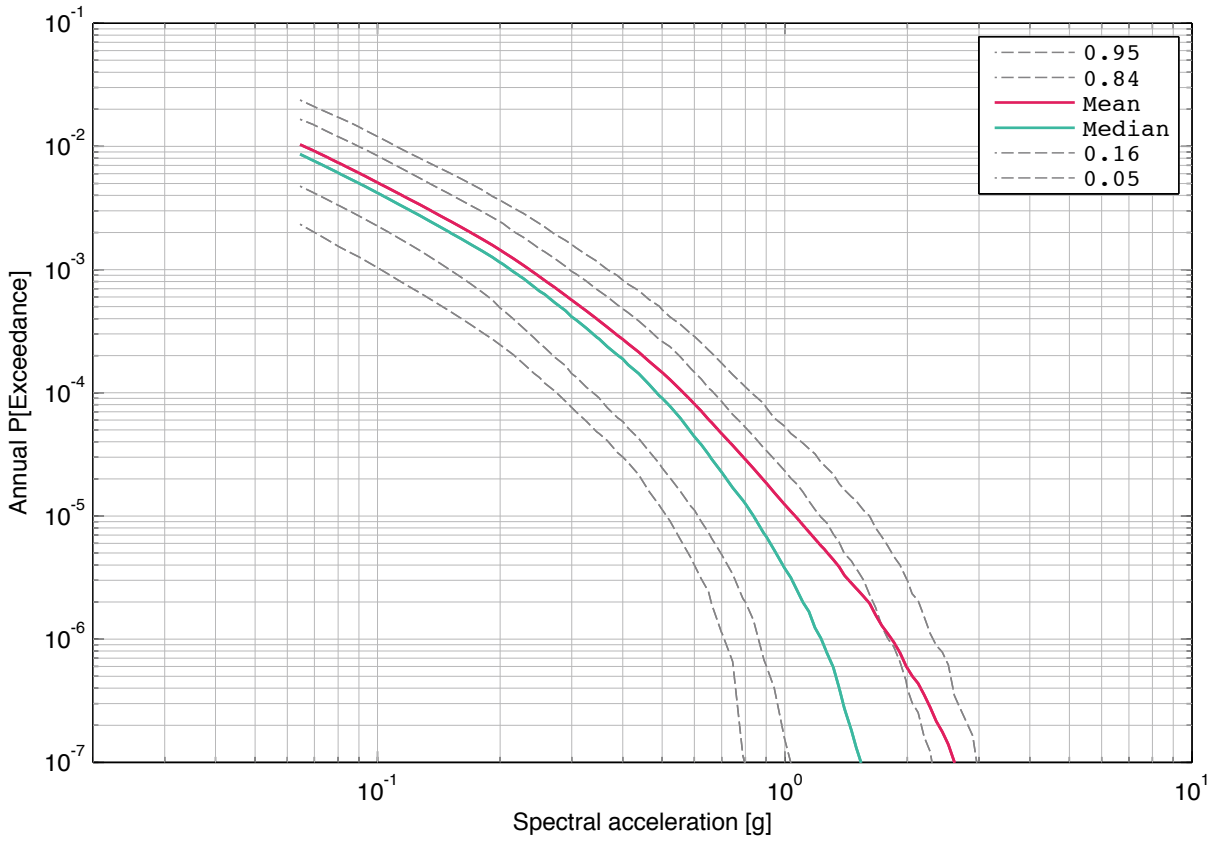

Fig. 3-2.7: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 33 Hz.

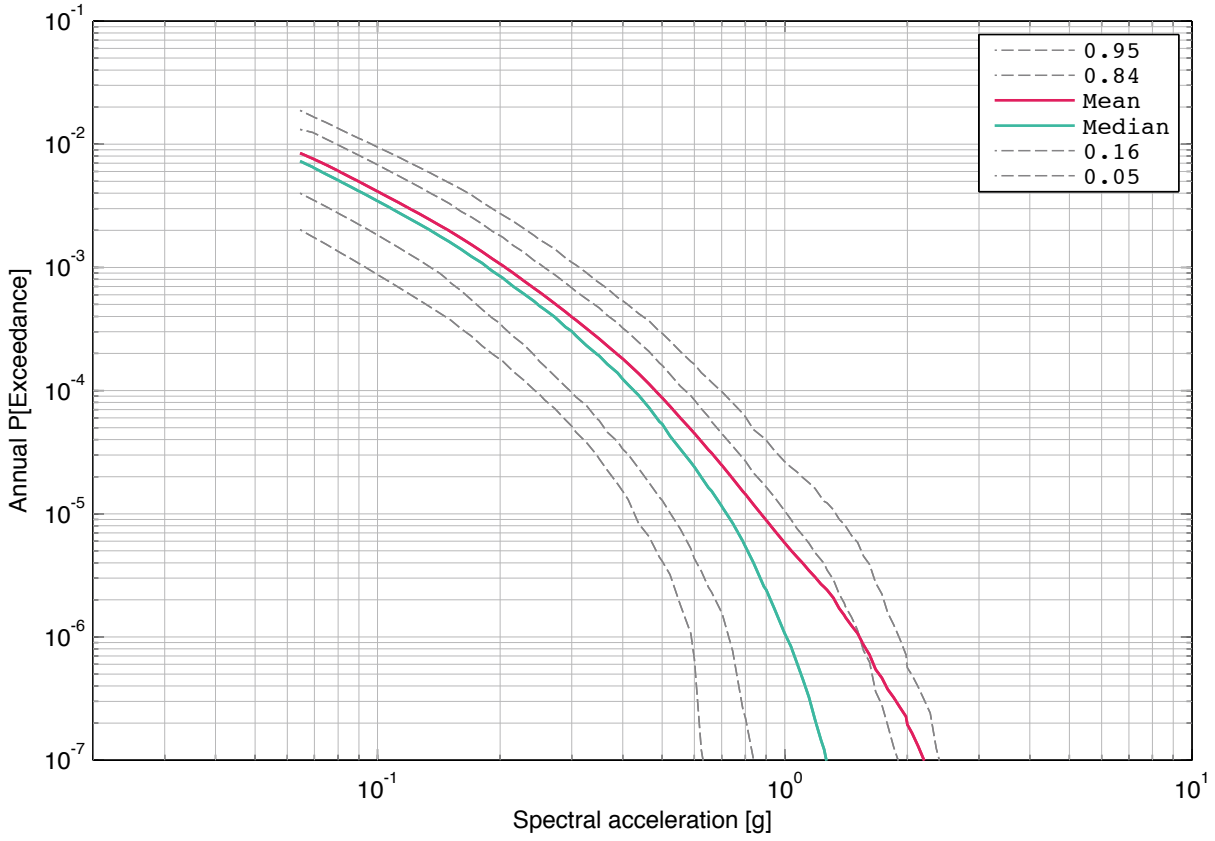

Fig. 3-2.8: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 50 Hz.

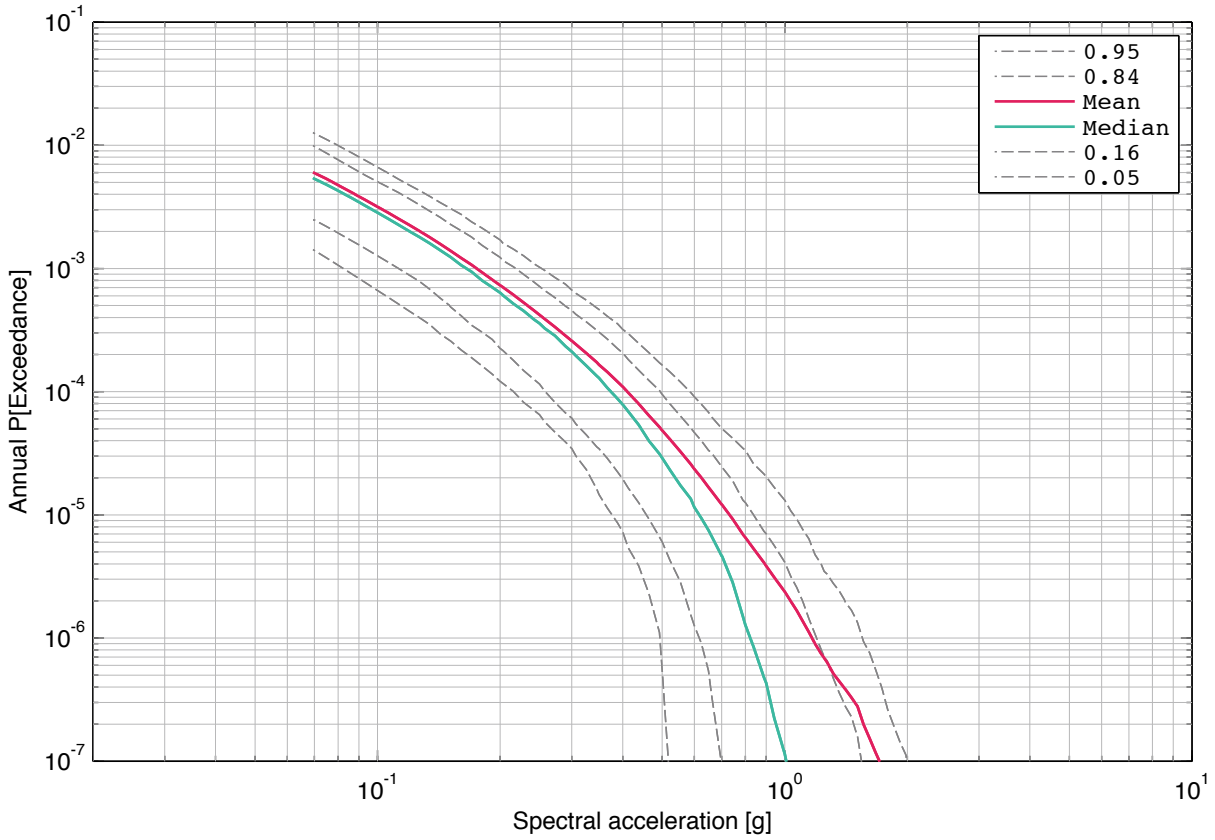

Fig. 3-2.9: Gösgen, horizontal component, soil, surface, mean hazard and fractiles, 100 Hz.

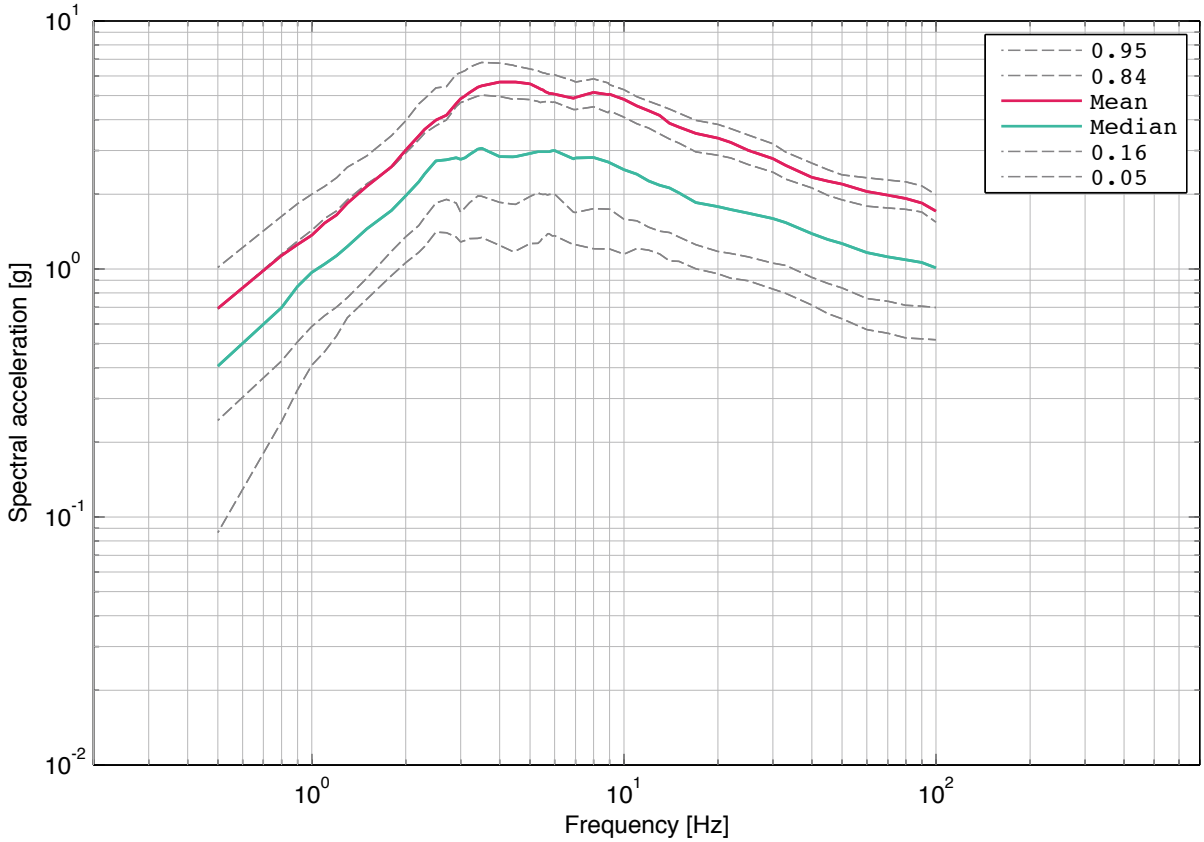

Fig. 3-2.10: Gösgen, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

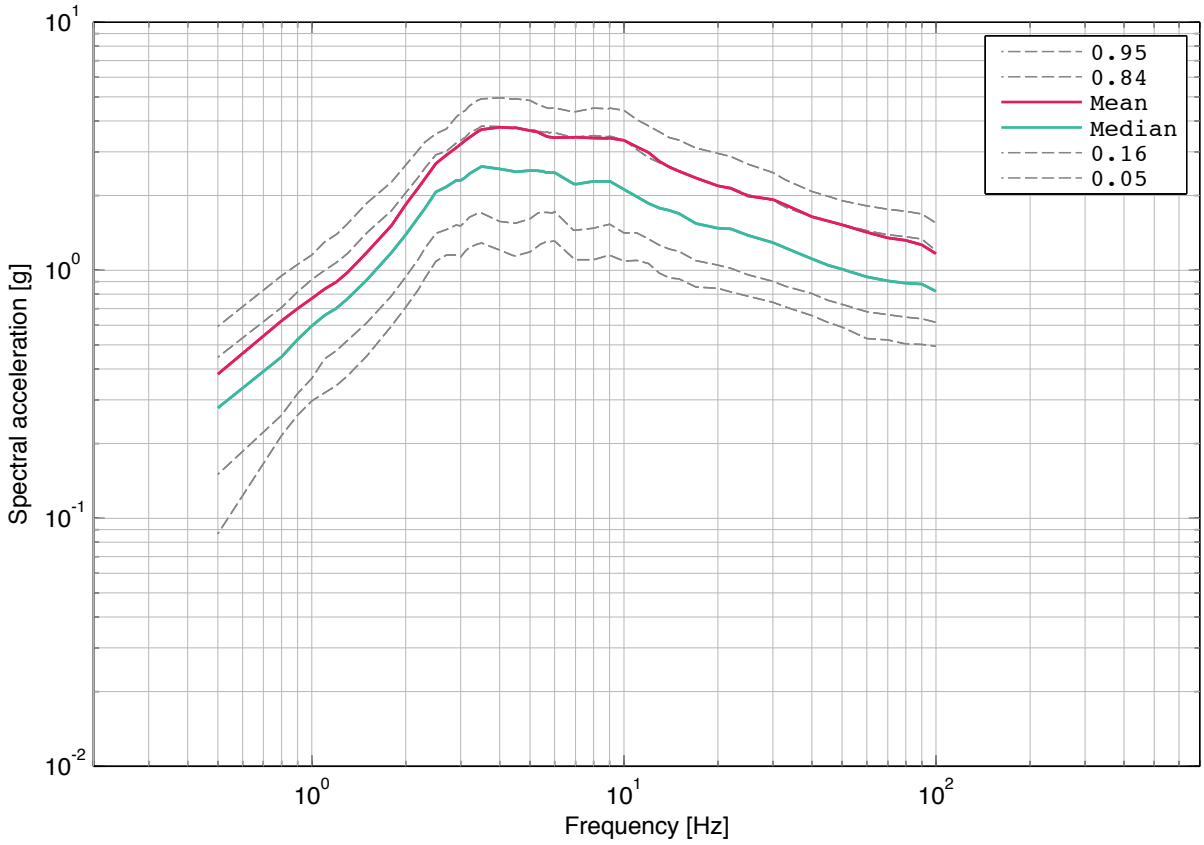

Fig. 3-2.11: Gösgen, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

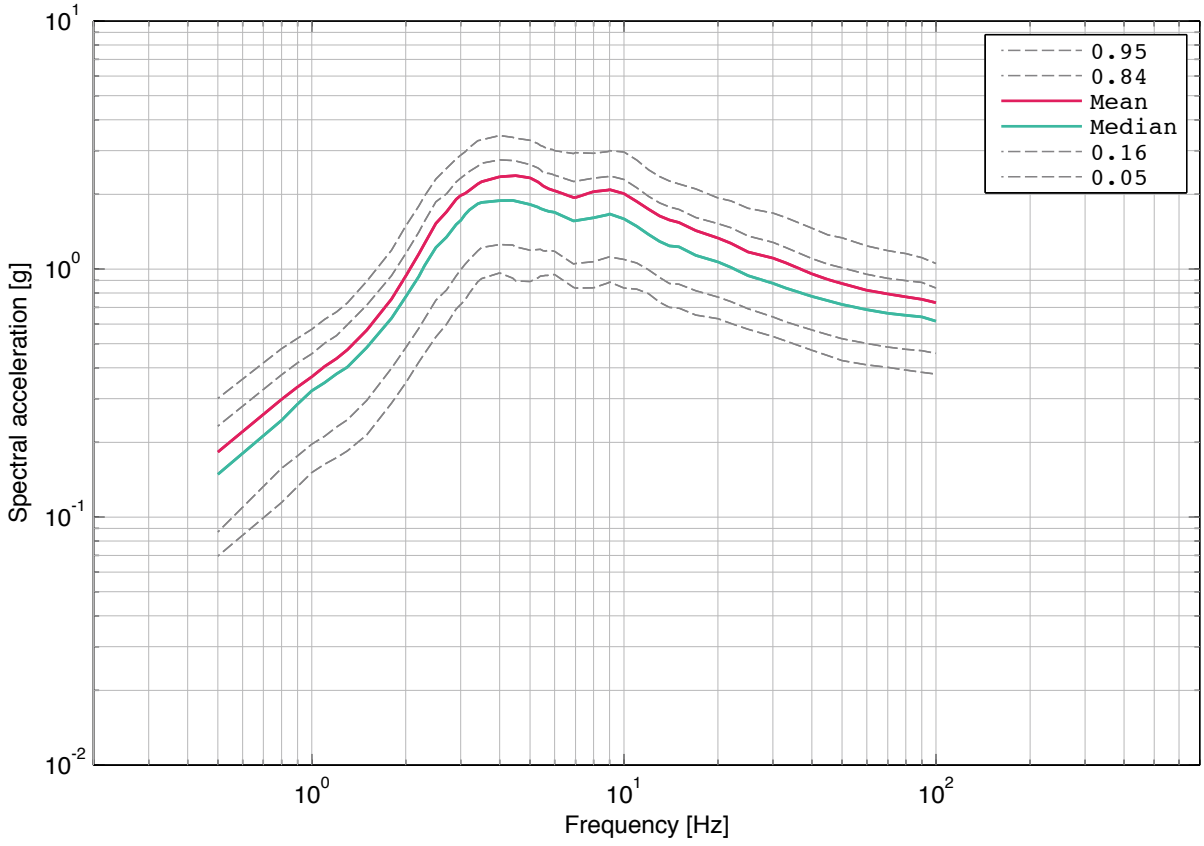

Fig. 3-2.12: Gösgen, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

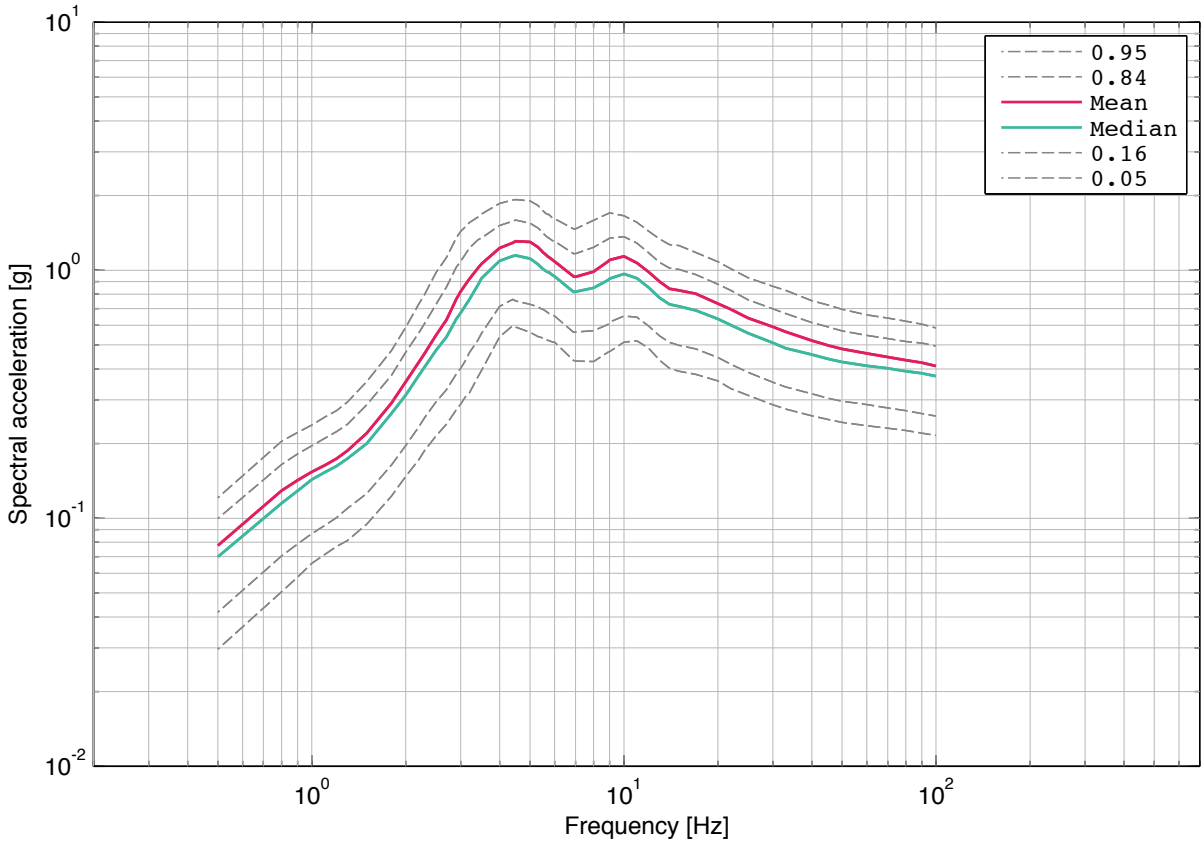

Fig. 3-2.13: Gösgen, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

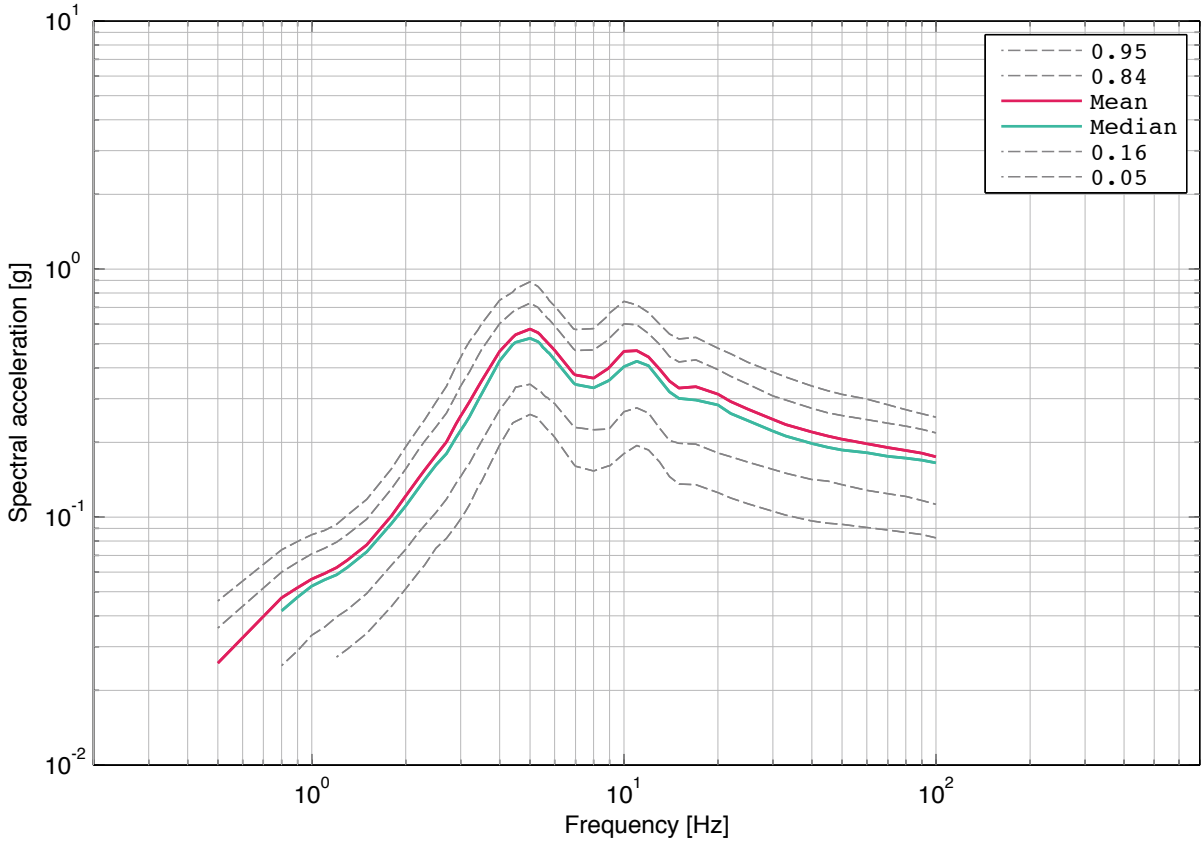

Fig. 3-2.14: Gösgen, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

3.3 Gösgen, Soil Hazard, Horizontal Component, -9 m

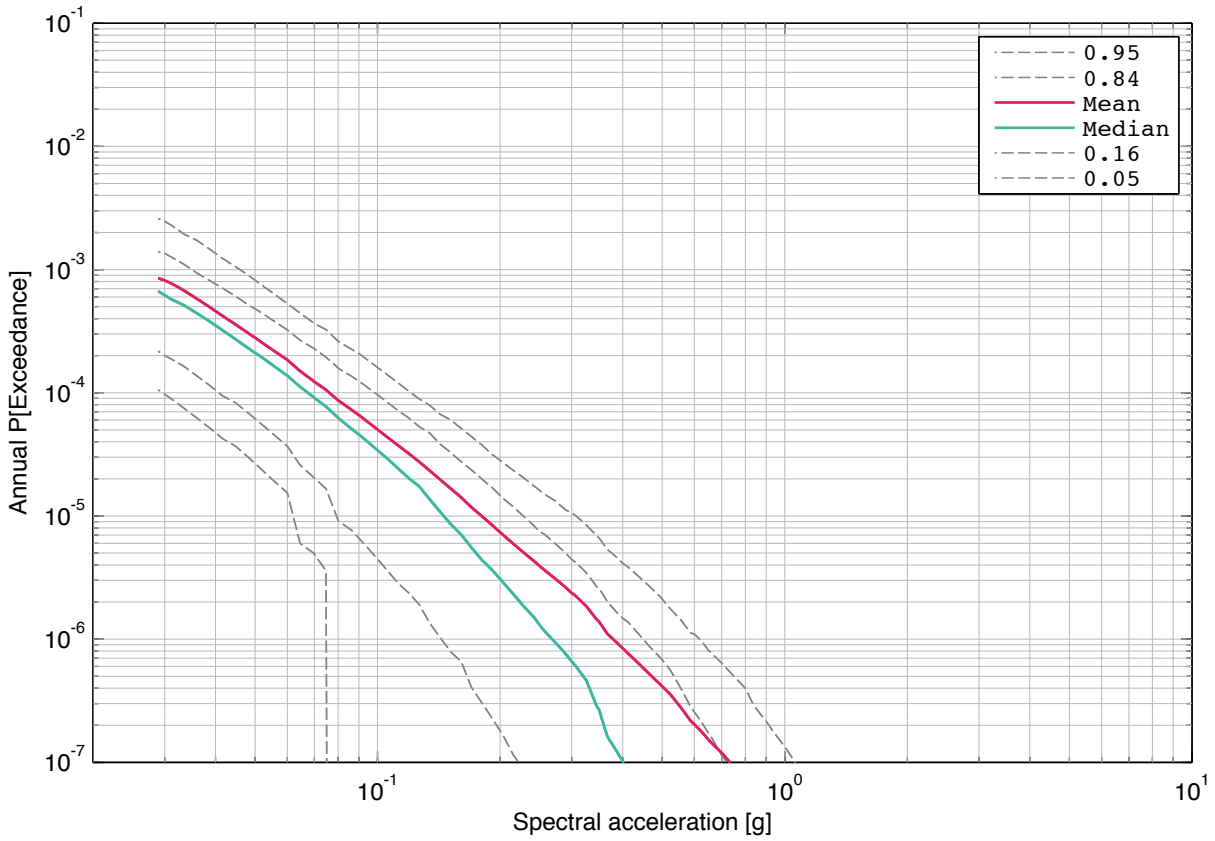

Fig. 3-3.1: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 0.5 Hz.

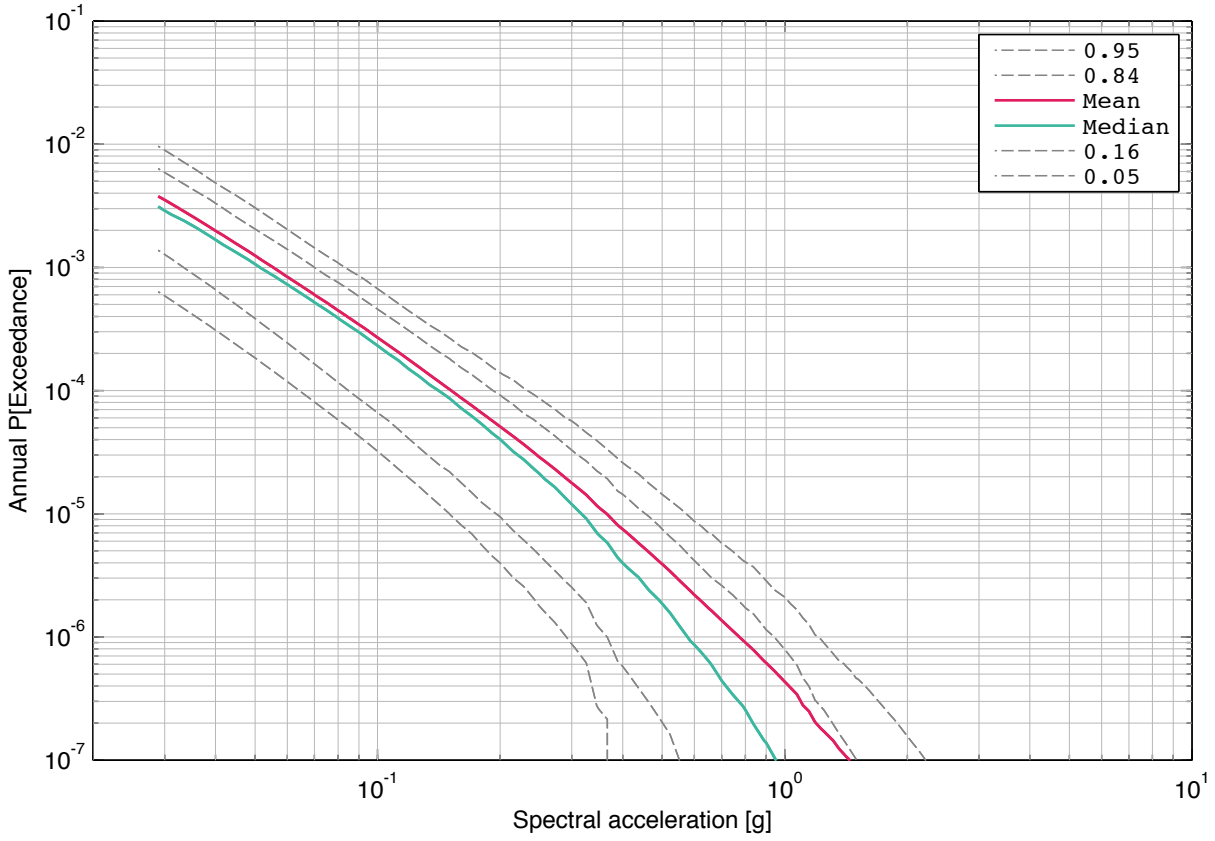

Fig. 3-3.2: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 1 Hz.

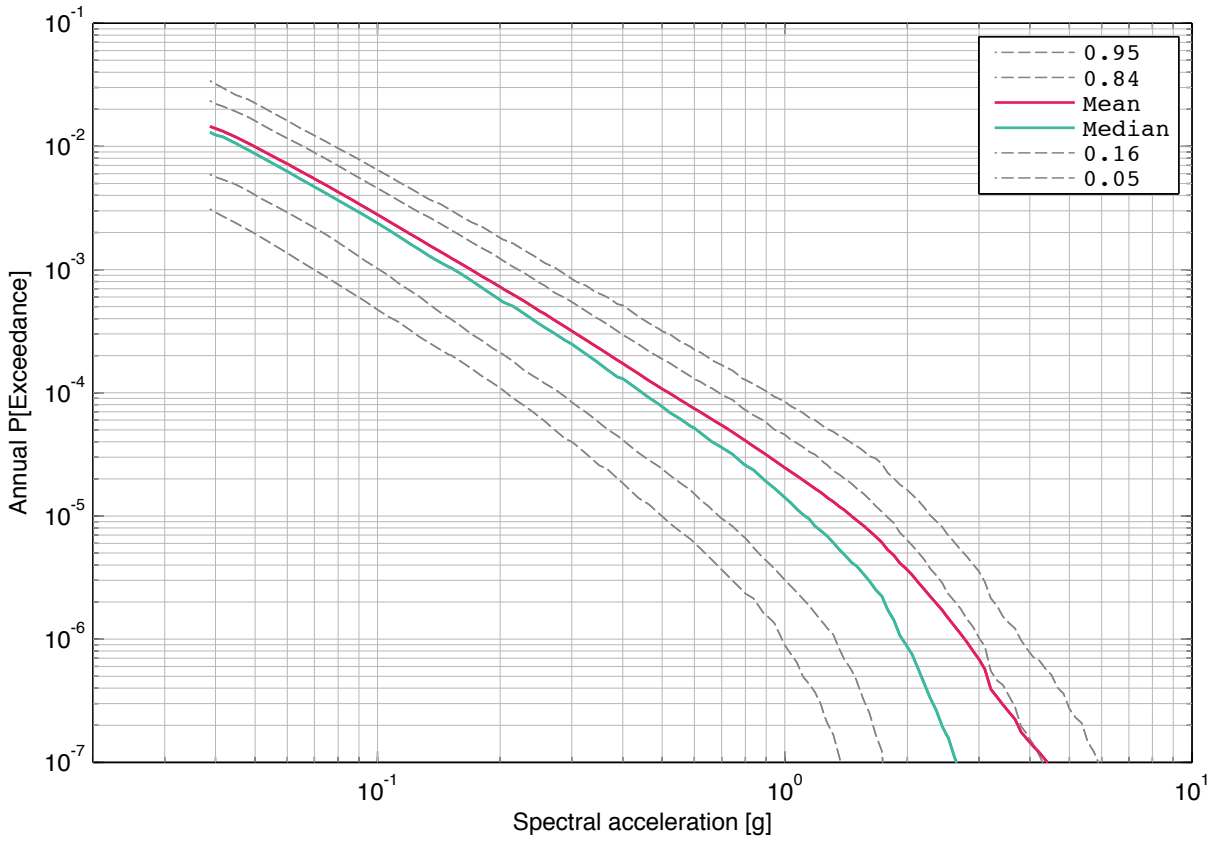

Fig. 3-3.3: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 2.5 Hz.

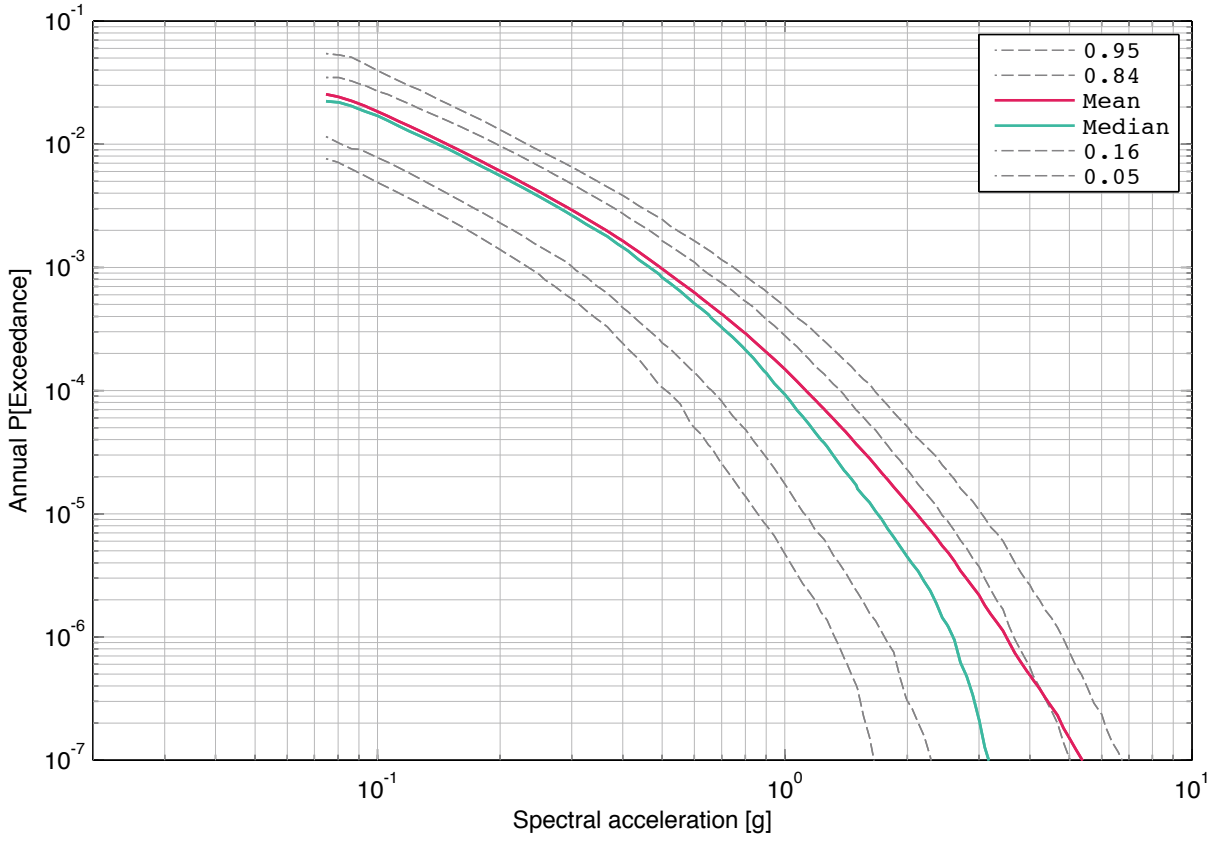

Fig. 3-3.4: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 5 Hz.

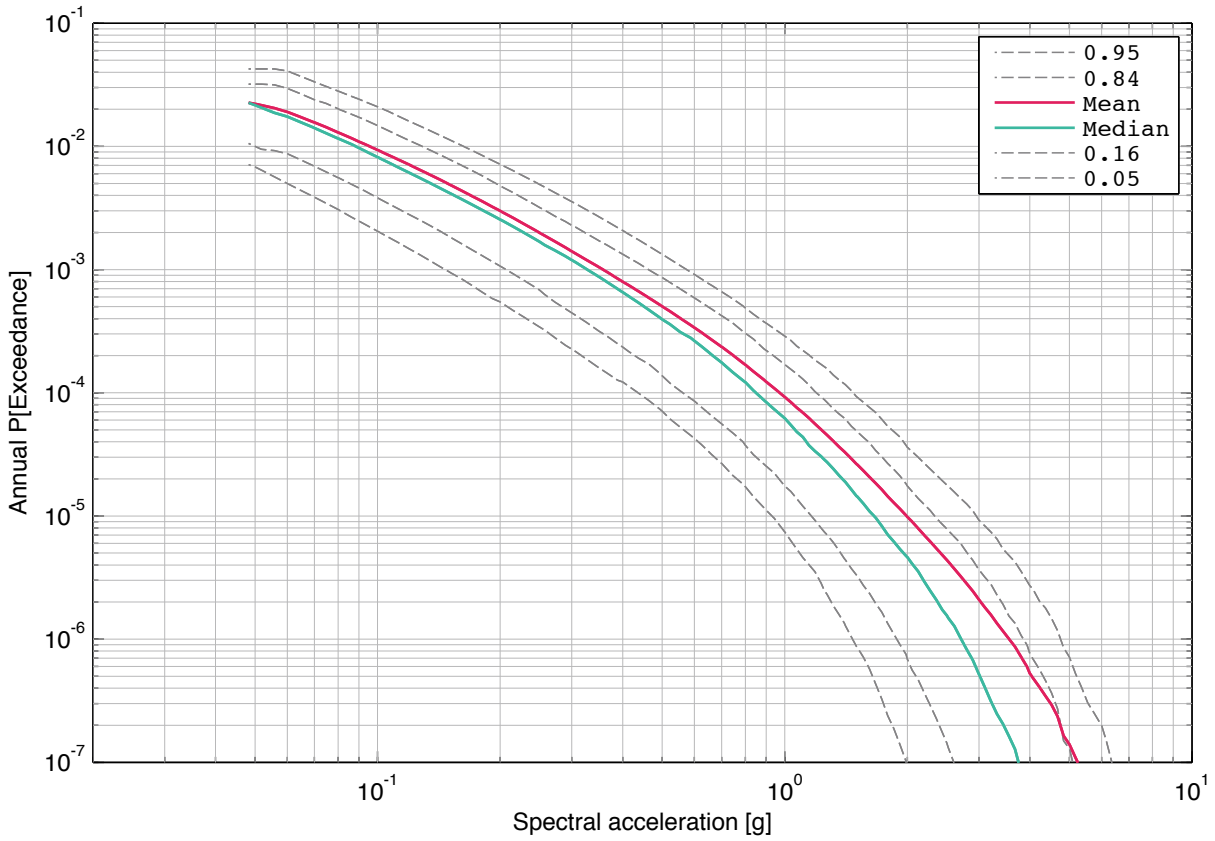

Fig. 3-3.5: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 10 Hz.

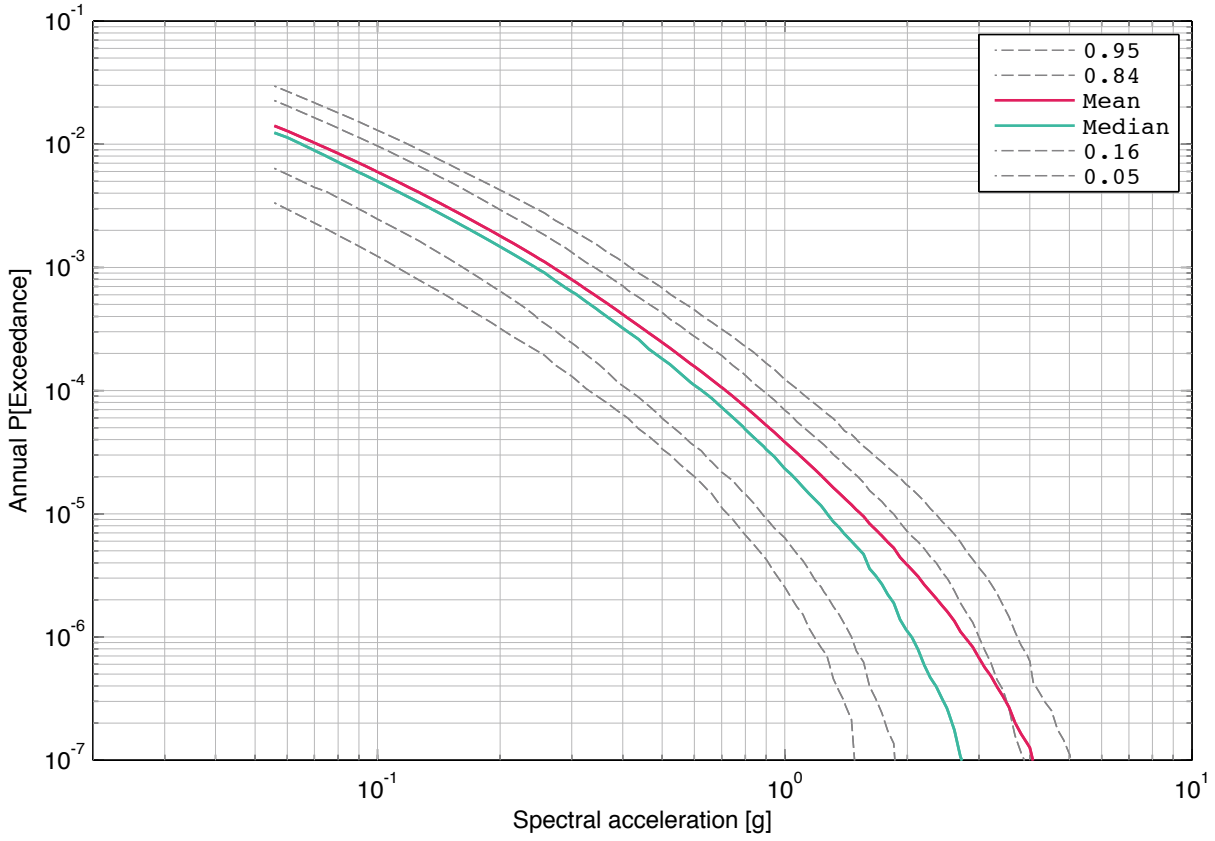

Fig. 3-3.6: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 20 Hz.

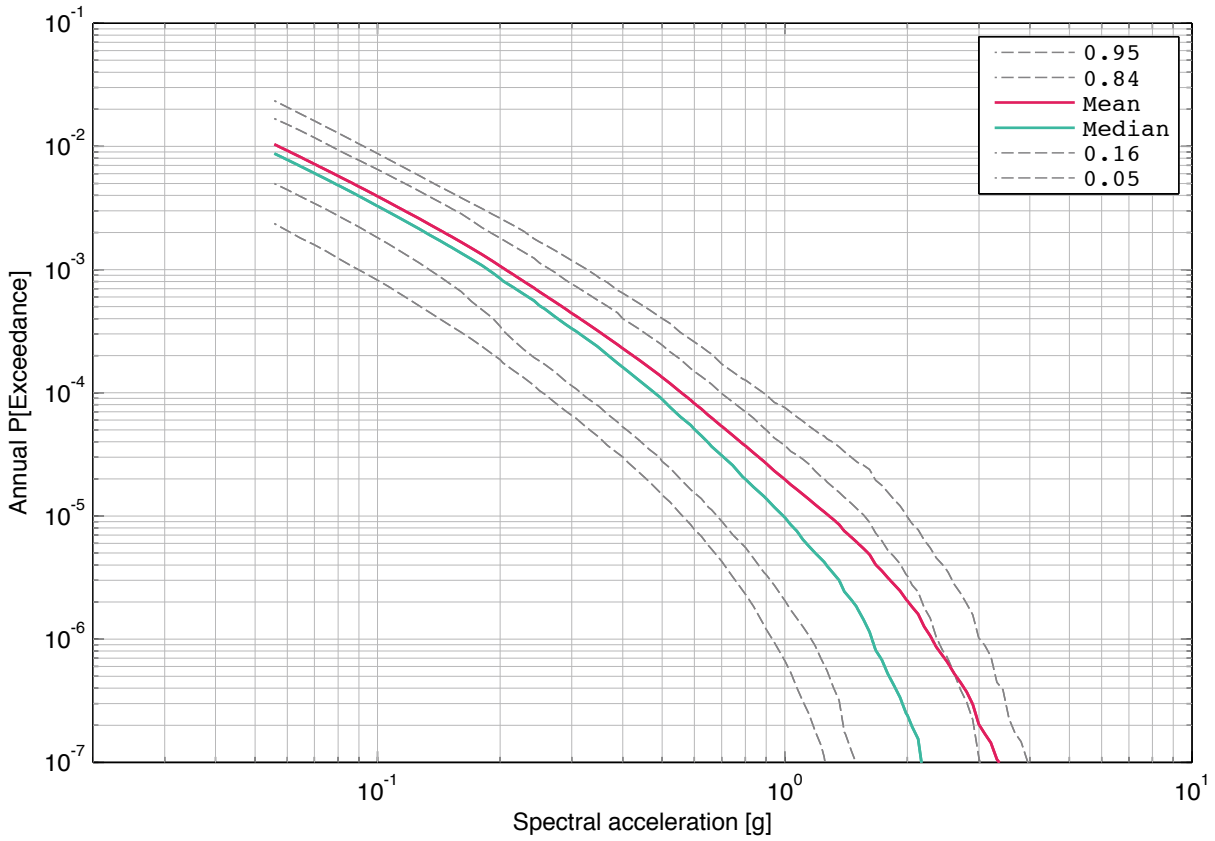

Fig. 3-3.7: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 33 Hz.

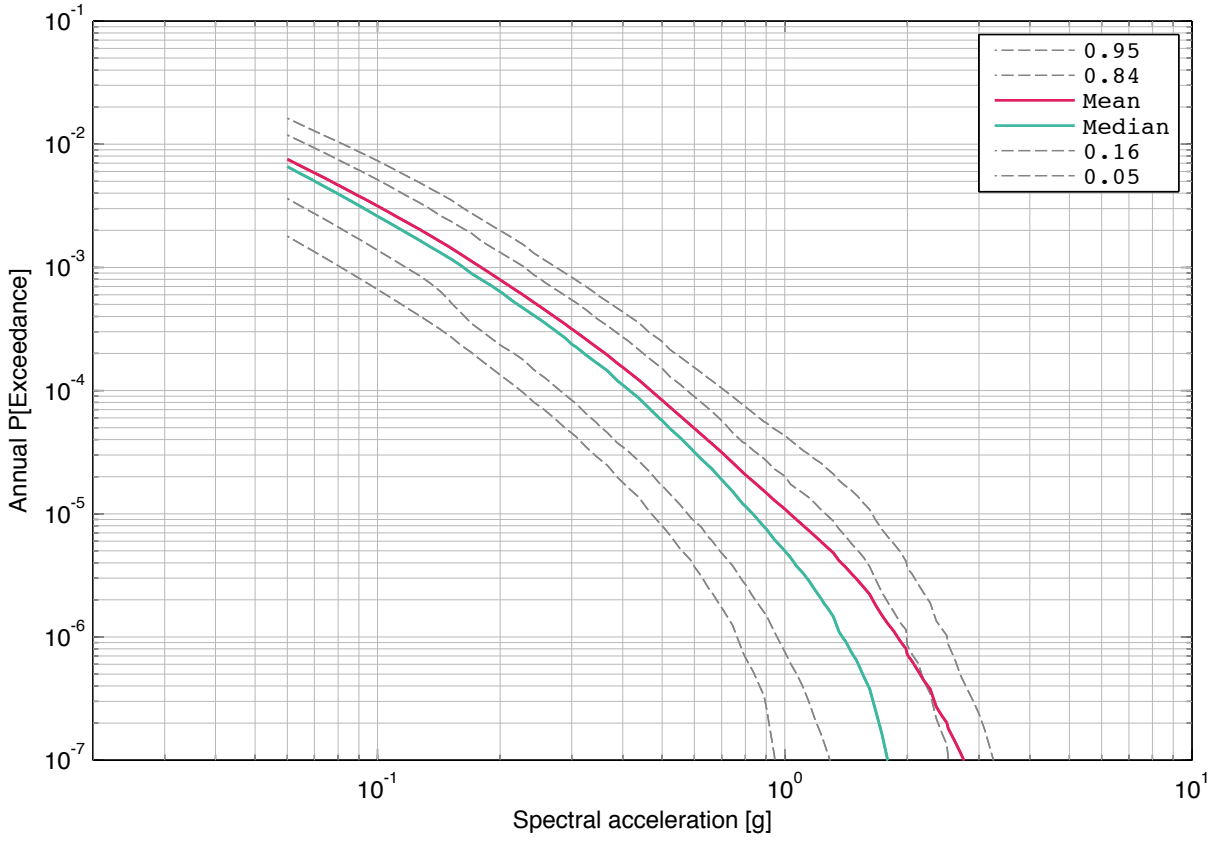

Fig. 3-3.8: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 50 Hz.

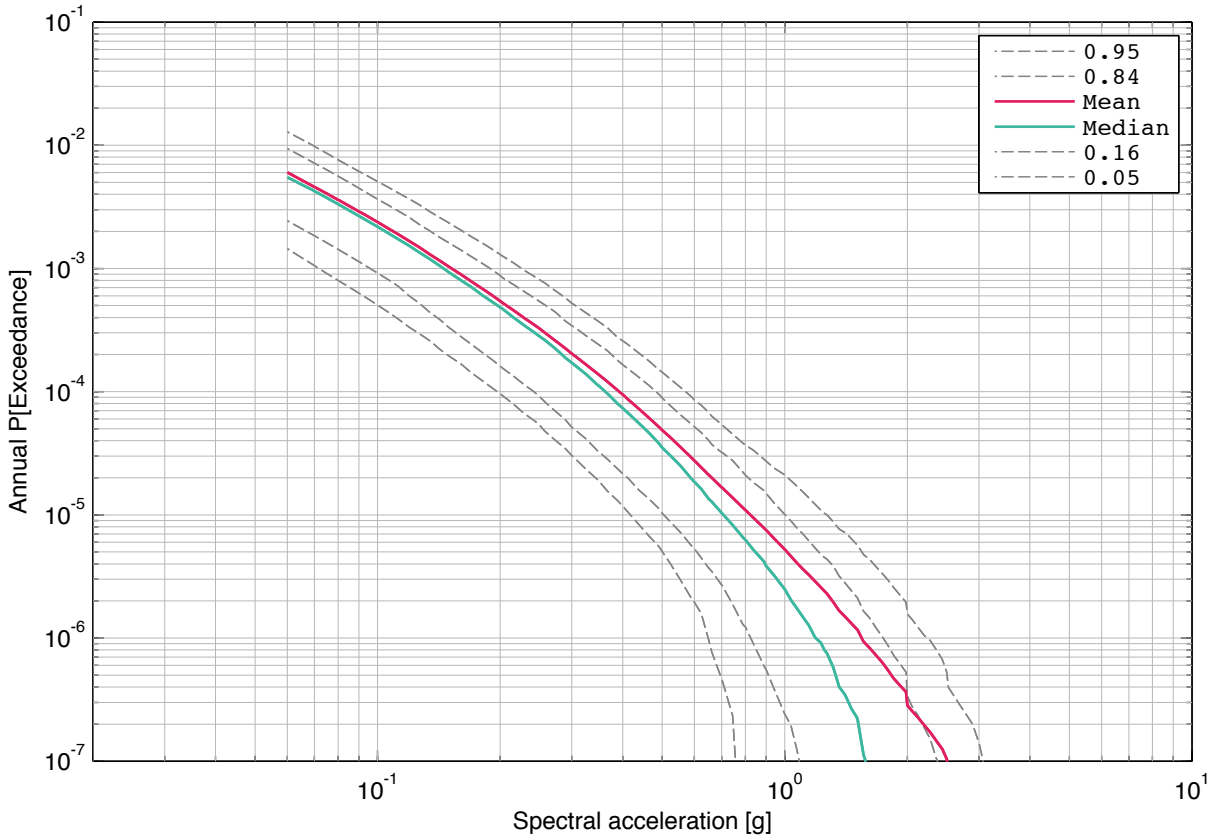

Fig. 3-3.9: Gösgen, horizontal component, soil, -9 m, mean hazard and fractiles, 100 Hz.

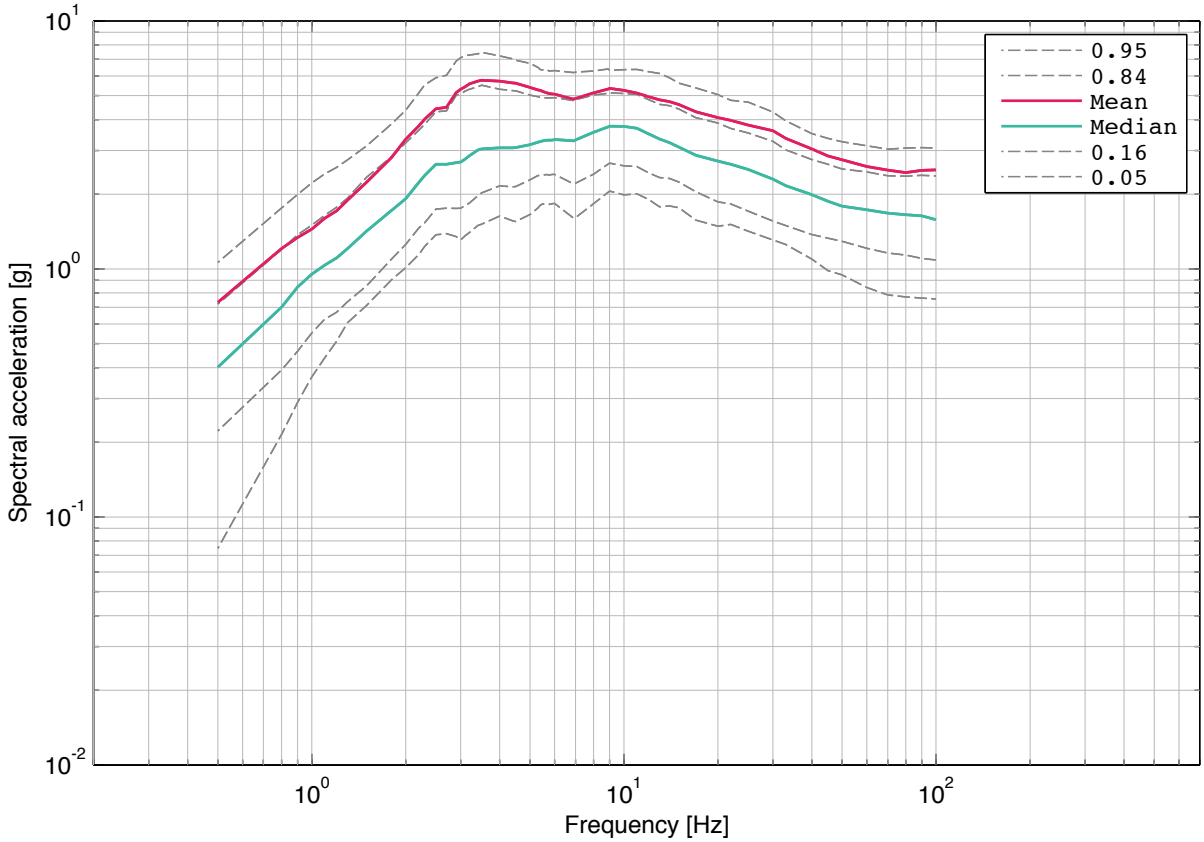

Fig. 3-3.10: Gösgen, horizontal component, soil, -9 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

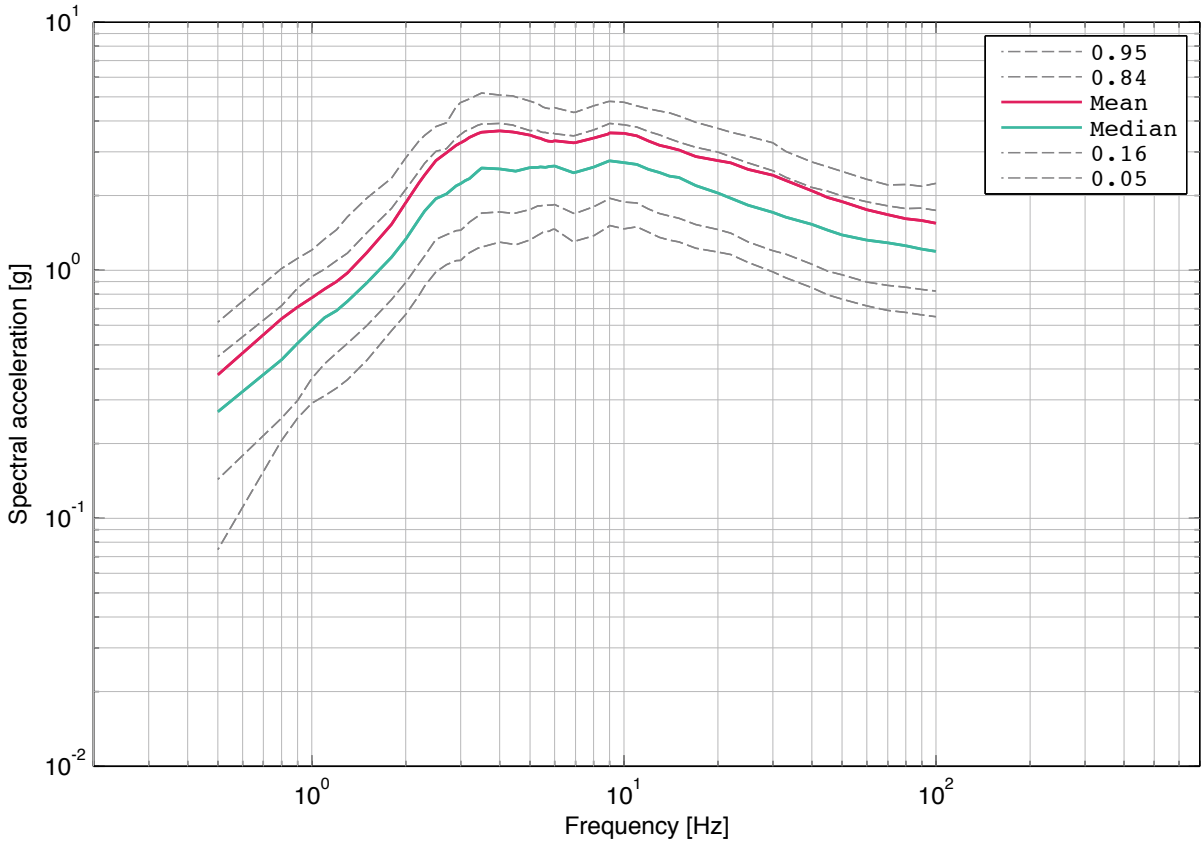

Fig. 3-3.11: Gösgen, horizontal component, soil, -9 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

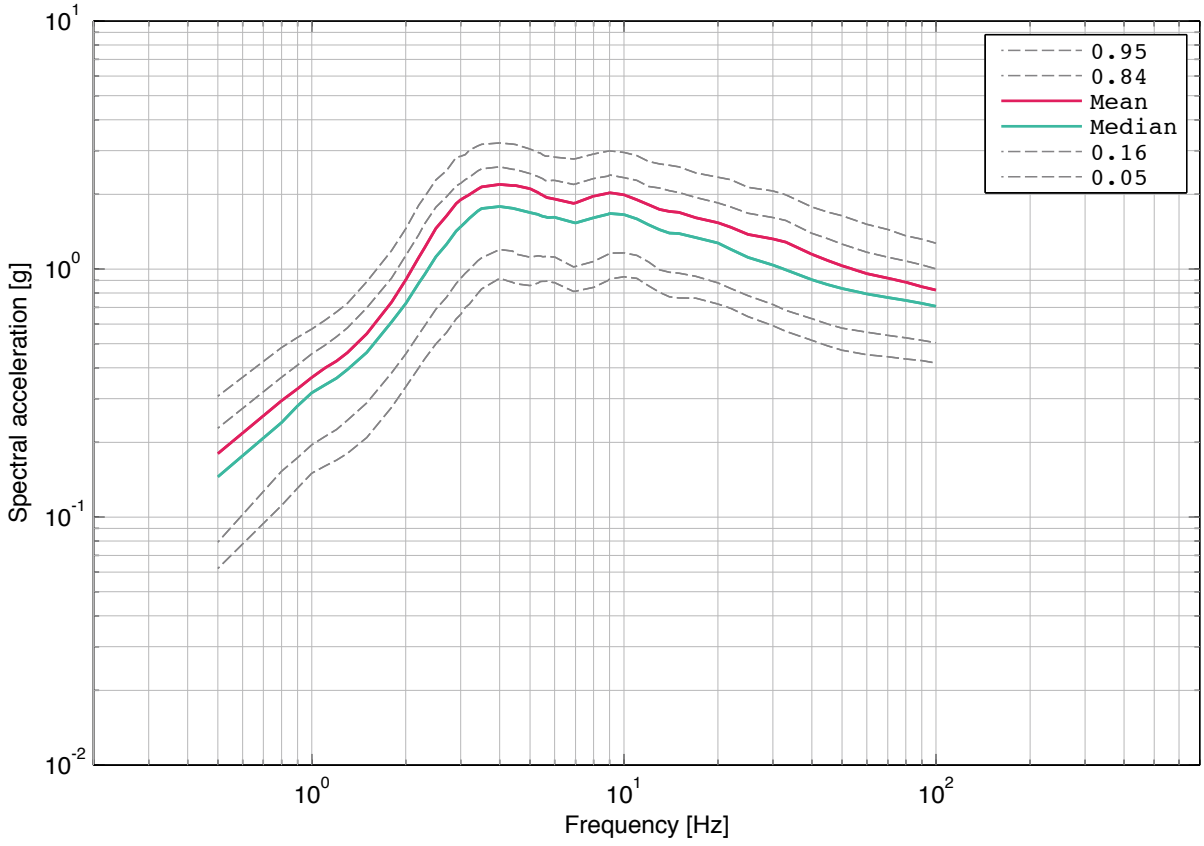

Fig. 3-3.12: Gösgen, horizontal component, soil, -9 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

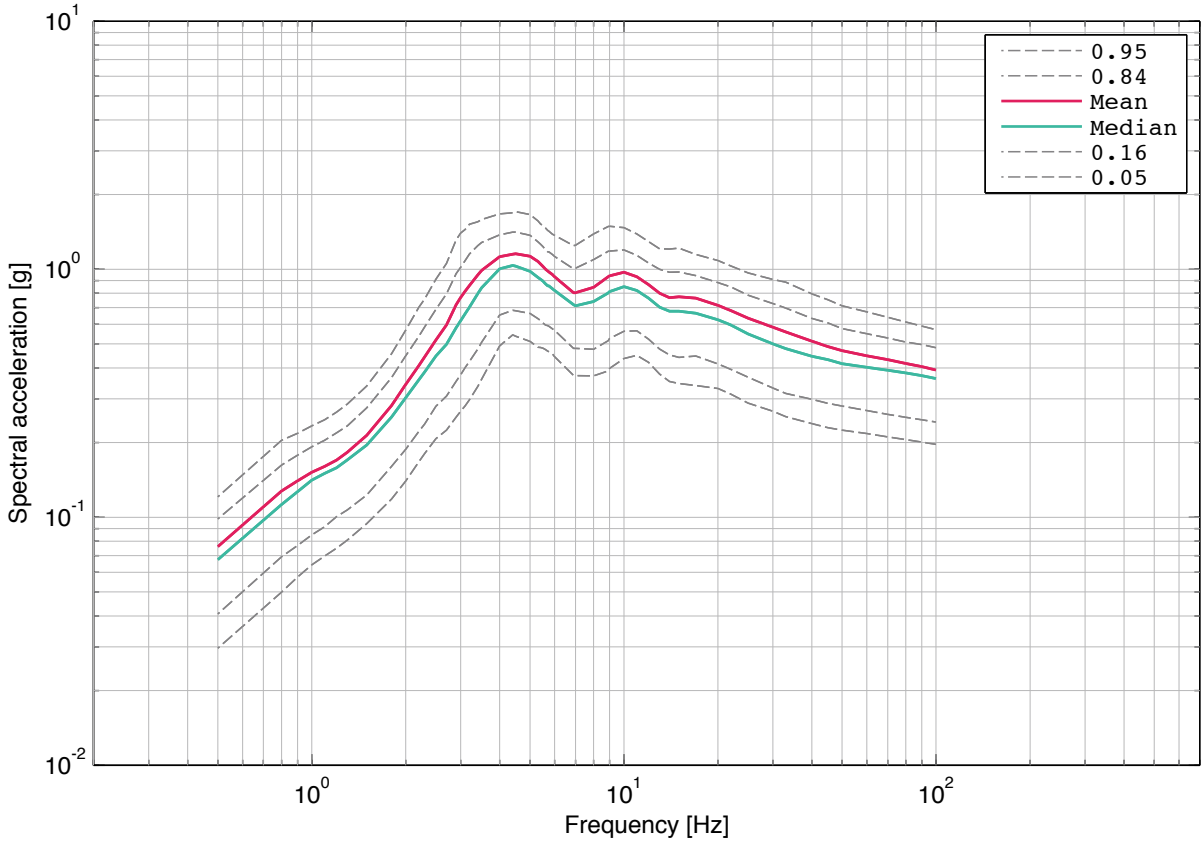

Fig. 3-3.13: Gösgen, horizontal component, soil, -9 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

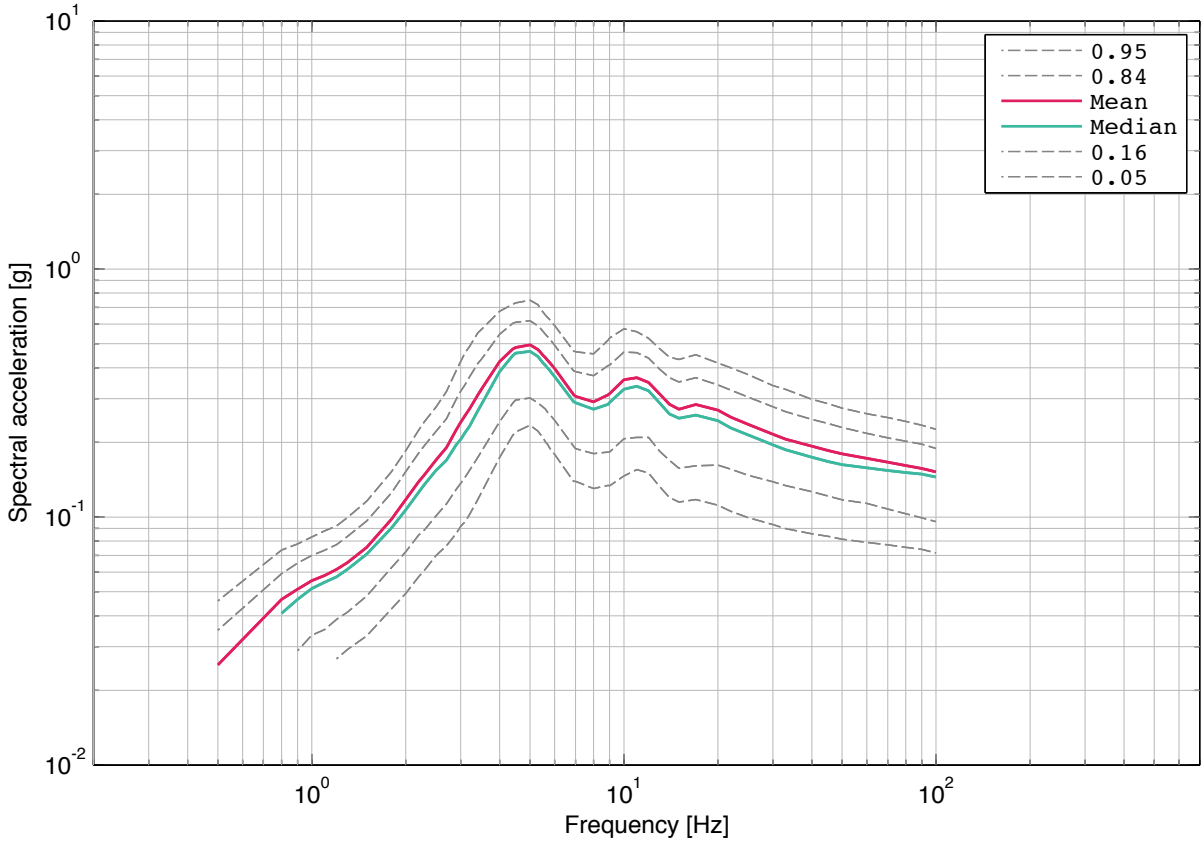

Fig. 3-3.14: Gösgen, horizontal component, soil, -9 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

3.4 Gösgen, Rock Hazard Deaggregation, Horizontal Component, Surface

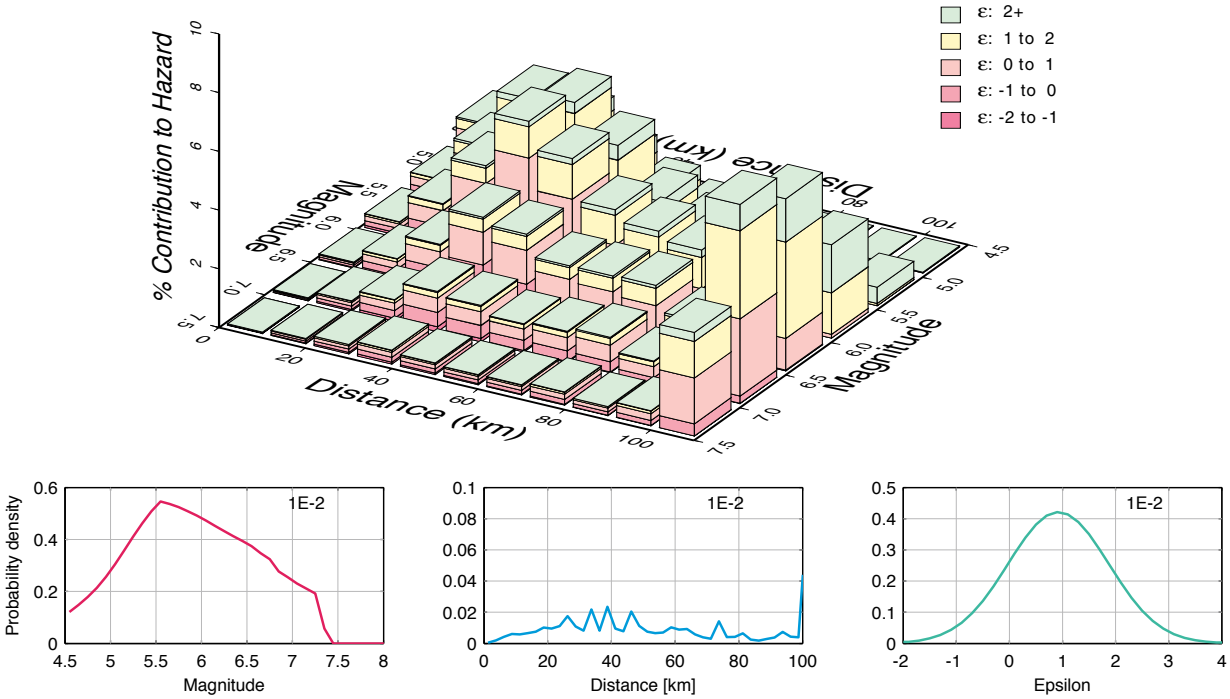

Fig. 3-4.1: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 5 Hz.

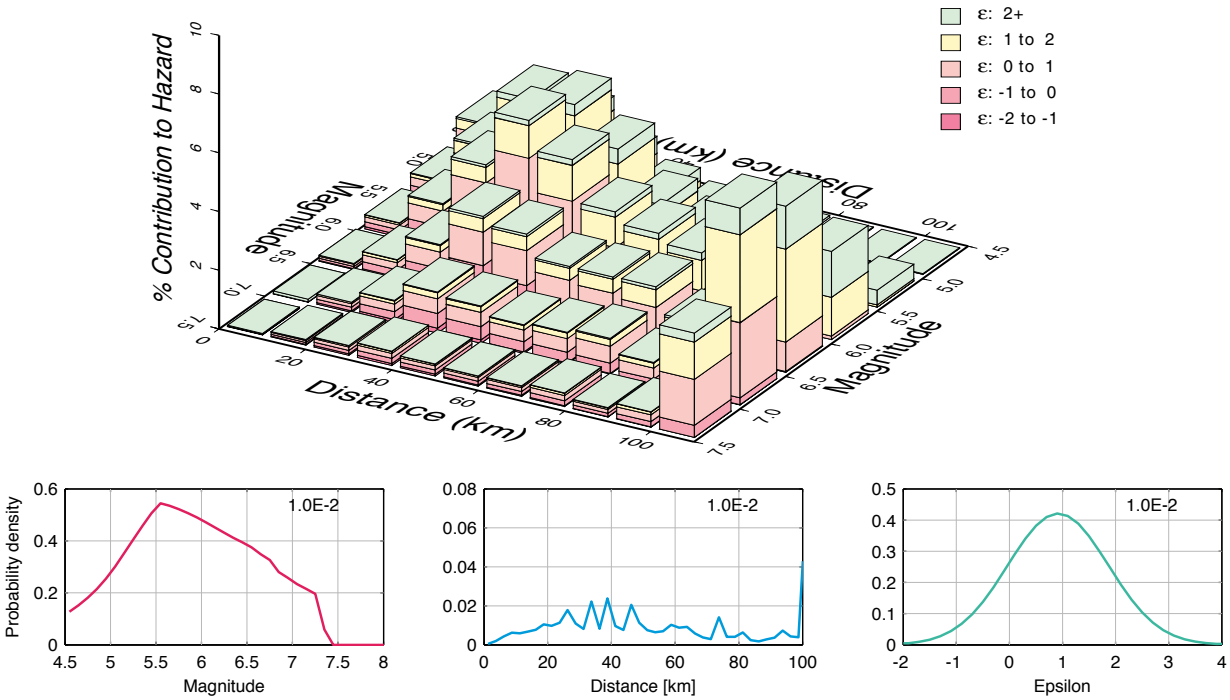

Fig. 3-4.2: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-02, 10 Hz.

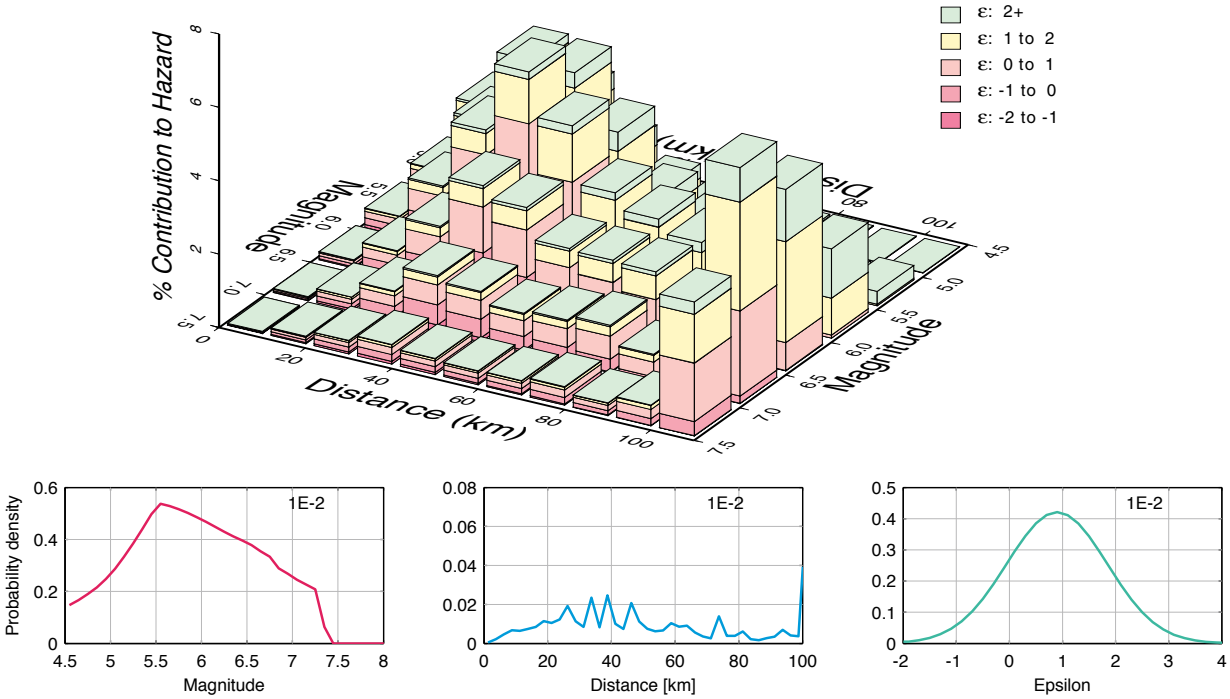

Fig. 3-4.3: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 100 Hz.

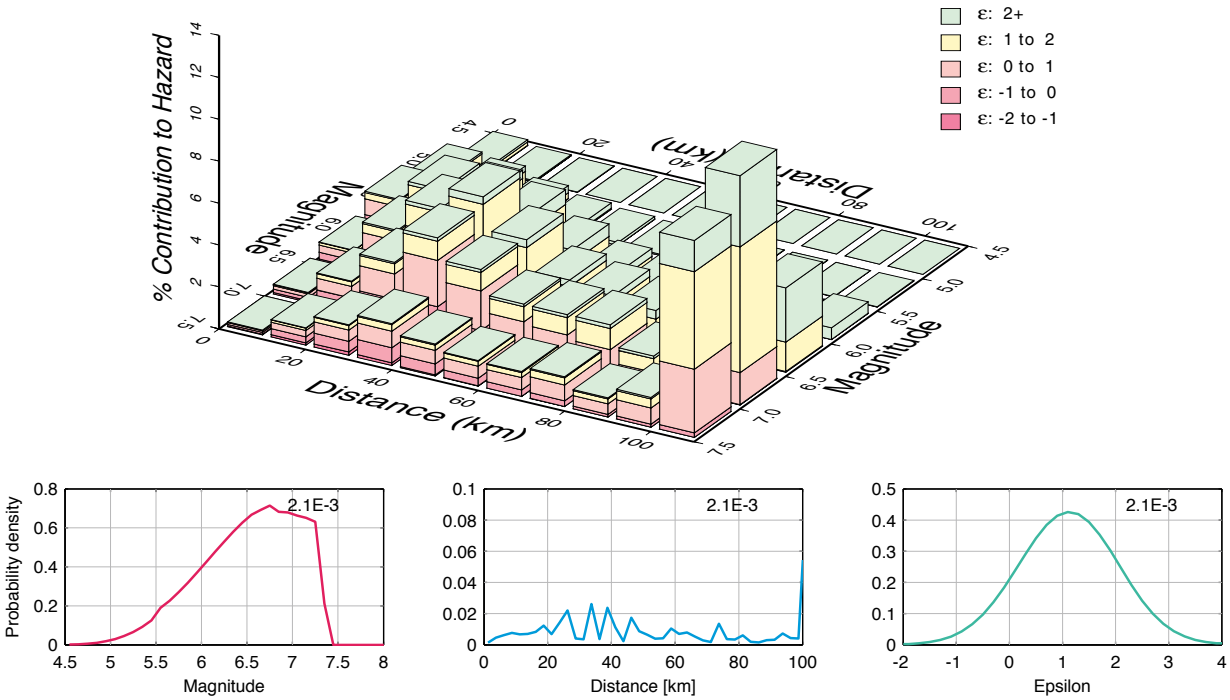

Fig. 3-4.4: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 1 Hz.

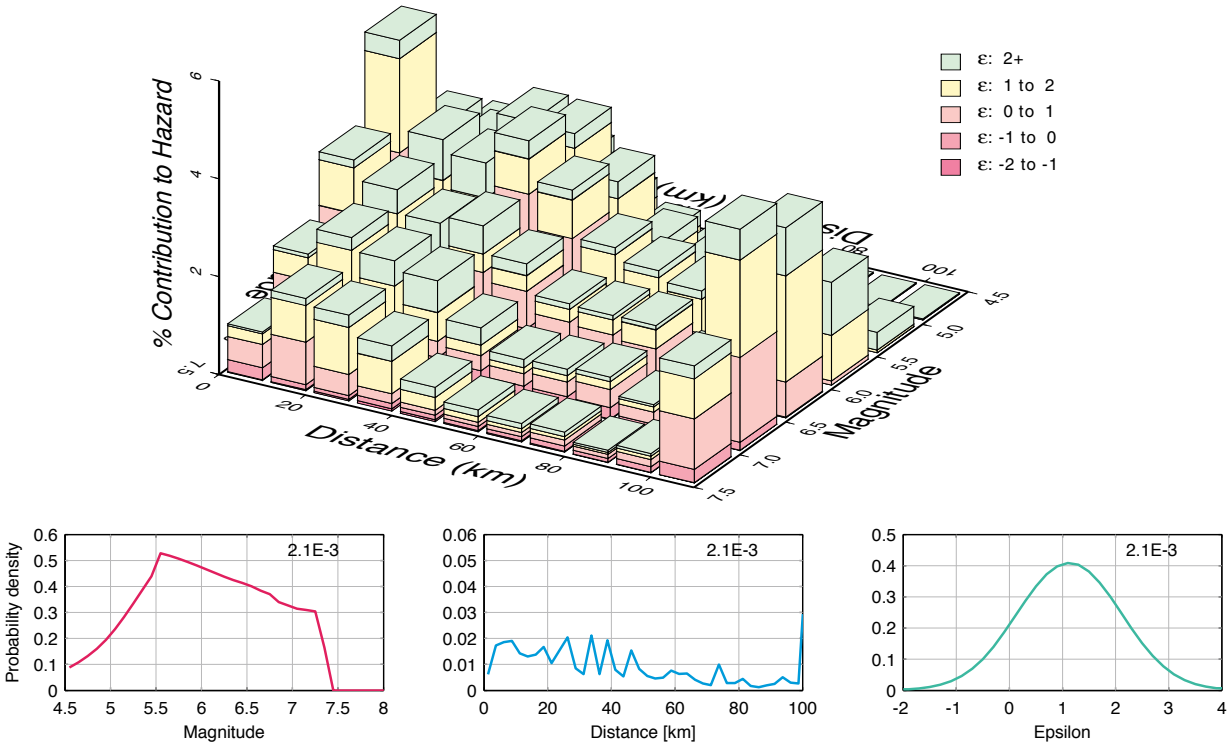

Fig. 3-4.5: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 5 Hz.

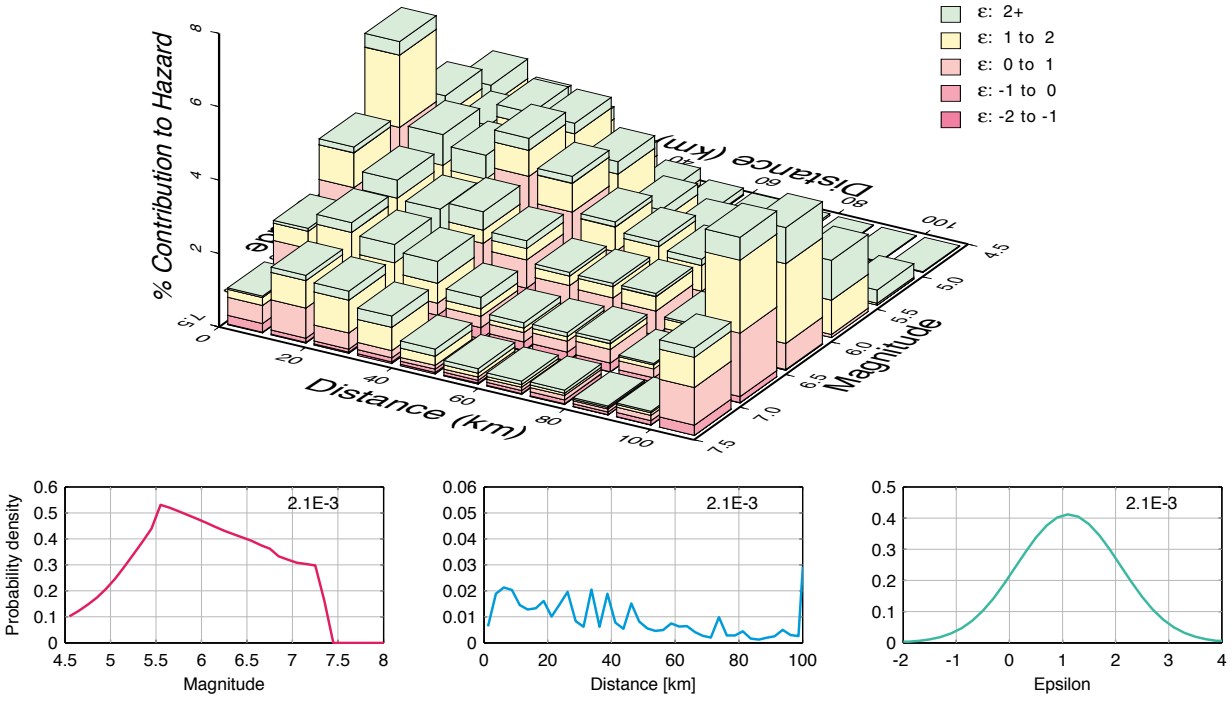

Fig. 3-4.6: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 10 Hz.

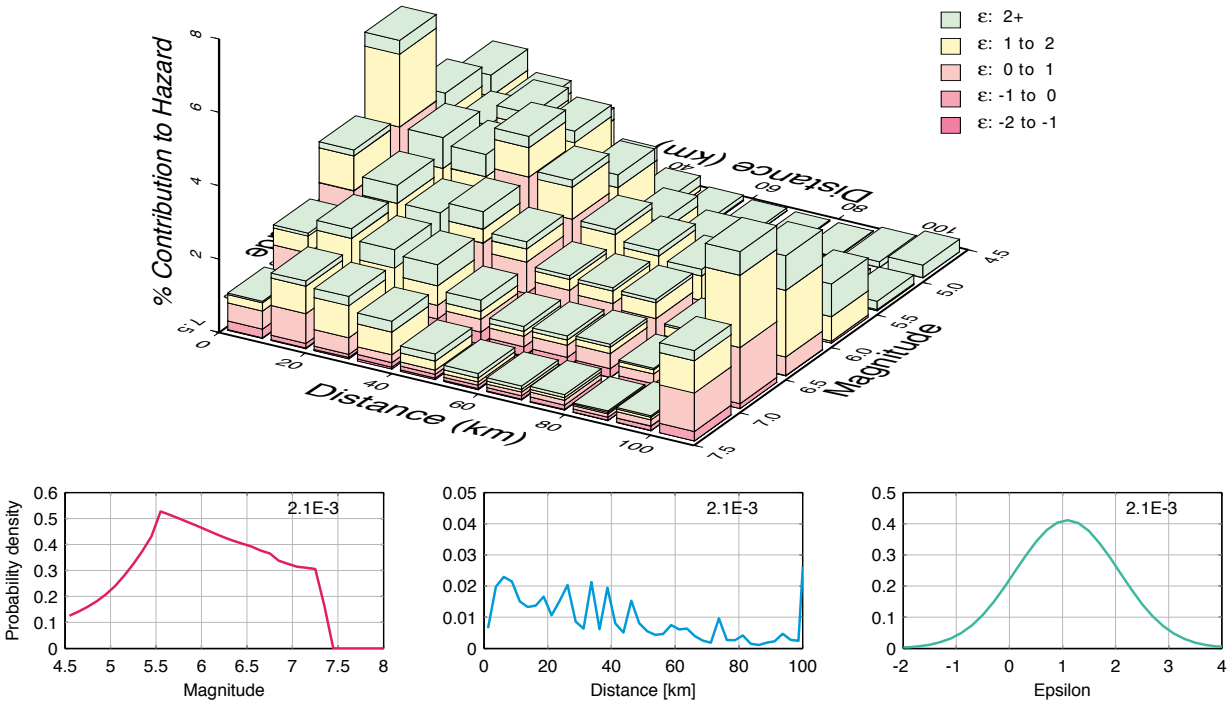

Fig. 3-4.7: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 100 Hz.

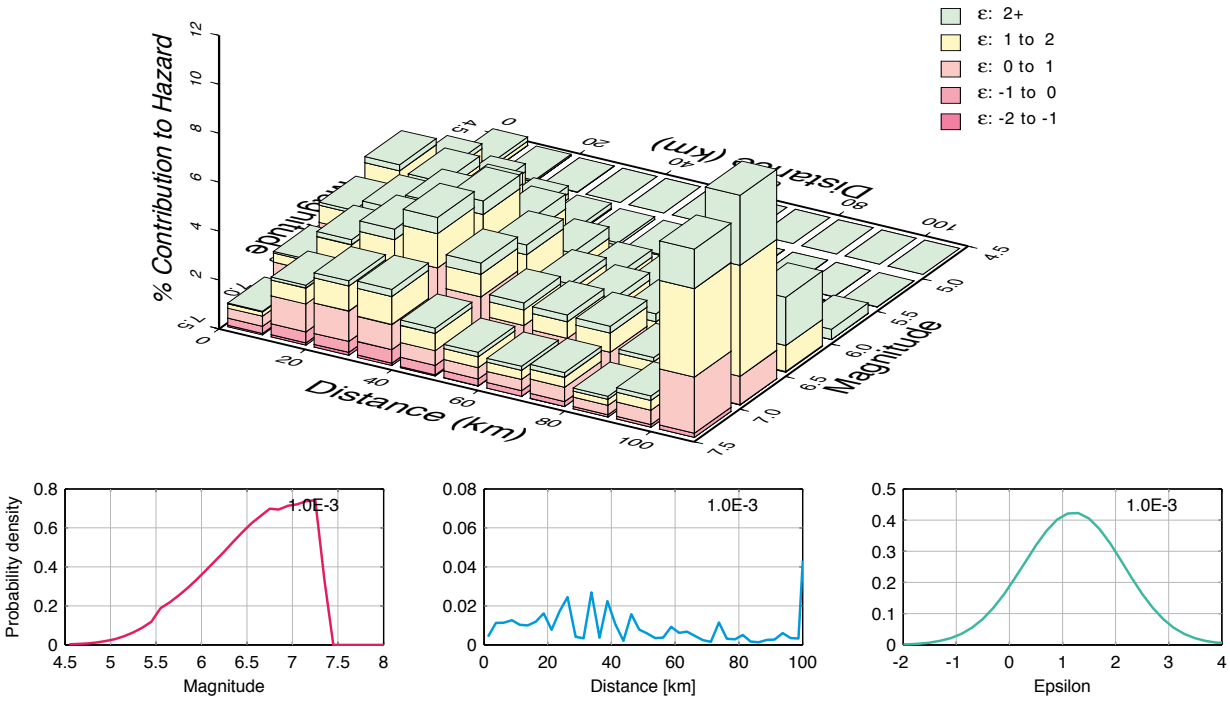

Fig. 3-4.8: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 1 Hz.

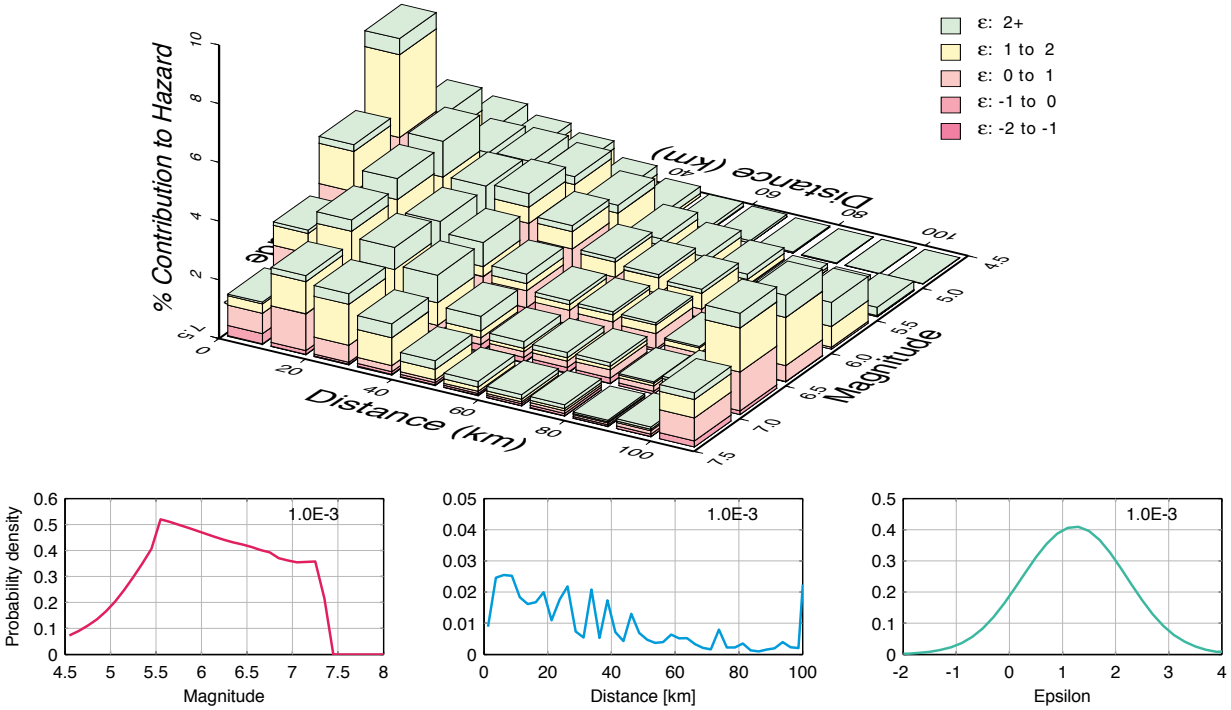

Fig. 3-4.9: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 5 Hz.

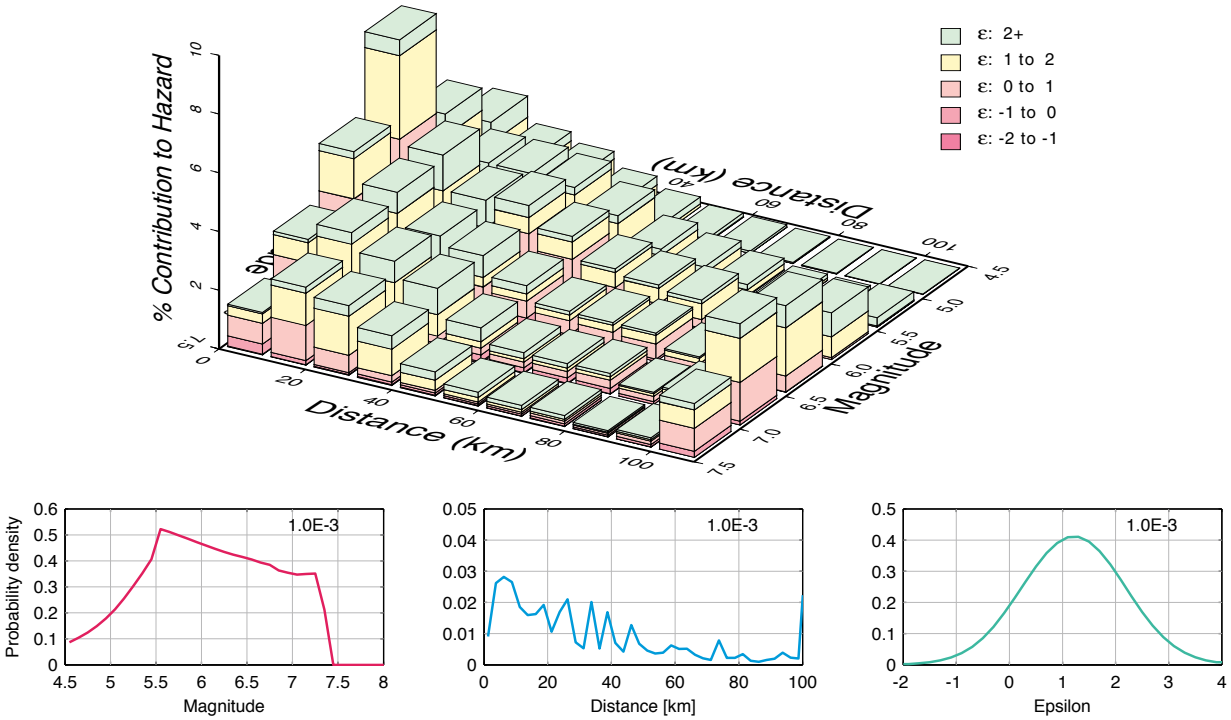

Fig. 3-4.10: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 10 Hz.

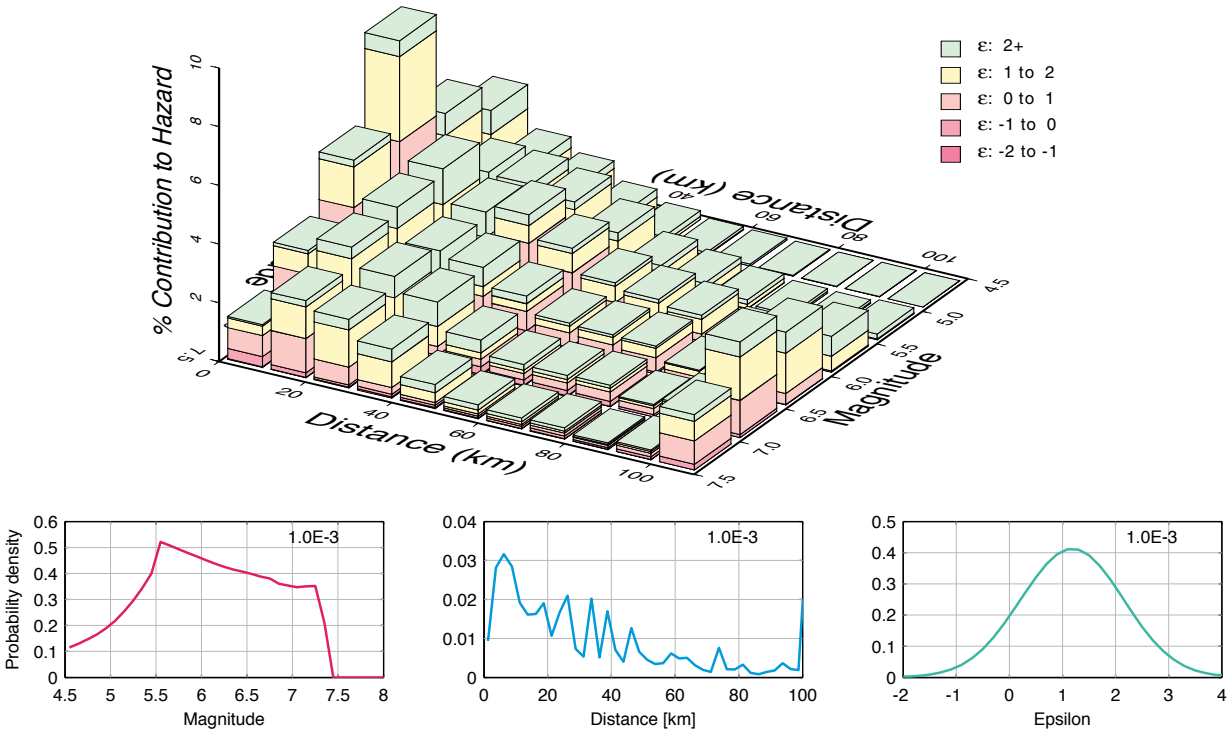

Fig. 3-4.11: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 100 Hz.

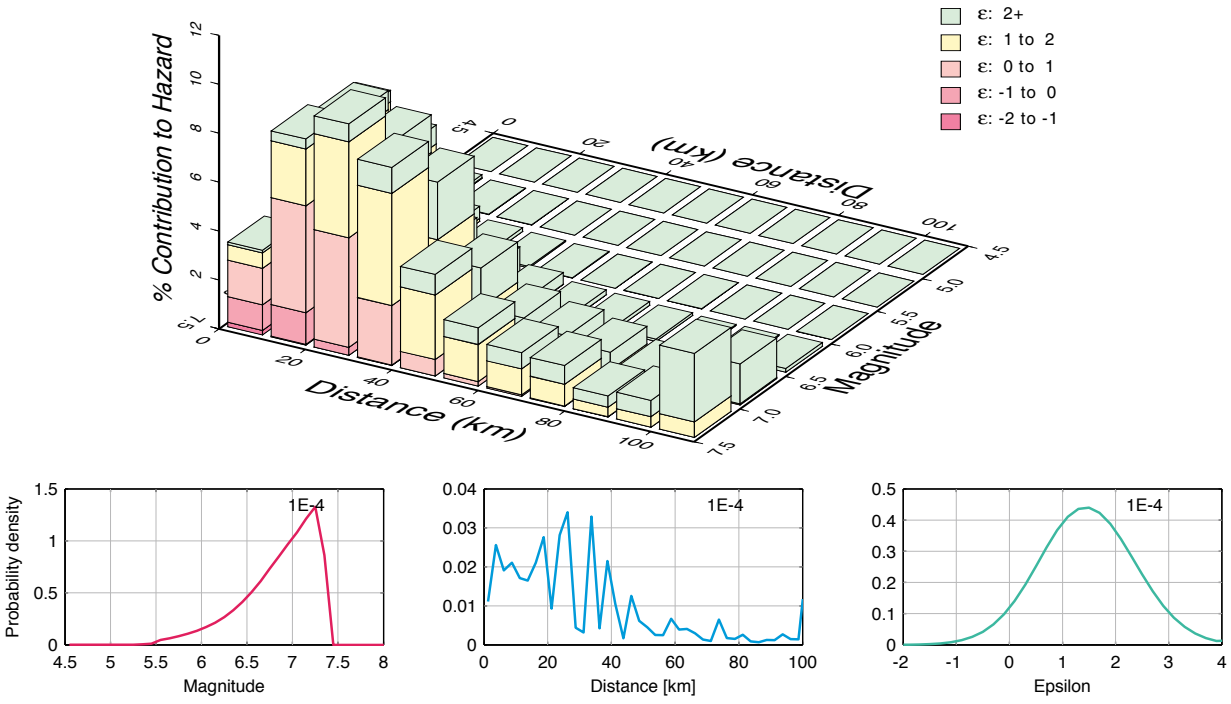

Fig. 3-4.12: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 0.5 Hz.

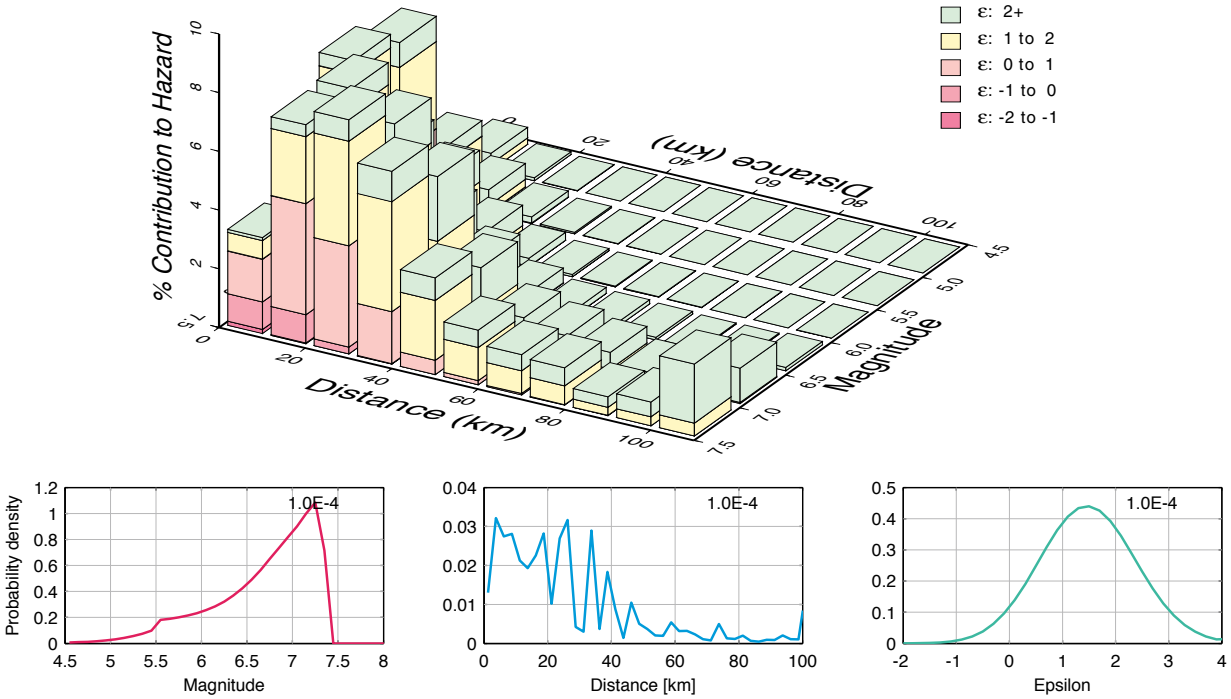

Fig. 3-4.13: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 1 Hz.

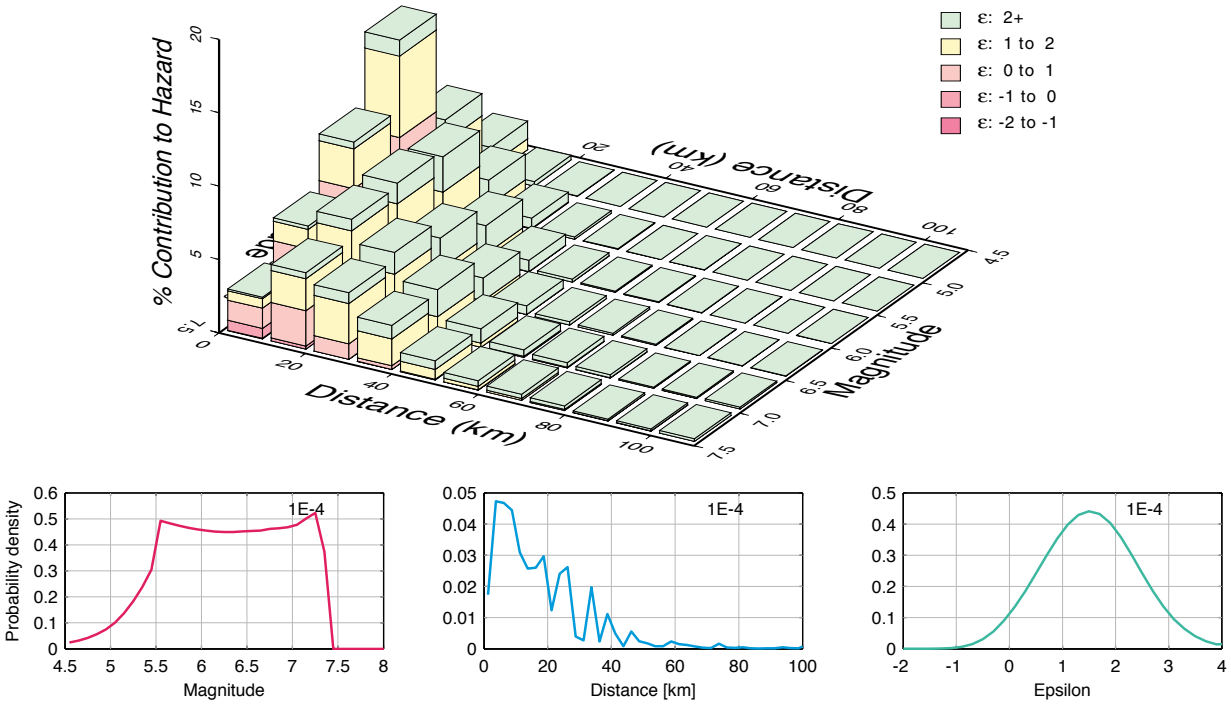

Fig. 3-4.14: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 5 Hz.

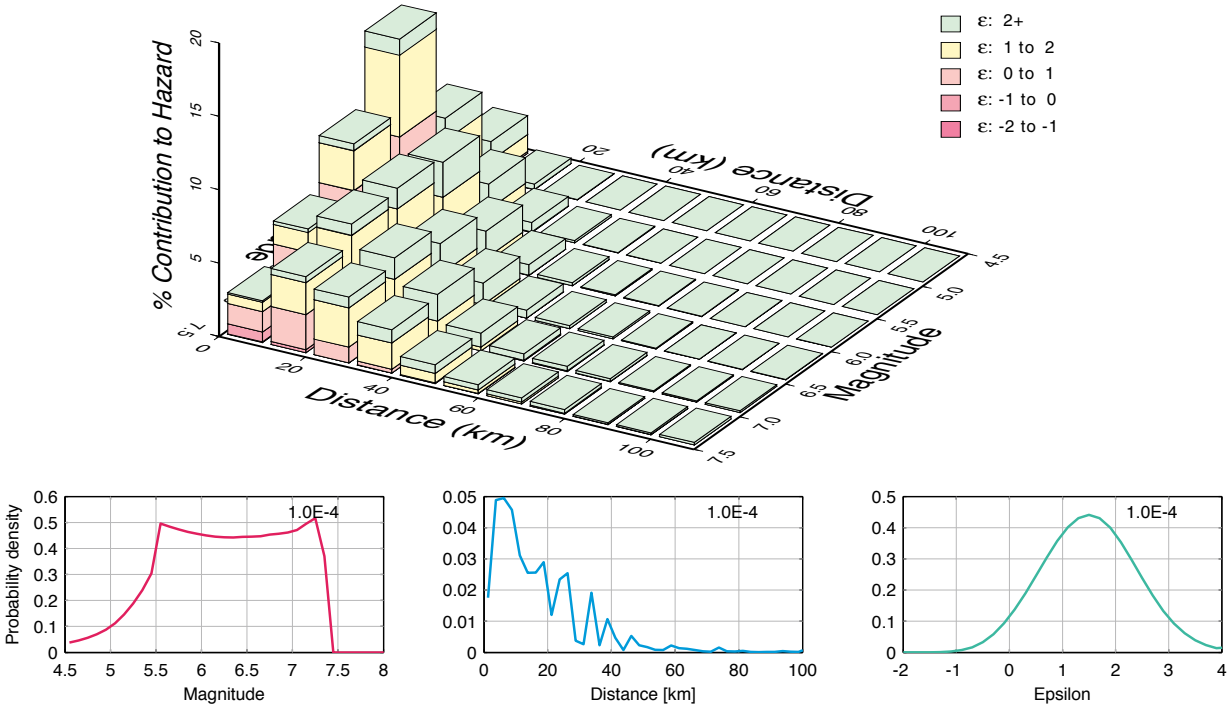

Fig. 3-4.15: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 10 Hz.

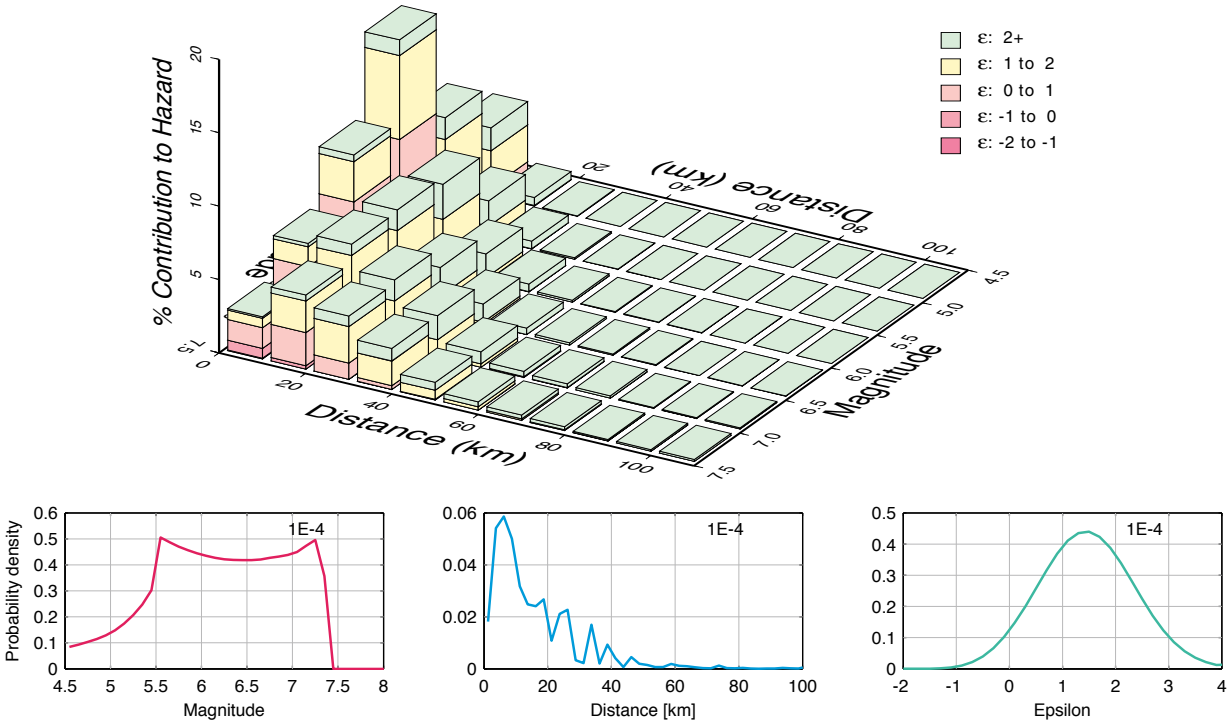

Fig. 3-4.16: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 100 Hz.

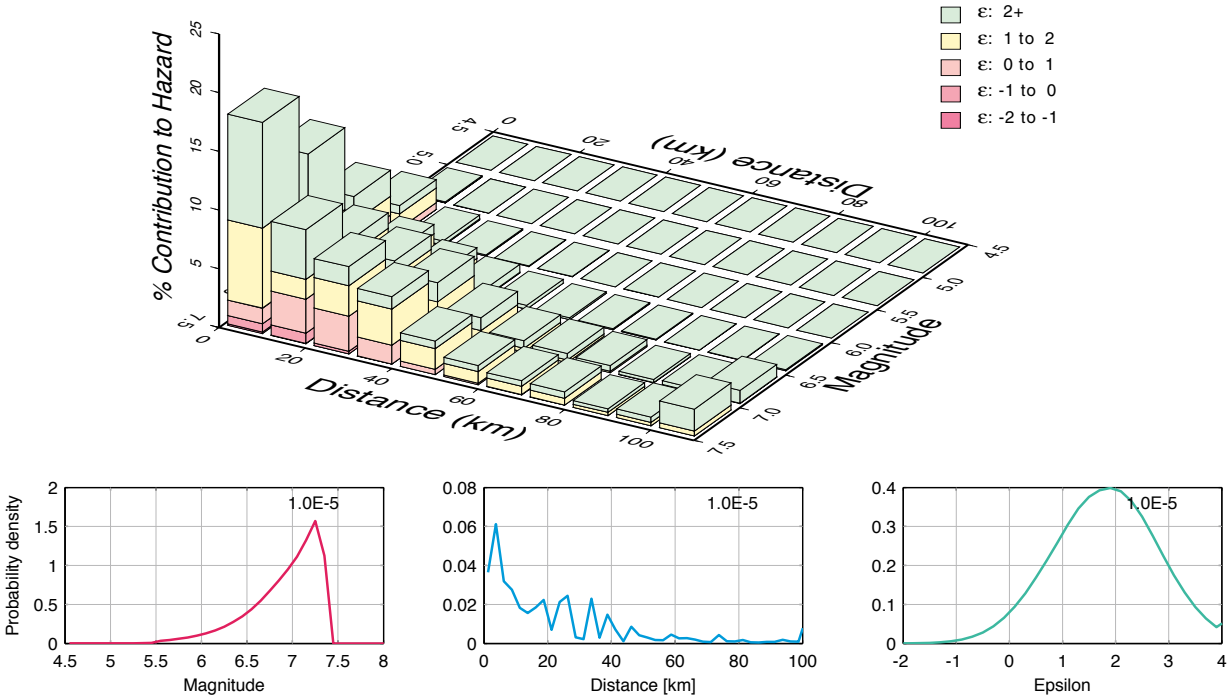

Fig. 3-4.17: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 0.5 Hz.

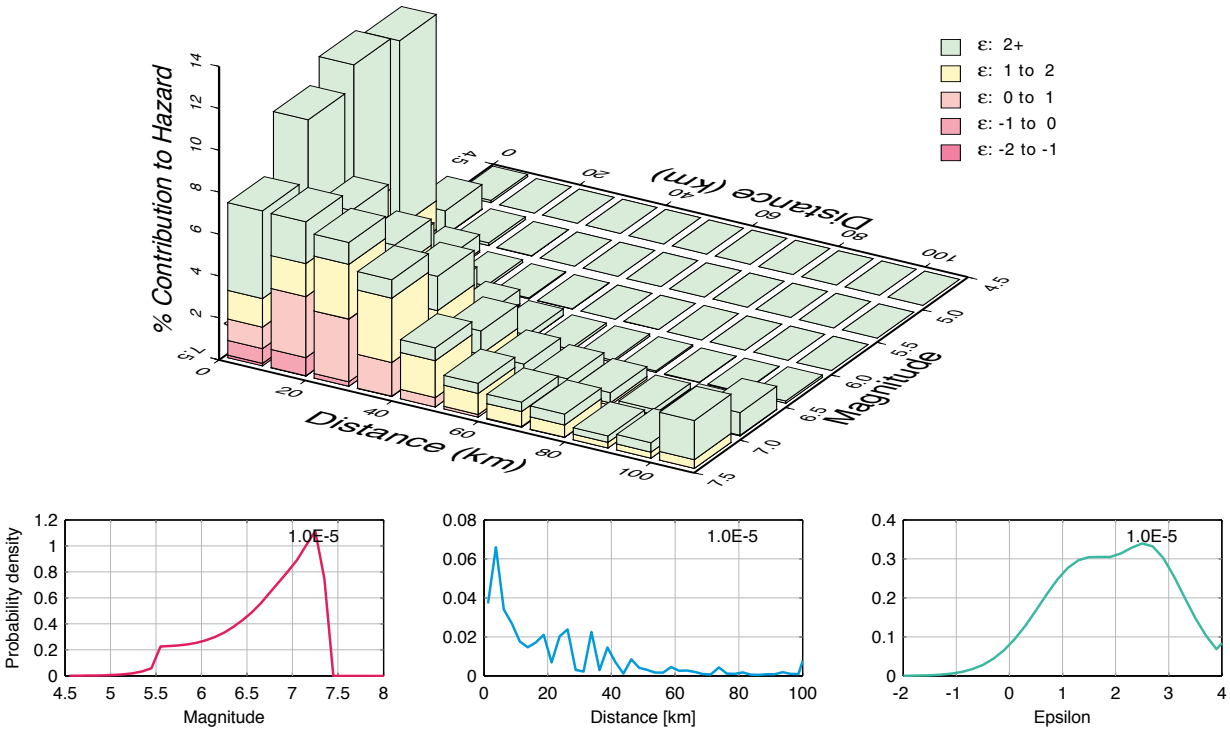

Fig. 3-4.18: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 1 Hz.

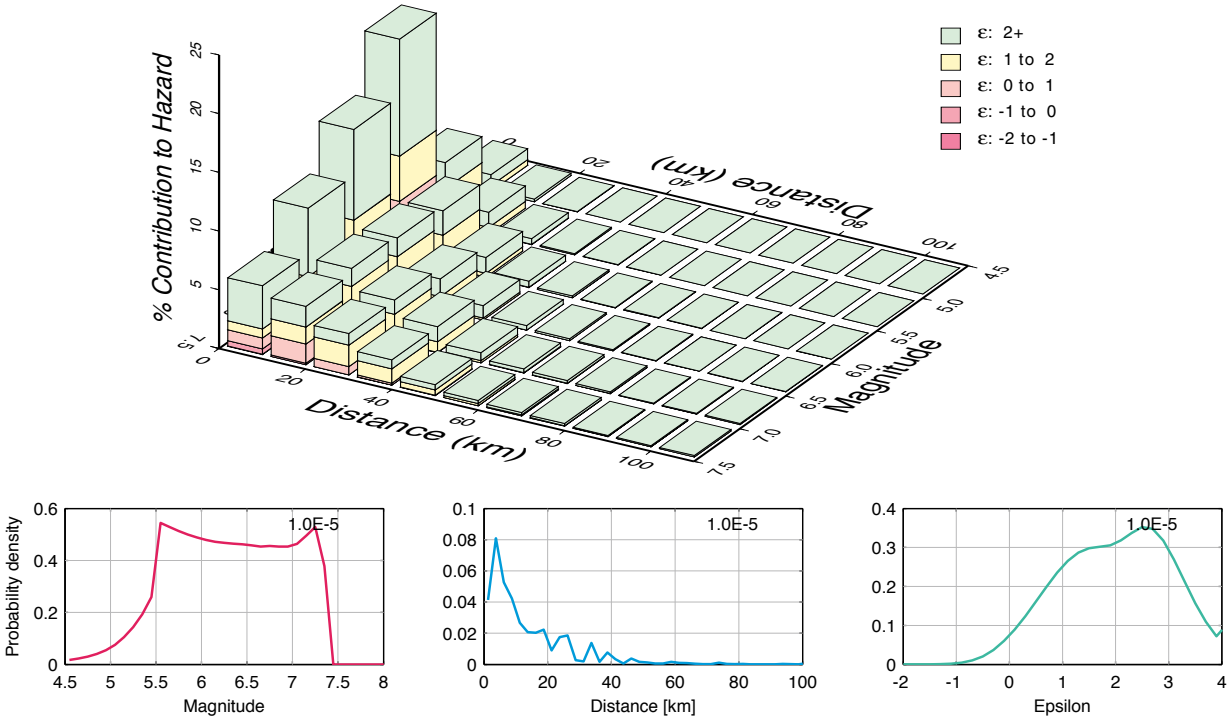

Fig. 3-4.19: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 5 Hz.

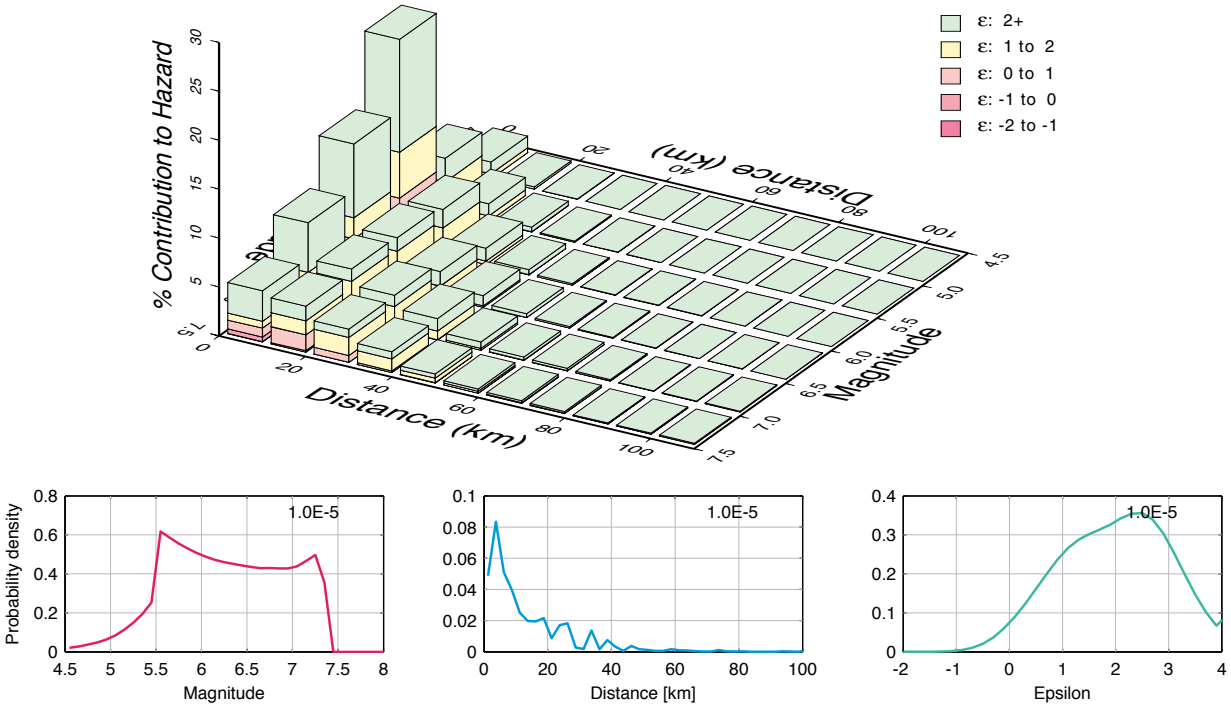

Fig. 3-4.20: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 10 Hz.

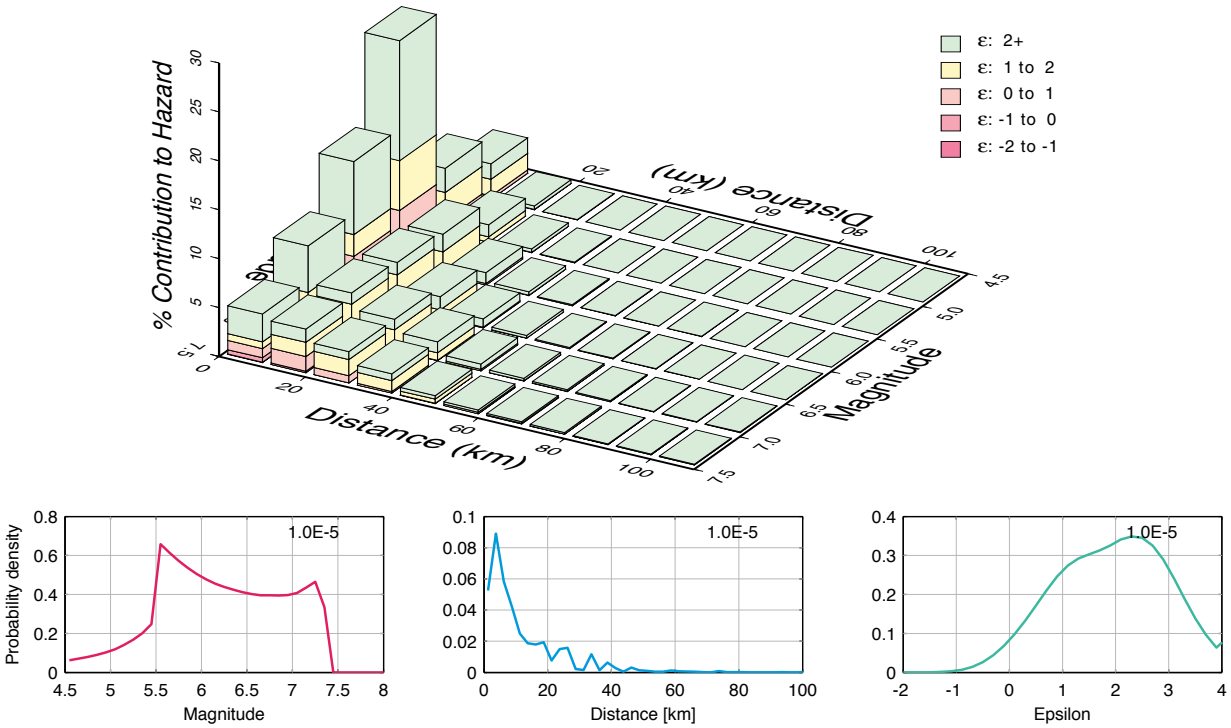

Fig. 3-4.21: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 100 Hz.

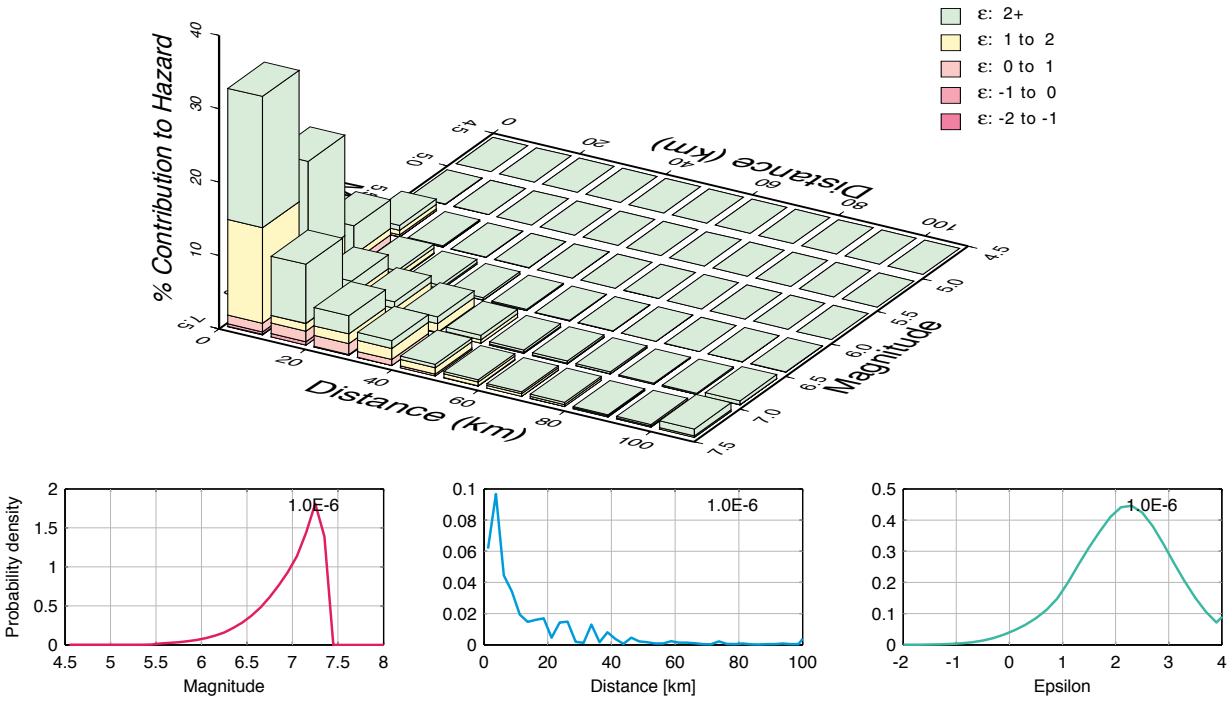

Fig. 3-4.22: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 0.5 Hz.

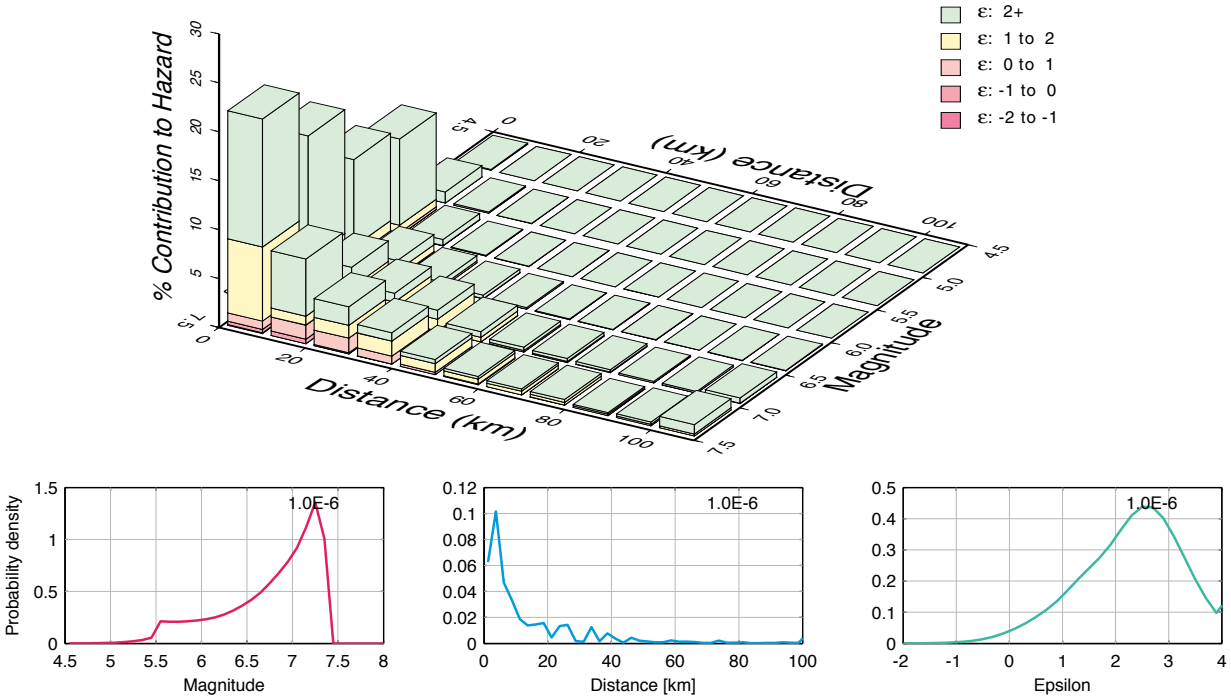

Fig. 3-4.23: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 1 Hz.

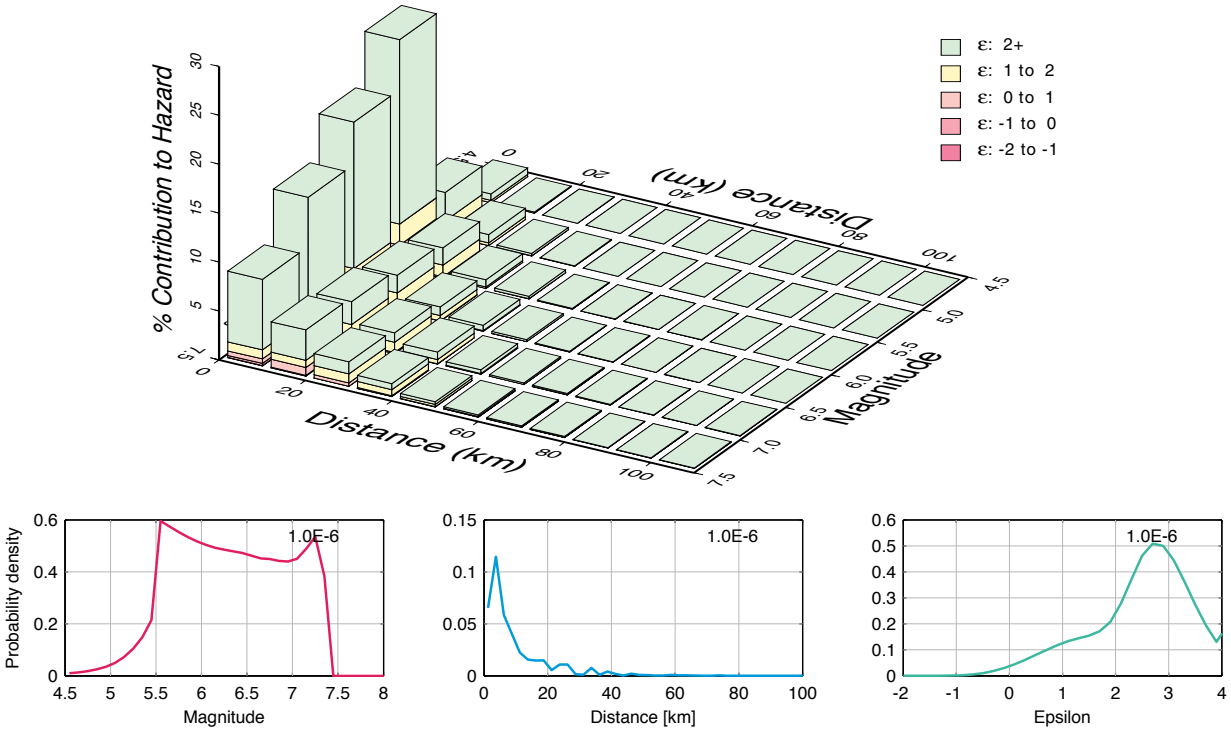

Fig. 3-4.24: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 5 Hz.

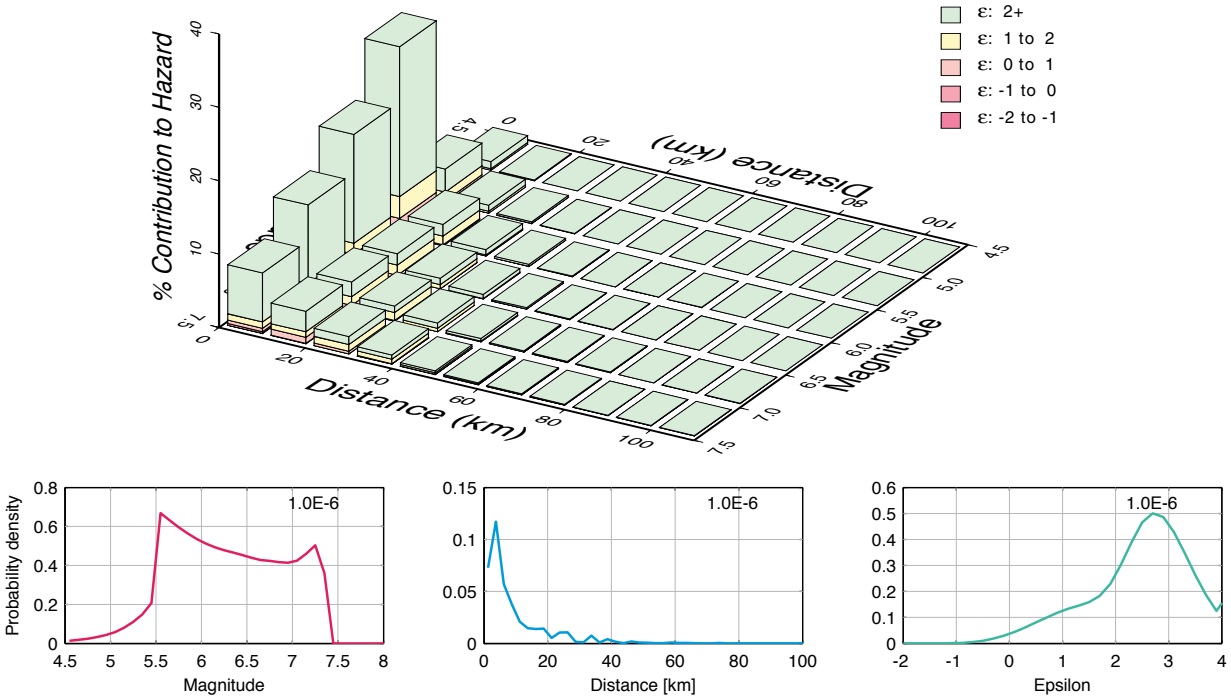

Fig. 3-4.25: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 10 Hz.

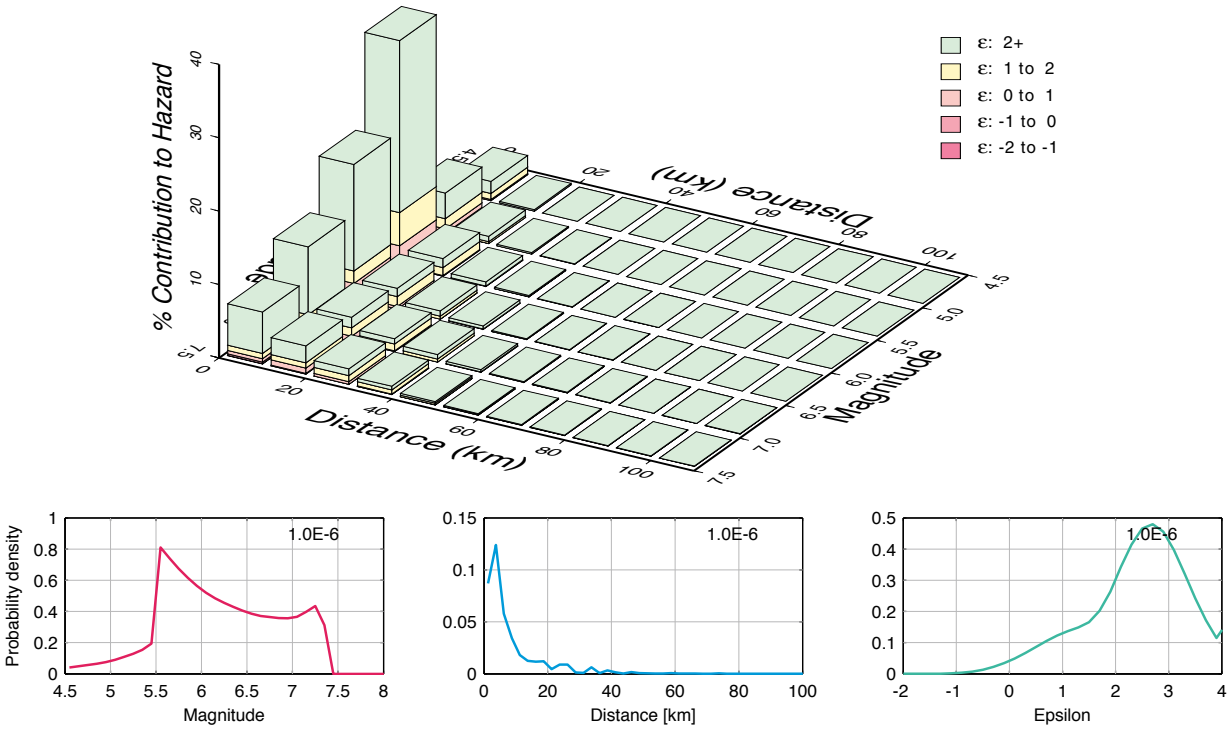

Fig. 3-4.26: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 100 Hz.

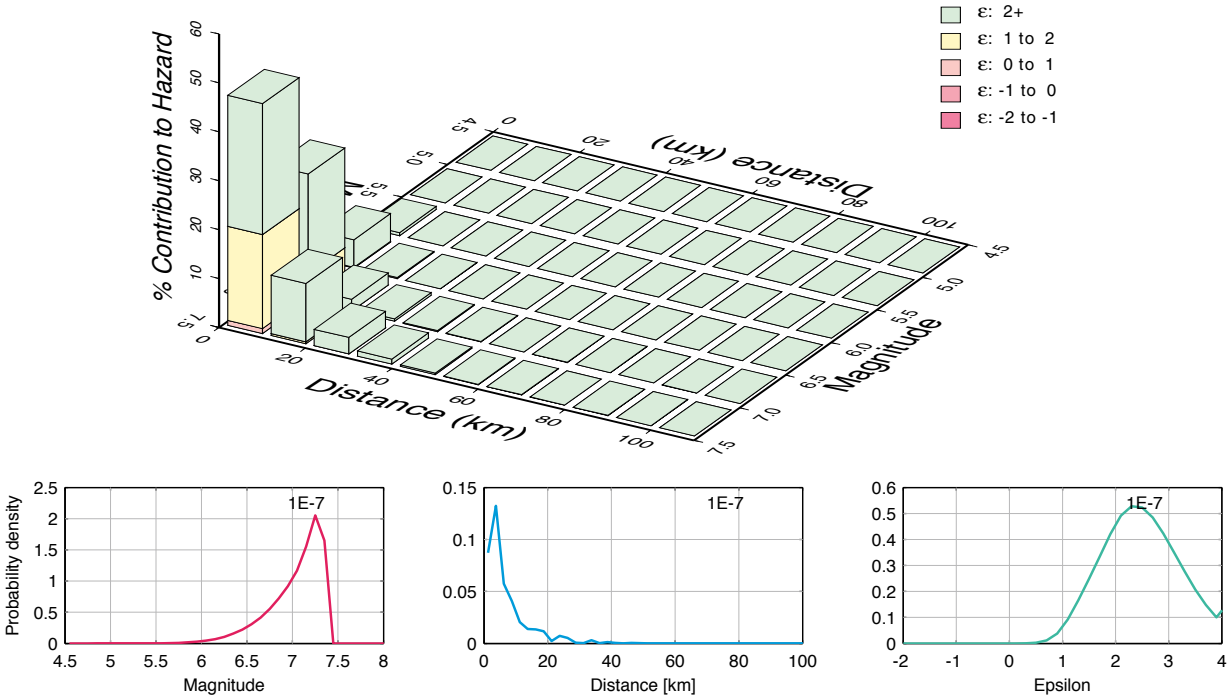

Fig. 3-4.27: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 0.5 Hz.

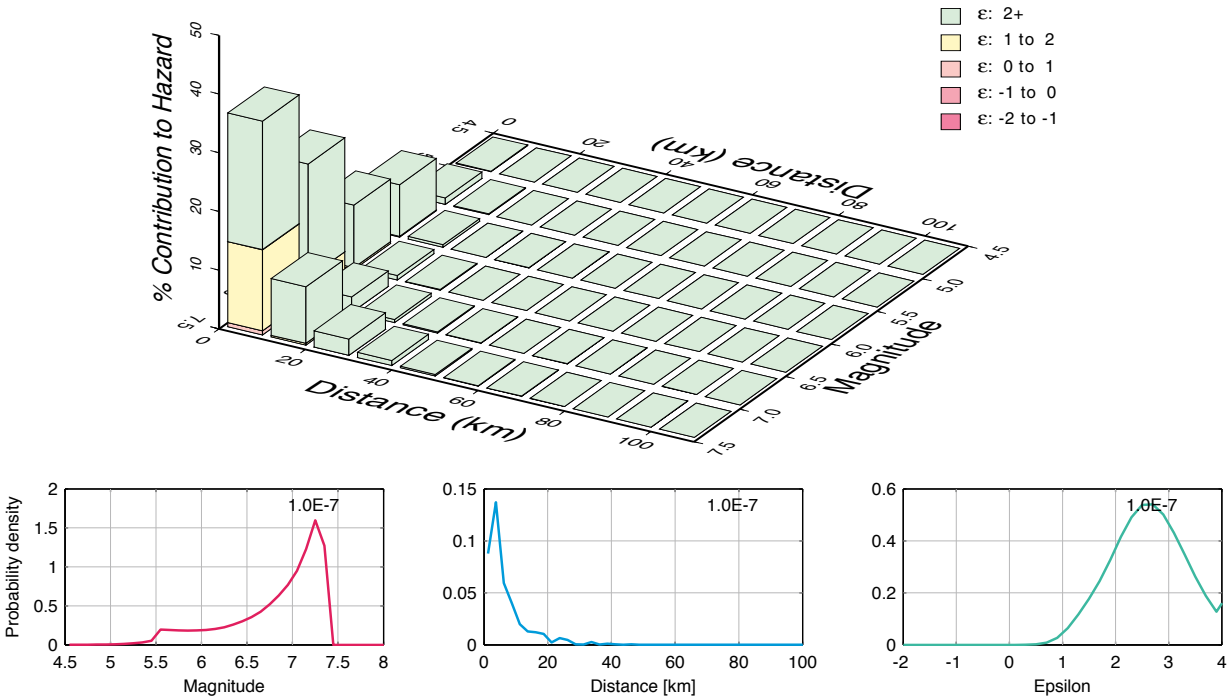

Fig. 3-4.28: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 1 Hz.

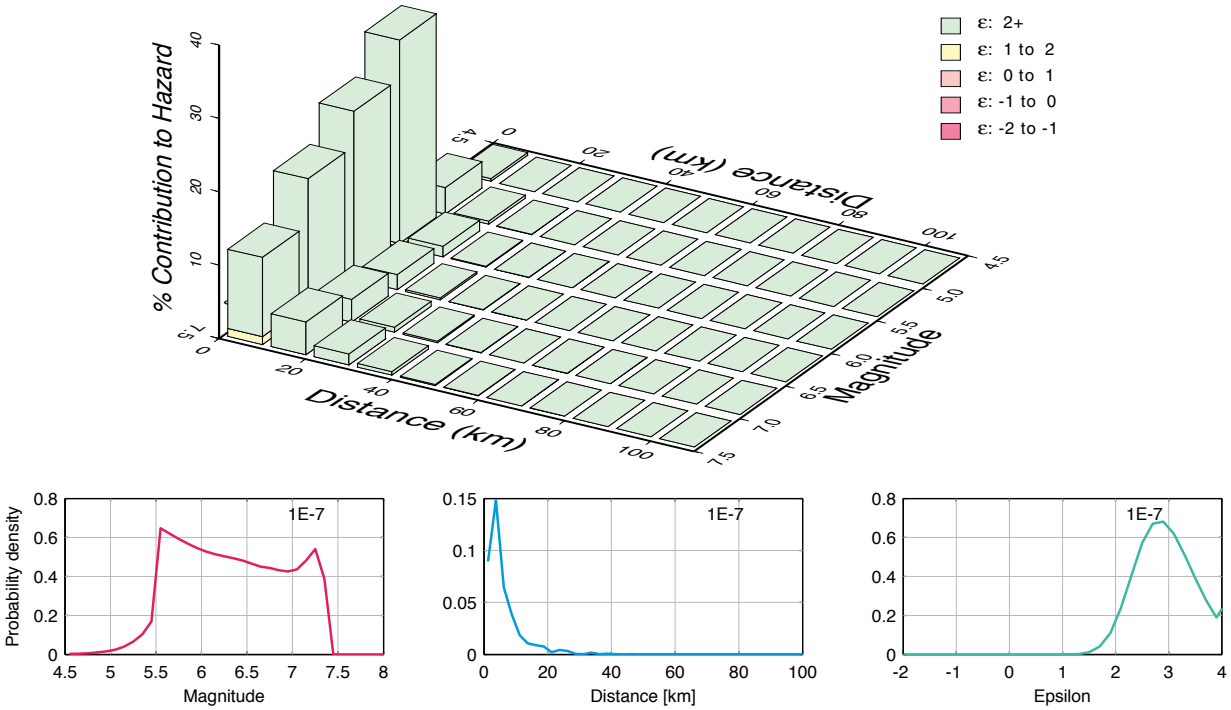

Fig. 3-4.29: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 5 Hz.

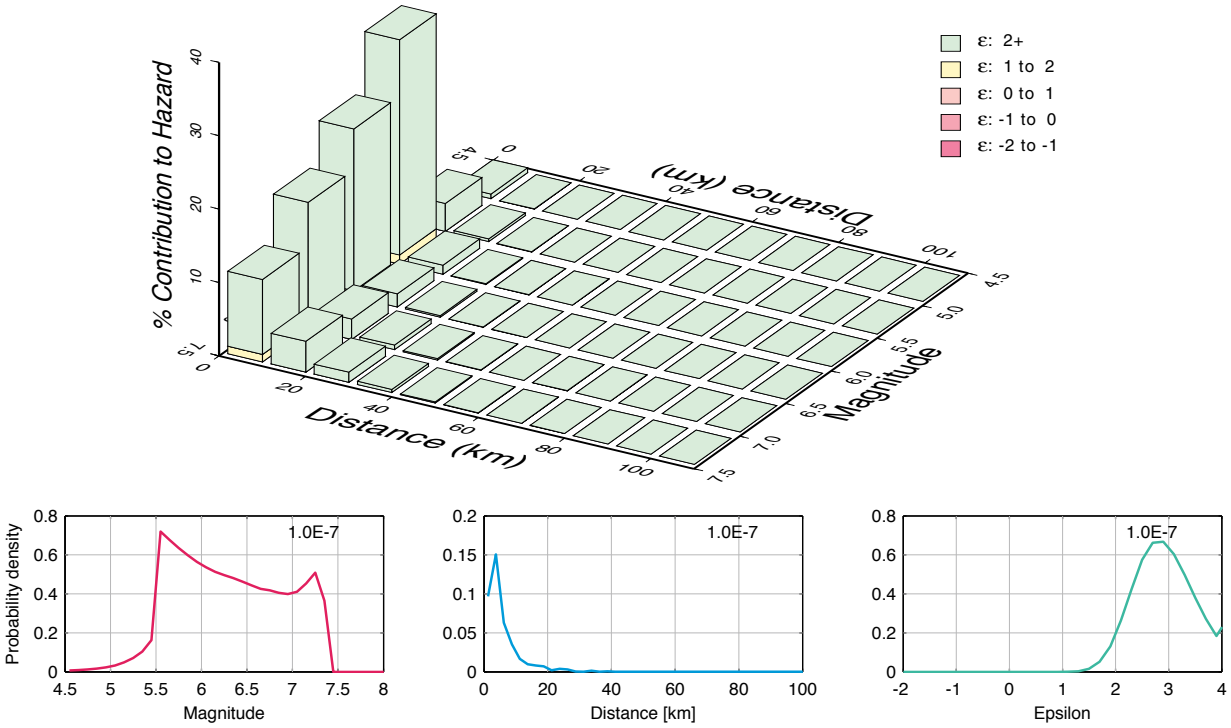

Fig. 3-4.30: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 10 Hz.

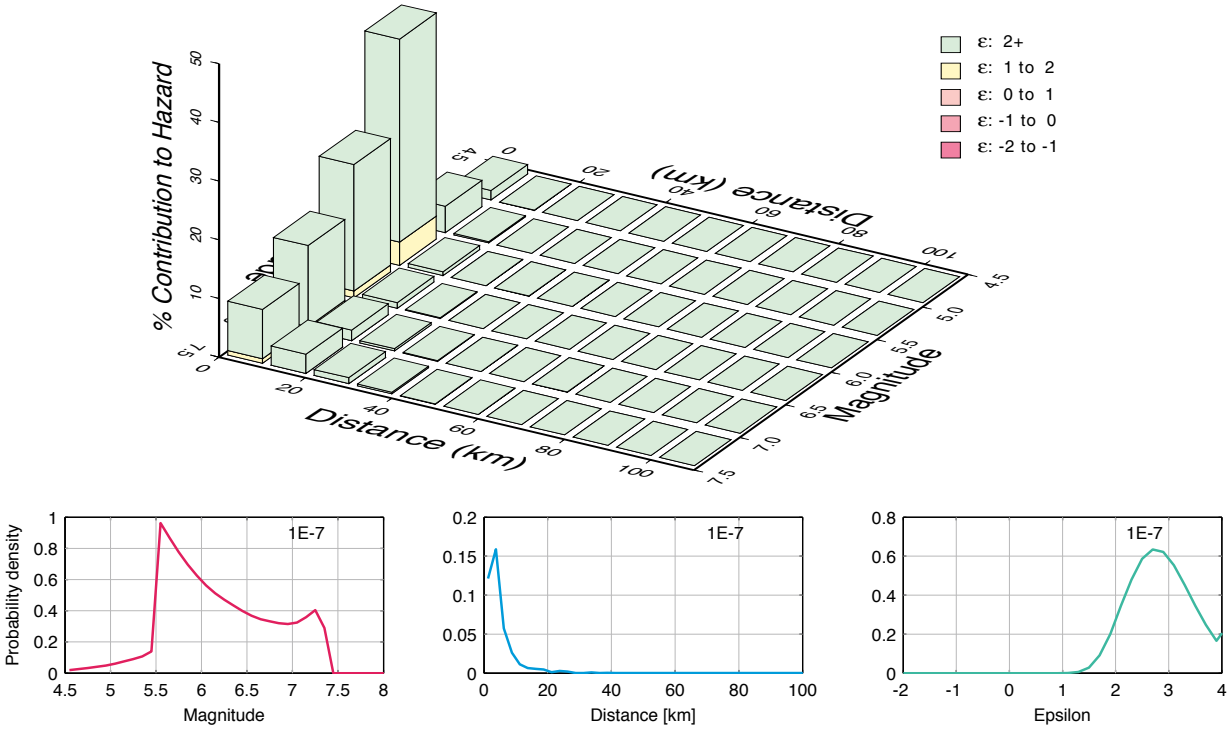

Fig. 3-4.31: Gösgen, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 100 Hz.

3.5 Gösgen, Horizontal Component, Mean $M - R - \varepsilon$

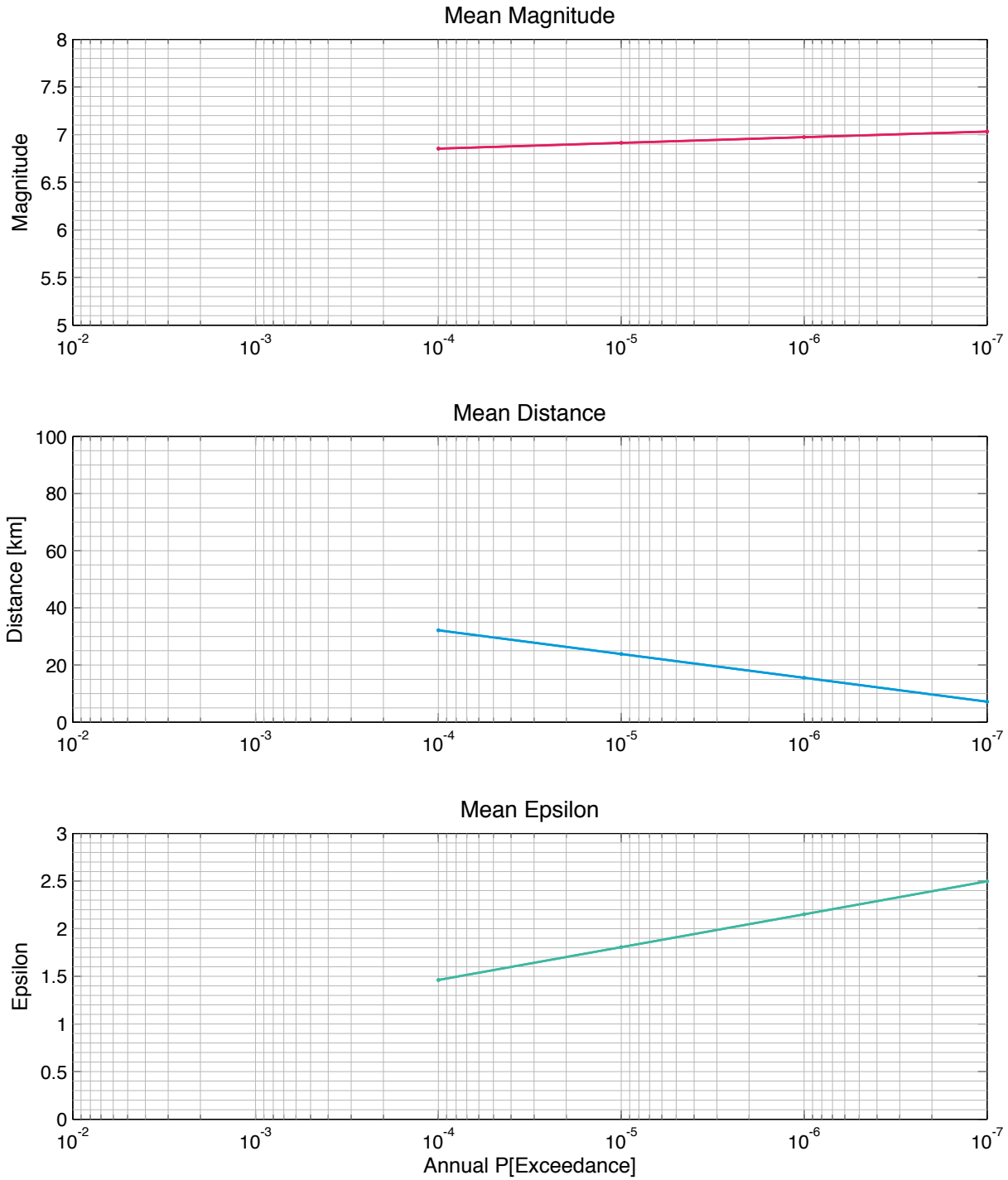

Fig. 3-9.1: Goesgen, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 0.5 Hz.

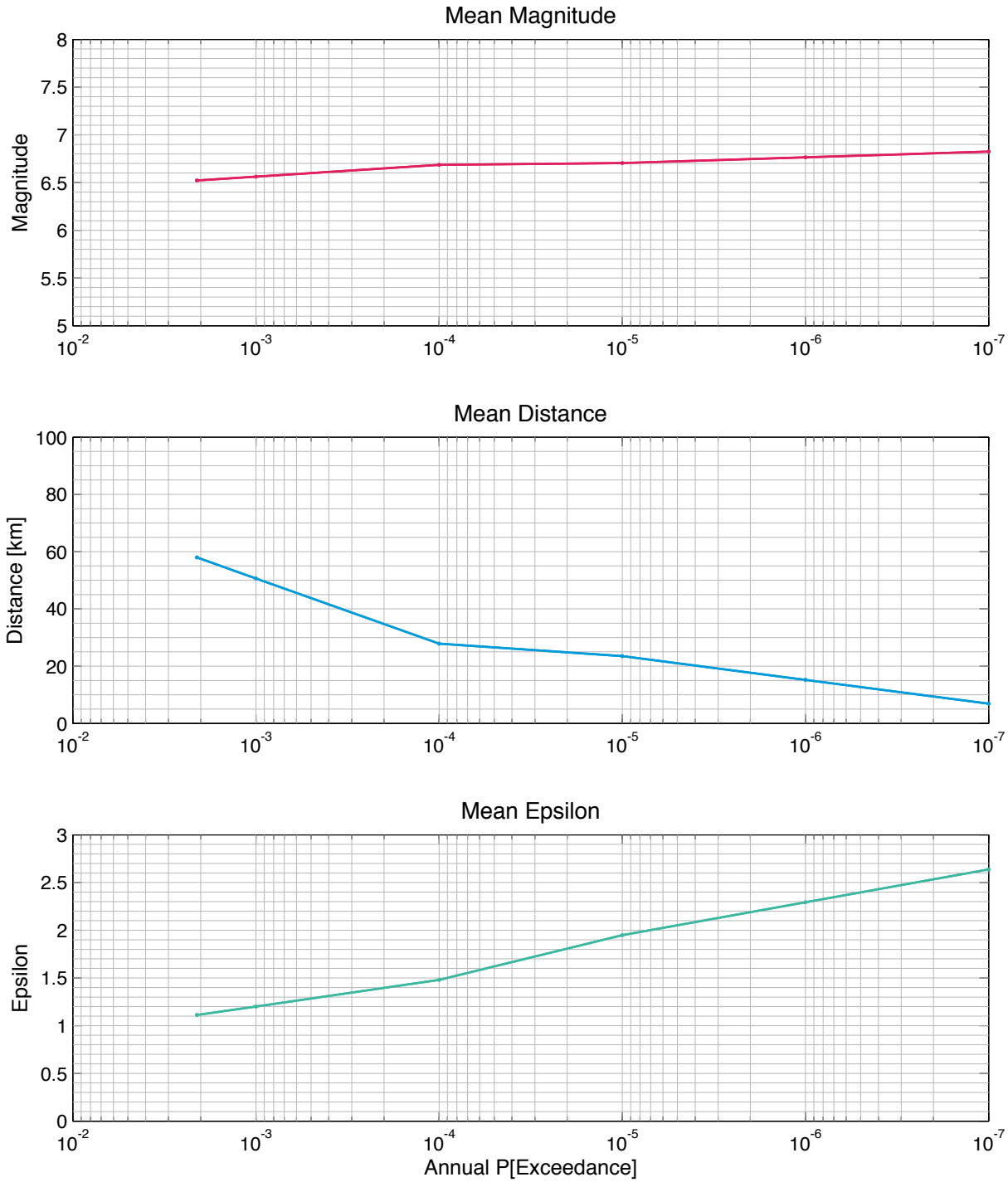

Fig. 3-9.2: Goesgen, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 1 Hz.

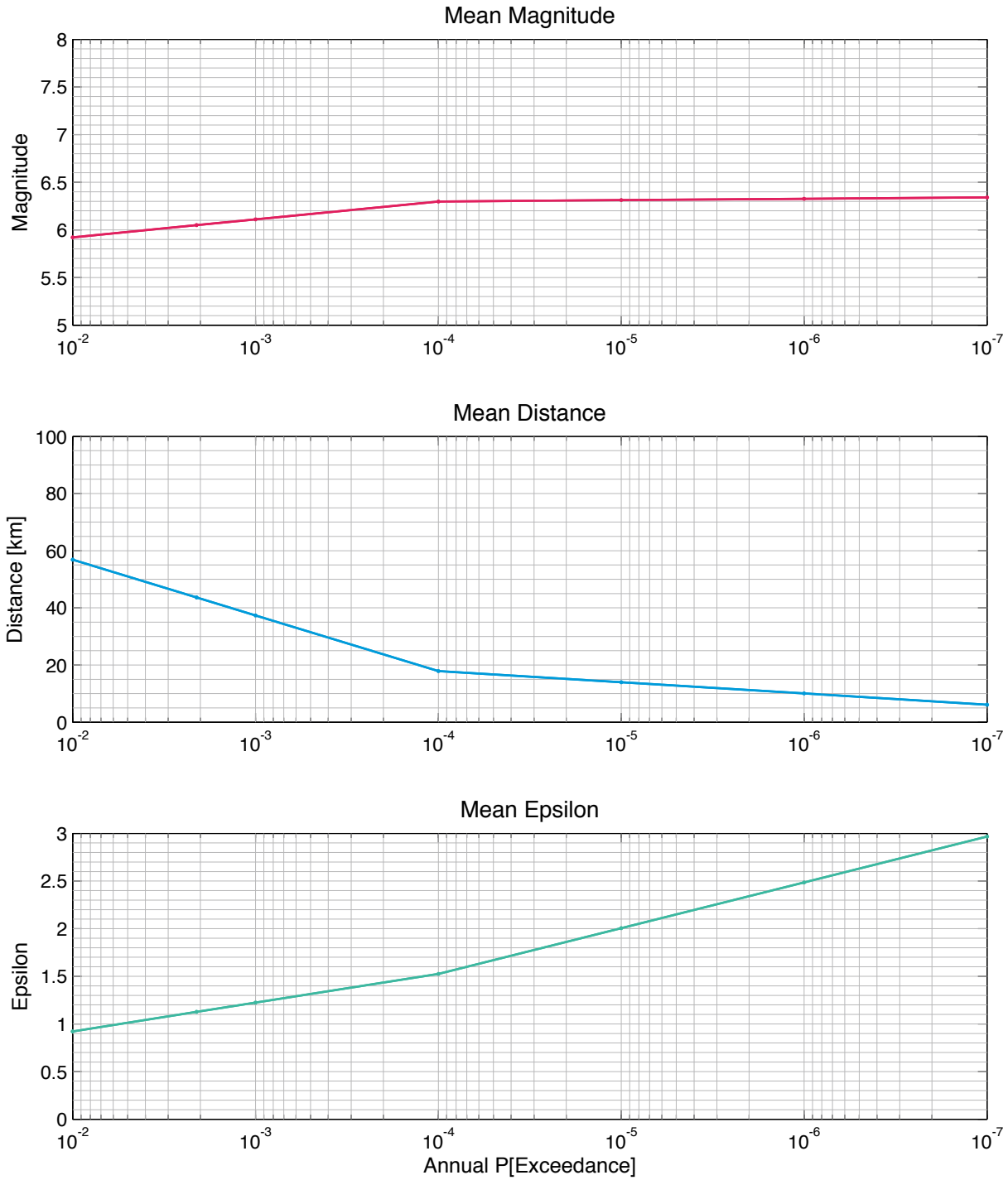

Fig. 3-9.3: Goesgen, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 5 Hz.

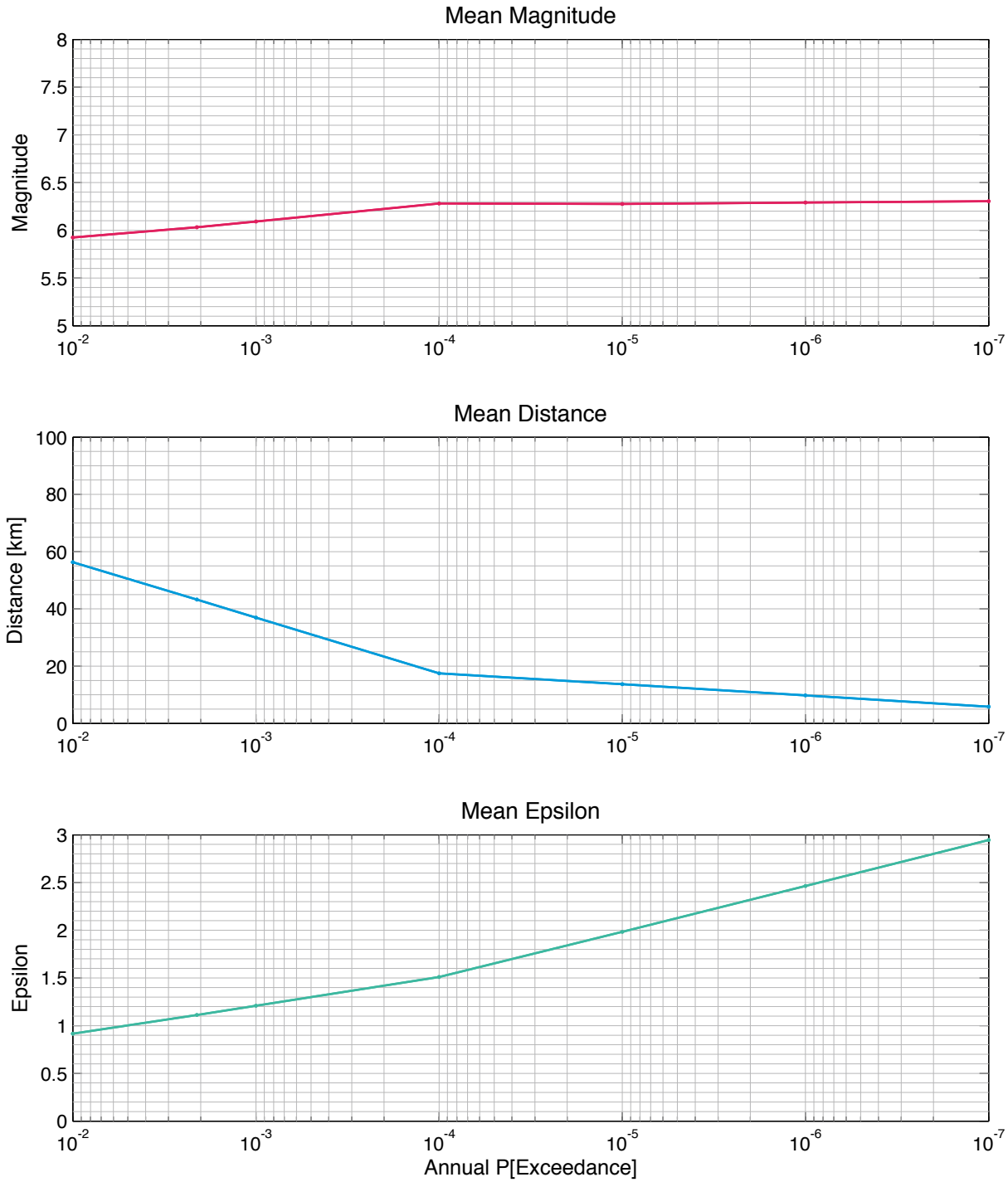

Fig. 3-9.4: Goesgen, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 10 Hz.

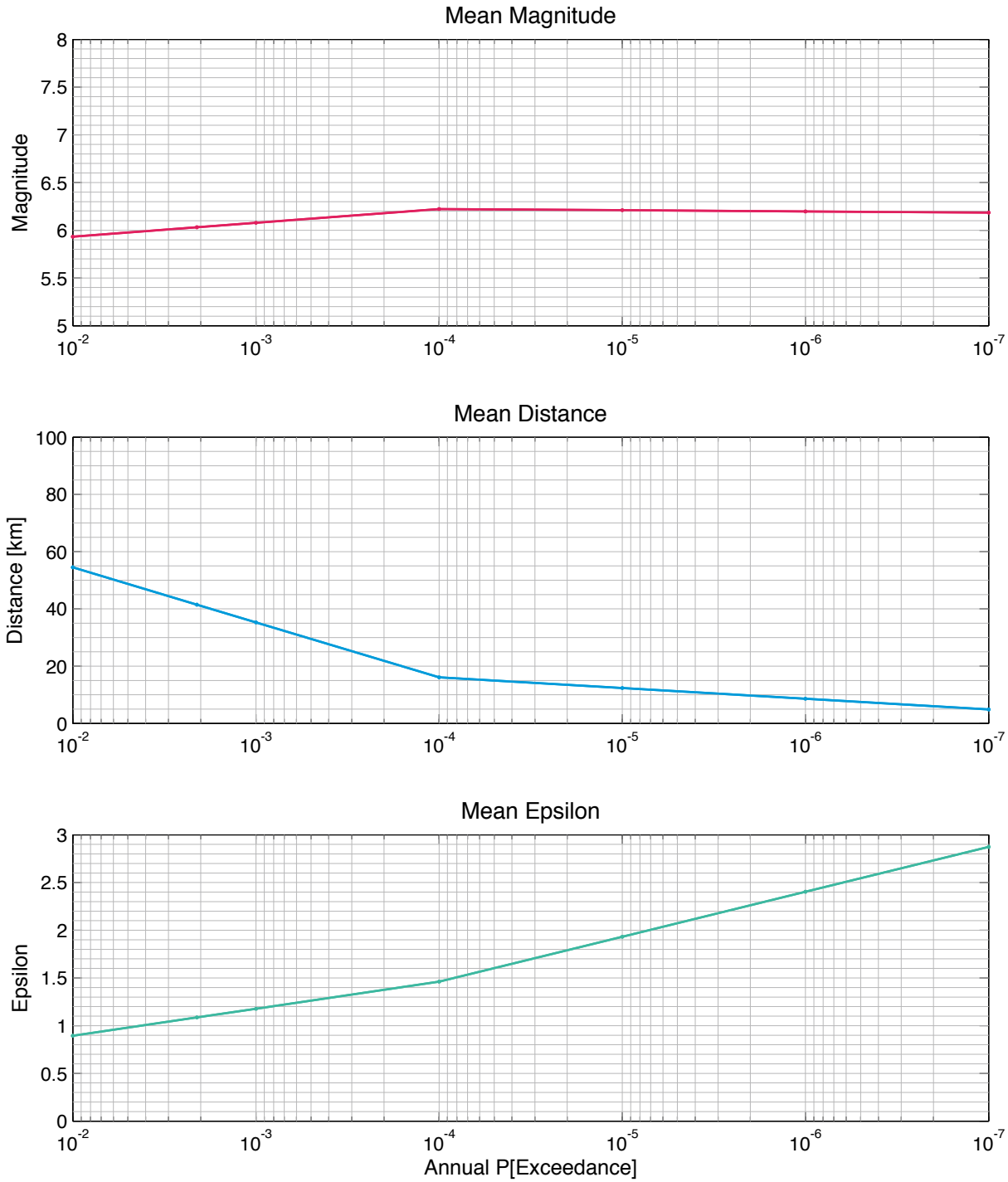

Fig. 3-9.5: Goesgen, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 100 Hz.

3.10 Gösgen, Rock Hazard, Vertical Component, Surface

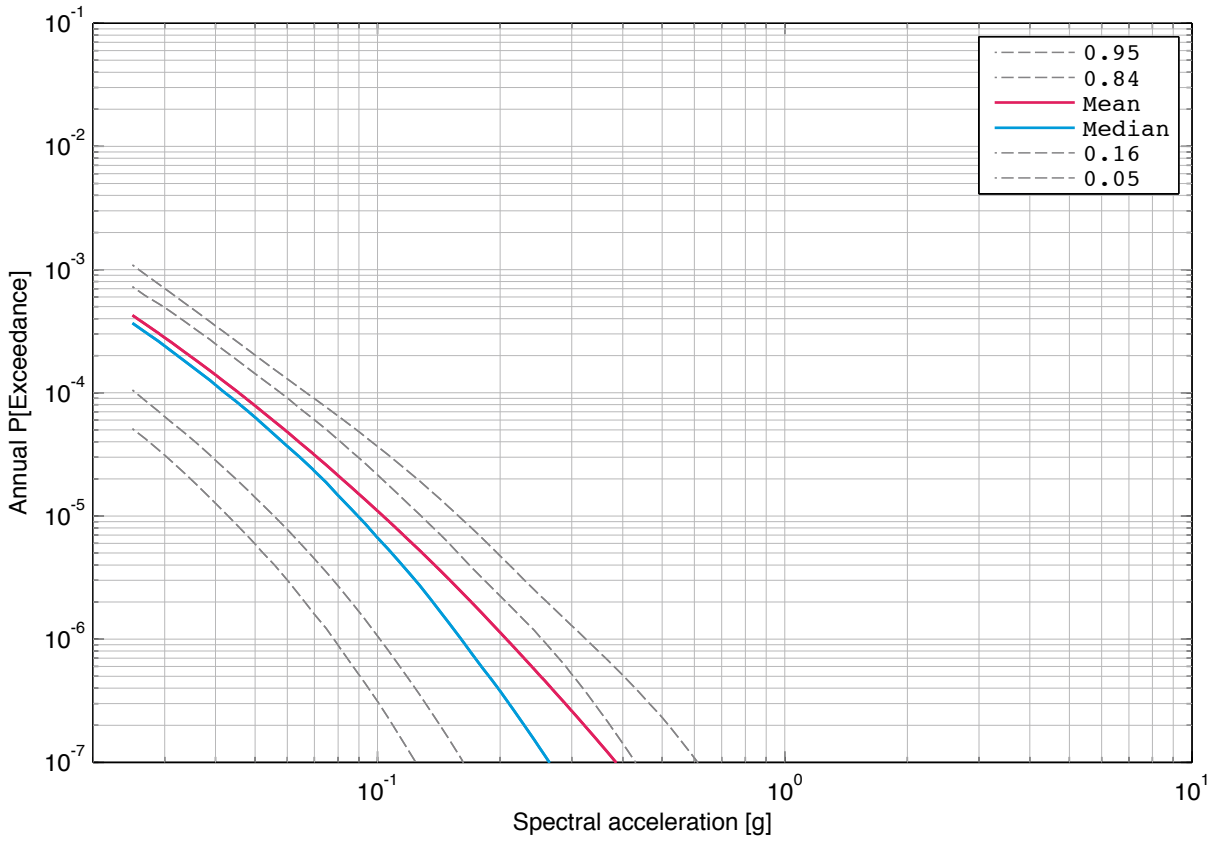

Fig. 3-10.1: Gösgen, vertical component, rock, mean hazard and fractiles, 0.5 Hz.

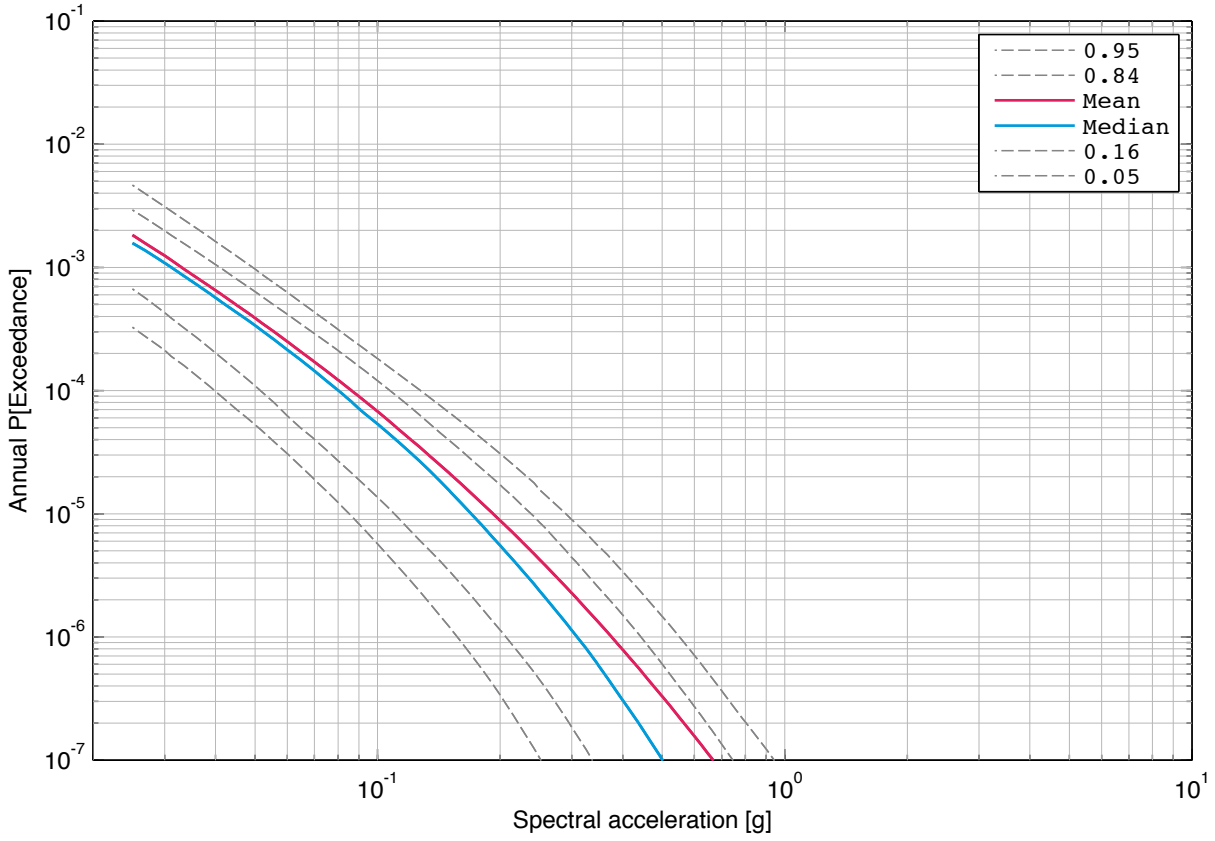

Fig. 3-10.2: Gösgen, vertical component, rock, mean hazard and fractiles, 1 Hz.

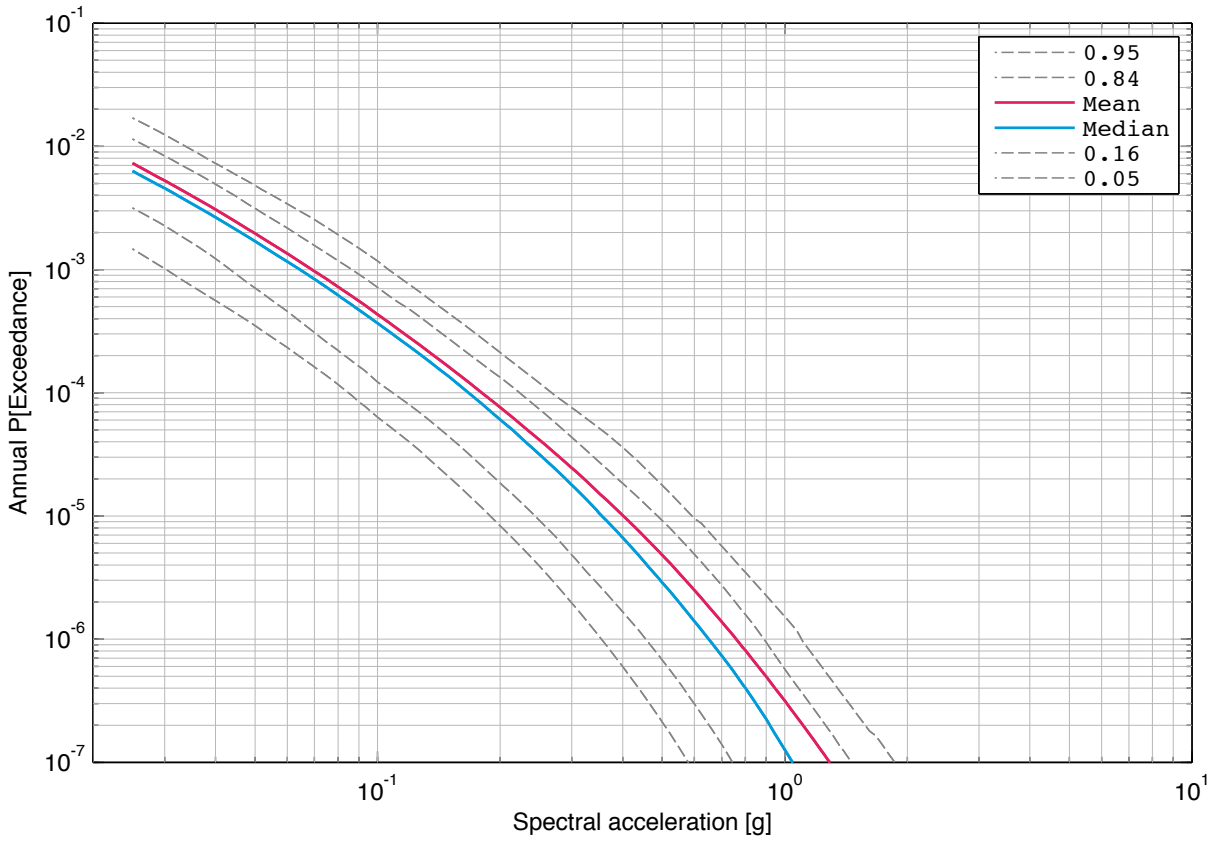

Fig. 3-10.3: Gösgen, vertical component, rock, mean hazard and fractiles, 2.5 Hz.

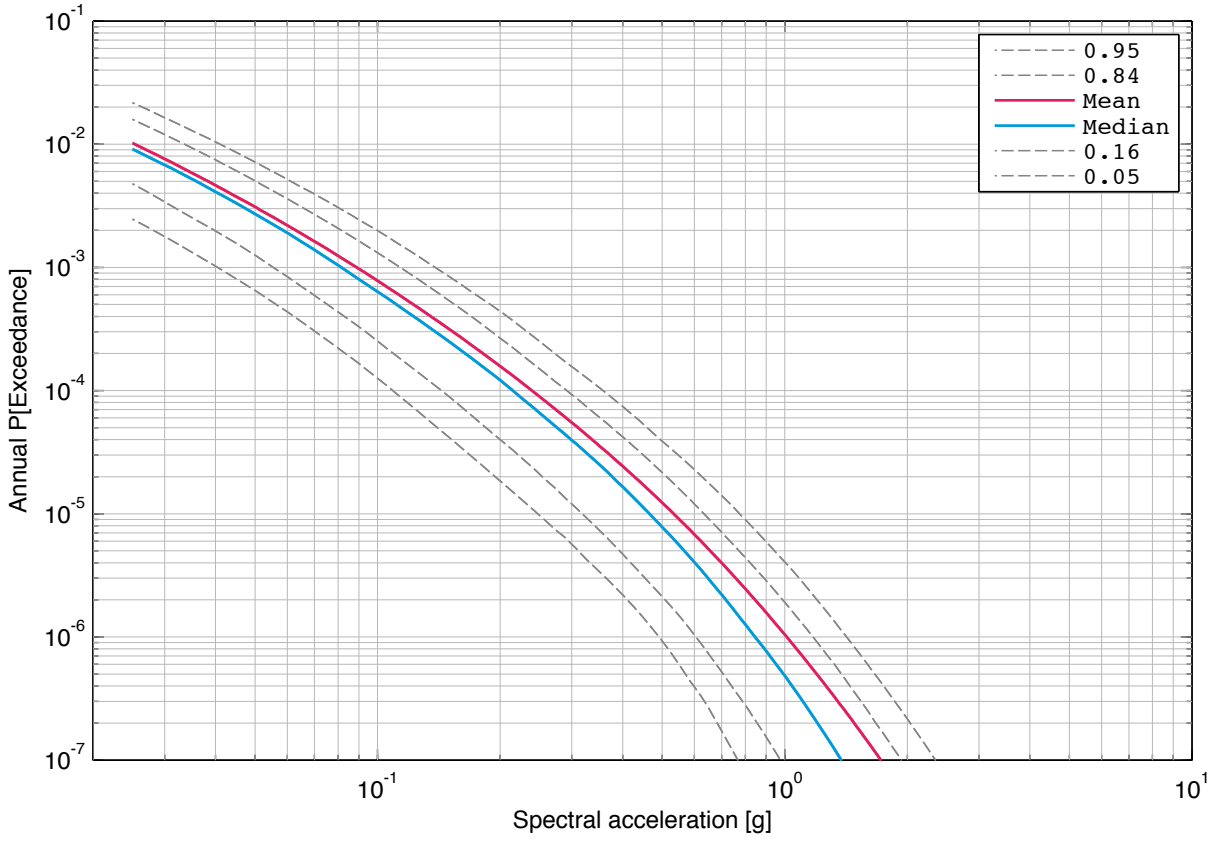

Fig. 3-10.4: Gösgen, vertical component, rock, mean hazard and fractiles, 5 Hz.

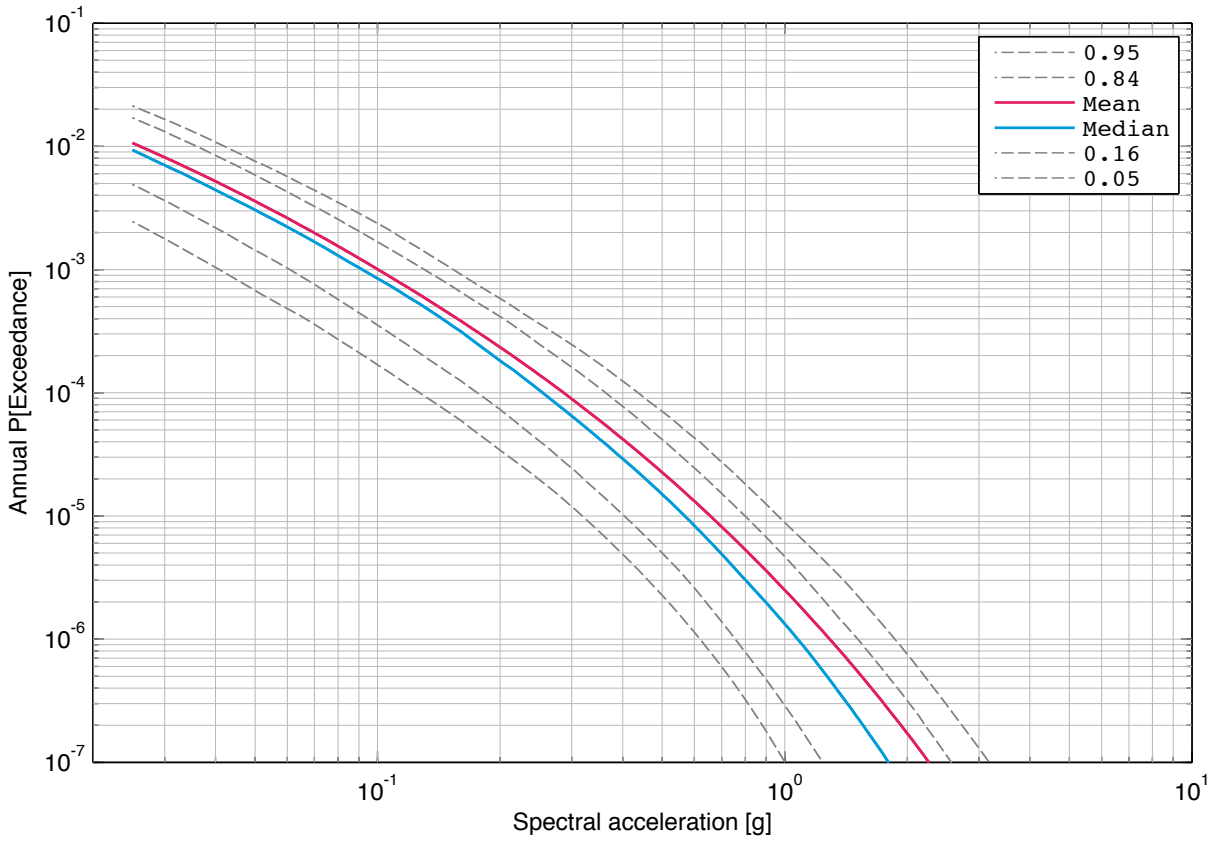

Fig. 3-10.5: Gösgen, vertical component, rock, mean hazard and fractiles, 10 Hz.

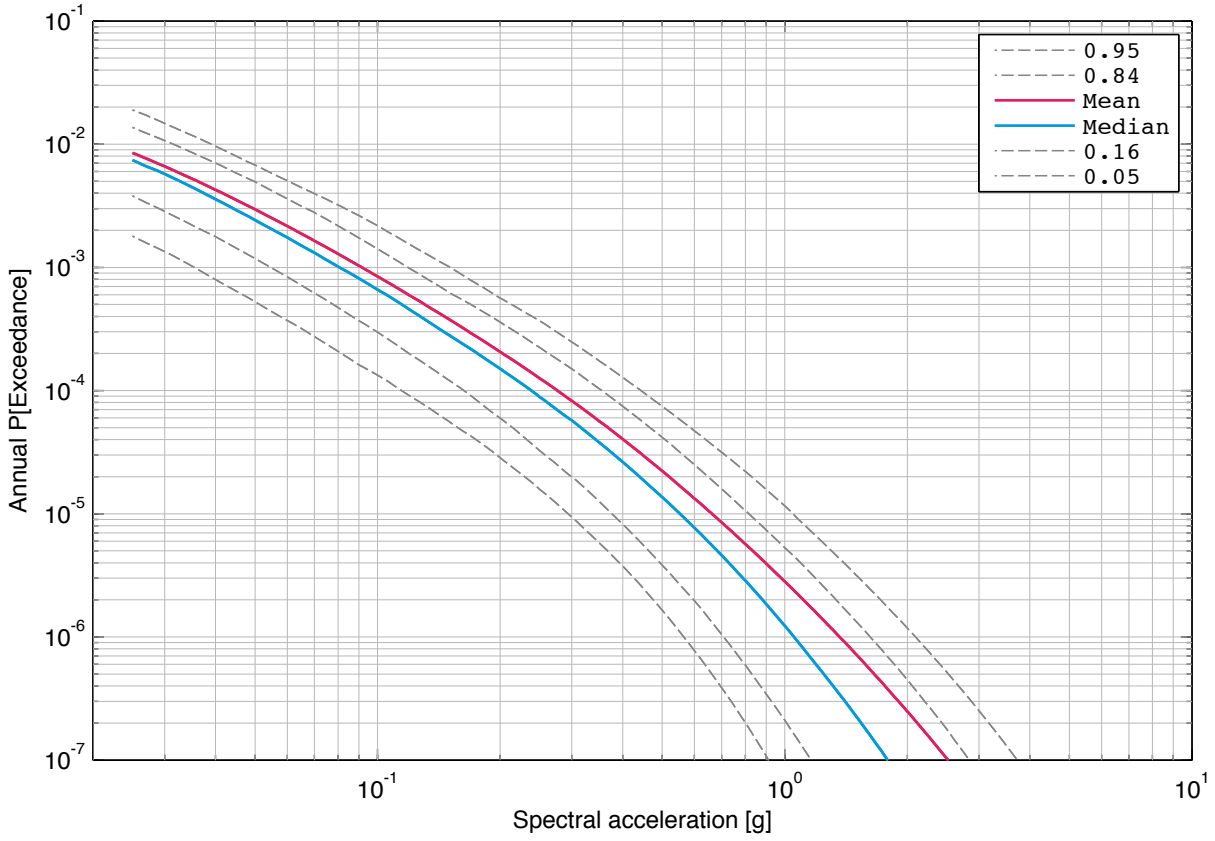

Fig. 3-10.6: Gösgen, vertical component, rock, mean hazard and fractiles, 20 Hz.

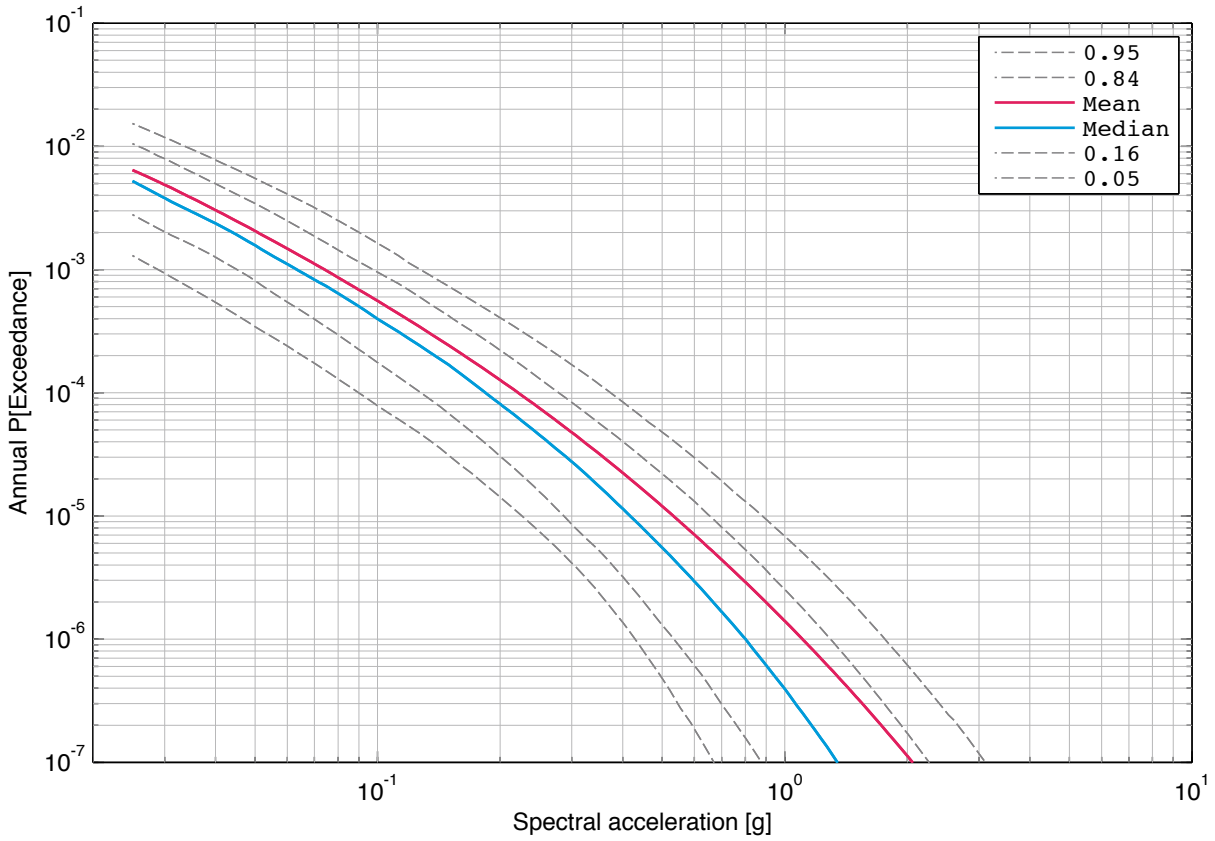

Fig. 3-10.7: Gösgen, vertical component, rock, mean hazard and fractiles, 33 Hz.

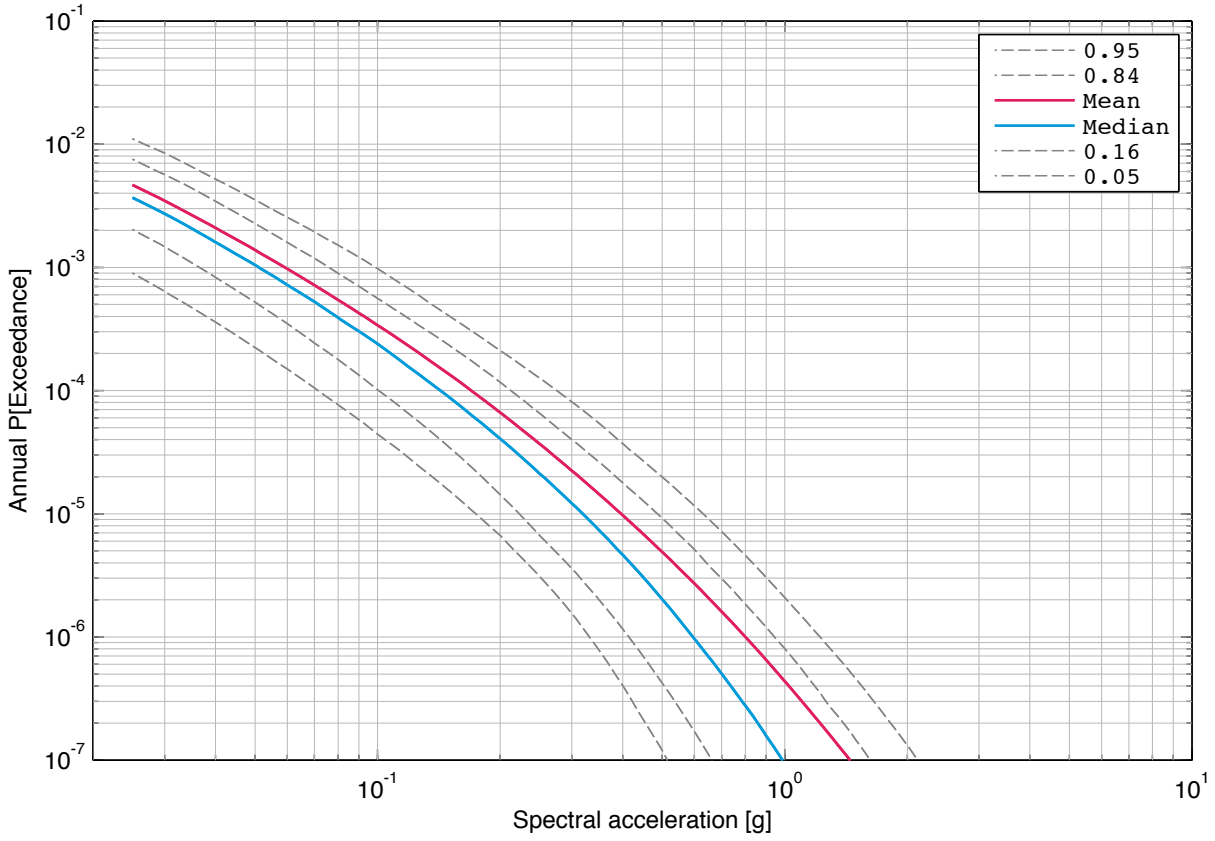

Fig. 3-10.8: Gösgen, vertical component, rock, mean hazard and fractiles, 50 Hz.

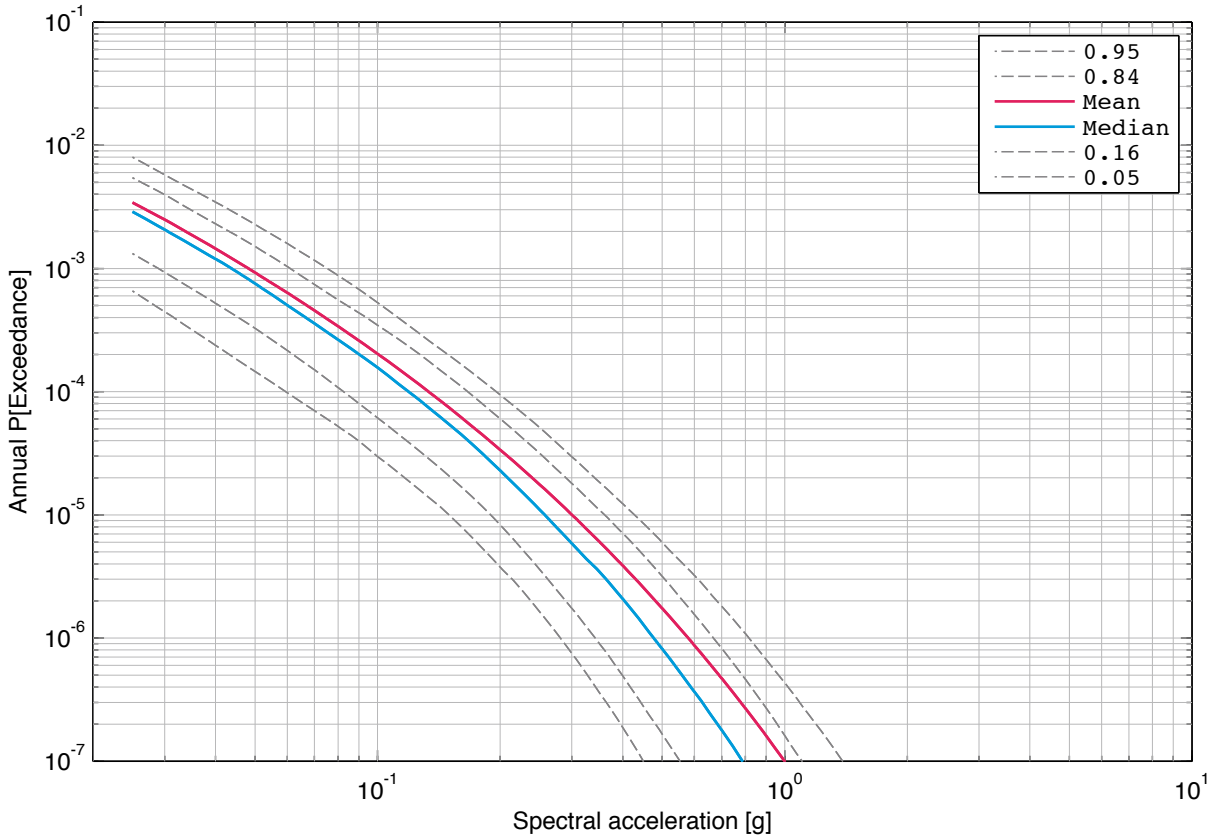

Fig. 3-10.9: Gösgen, vertical component, rock, mean hazard and fractiles, 100 Hz.

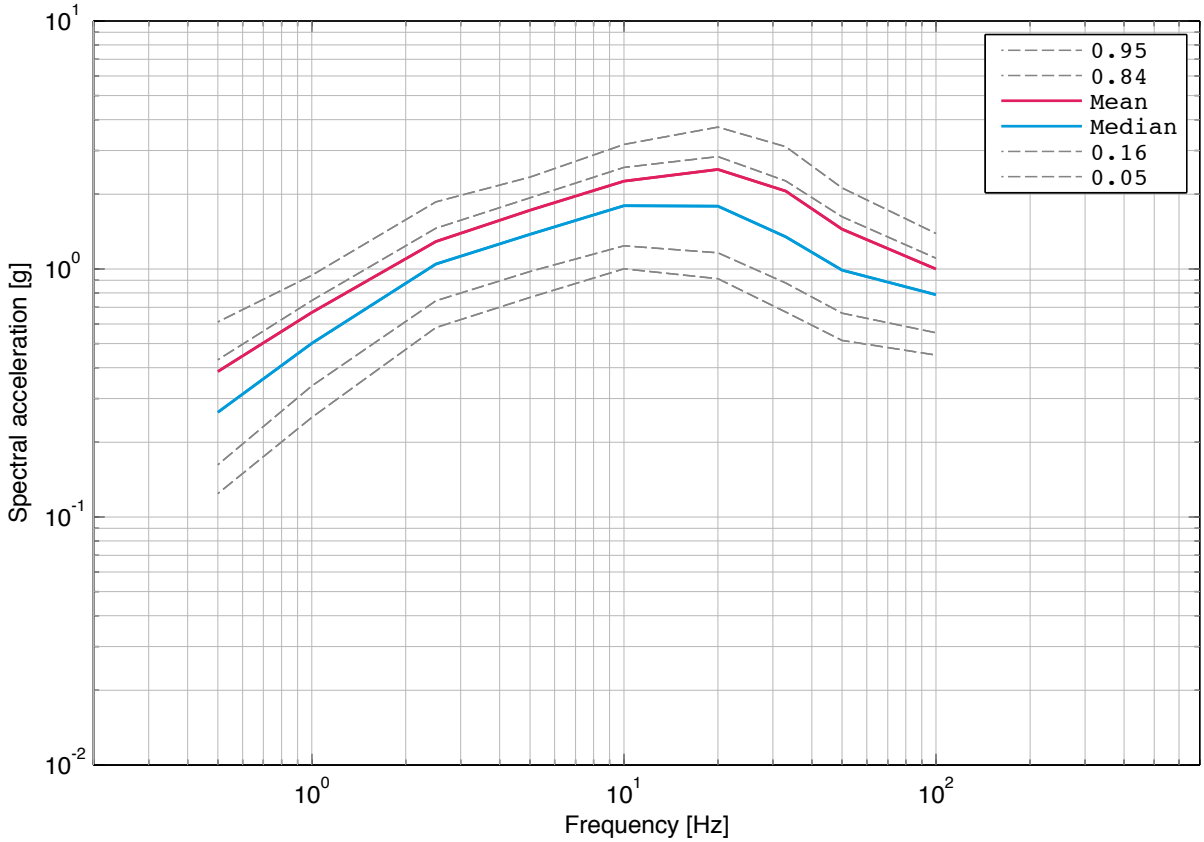

Fig. 3-10.10: Gösgen, vertical component, rock, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

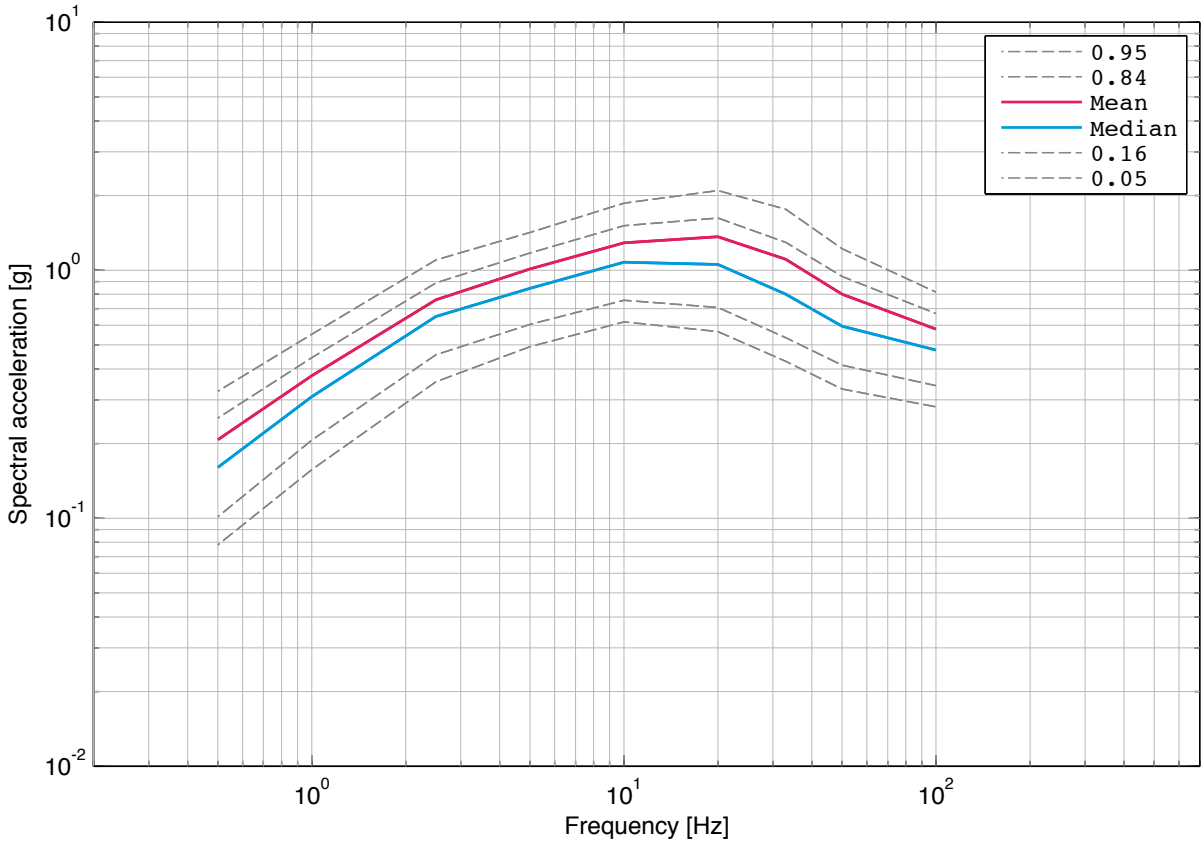

Fig. 3-10.11: Gösgen, vertical component, rock, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

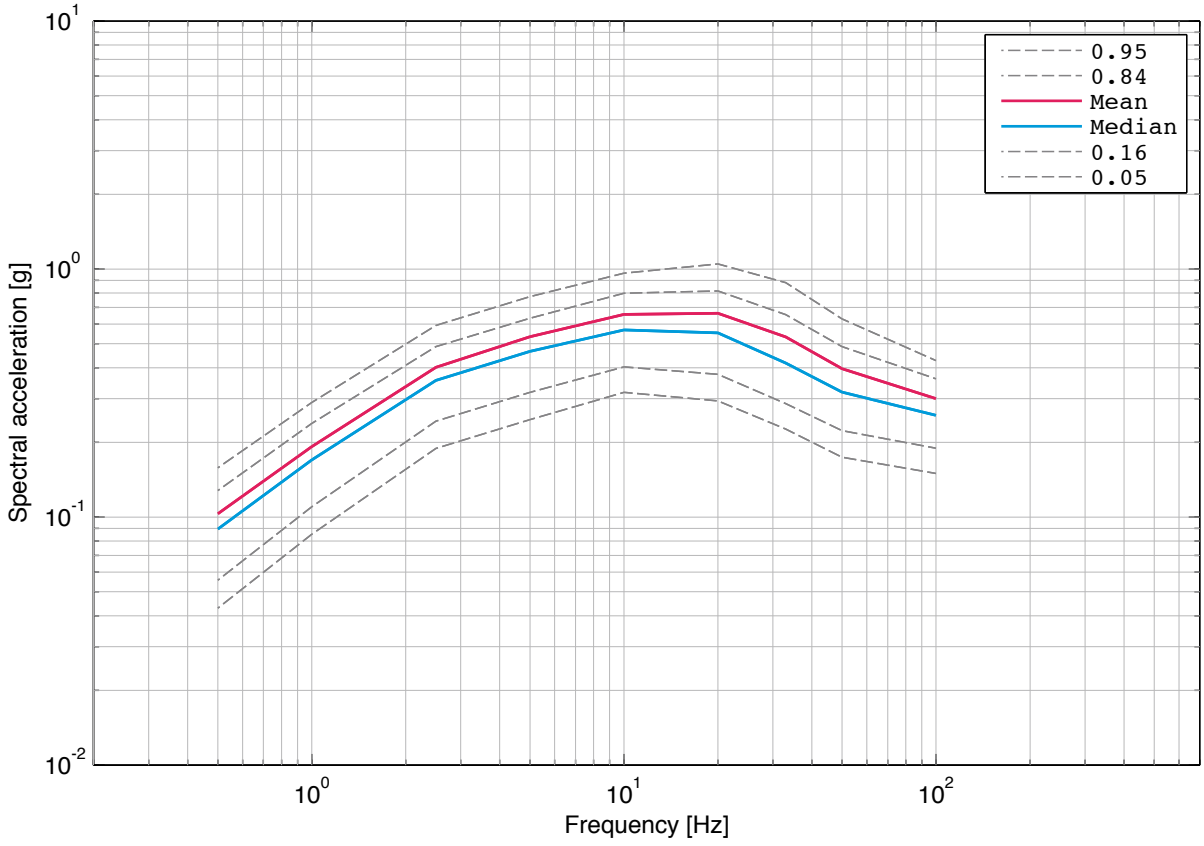

Fig. 3-10.12: Gösgen, vertical component, rock, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

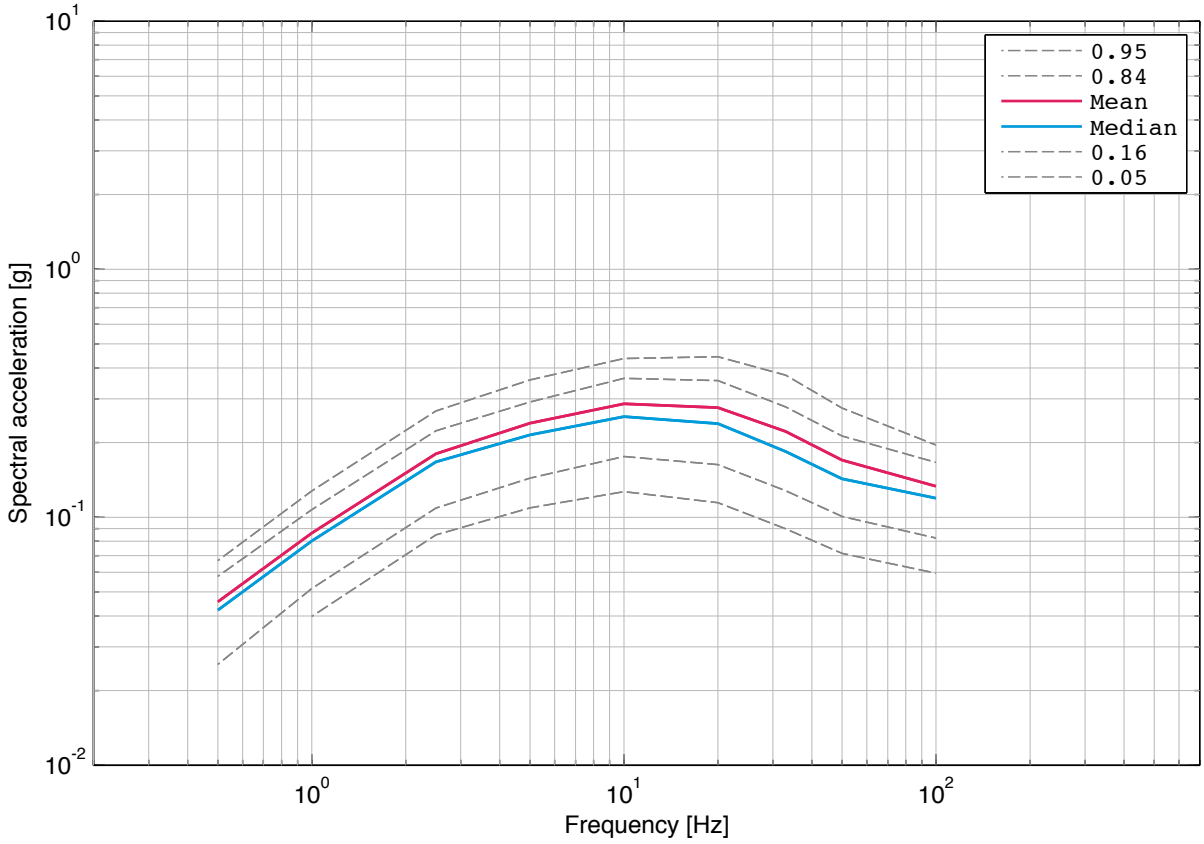

Fig. 3-10.13: Gösgen, vertical component, rock, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

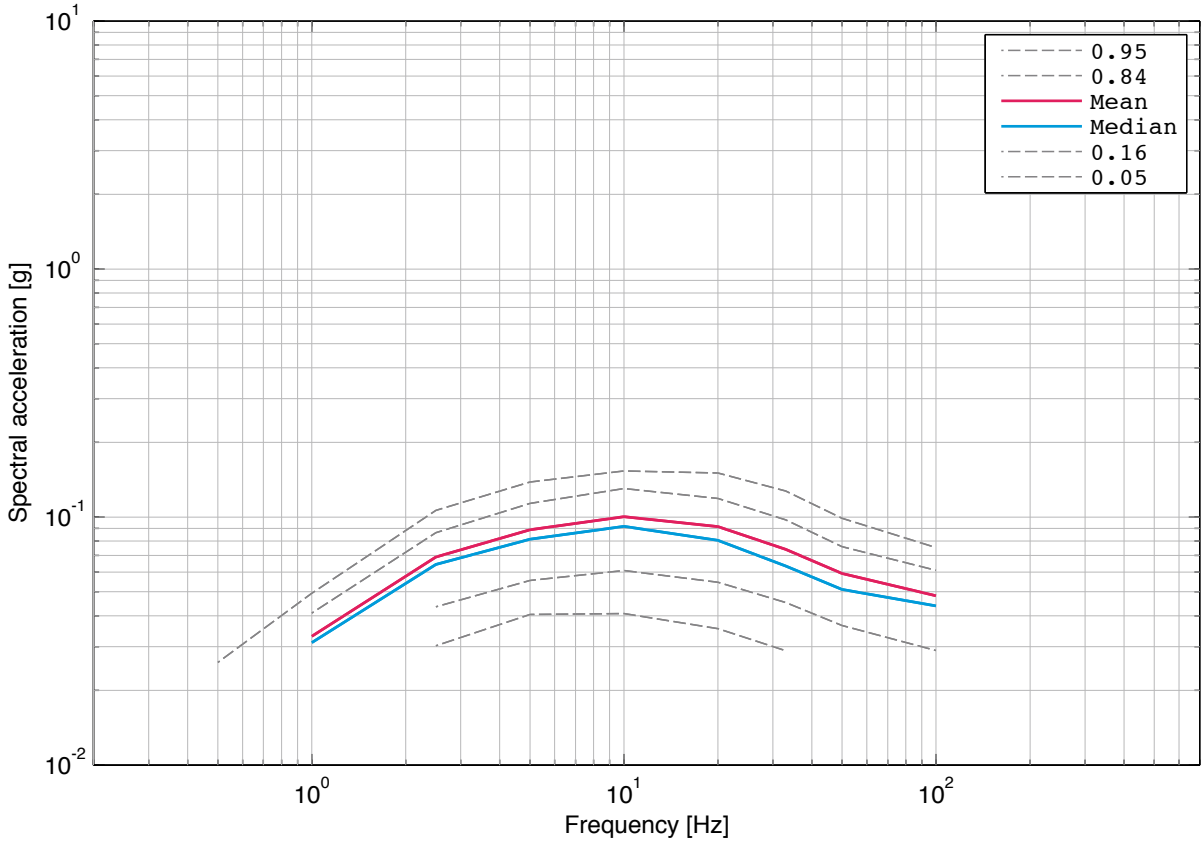

Fig. 3-10.14: Gösgen, vertical component, rock, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

3.11 Gösgen, Soil Hazard, Vertical Component, Surface

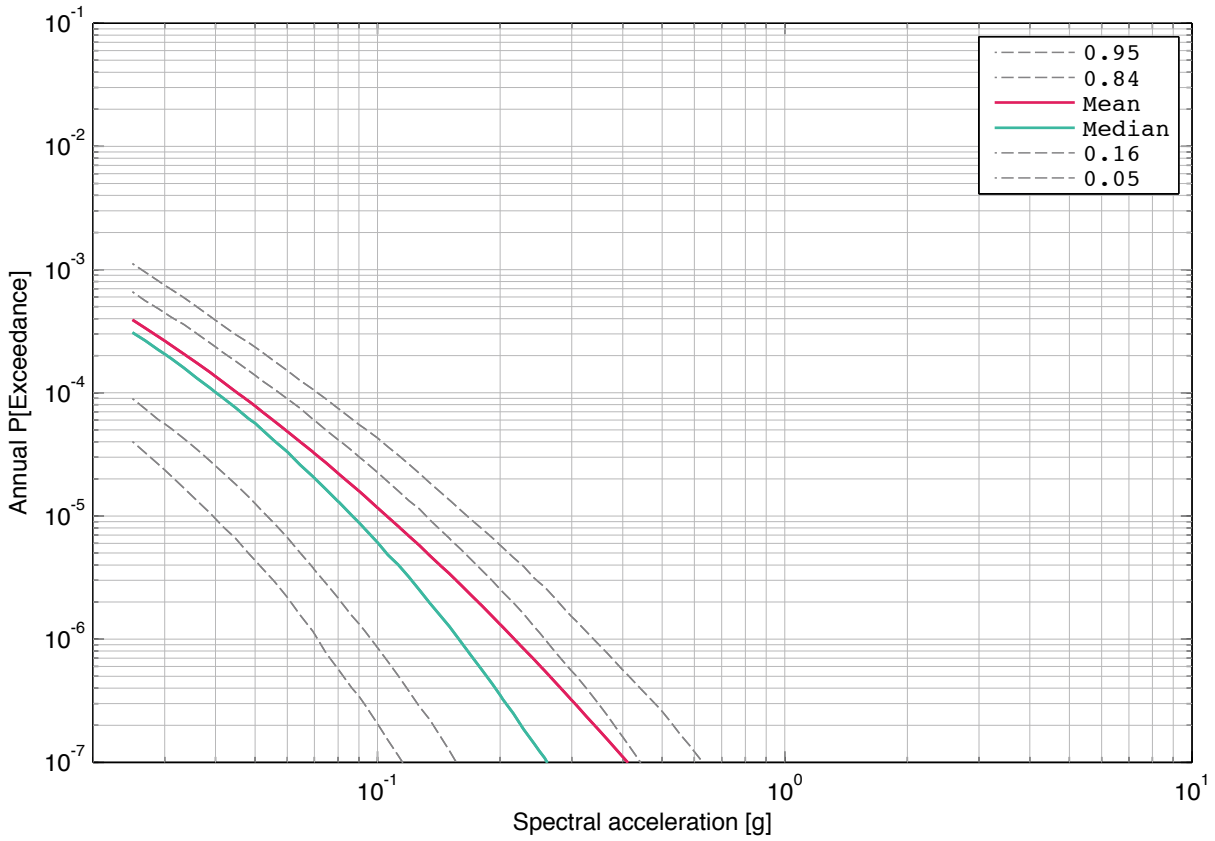

Fig. 3-11.1: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 0.5 Hz.

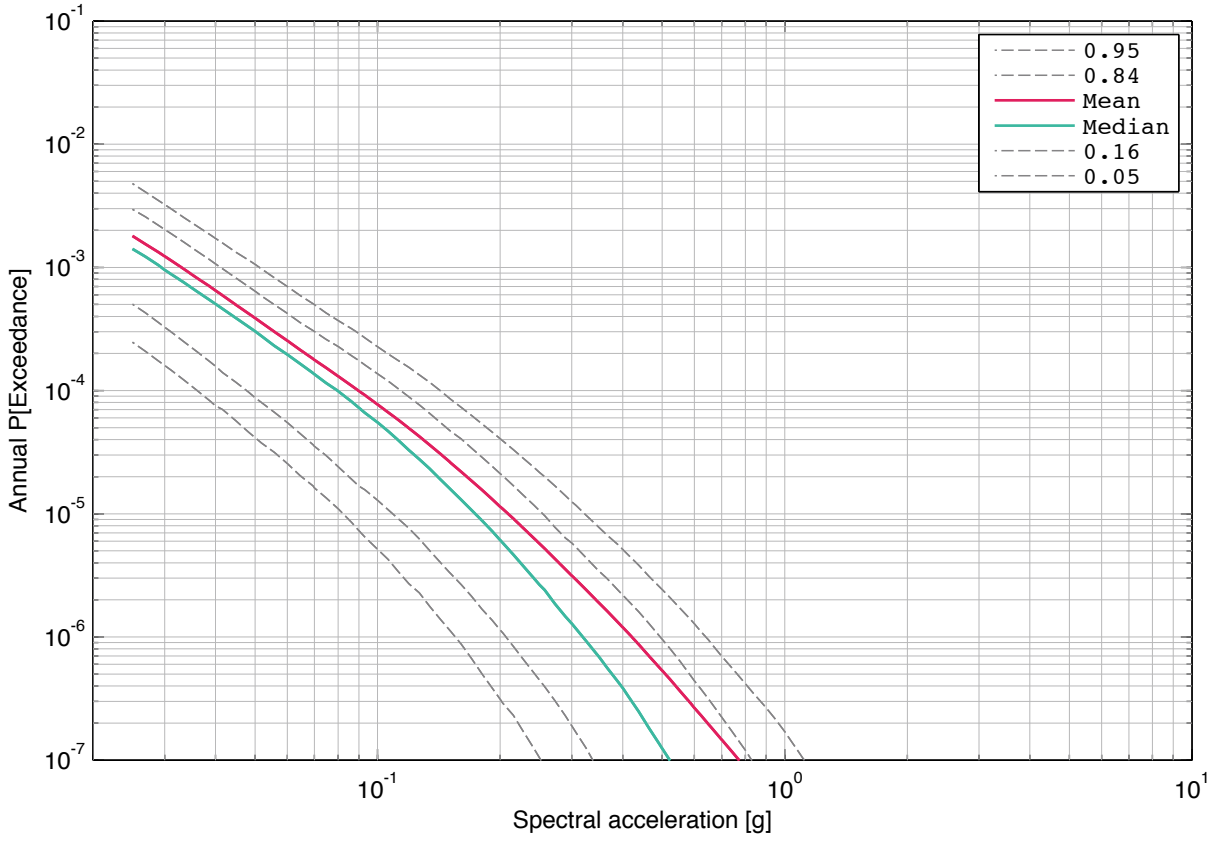

Fig. 3-11.2: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 1 Hz.

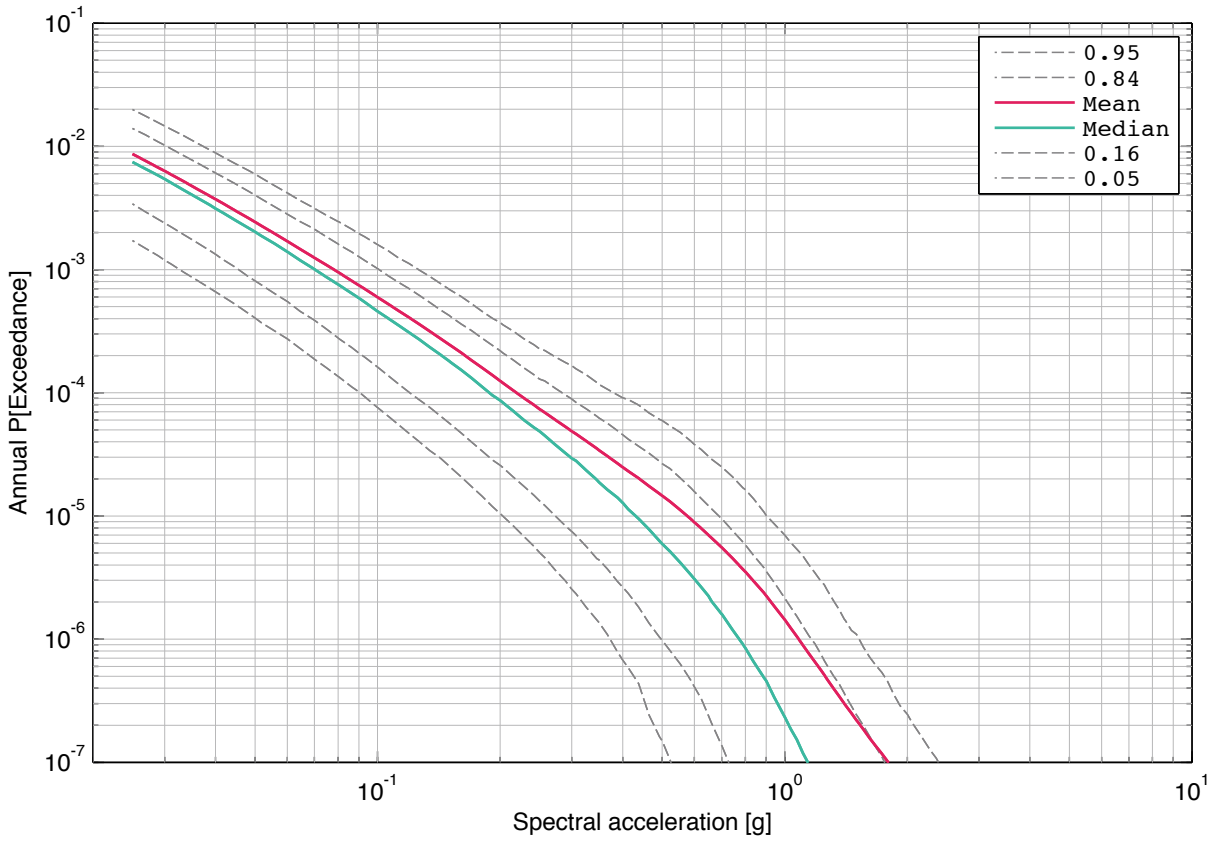

Fig. 3-11.3: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 2.5 Hz.

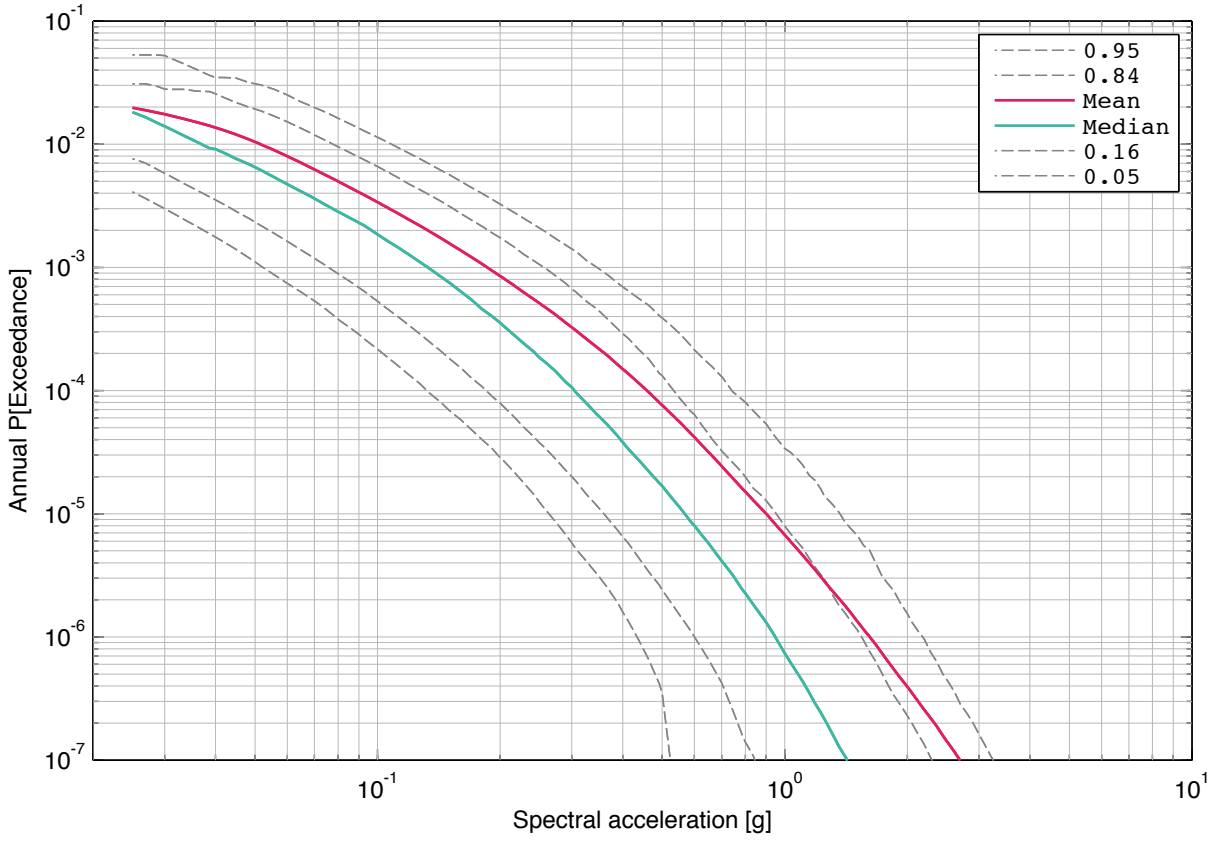

Fig. 3-11.4: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 5 Hz.

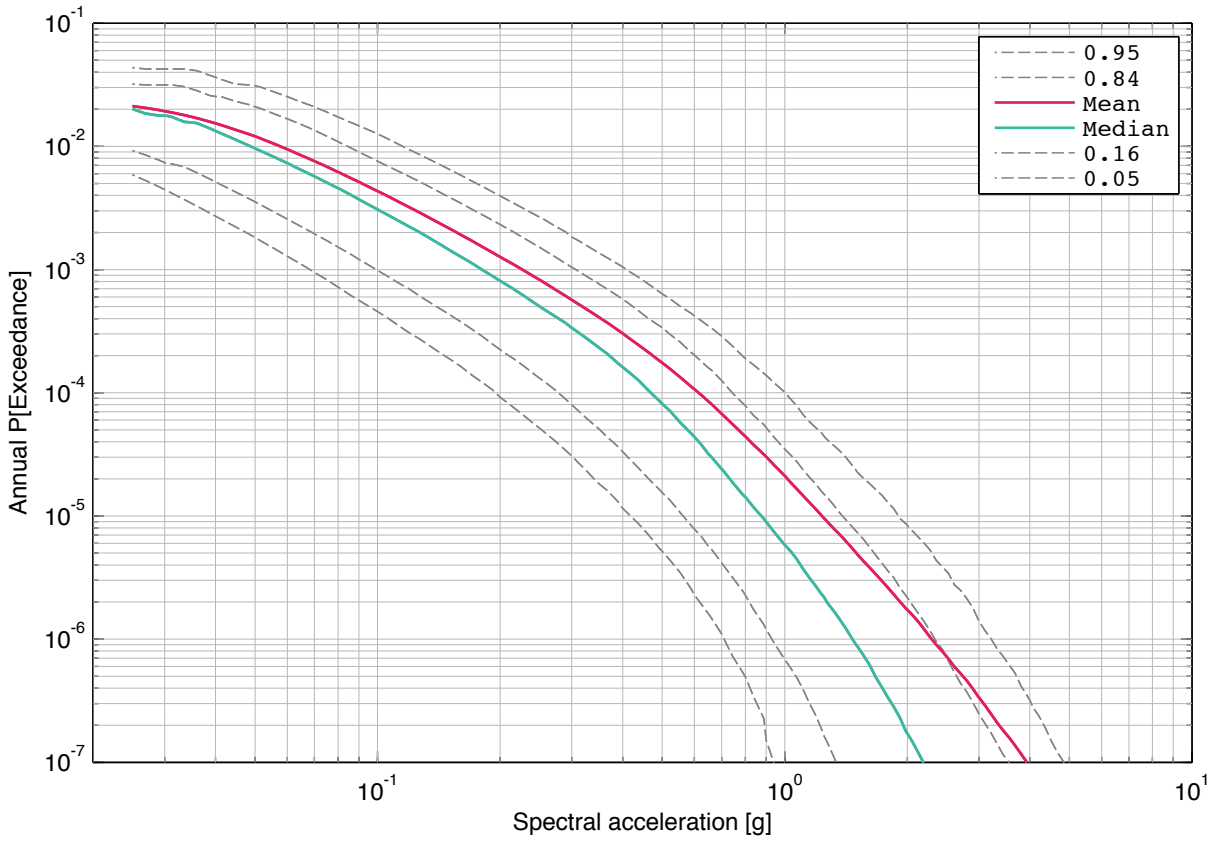

Fig. 3-11.5: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 10 Hz.

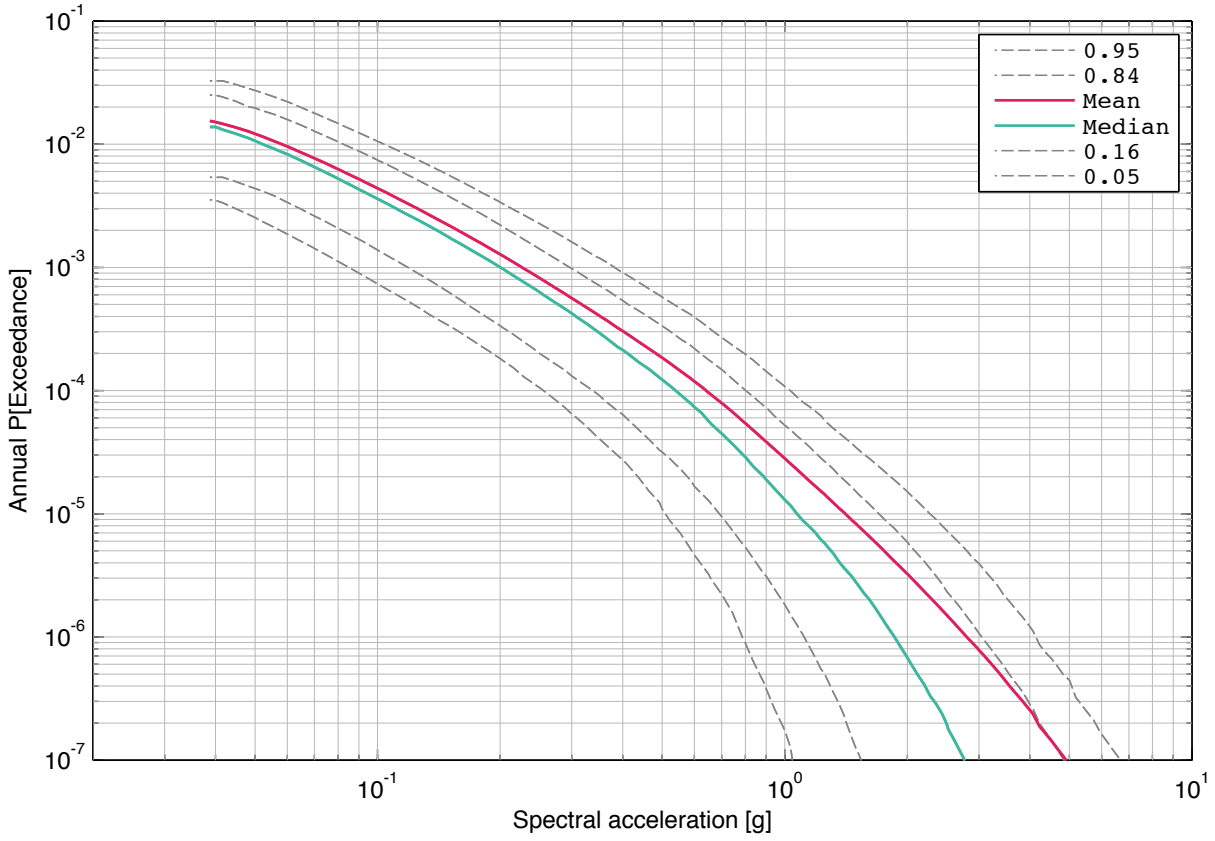

Fig. 3-11.6: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 20 Hz.

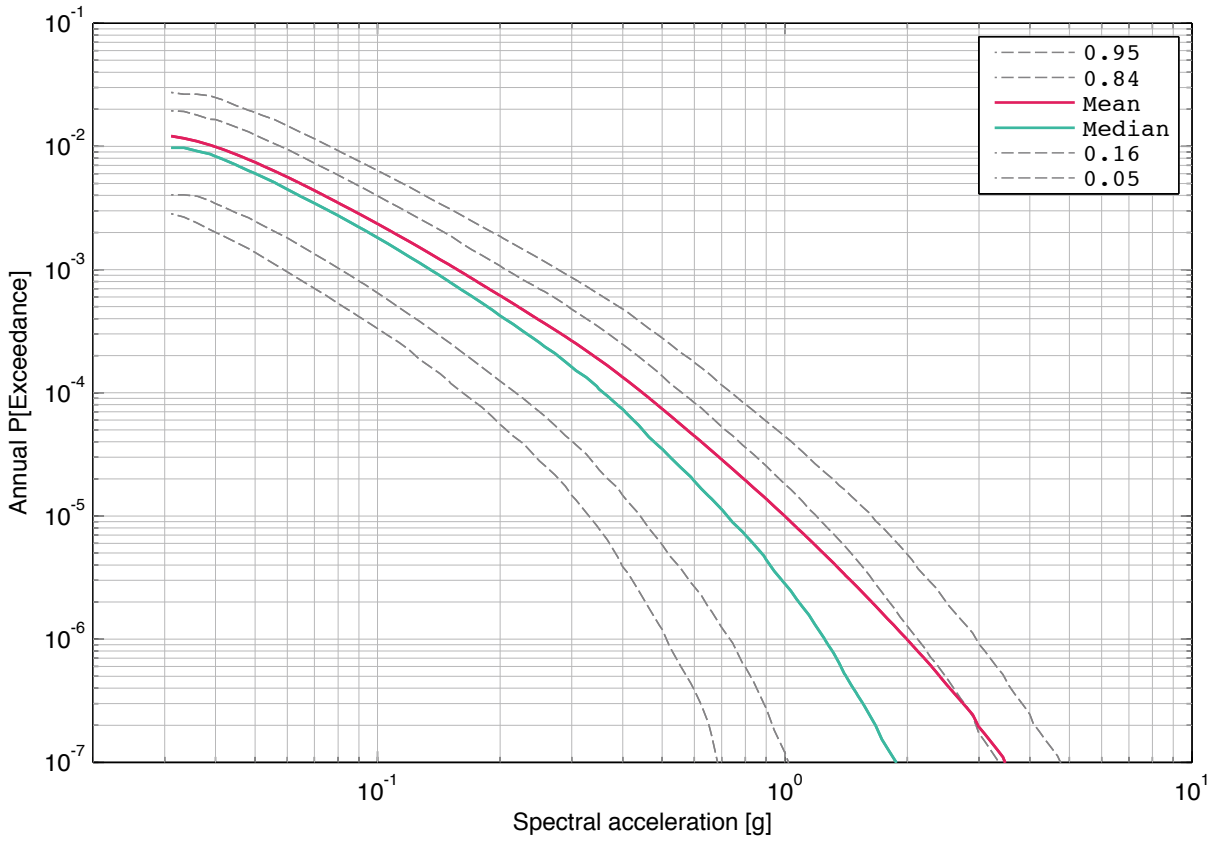

Fig. 3-11.7: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 33 Hz.

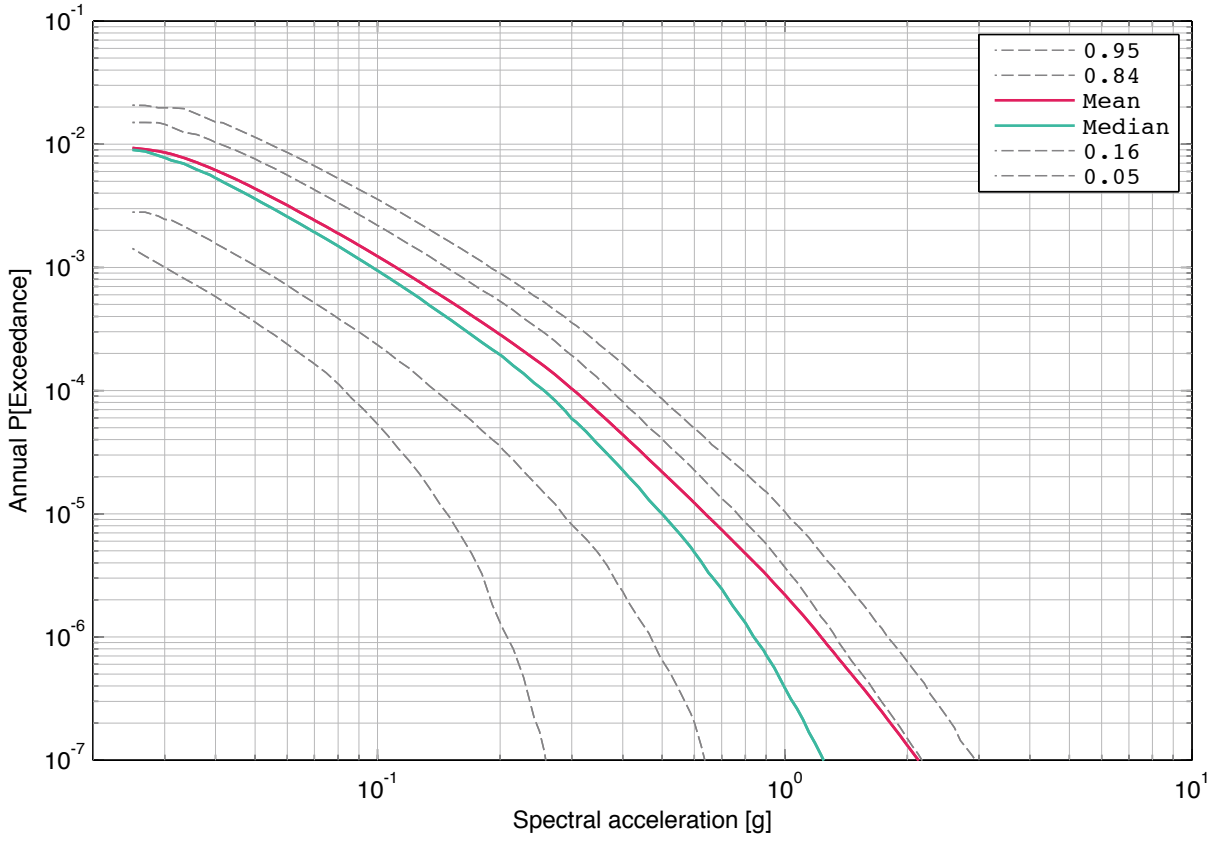

Fig. 3-11.8: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 50 Hz.

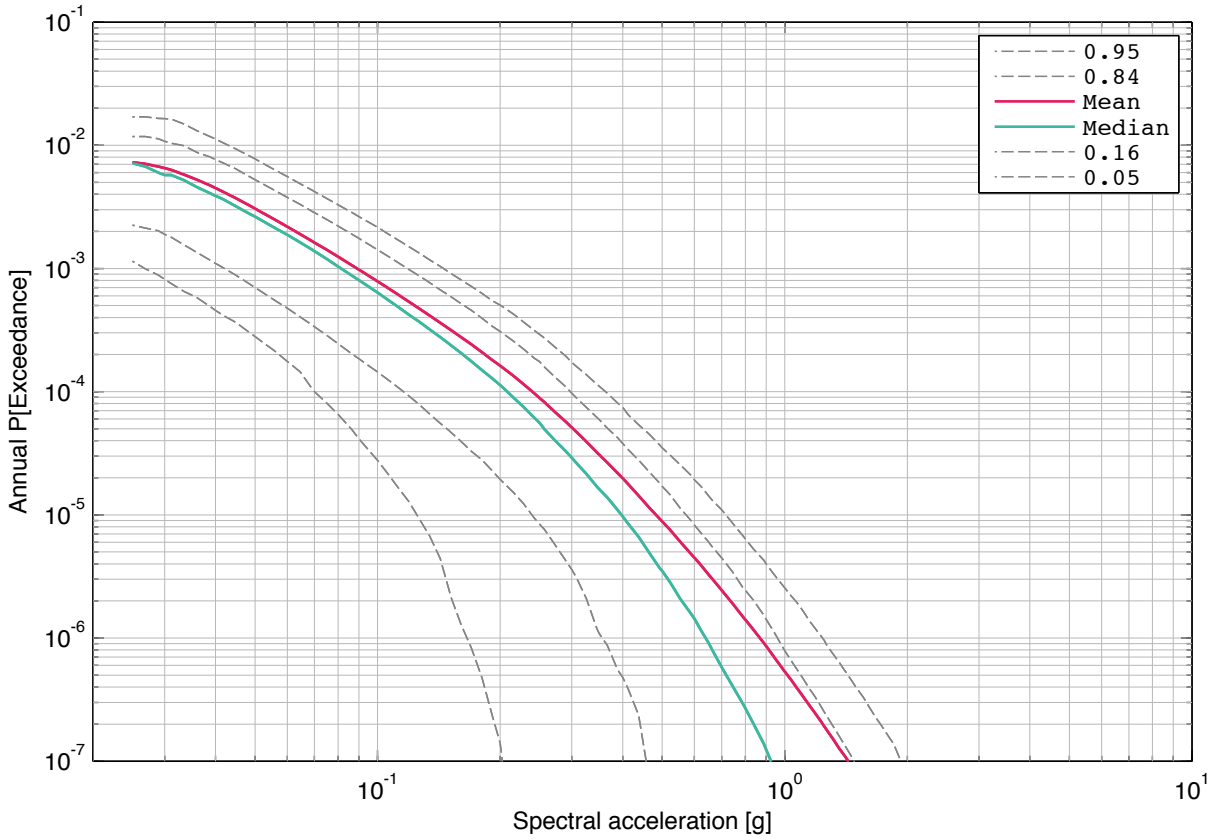

Fig. 3-11.9: Gösgen, vertical component, soil, surface, mean hazard and fractiles, 100 Hz.

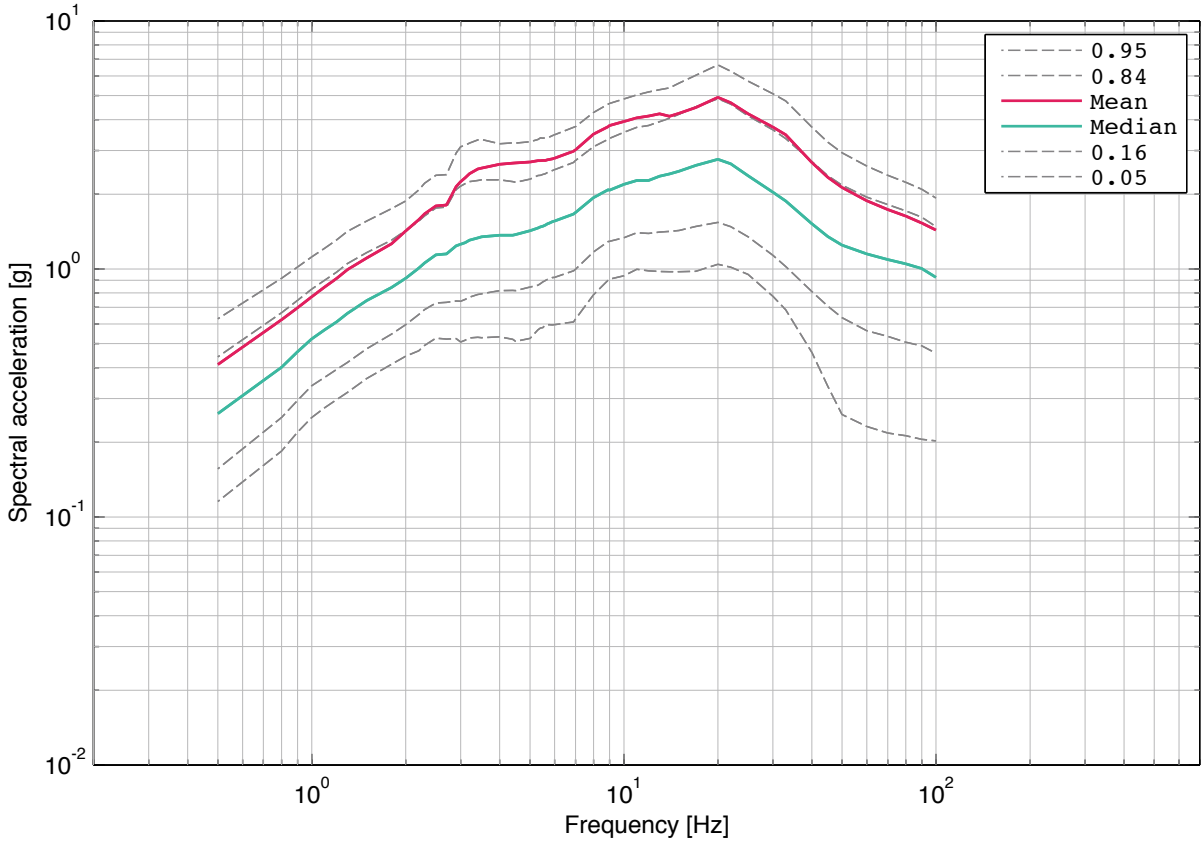

Fig. 3-11.10: Gösgen, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-07 and 5% damping.

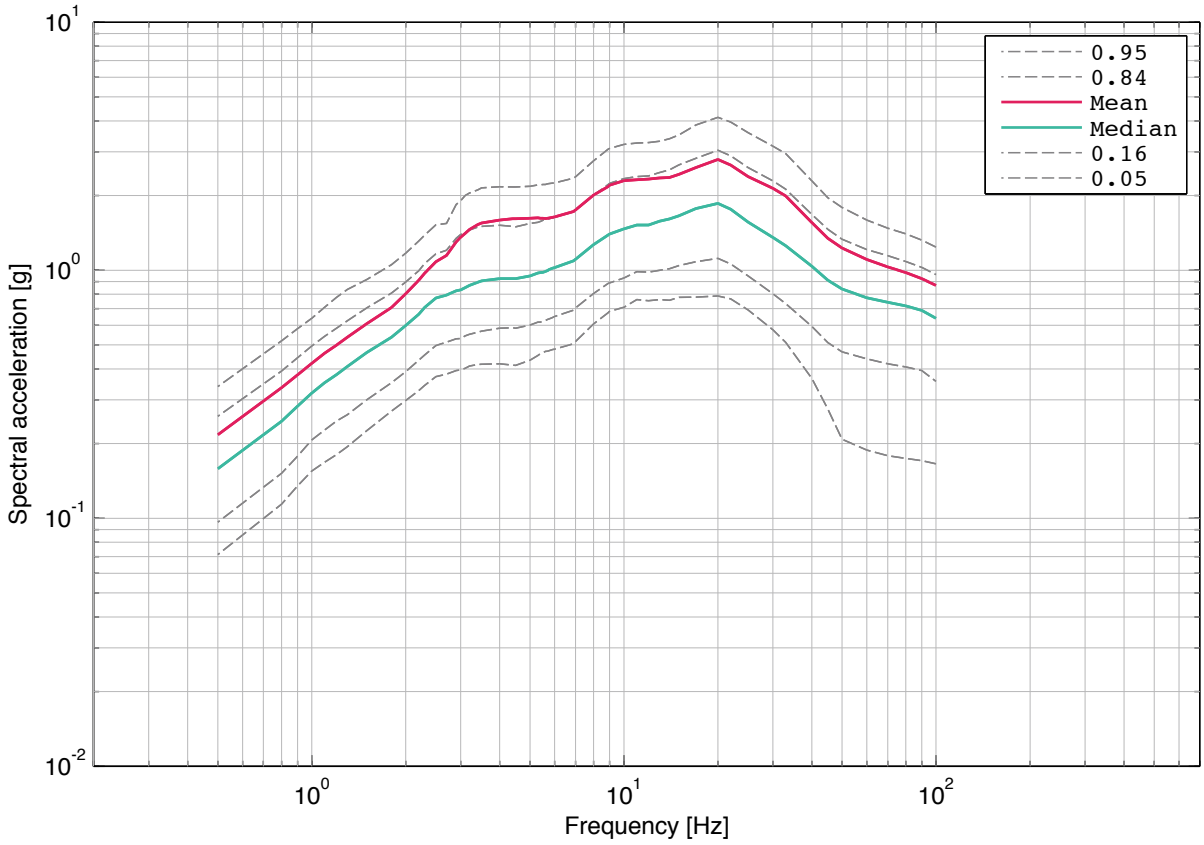

Fig. 3-11.11: Gösgen, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-06 and 5% damping.

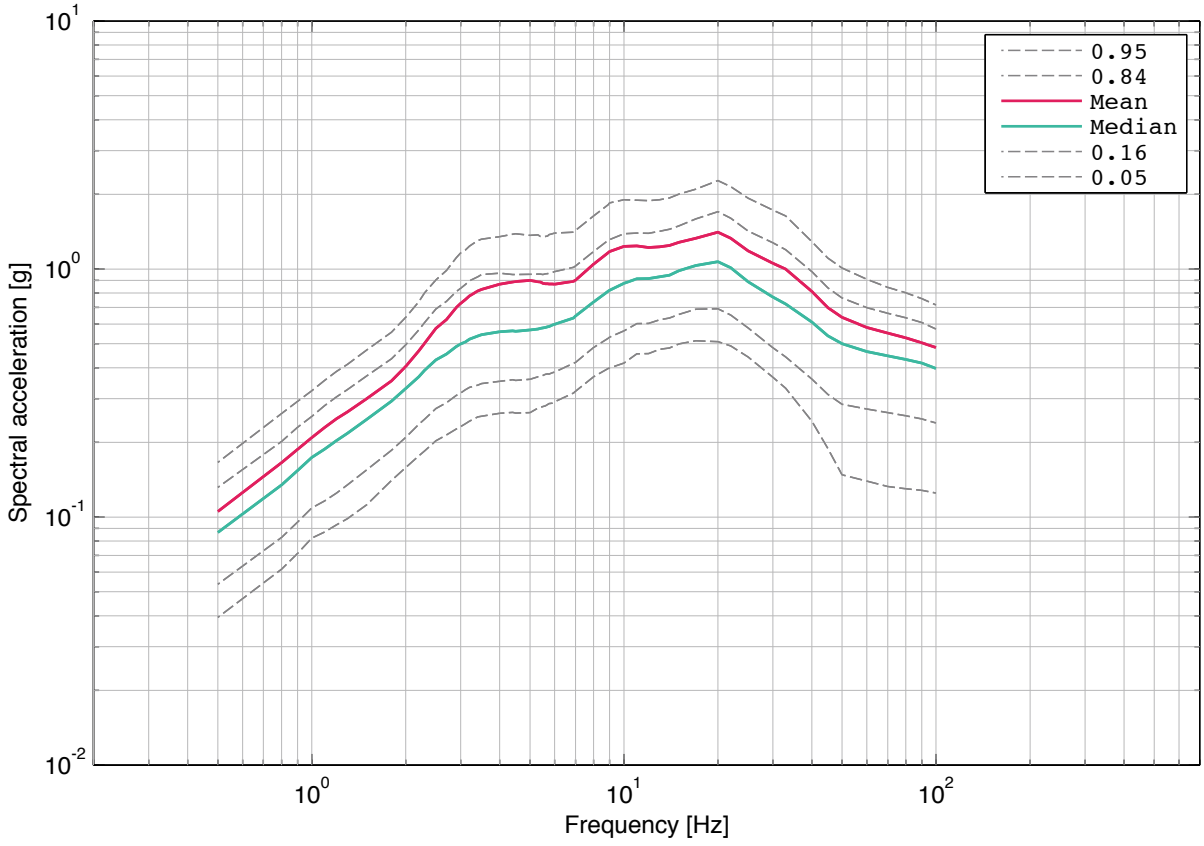

Fig. 3-11.12: Gösgen, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-05 and 5% damping.

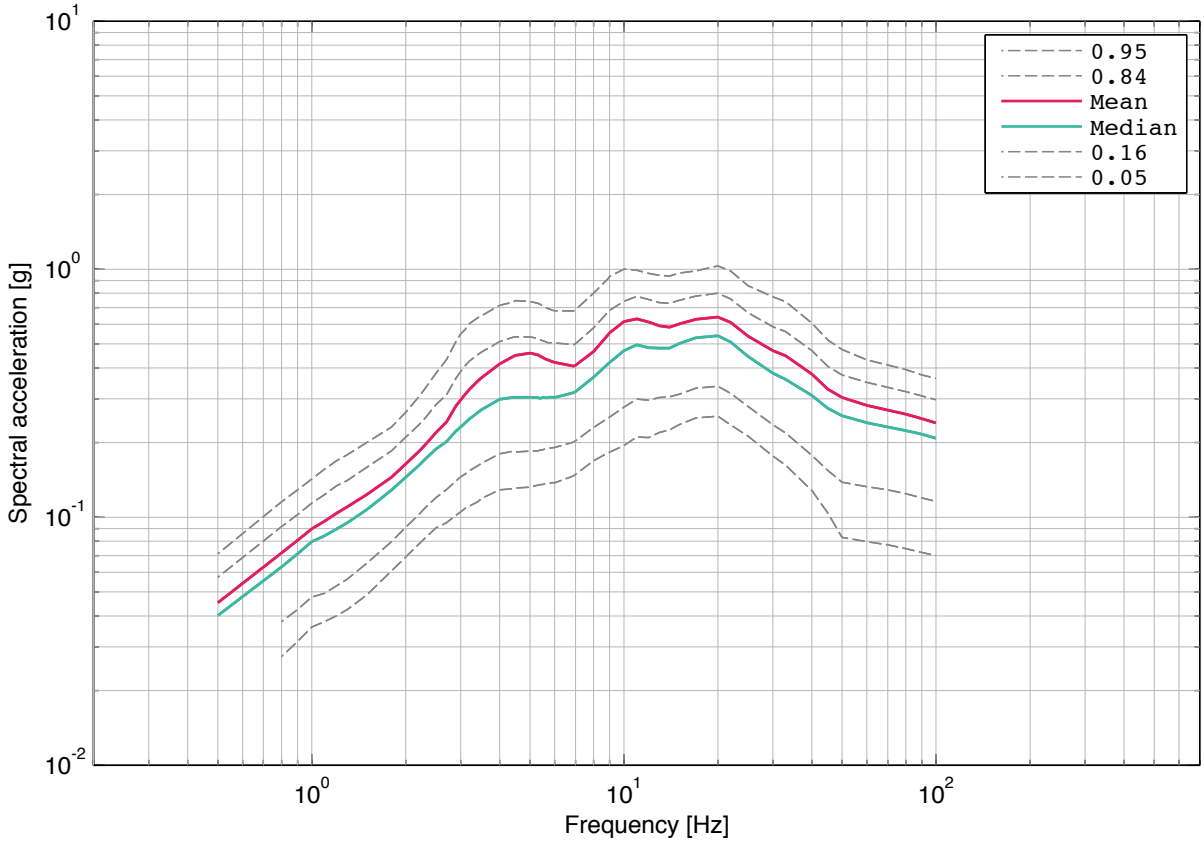

Fig. 3-11.13: Gösgen, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-04 and 5% damping.

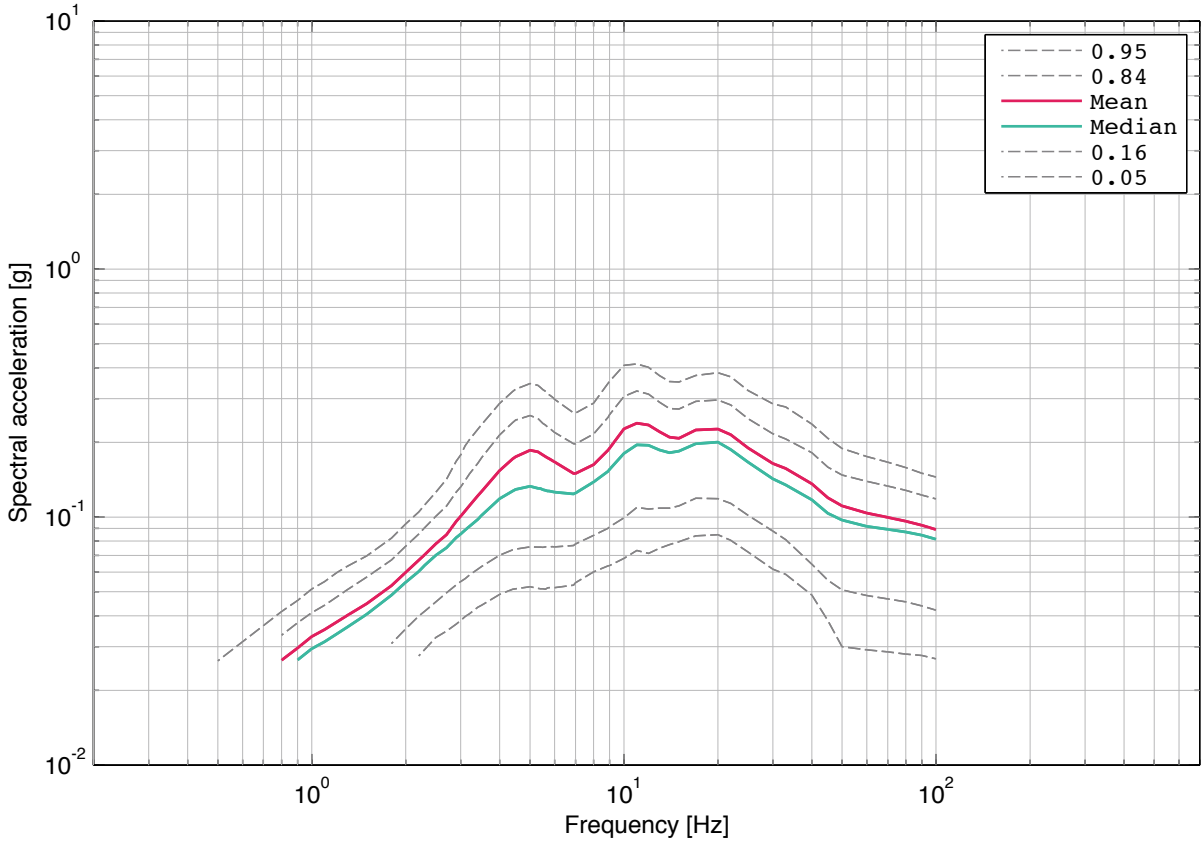

Fig. 3-11.14: Gösgen, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-03 and 5% damping.

3.12 Gösgen, Soil Hazard, Vertical Component, -9 m

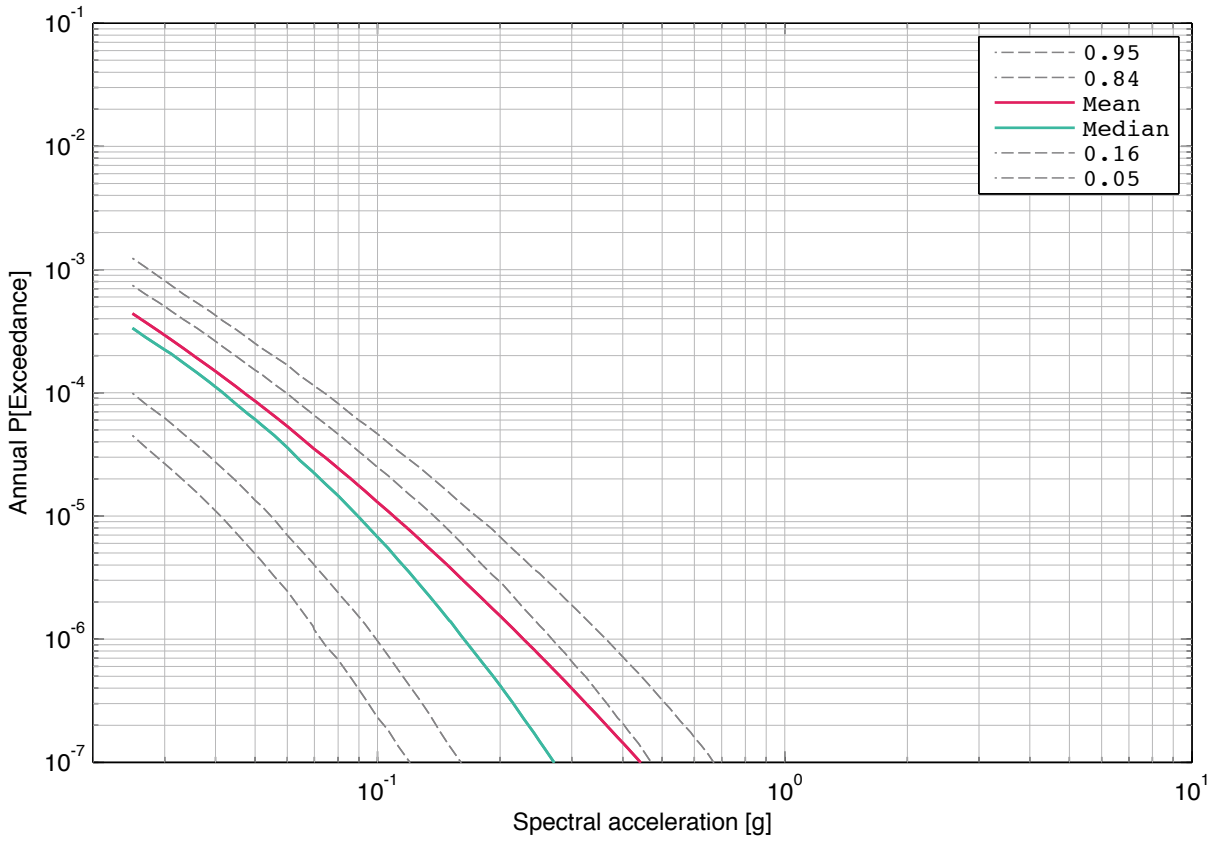

Fig. 3-12.1: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 0.5 Hz.

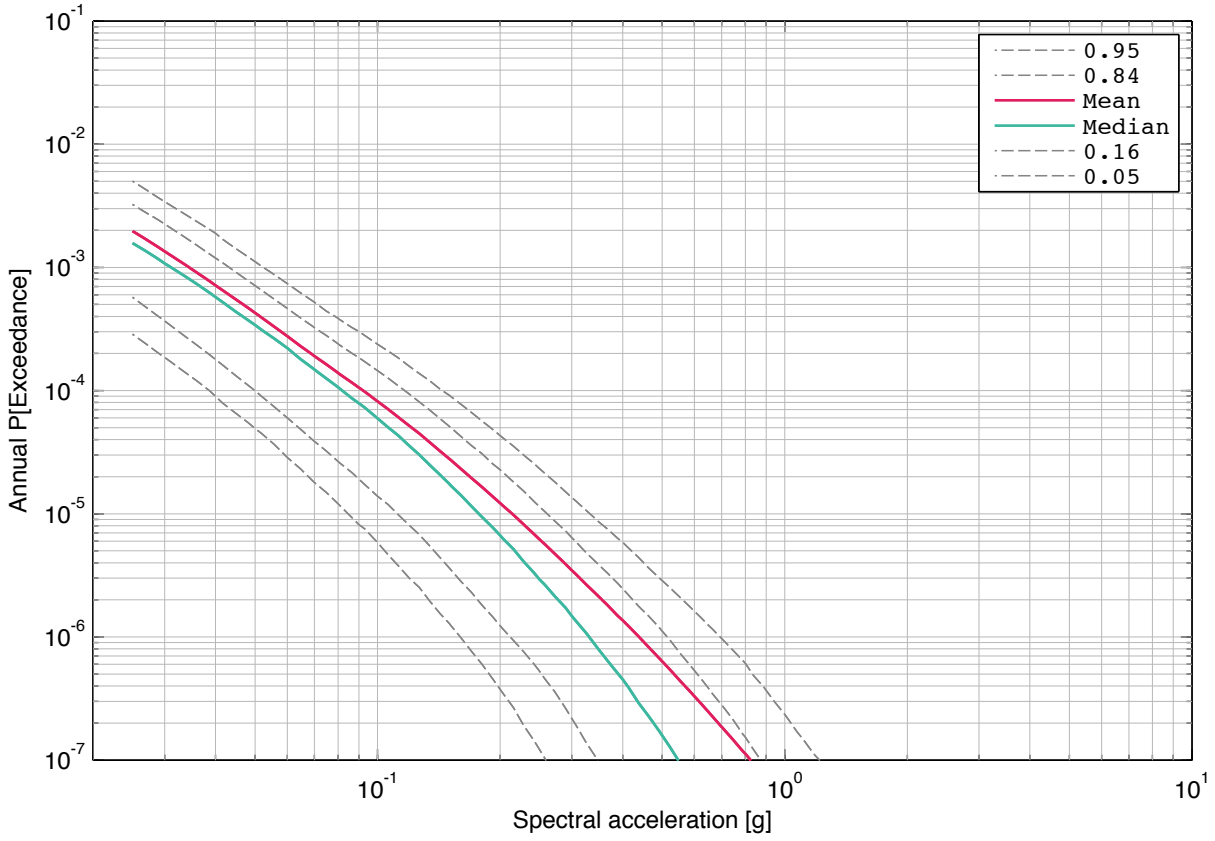

Fig. 3-12.2: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 1 Hz.

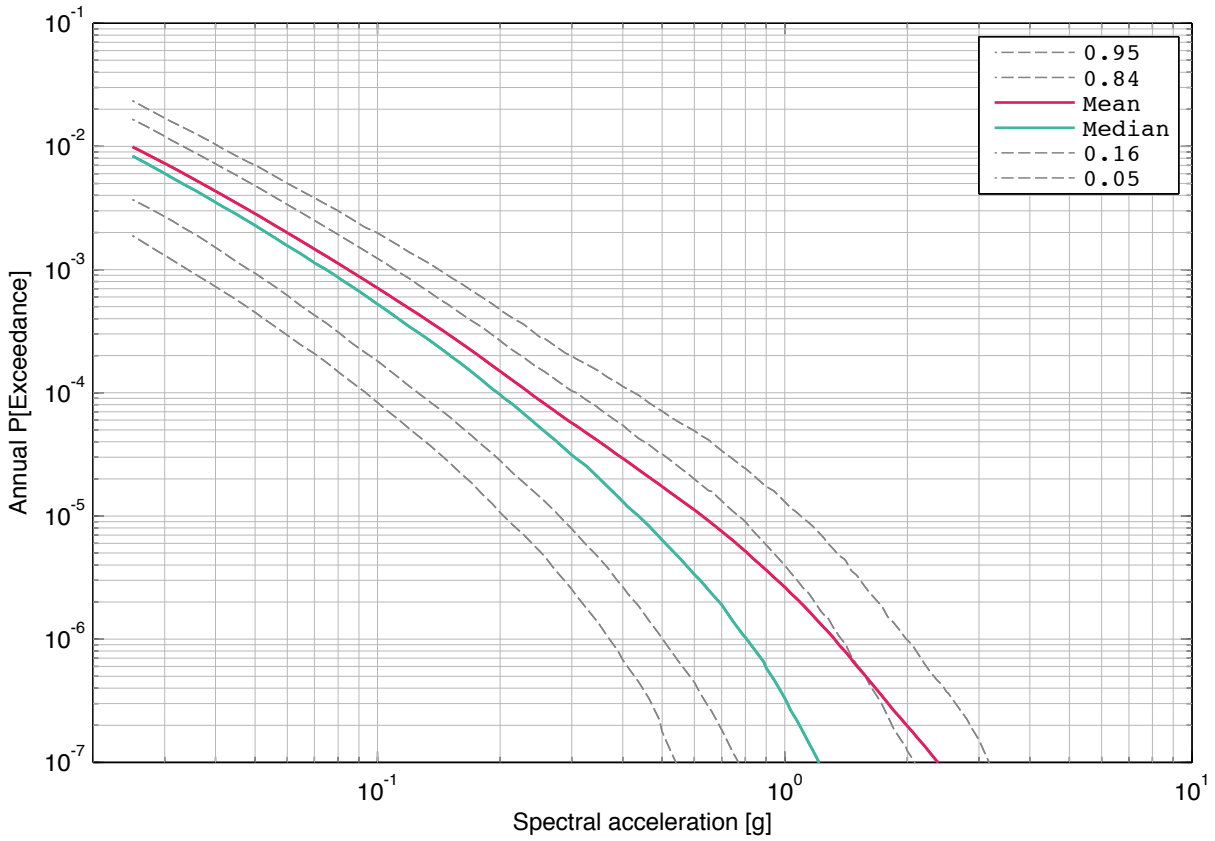

Fig. 3-12.3: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 2.5 Hz.

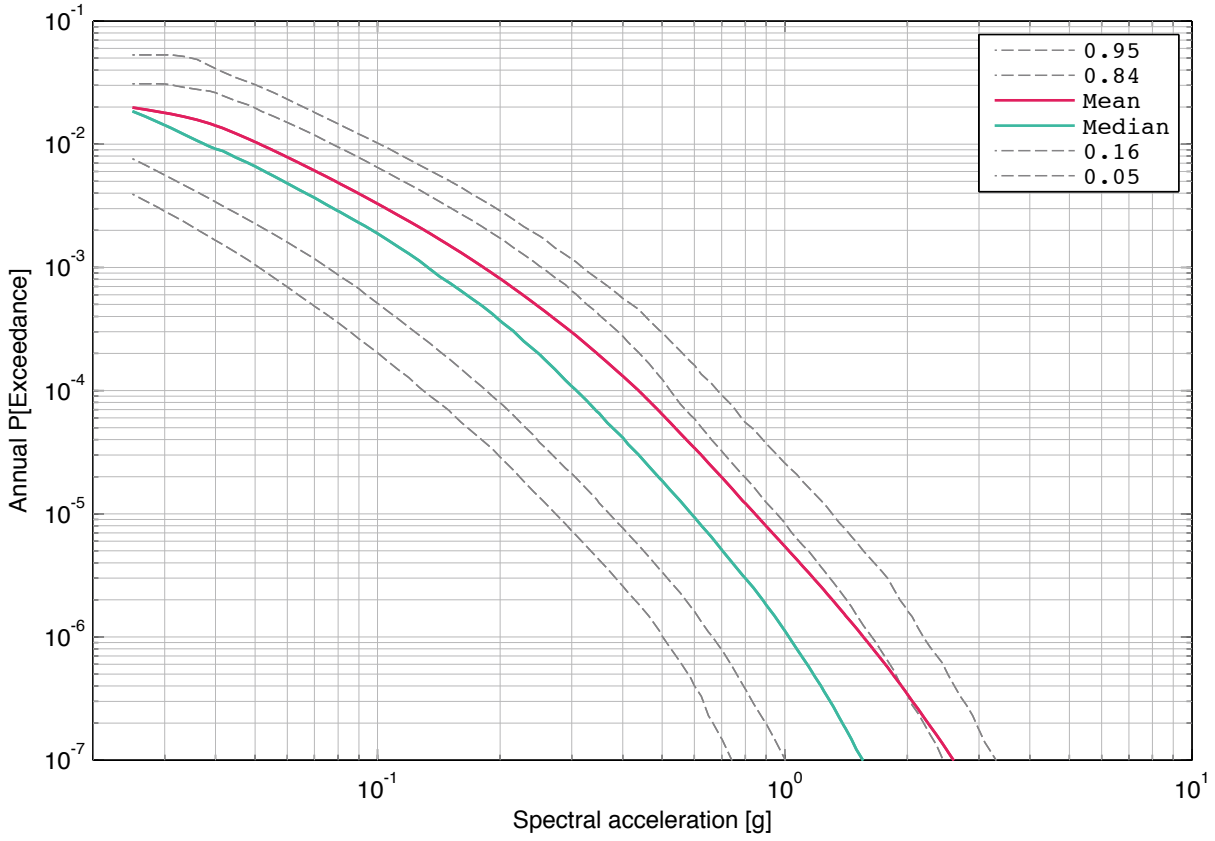

Fig. 3-12.4: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 5 Hz.

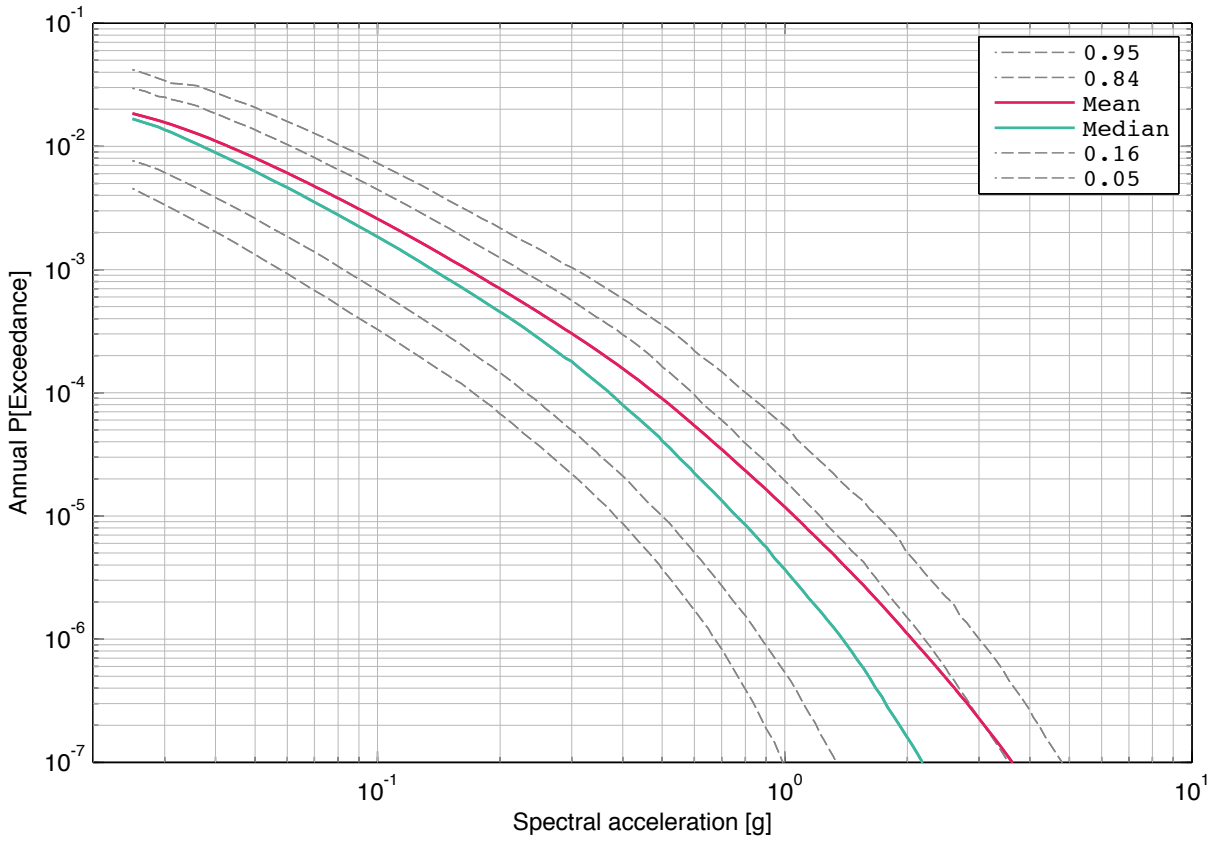

Fig. 3-12.5: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 10 Hz.

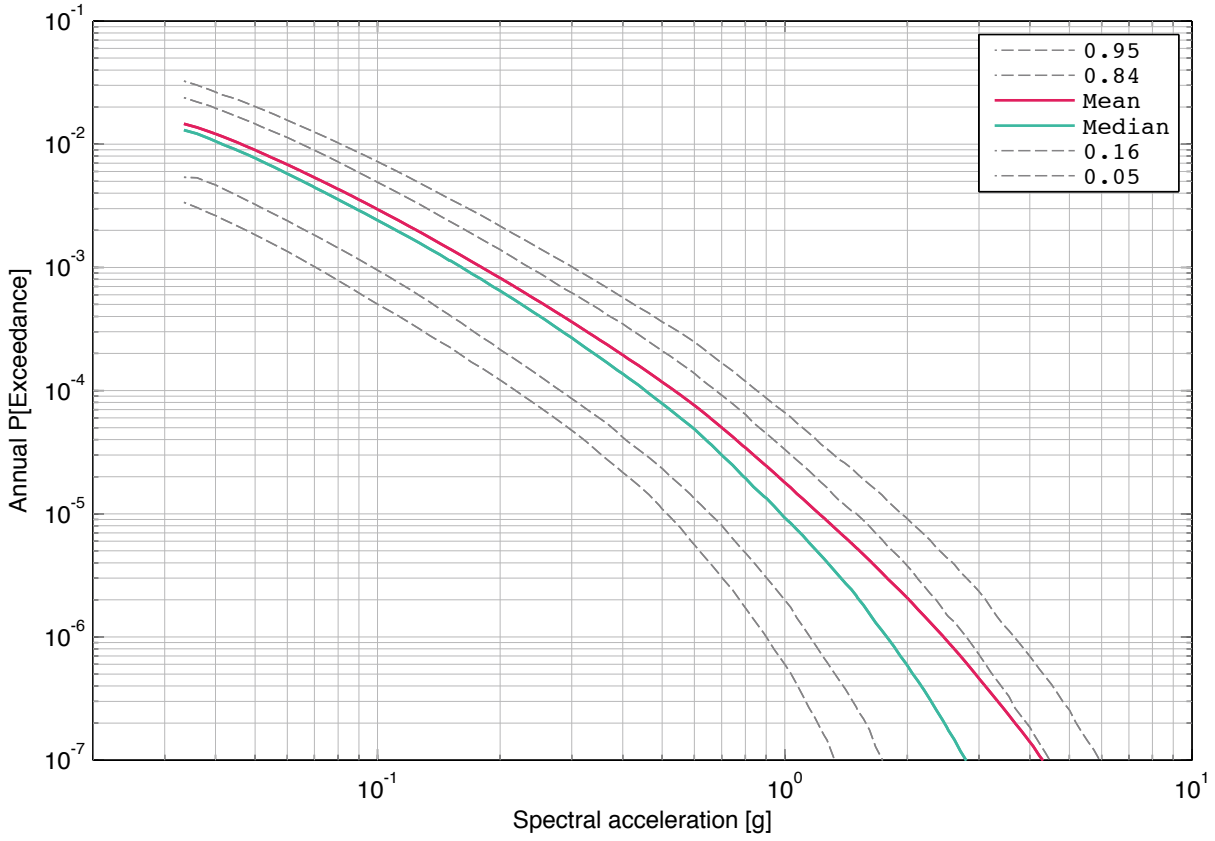

Fig. 3-12.6: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 20 Hz.

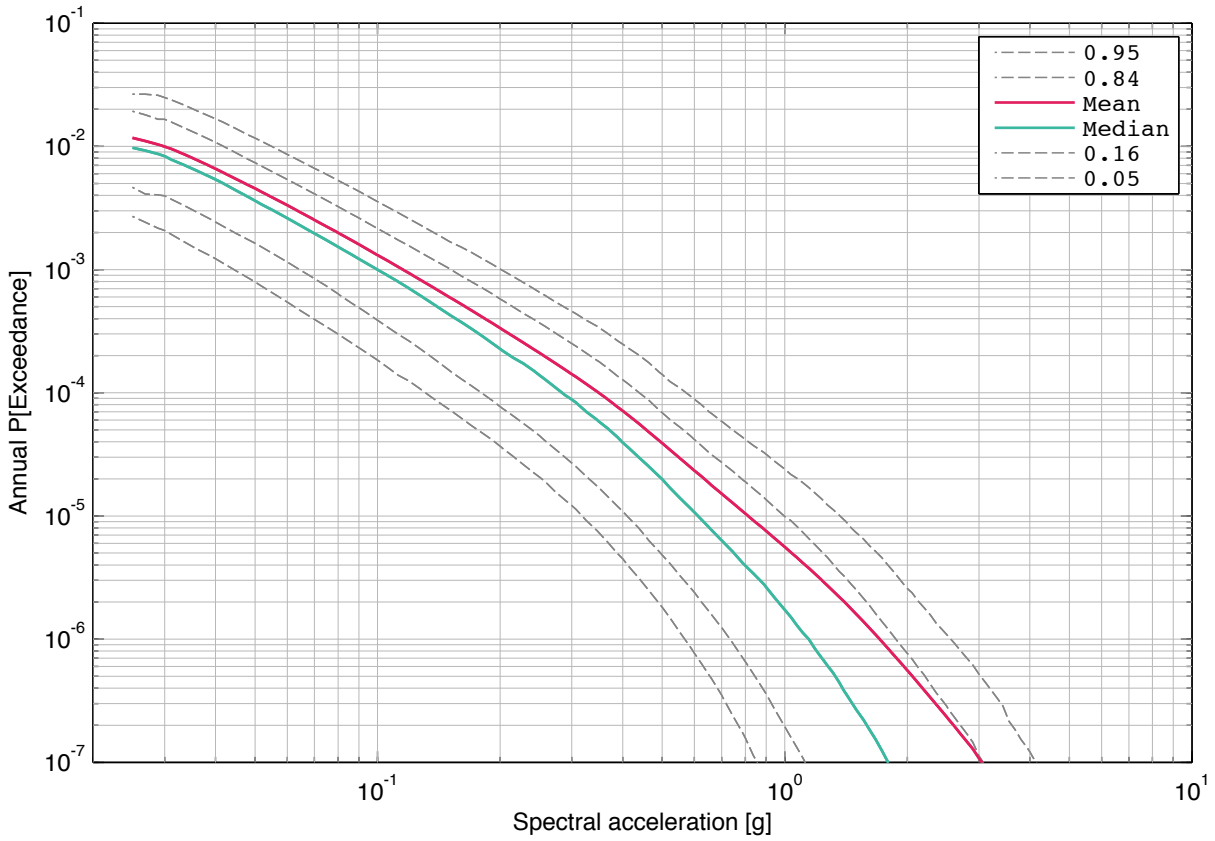

Fig. 3-12.7: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 33 Hz.

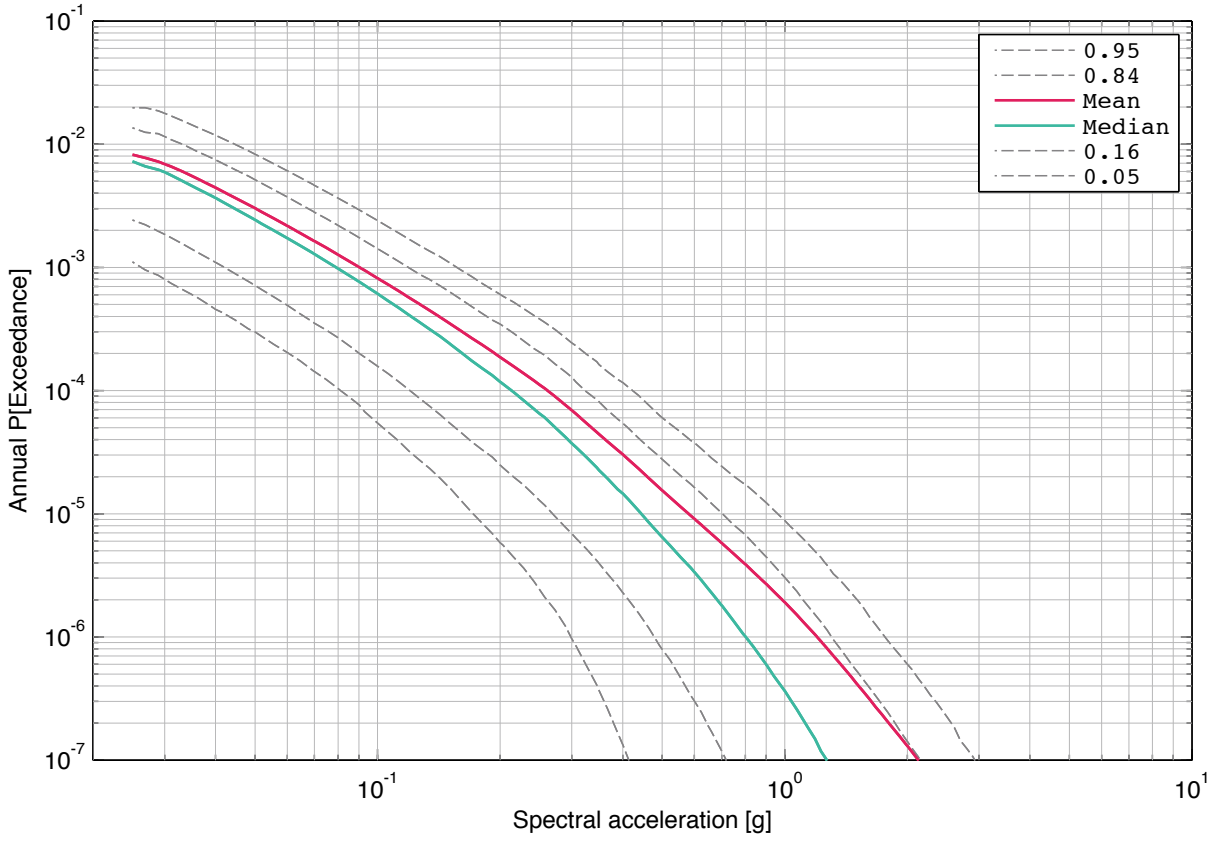

Fig. 3-12.8: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 50 Hz.

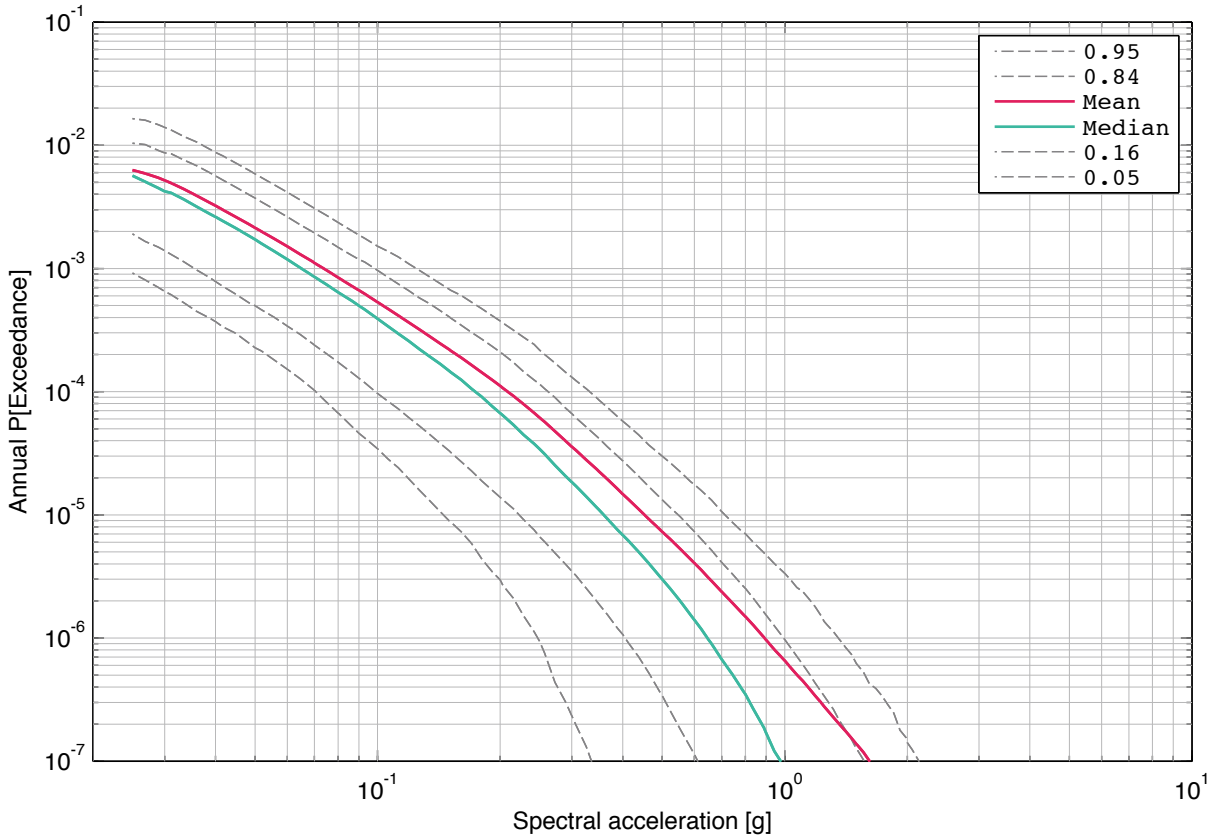

Fig. 3-12.9: Gösgen, vertical component, soil, -9 m, mean hazard and fractiles, 100 Hz.

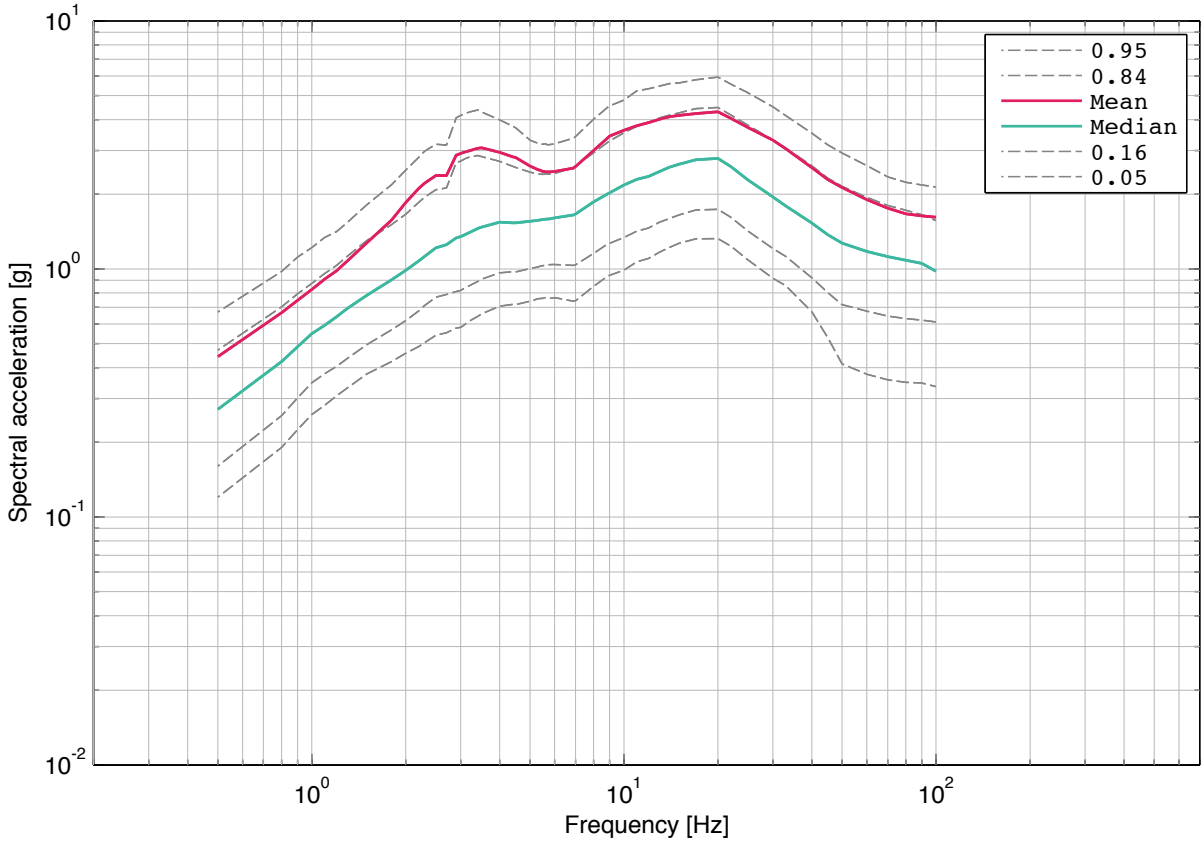

Fig. 3-12.10: Gösgen, vertical component, soil, -9 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

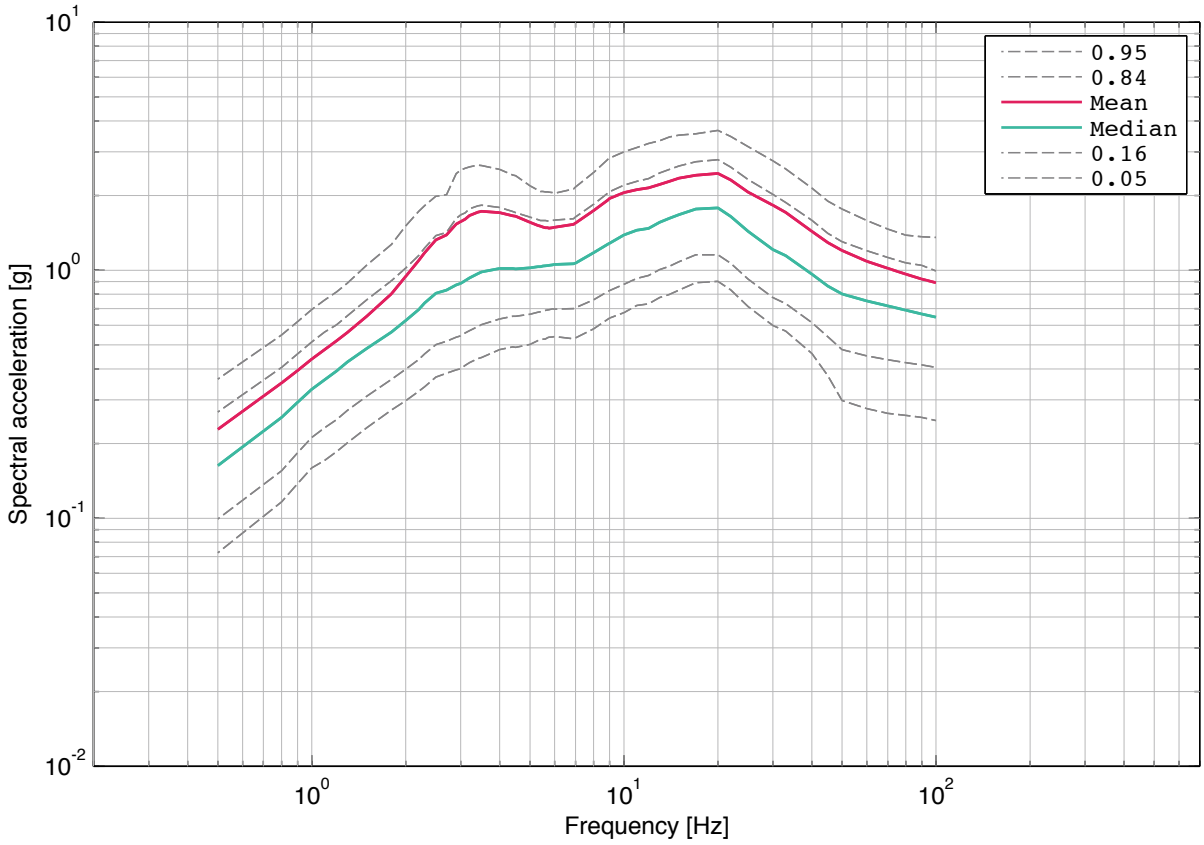

Fig. 3-12.11: Gösgen, vertical component, soil, -9 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

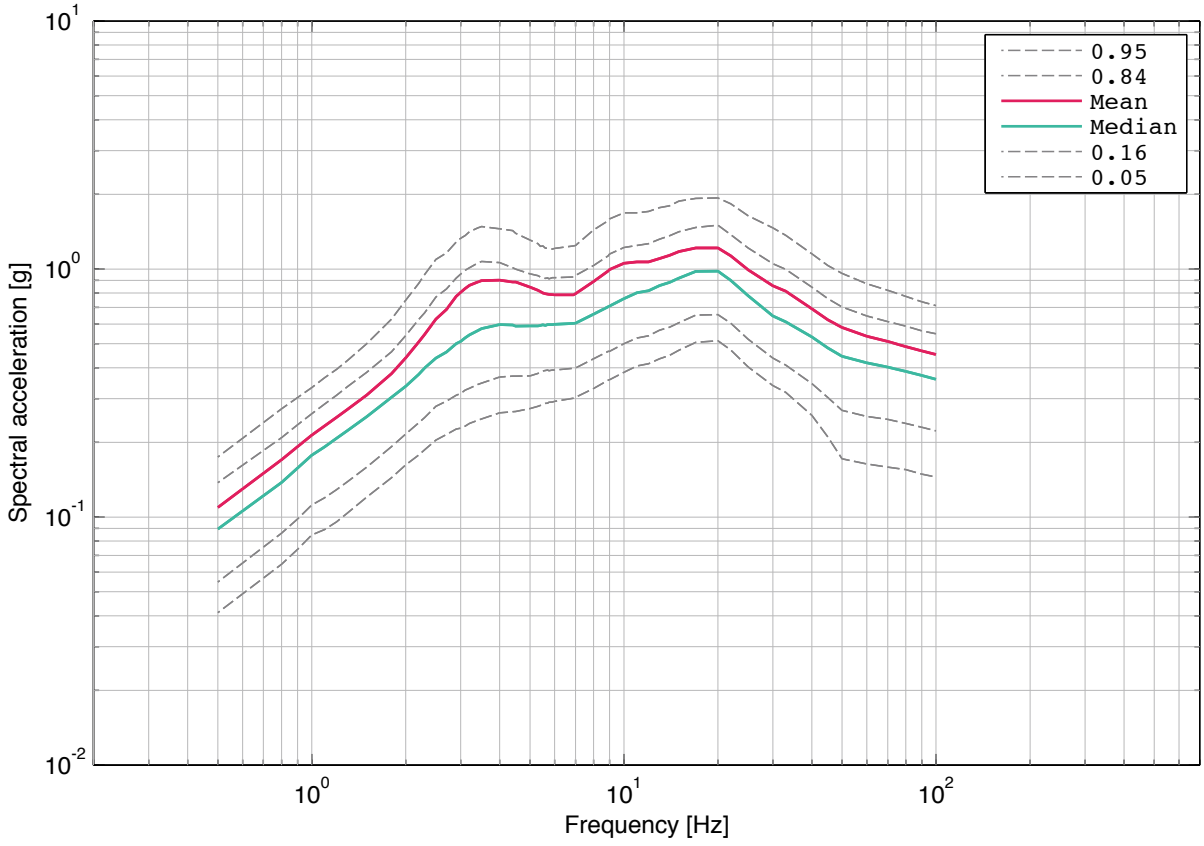

Fig. 3-12.12: Gösgen, vertical component, soil, -9 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

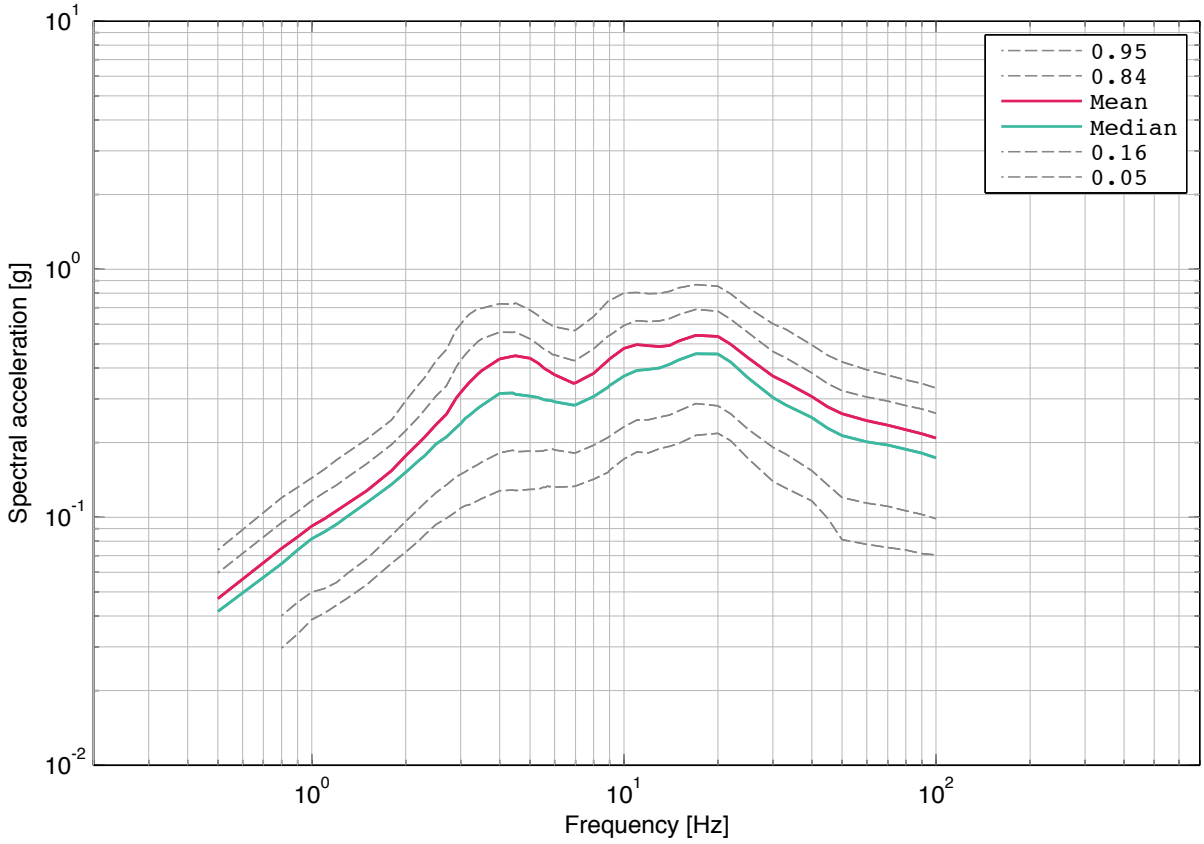

Fig. 3-12.13: Gösgen, vertical component, soil, -9 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

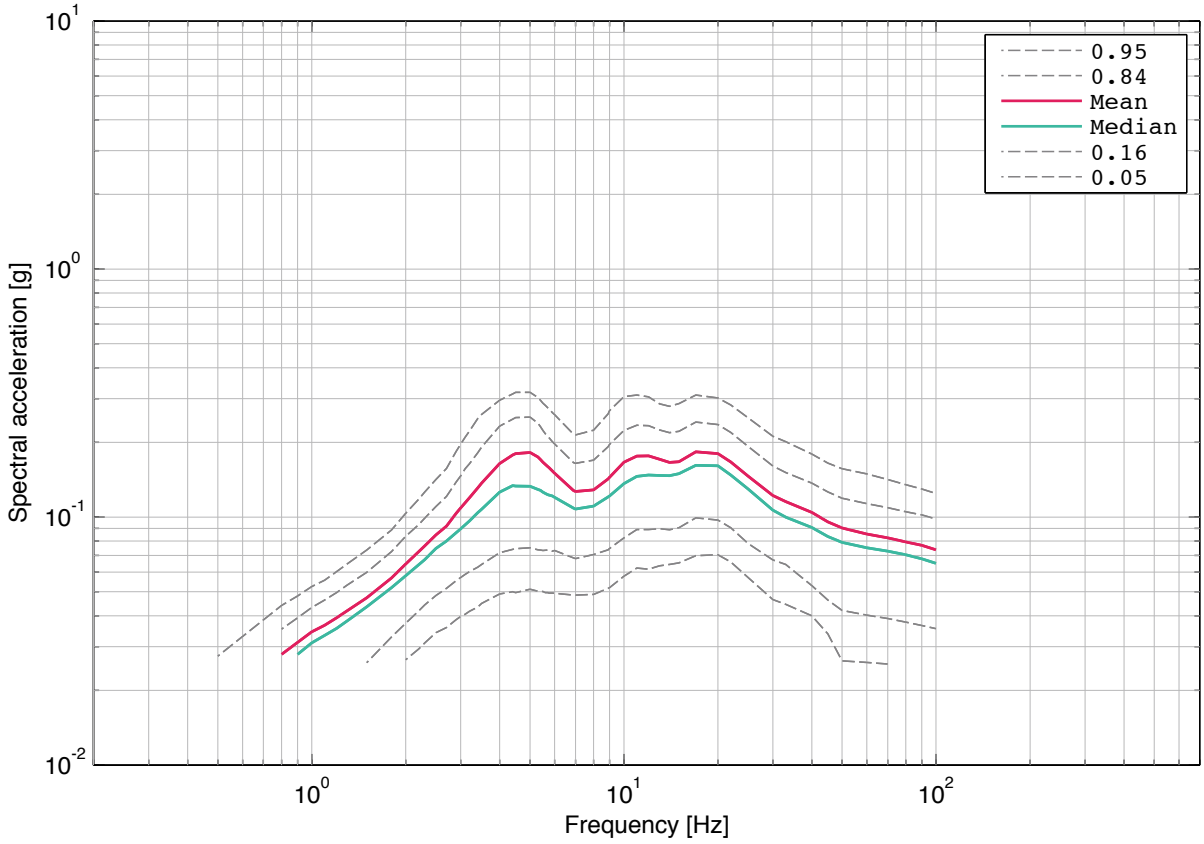

Fig. 3-12.14: Gösgen, vertical component, soil, -9 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

4 LEIBSTADT

4.1 Leibstadt, Rock Hazard, Horizontal Component, Surface

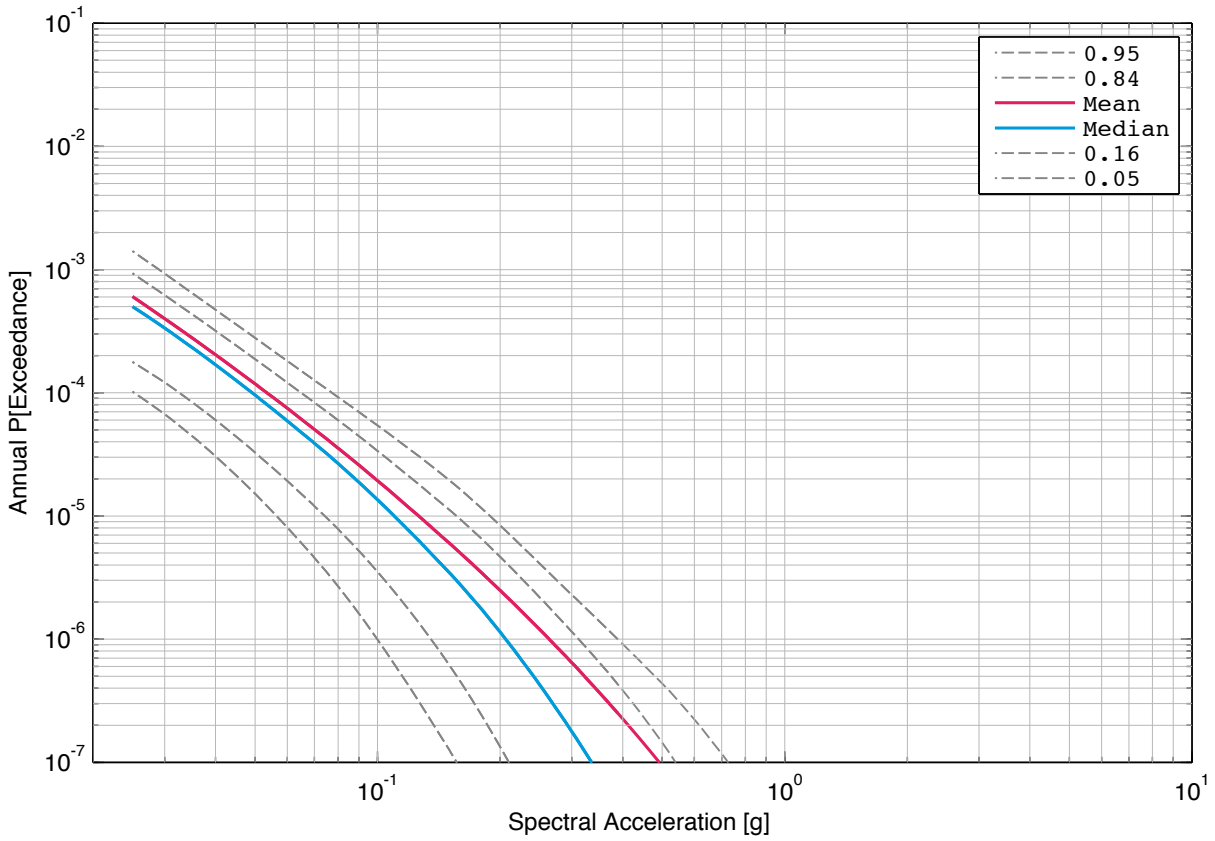

Fig. 4-1.1: Leibstadt, horizontal component, rock, mean hazard and fractiles, 0.5 Hz.

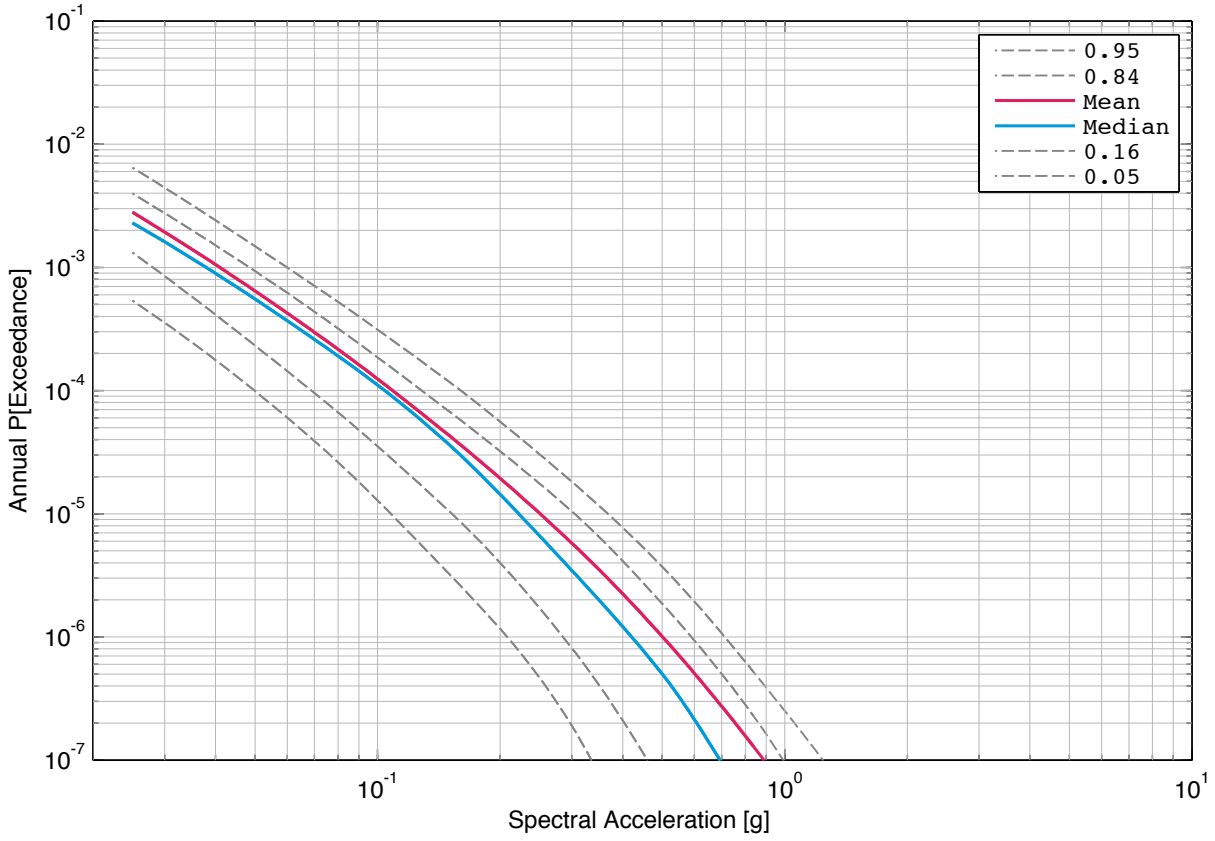

Fig. 4-1.2: Leibstadt, horizontal component, rock, mean hazard and fractiles, 1 Hz.

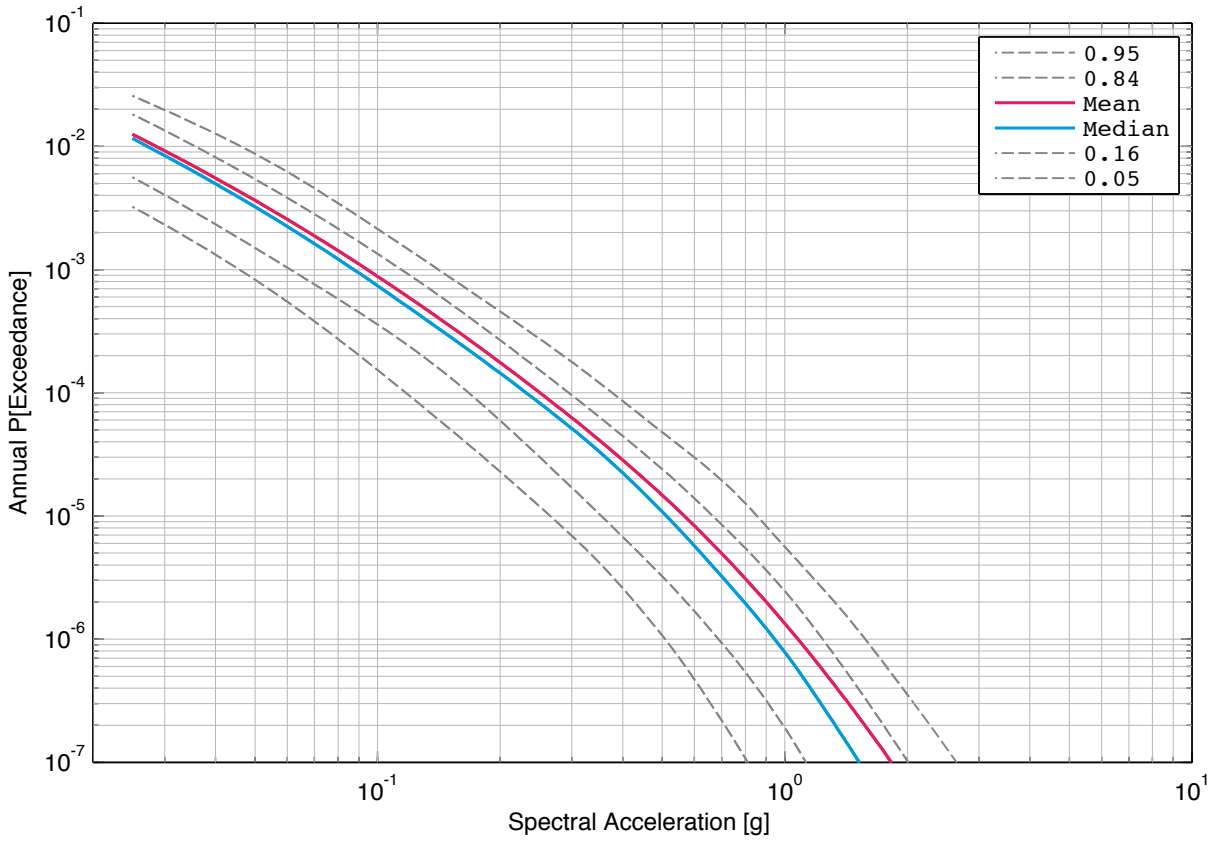

Fig. 4-1.3: Leibstadt, horizontal component, rock, mean hazard and fractiles, 2.5 Hz.

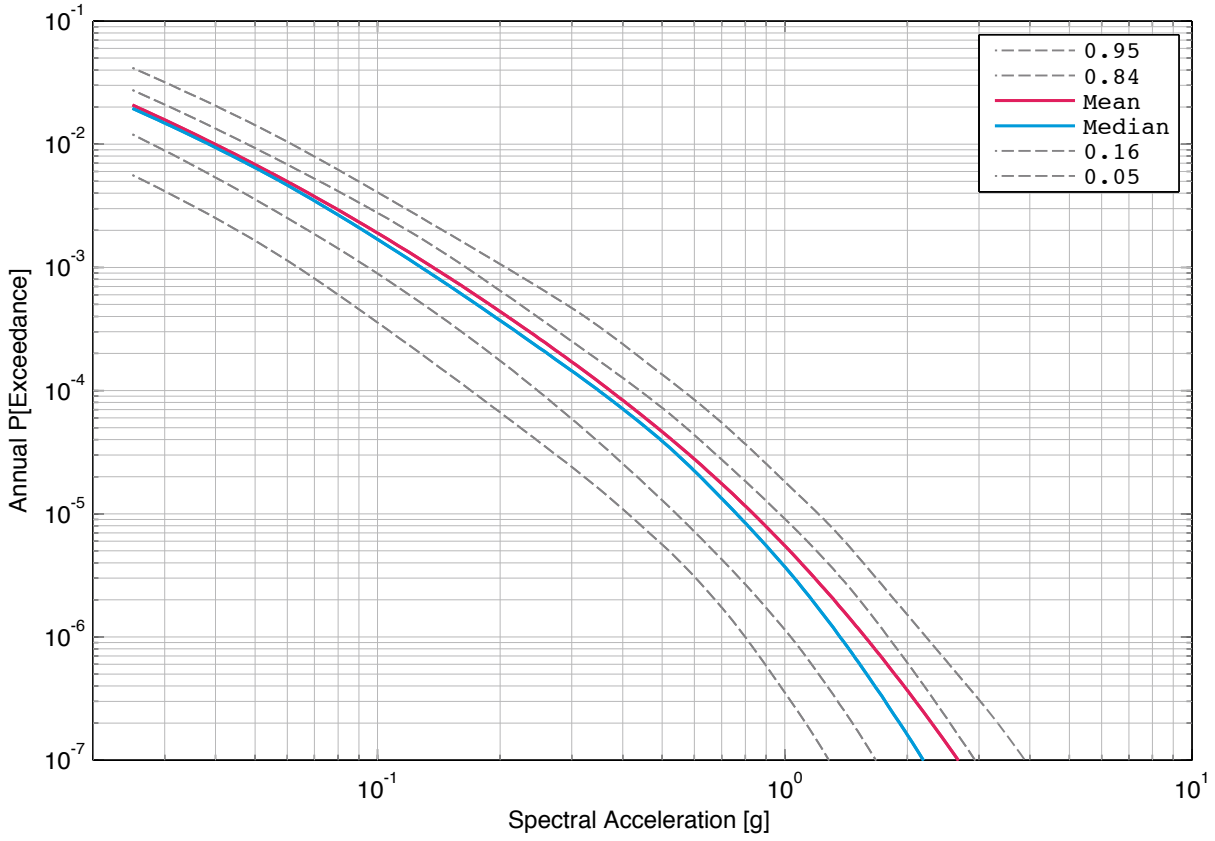

Fig. 4-1.4: Leibstadt, horizontal component, rock, mean hazard and fractiles, 5 Hz.

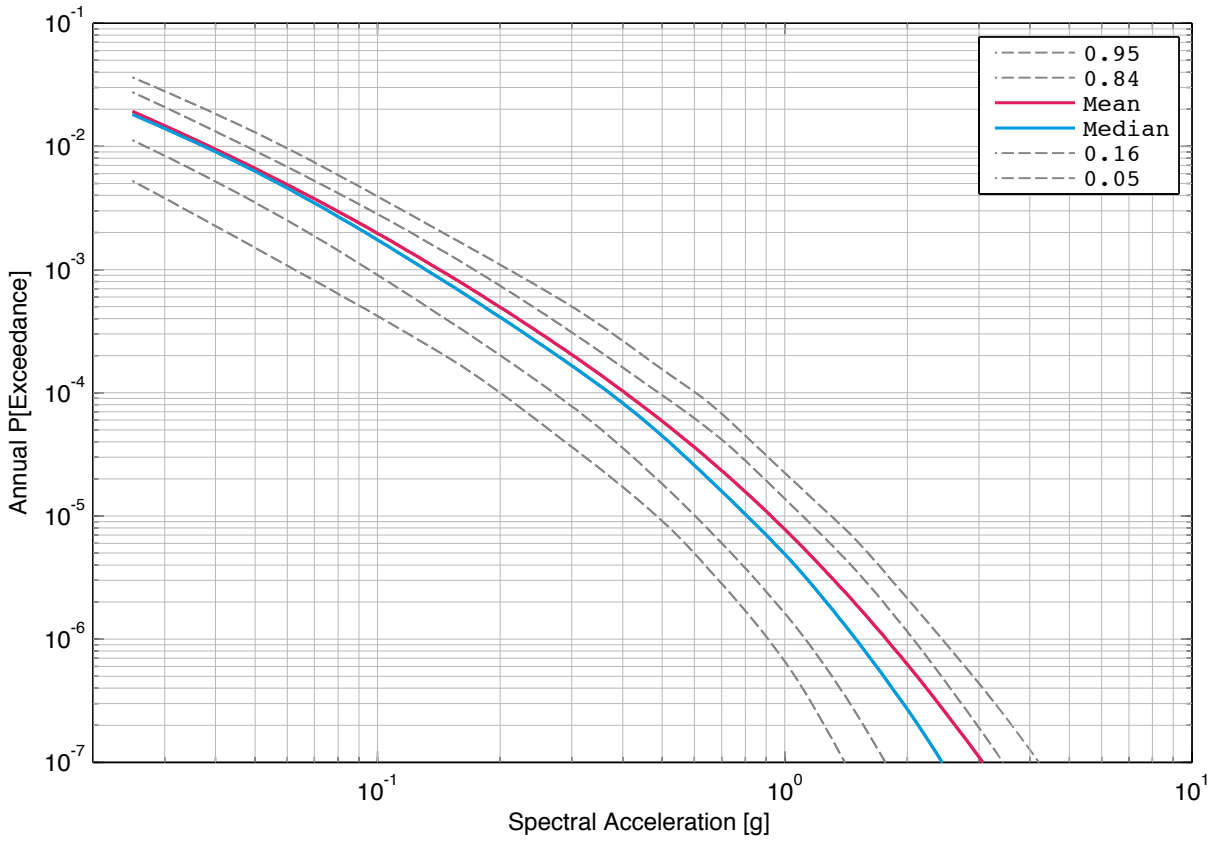

Fig. 4-1.5: Leibstadt, horizontal component, rock, mean hazard and fractiles, 10 Hz.

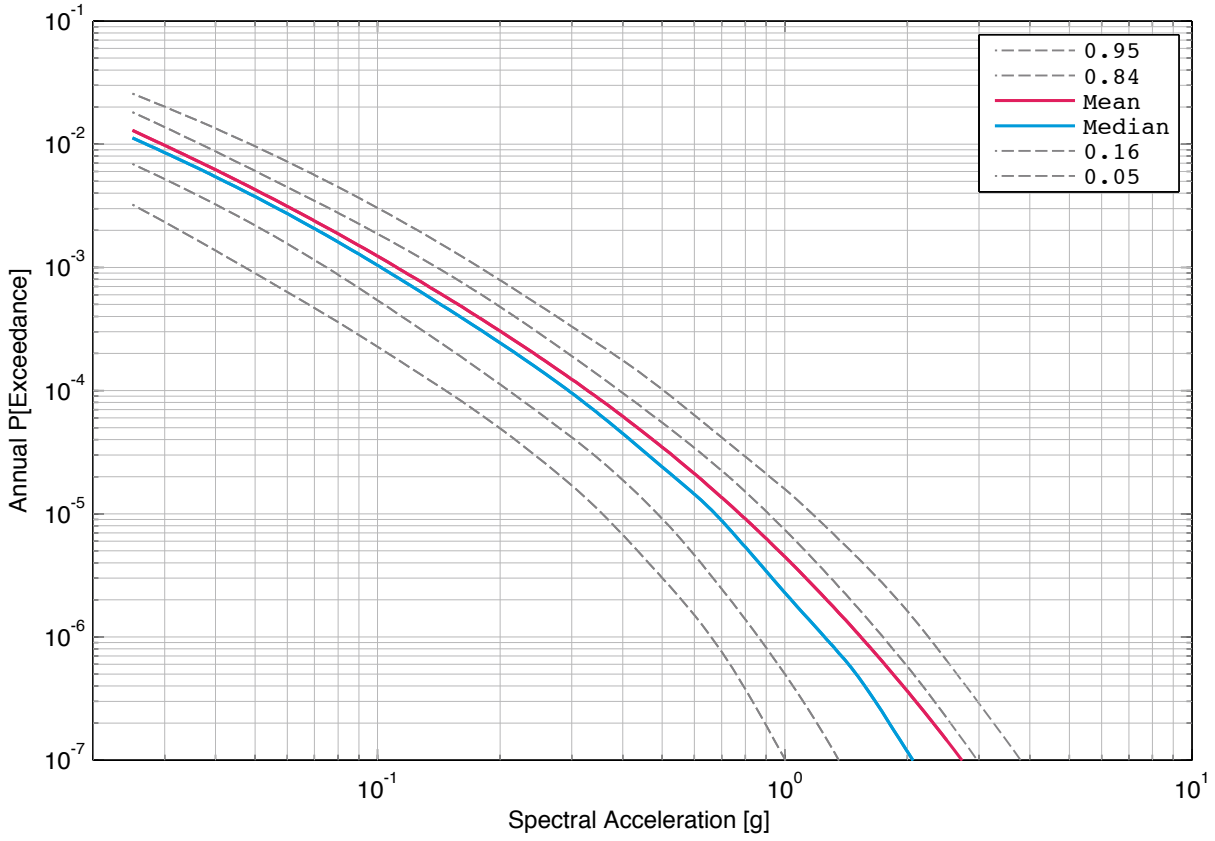

Fig. 4-1.6: Leibstadt, horizontal component, rock, mean hazard and fractiles, 20 Hz.

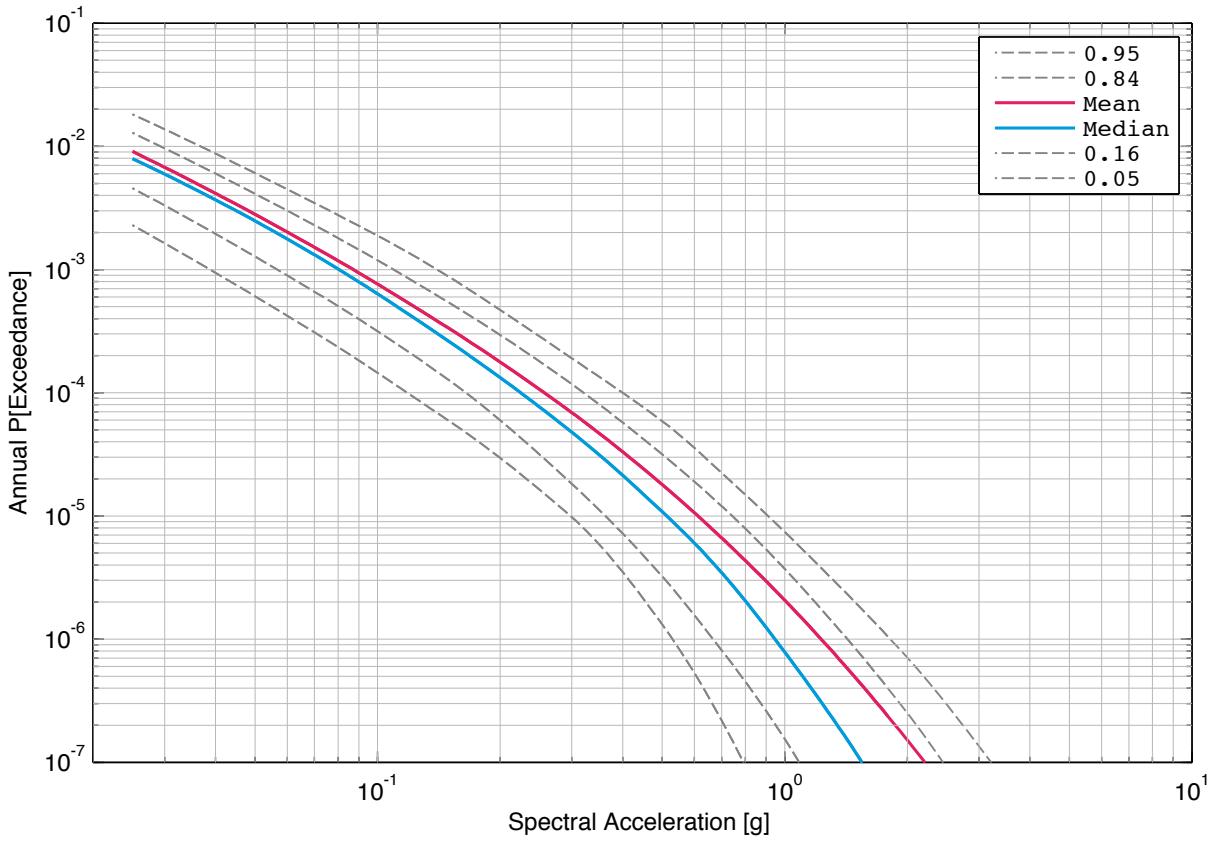

Fig. 4-1.7: Leibstadt, horizontal component, rock, mean hazard and fractiles, 33 Hz.

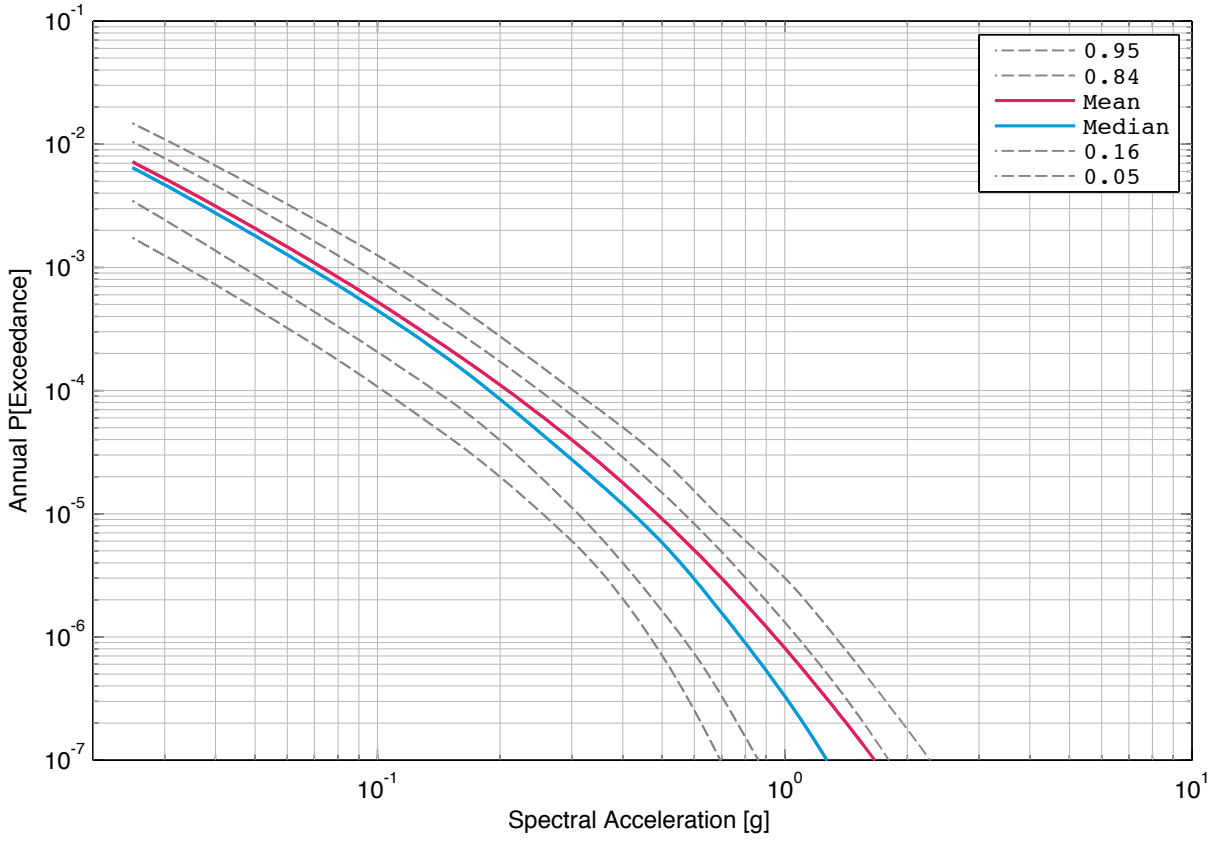

Fig. 4-1.8: Leibstadt, horizontal component, rock, mean hazard and fractiles, 50 Hz.

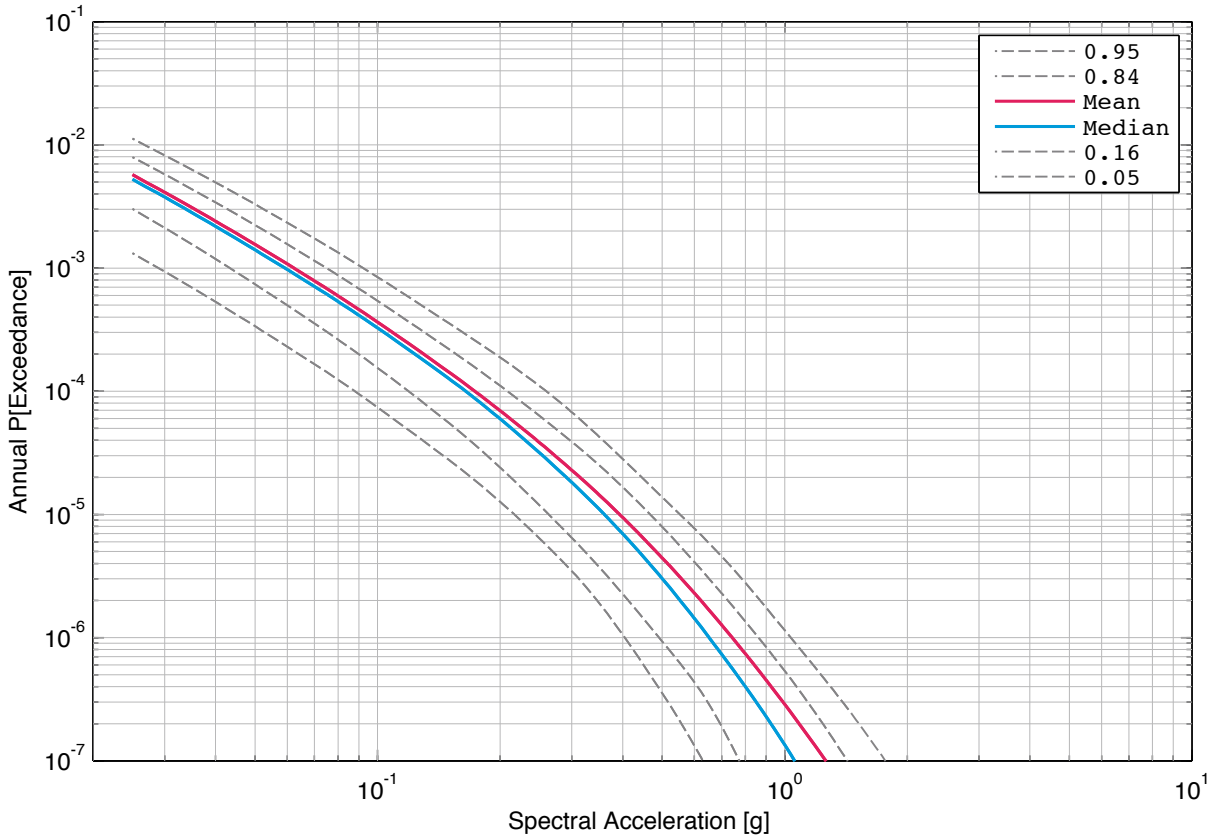

Fig. 4-1.9: Leibstadt, horizontal component, rock, mean hazard and fractiles, 100 Hz.

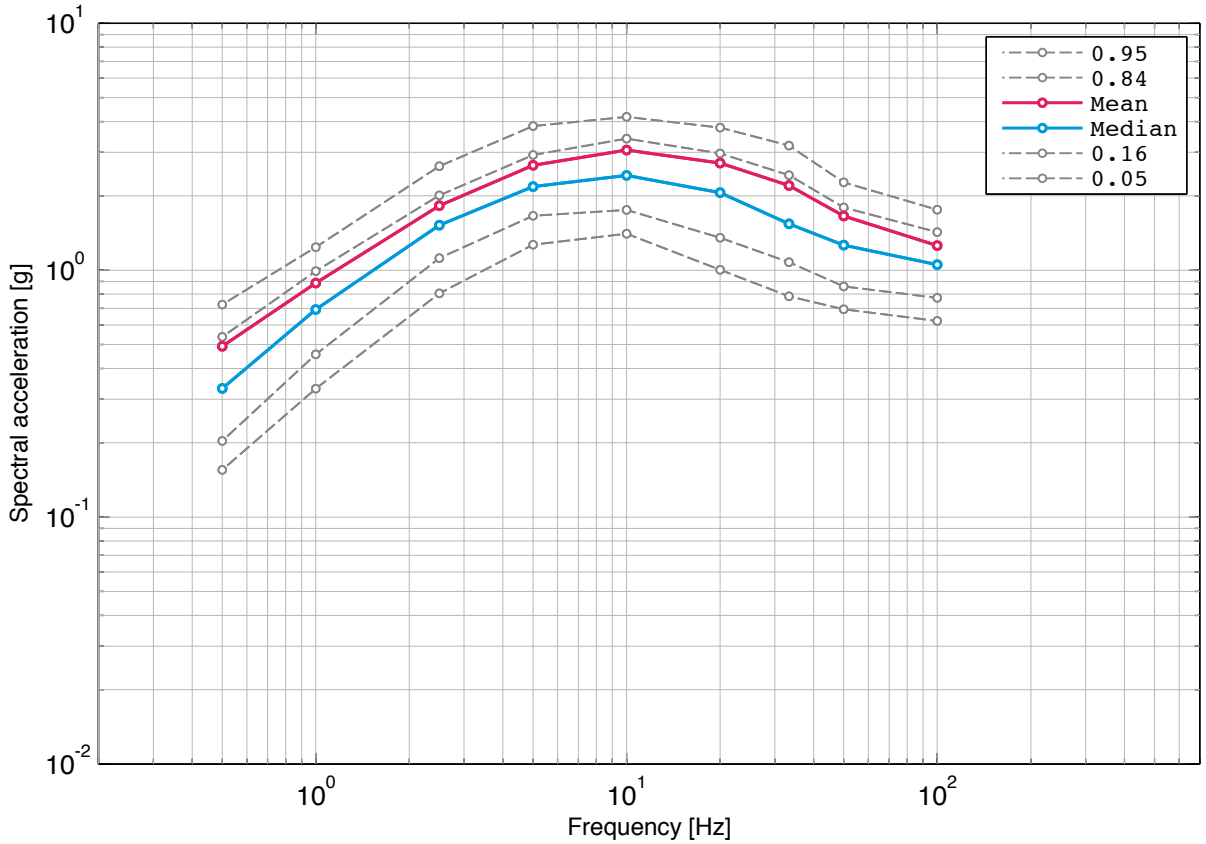

Fig. 4-1.10: Leibstadt, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-07 and 5% damping.

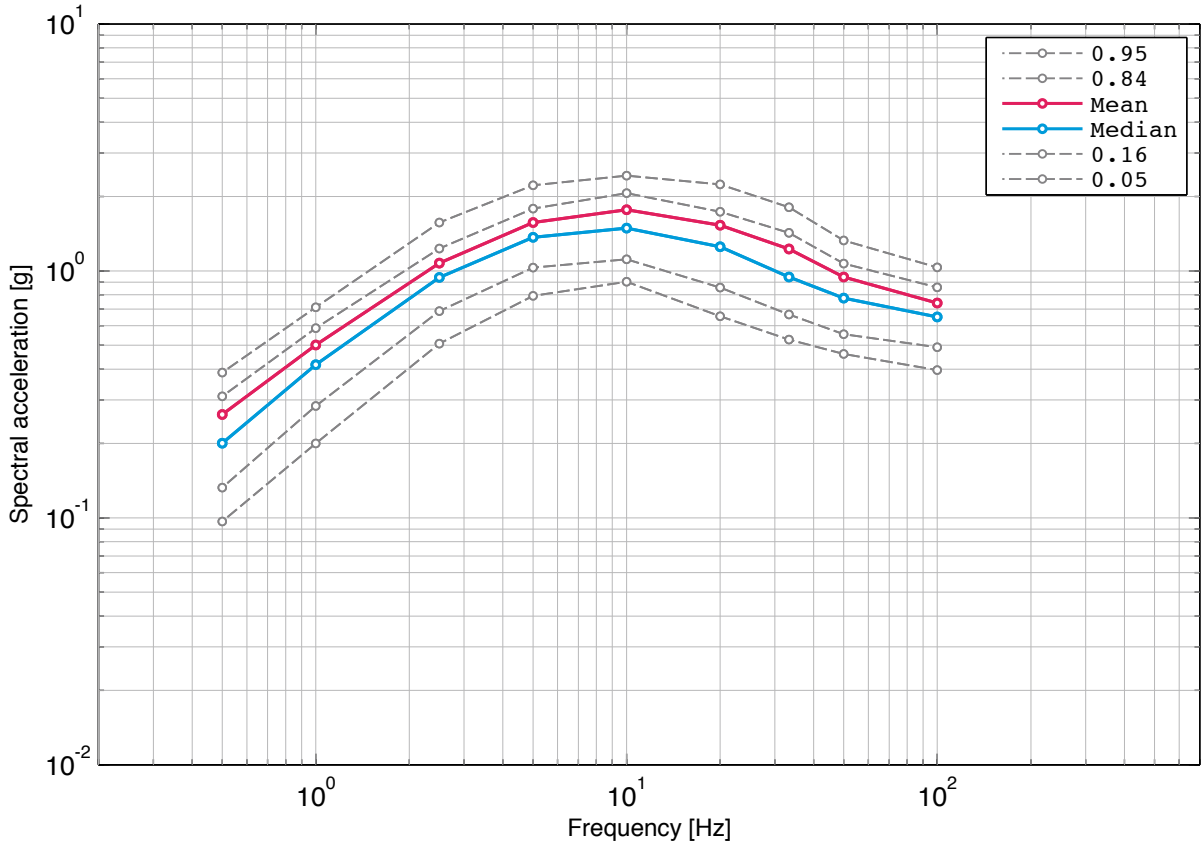

Fig. 4-1.11: Leibstadt, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-06 and 5% damping.

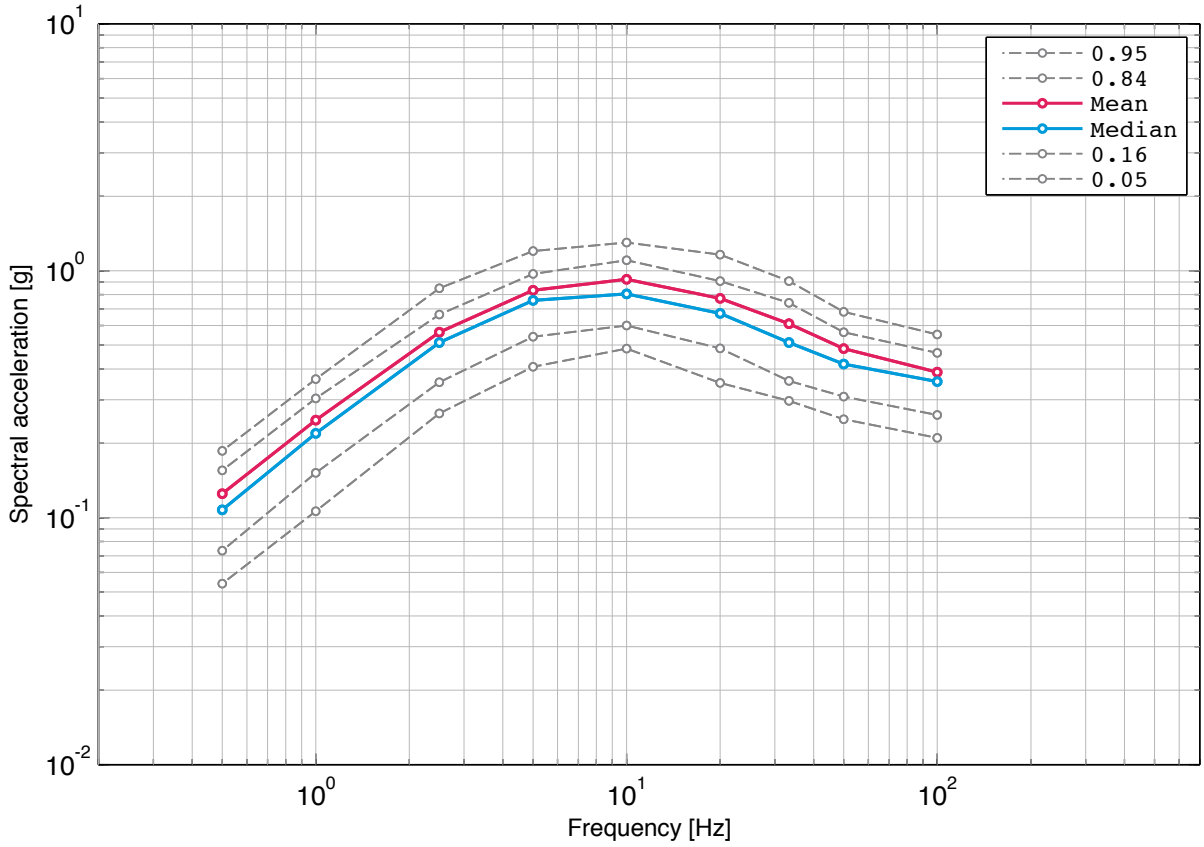

Fig. 4-1.12: Leibstadt, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-05 and 5% damping.

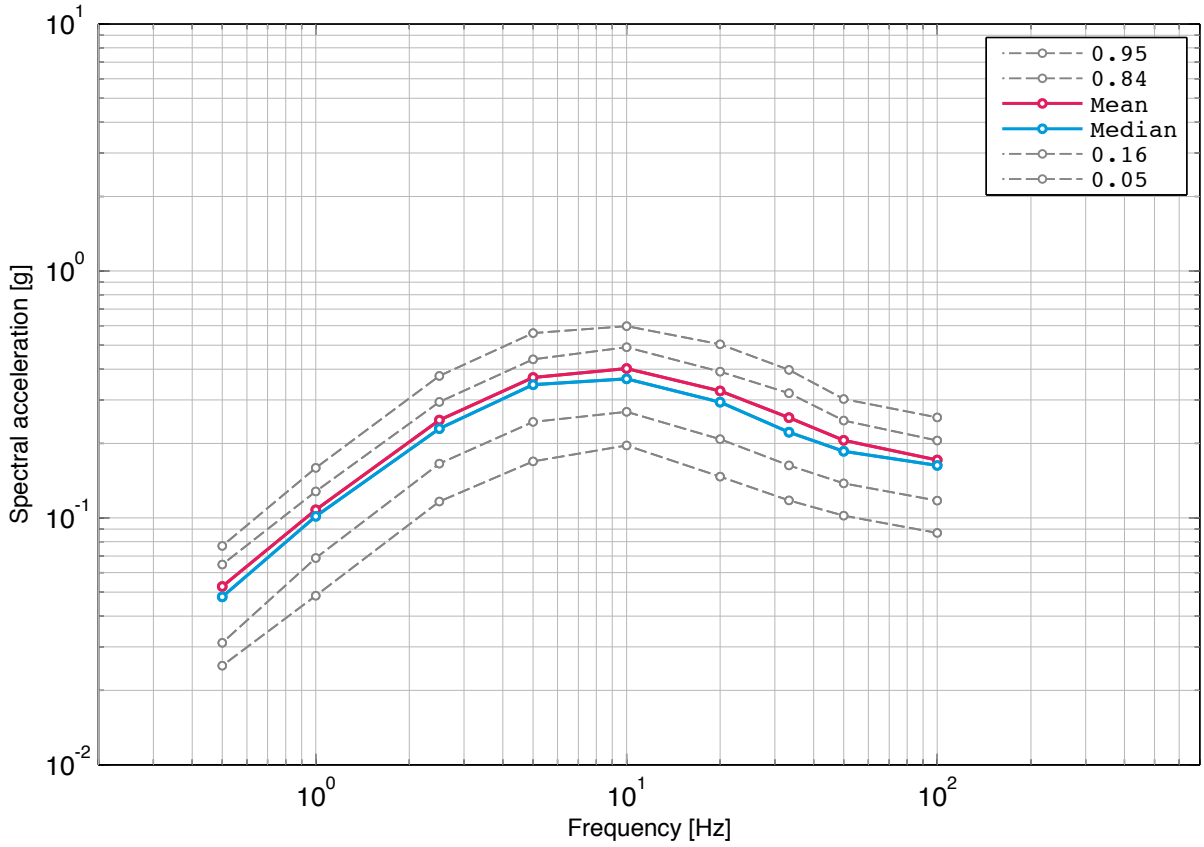

Fig. 4-1.13: Leibstadt, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-04 and 5% damping.

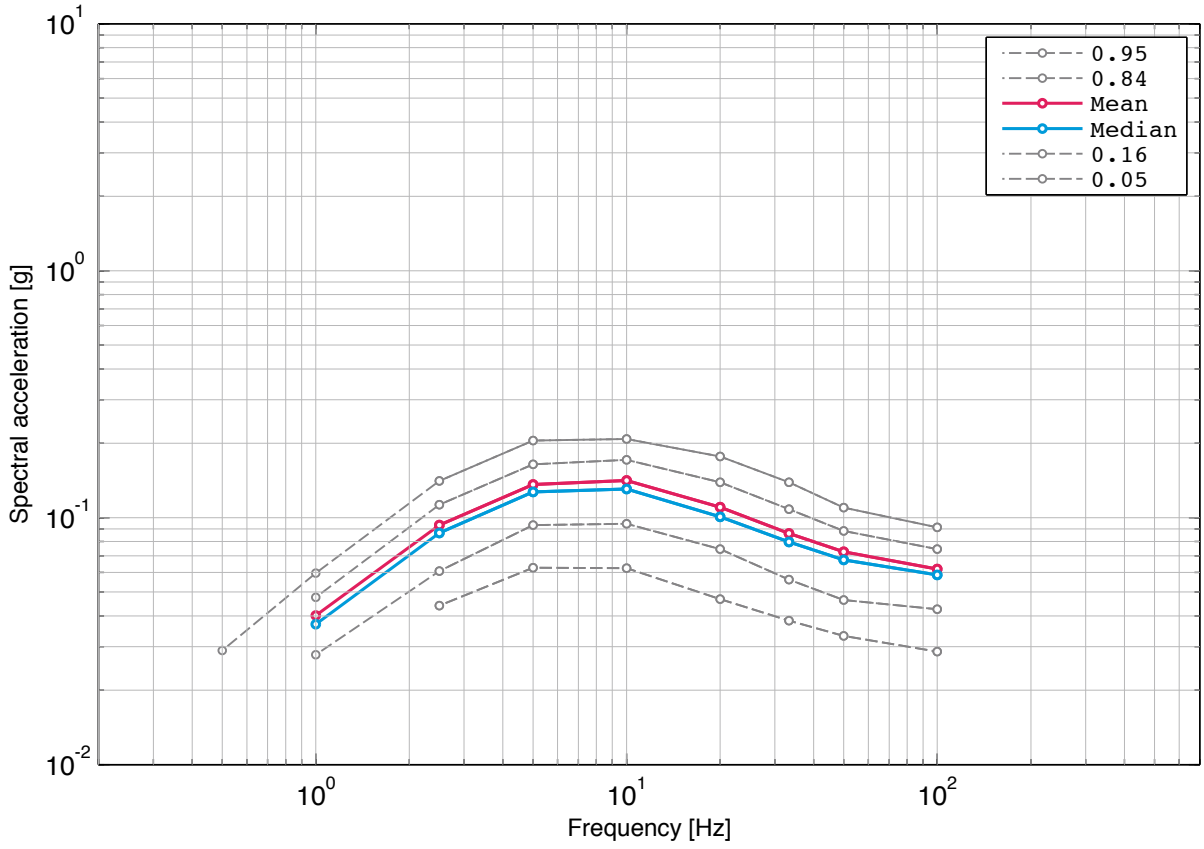

Fig. 4-1.14: Leibstadt, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-03 and 5% damping.

4.2 Leibstadt, Soil Hazard, Horizontal Component, Surface

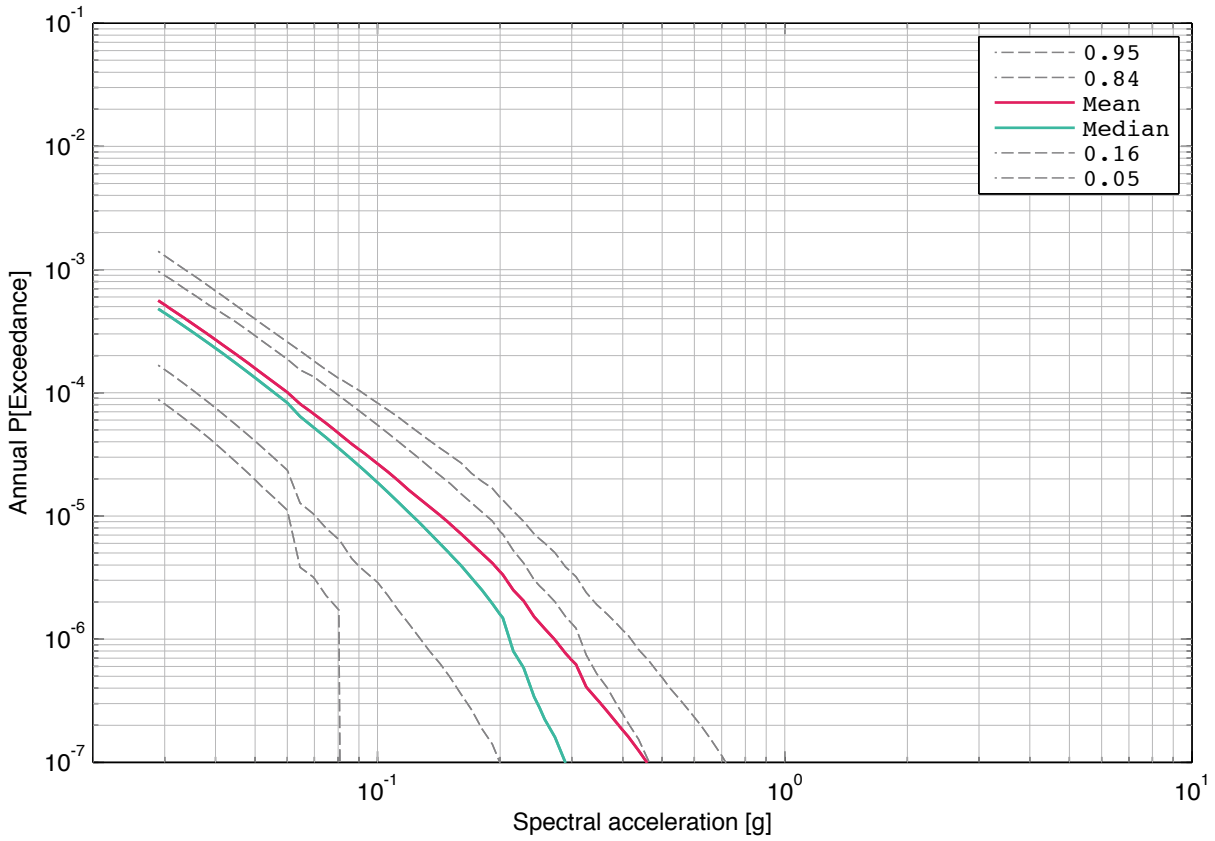

Fig. 4-2.1: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 0.5 Hz.

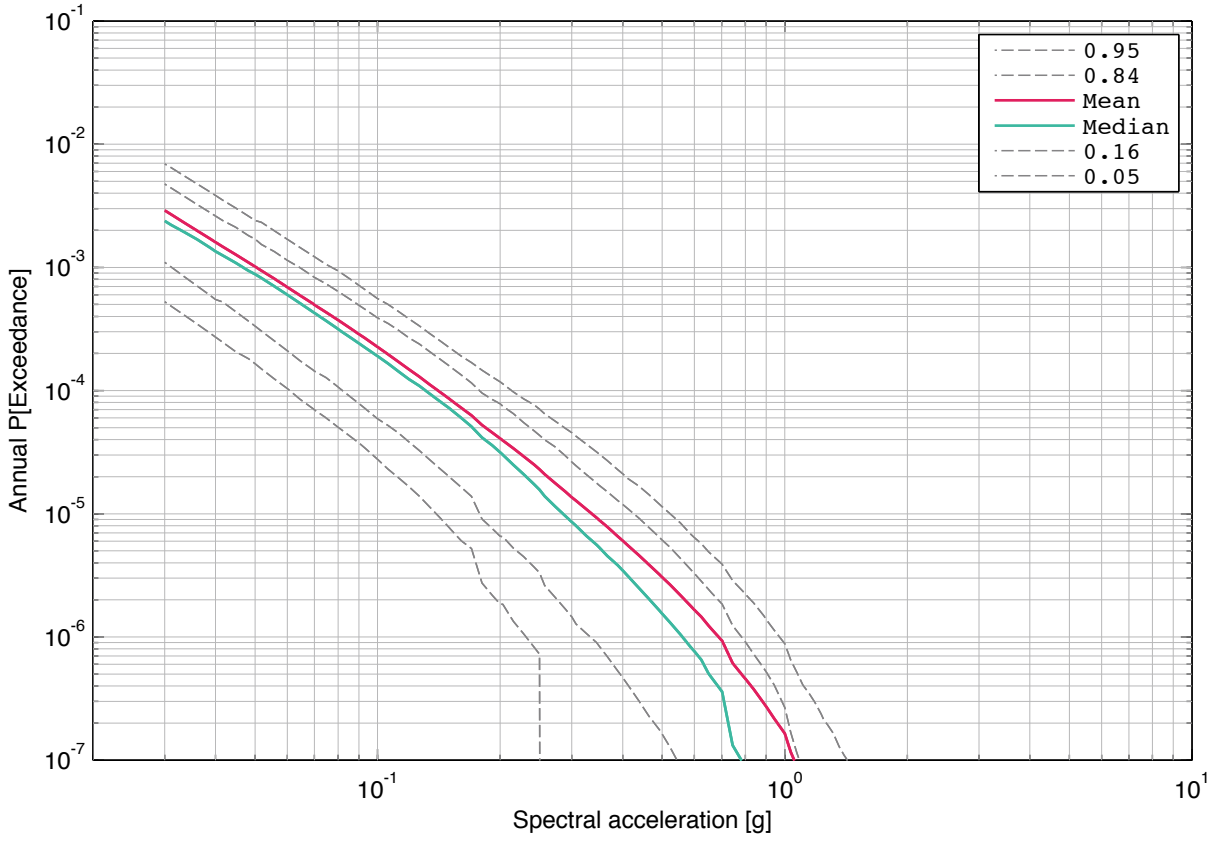

Fig. 4-2.2: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 1 Hz.

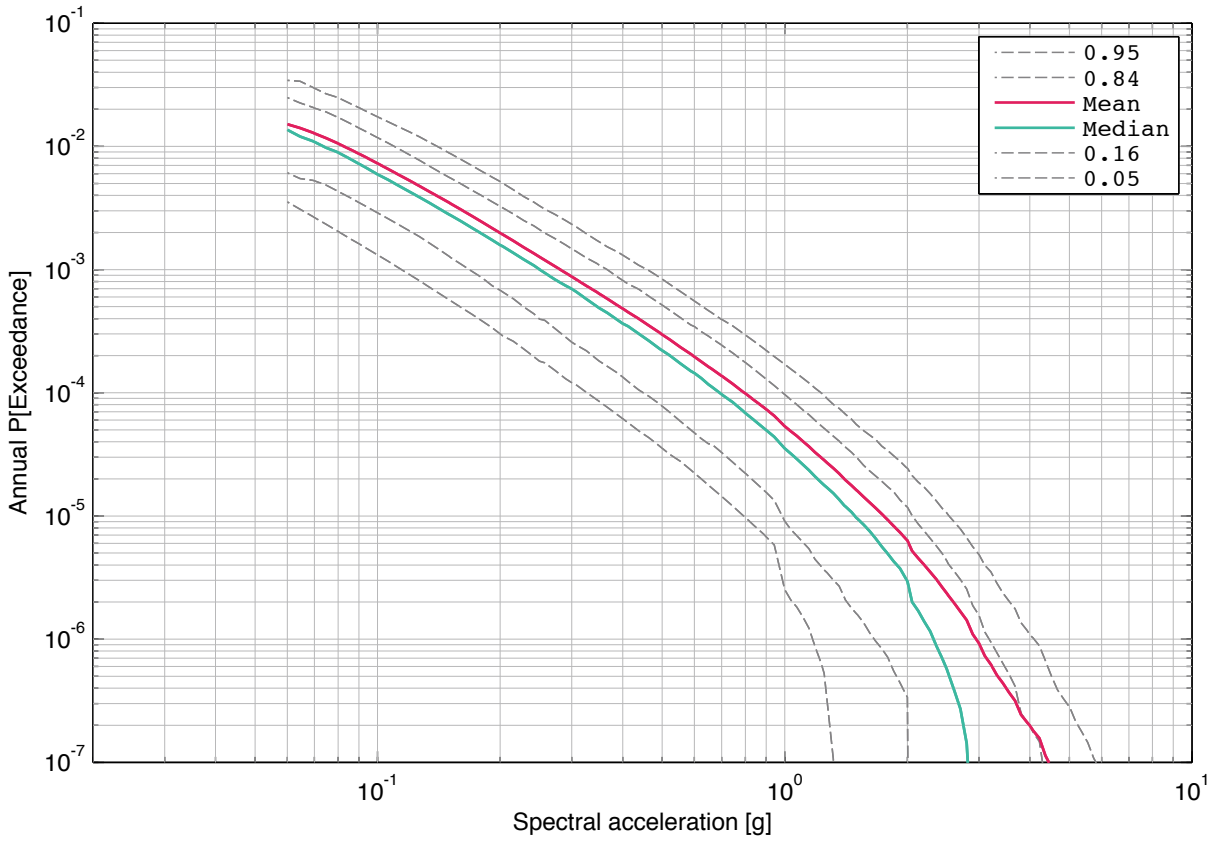

Fig. 4-2.3: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 2.5 Hz.

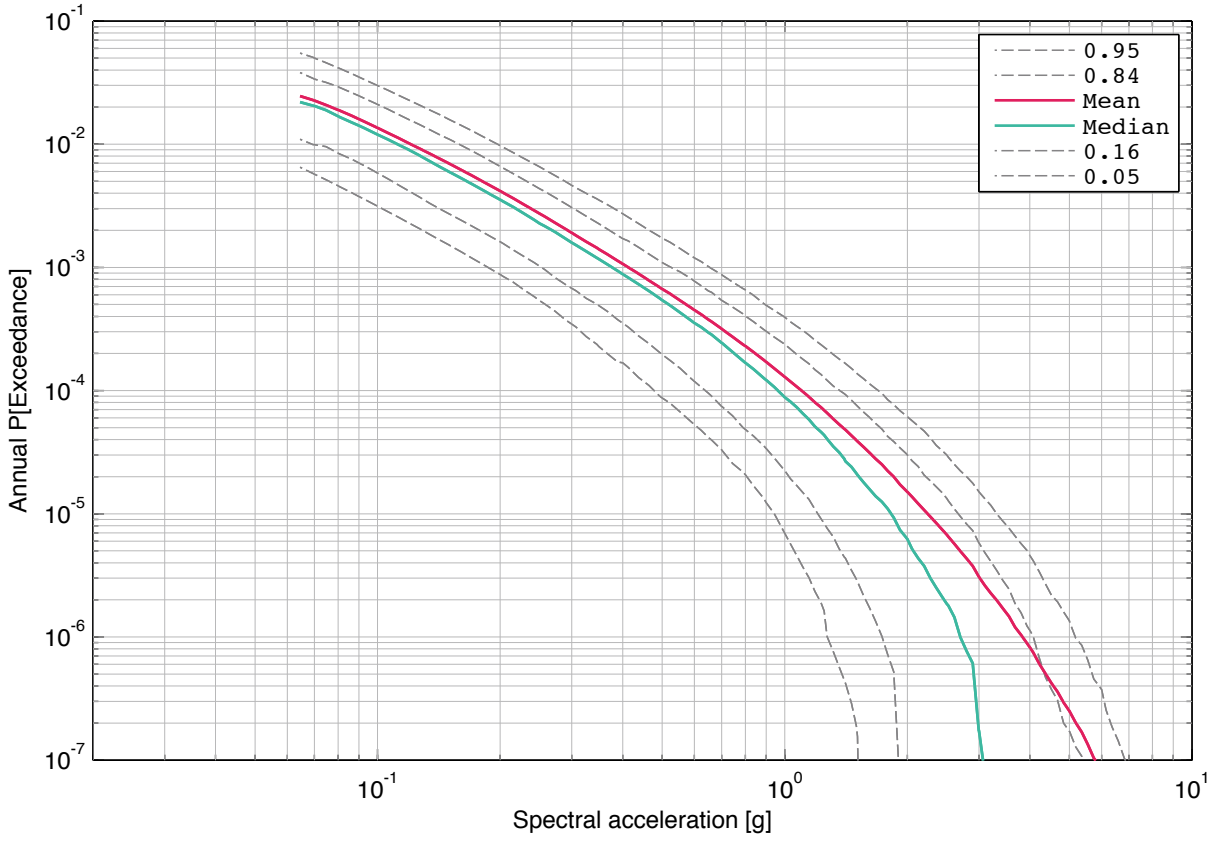

Fig. 4-2.4: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 5 Hz.

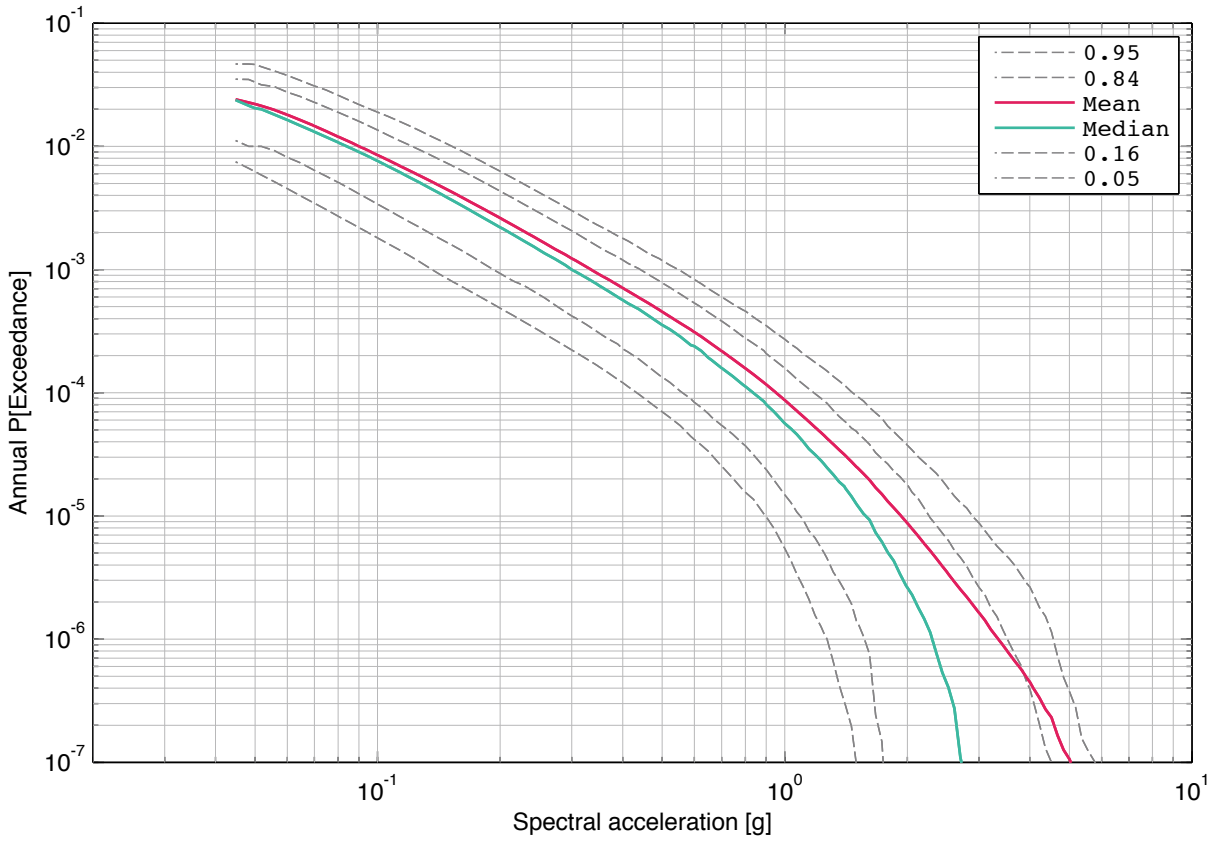

Fig. 4-2.5: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 10 Hz.

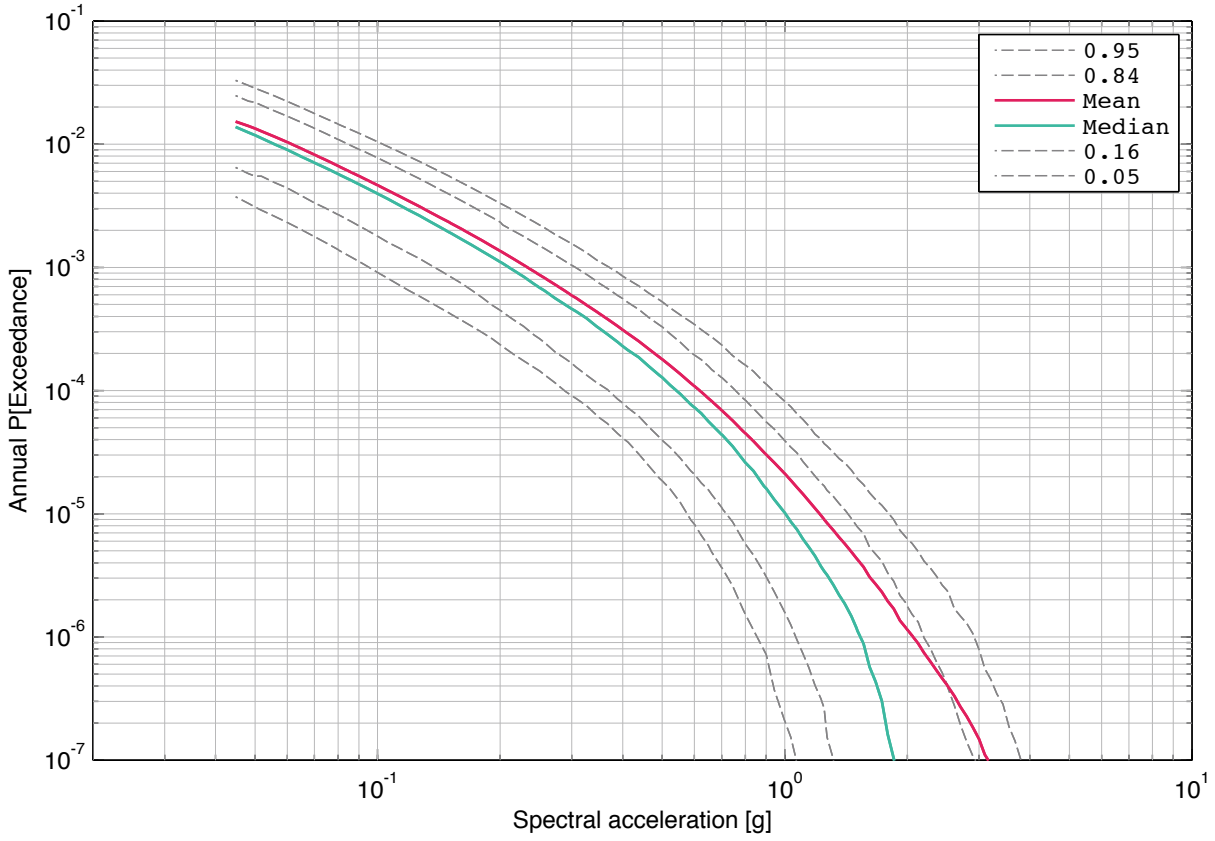

Fig. 4-2.6: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 20 Hz.

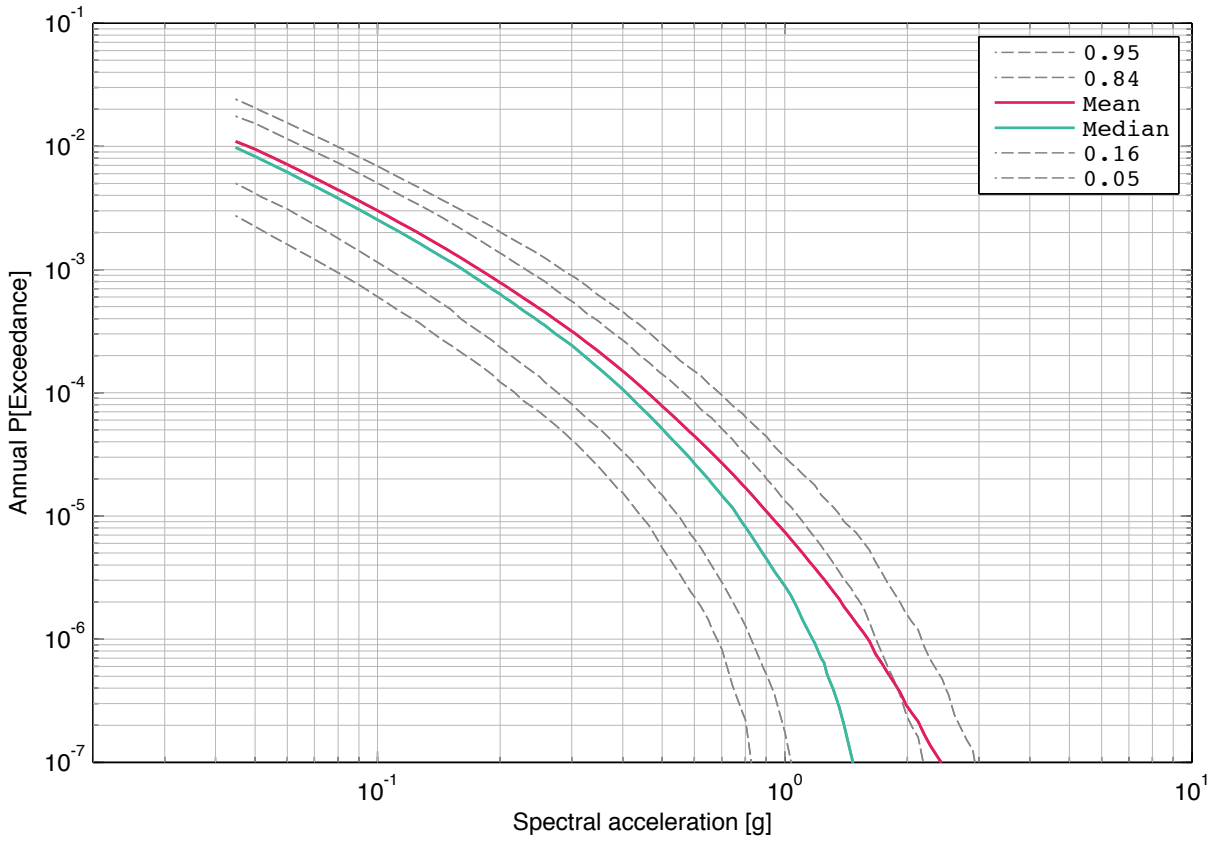

Fig. 4-2.7: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 33 Hz.

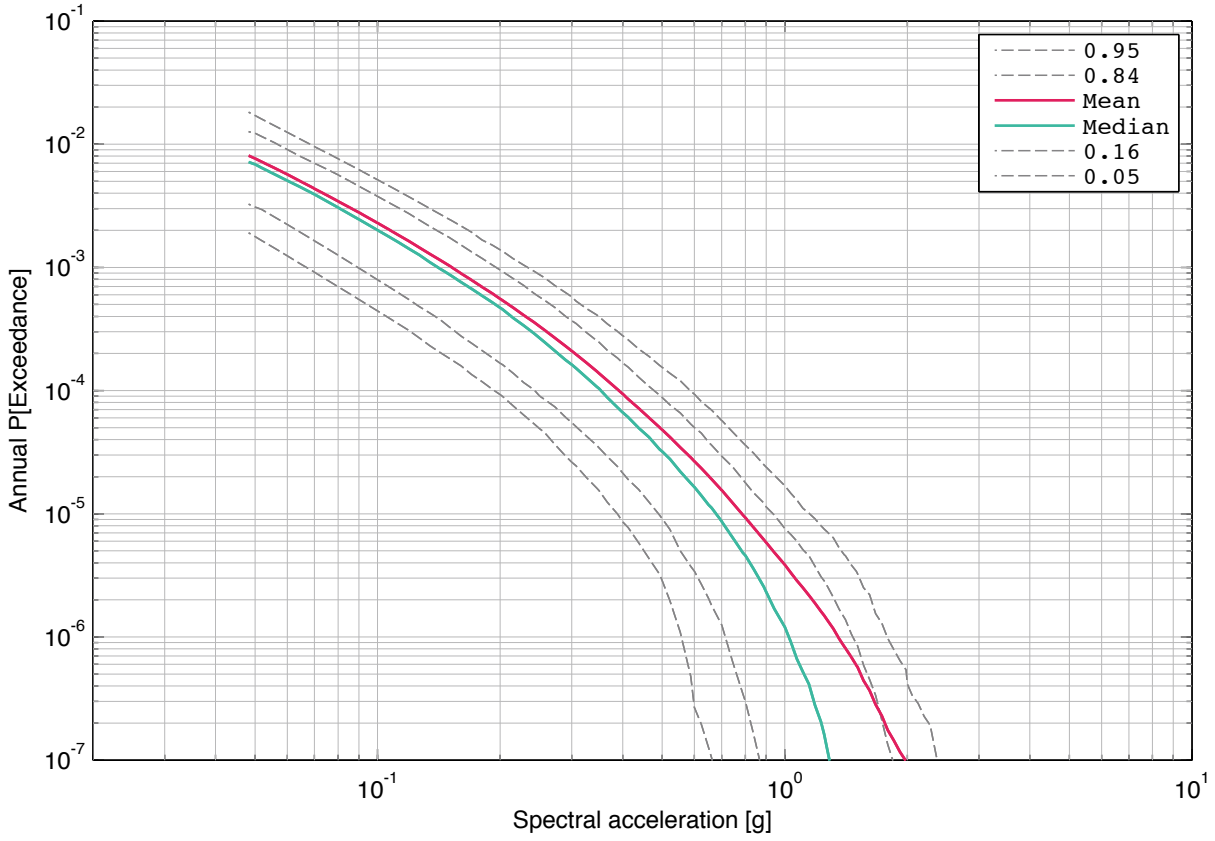

Fig. 4-2.8: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 50 Hz.

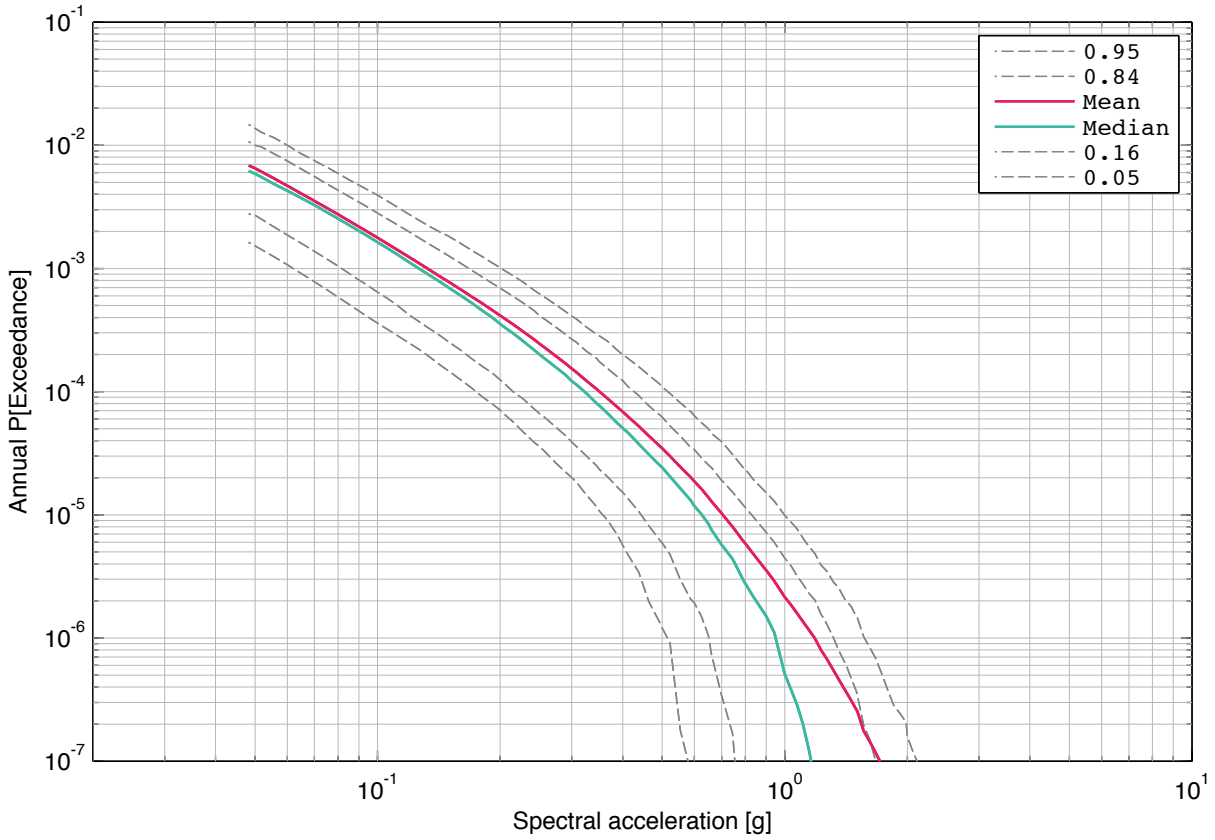

Fig. 4-2.9: Leibstadt, horizontal component, soil, surface, mean hazard and fractiles, 100 Hz.

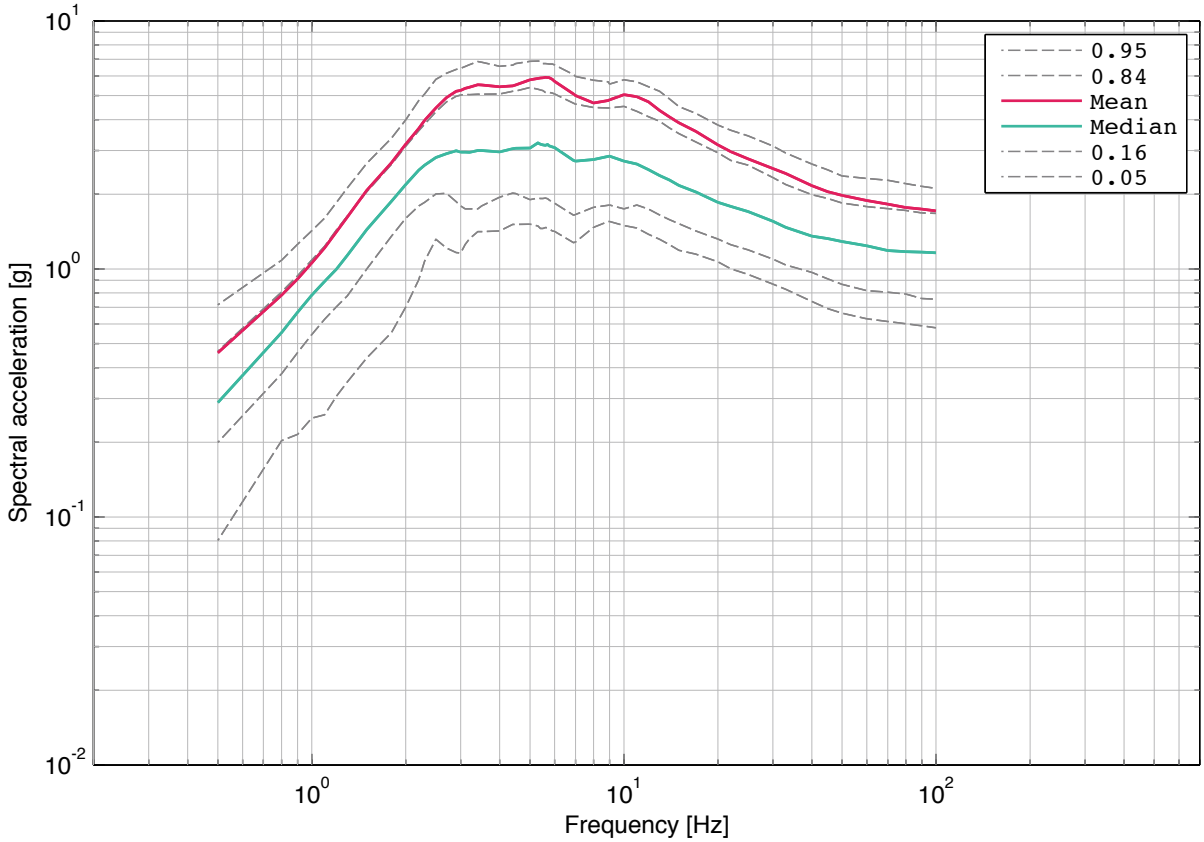

Fig. 4-2.10: Leibstadt, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

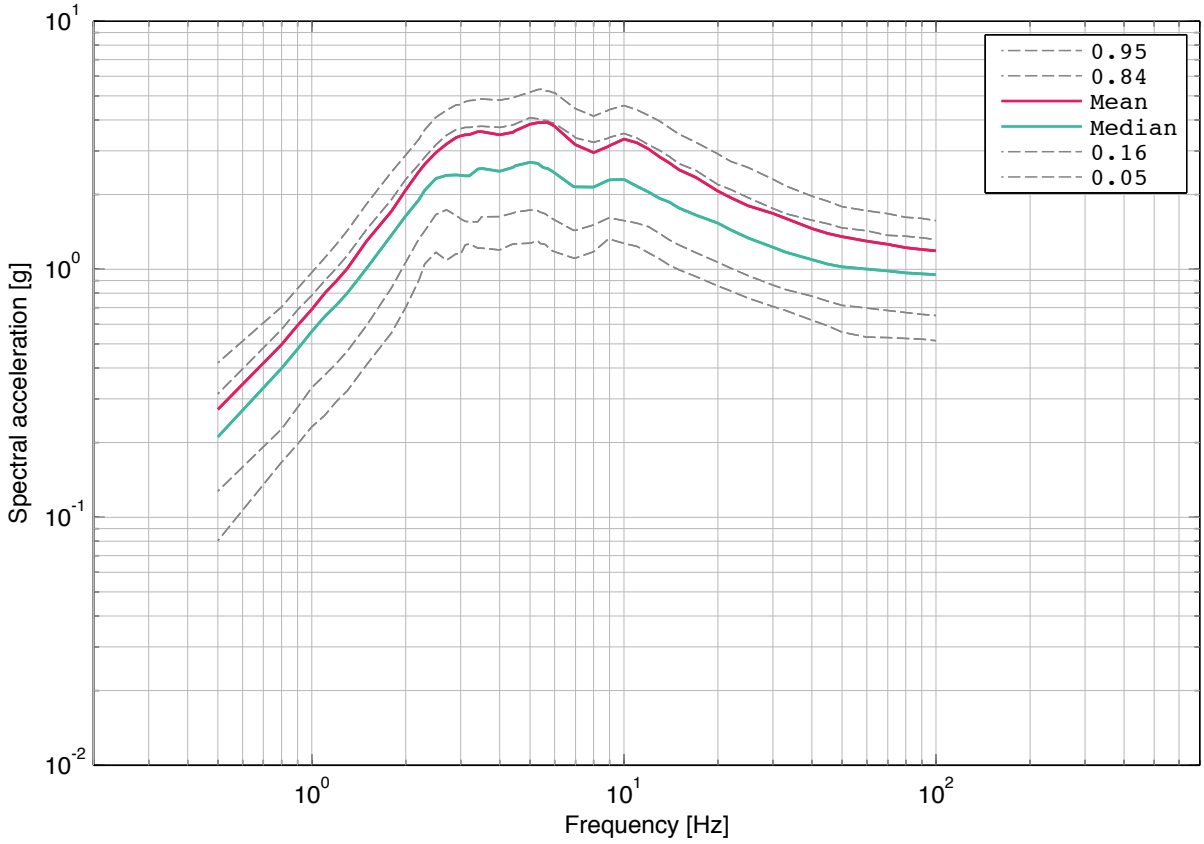

Fig. 4-2.11: Leibstadt, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

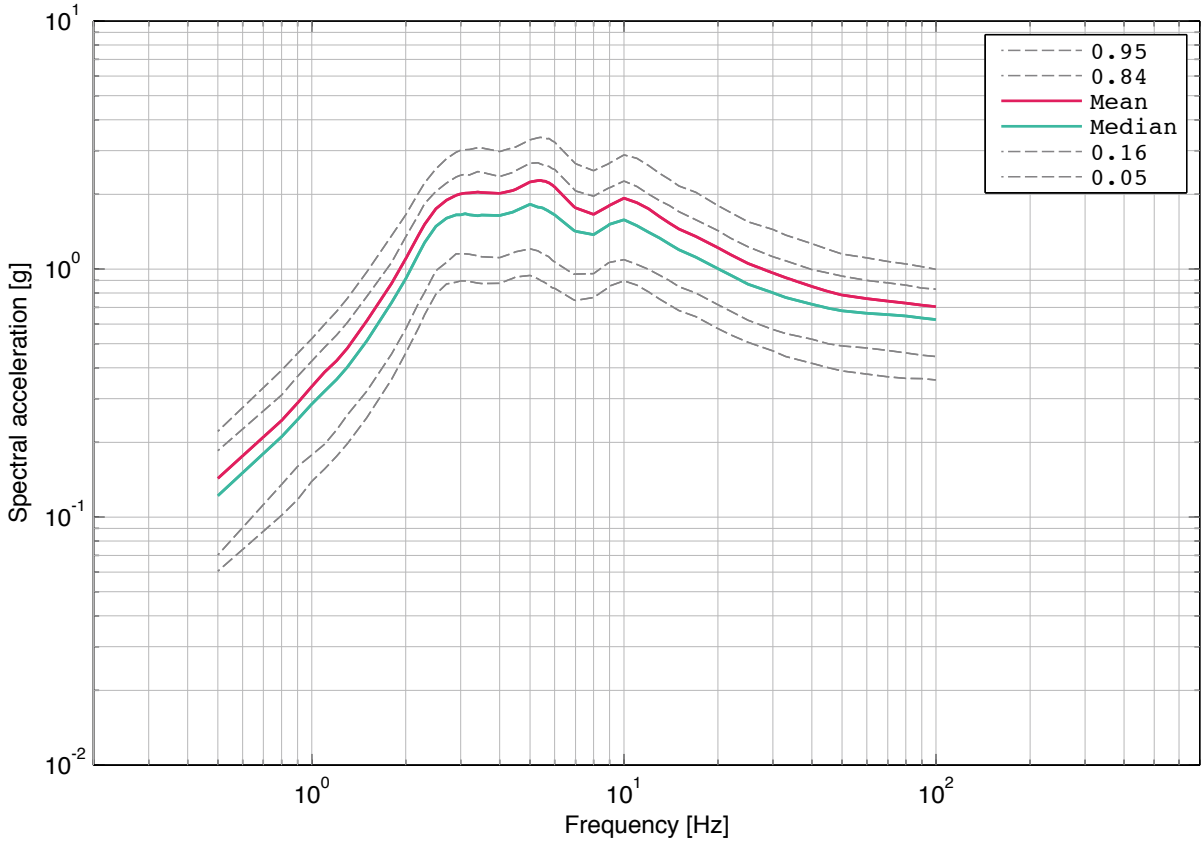

Fig. 4-2.12: Leibstadt, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

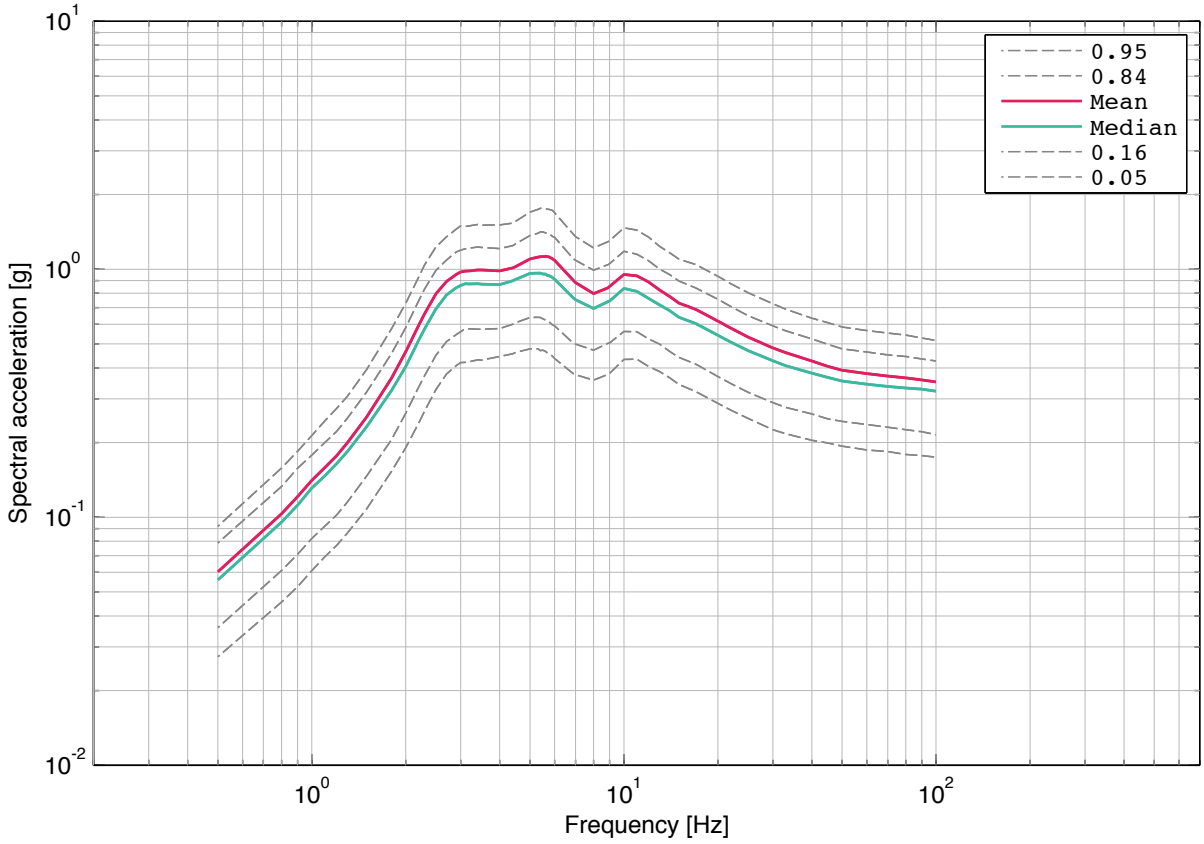

Fig. 4-2.13: Leibstadt, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

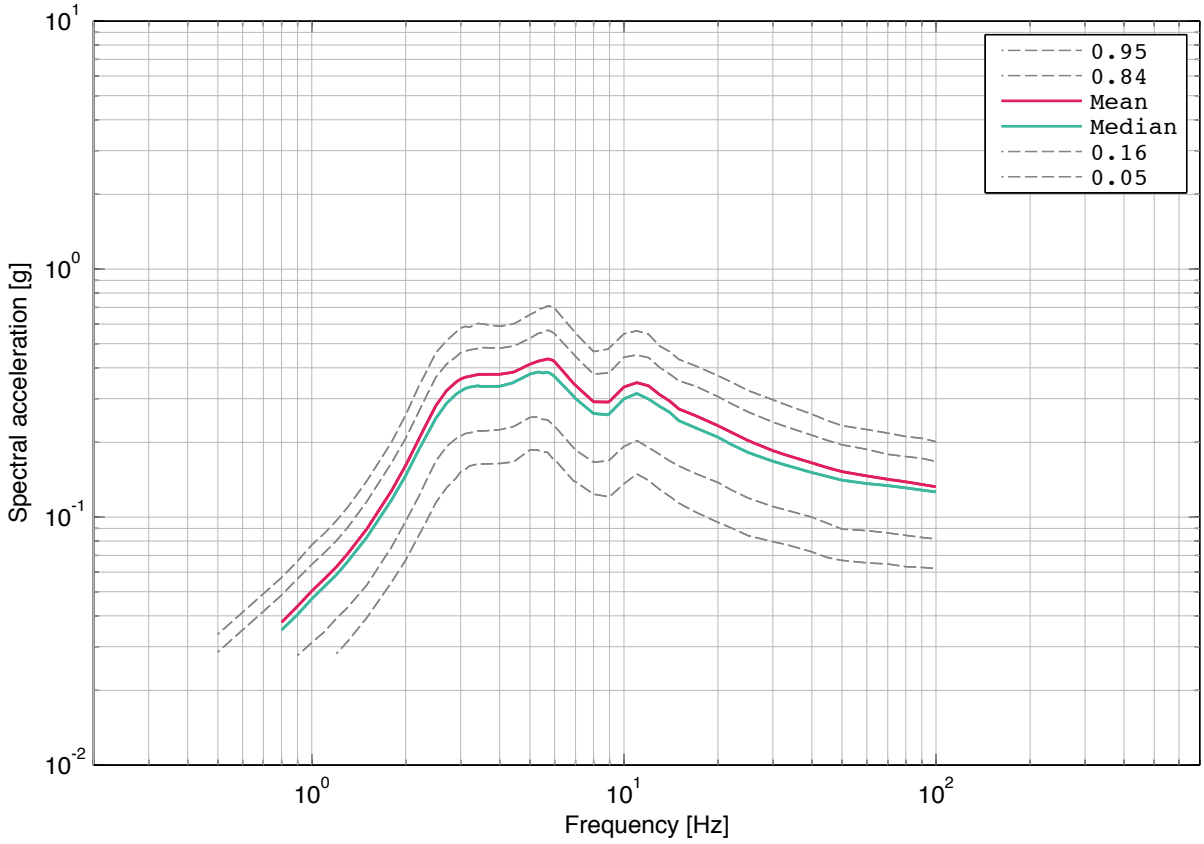

Fig. 4-2.14: Leibstadt, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

4.3 Leibstadt, Soil Hazard, Horizontal Component, -10 m

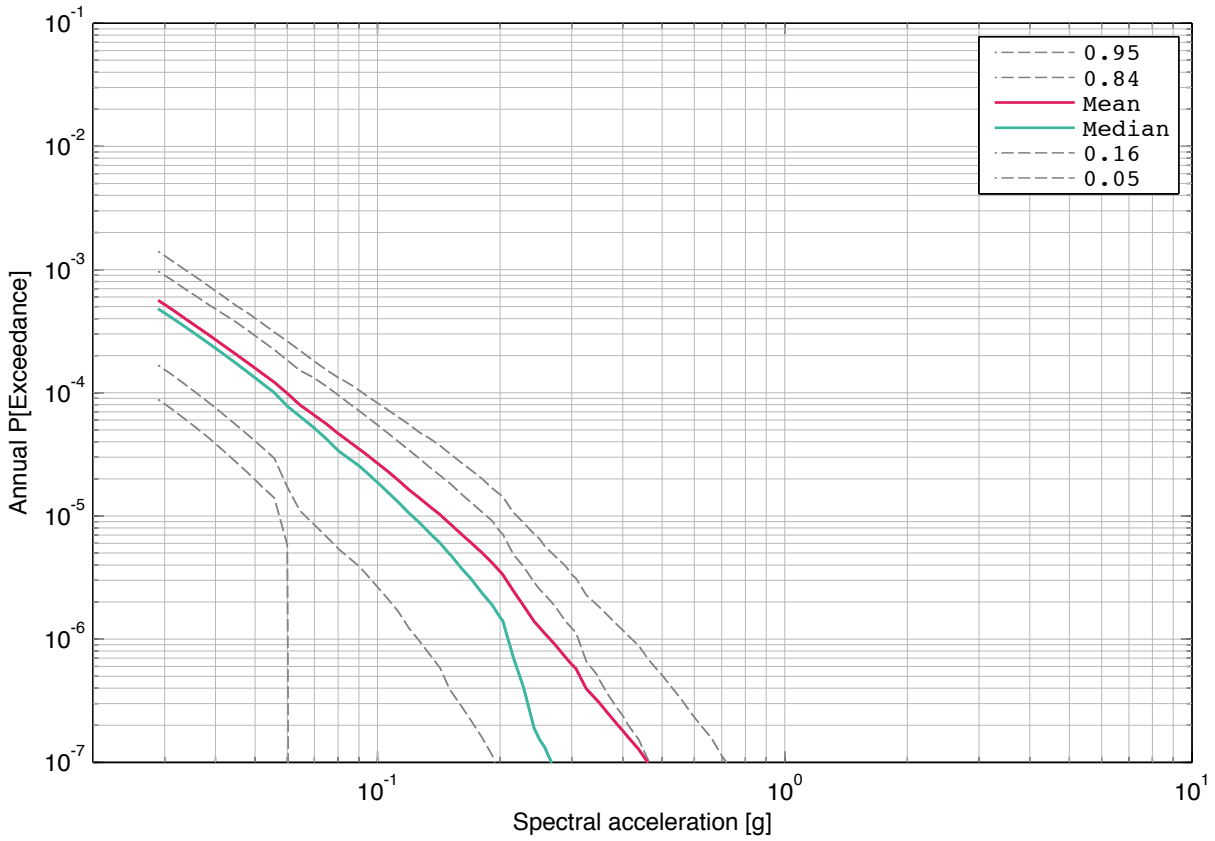

Fig. 4-3.1: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 0.5 Hz.

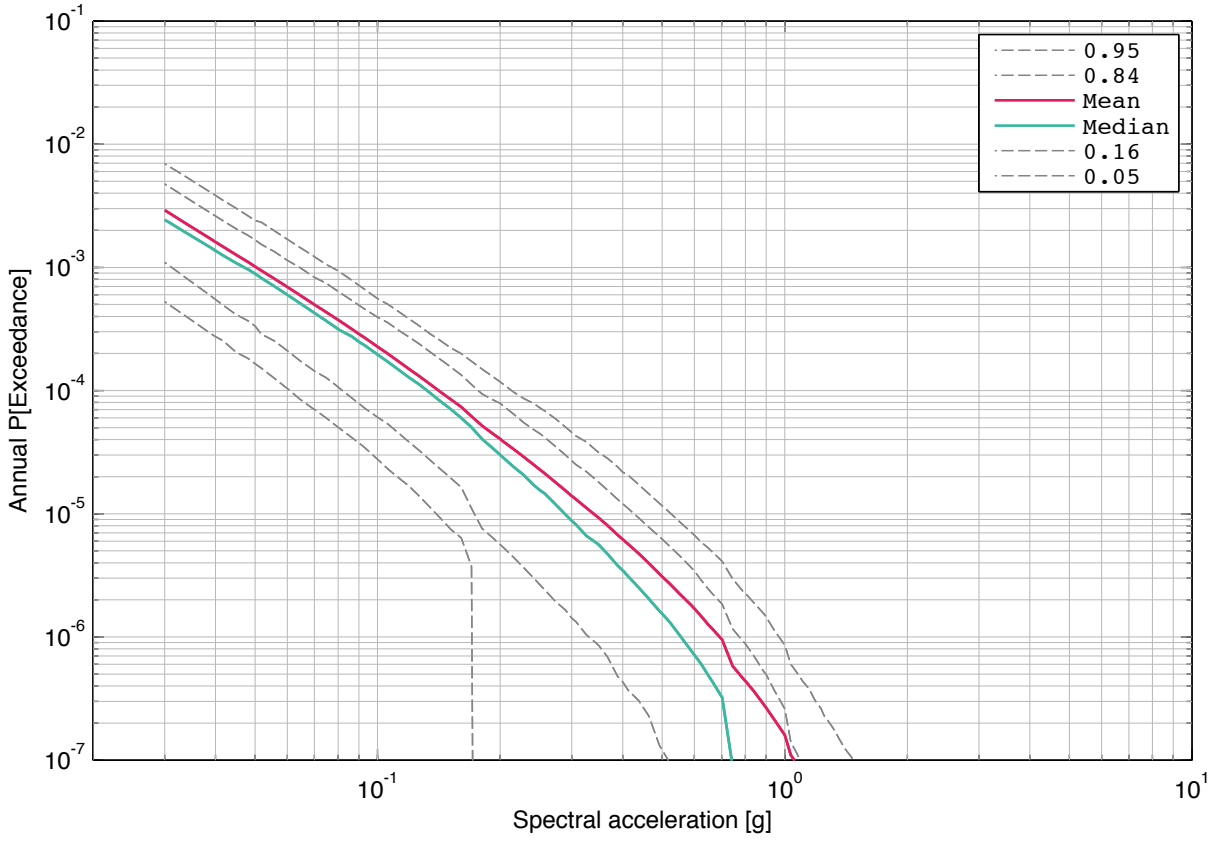

Fig. 4-3.2: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 1 Hz.

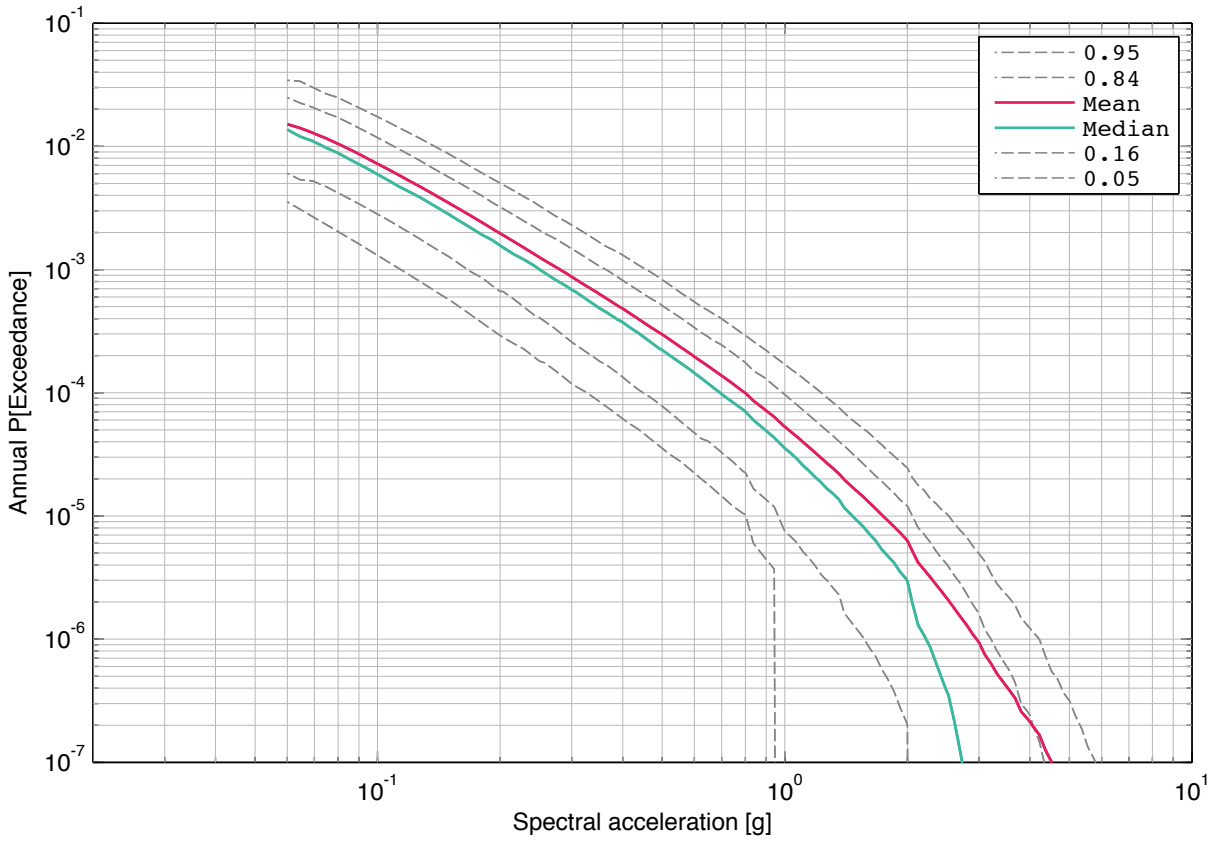

Fig. 4-3.3: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 2.5 Hz.

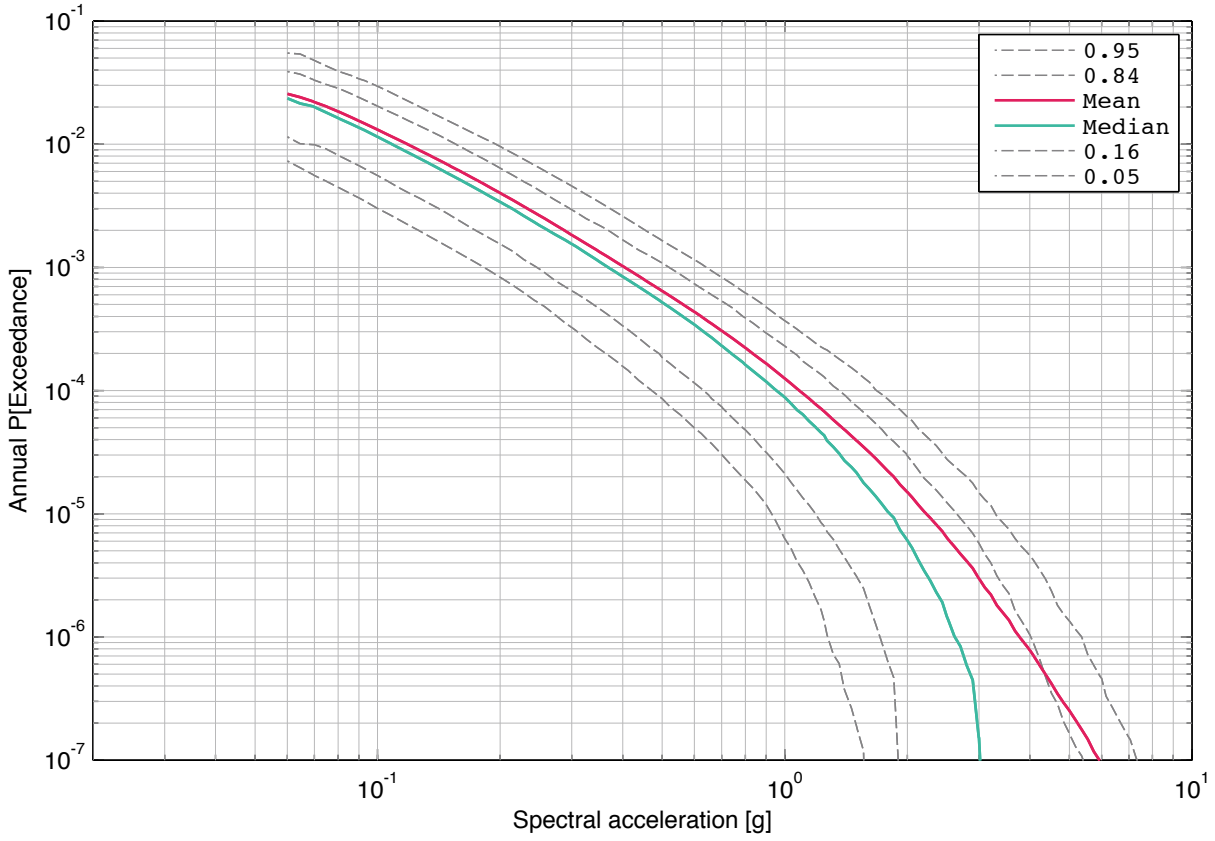

Fig. 4-3.4: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 5 Hz.

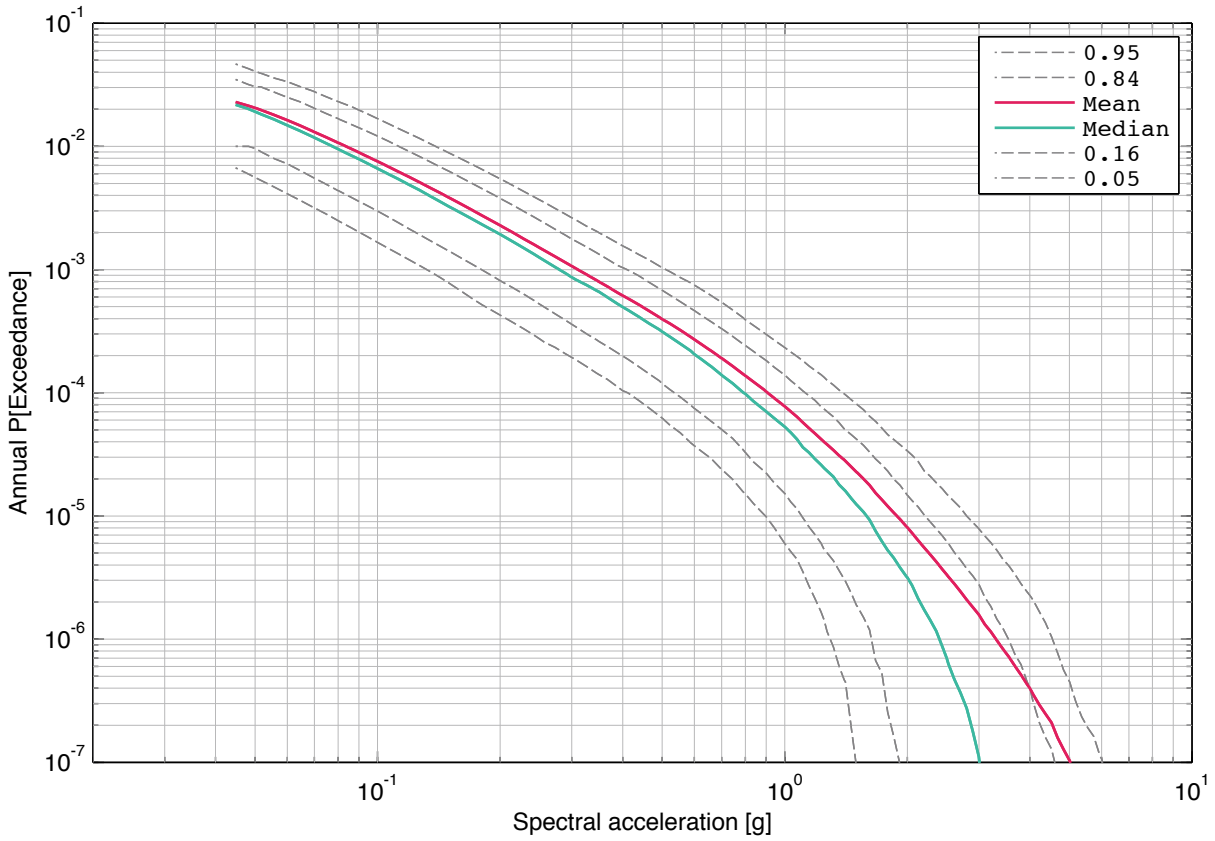

Fig. 4-3.5: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 10 Hz.

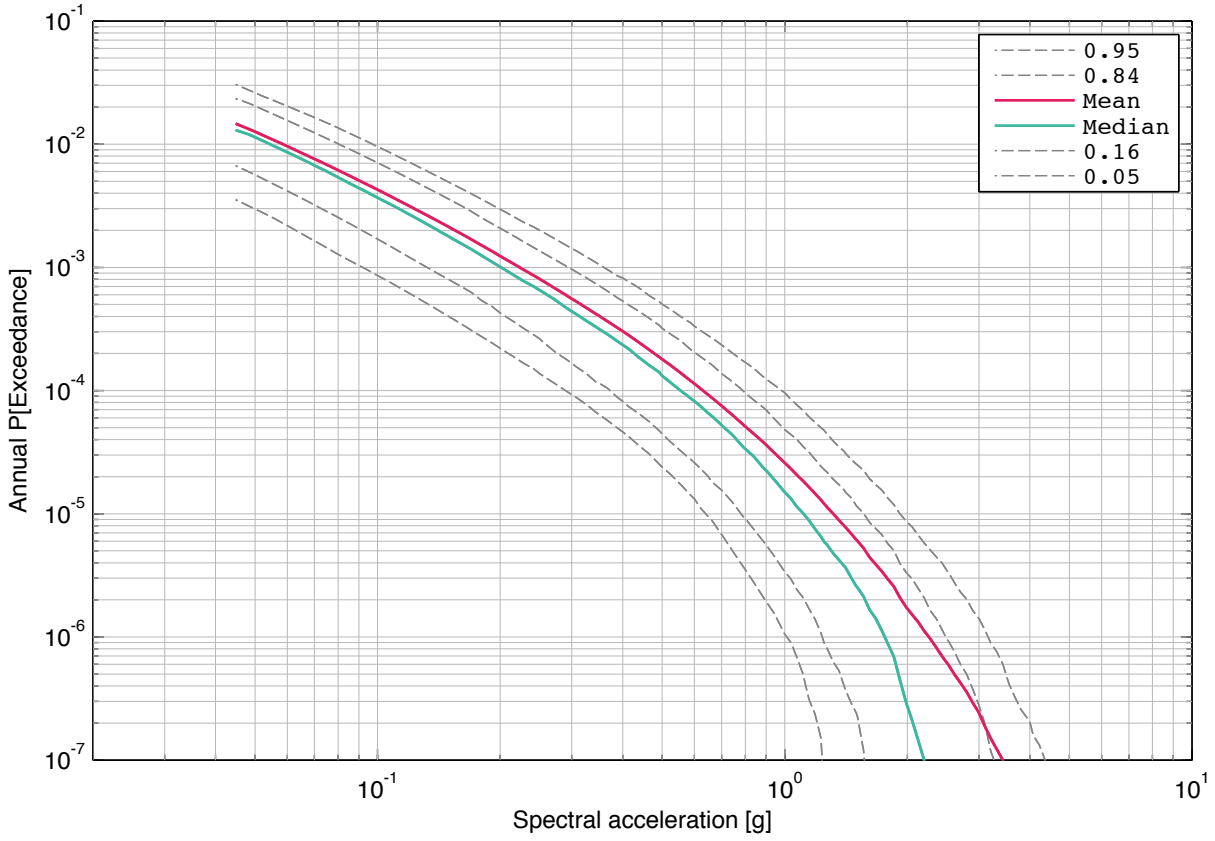

Fig. 4-3.6: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 20 Hz.

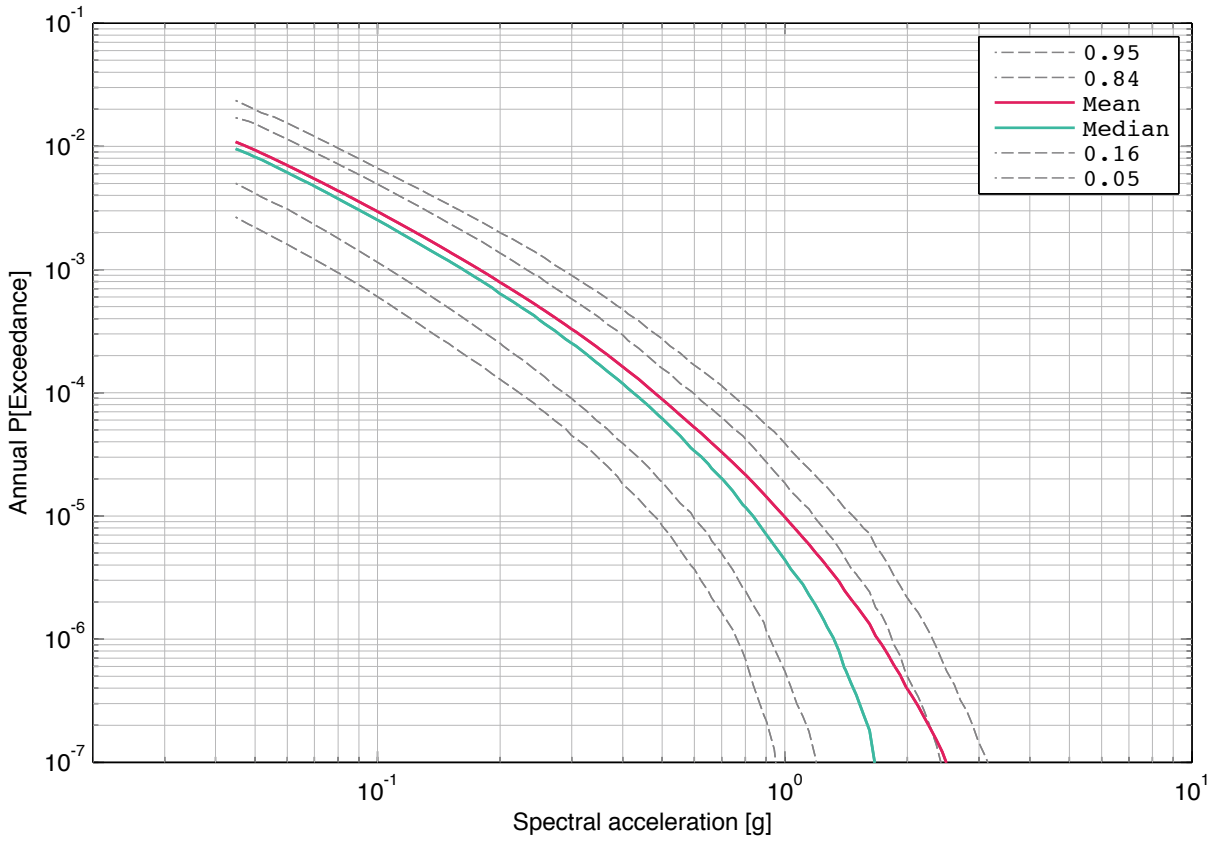

Fig. 4-3.7: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 33 Hz.

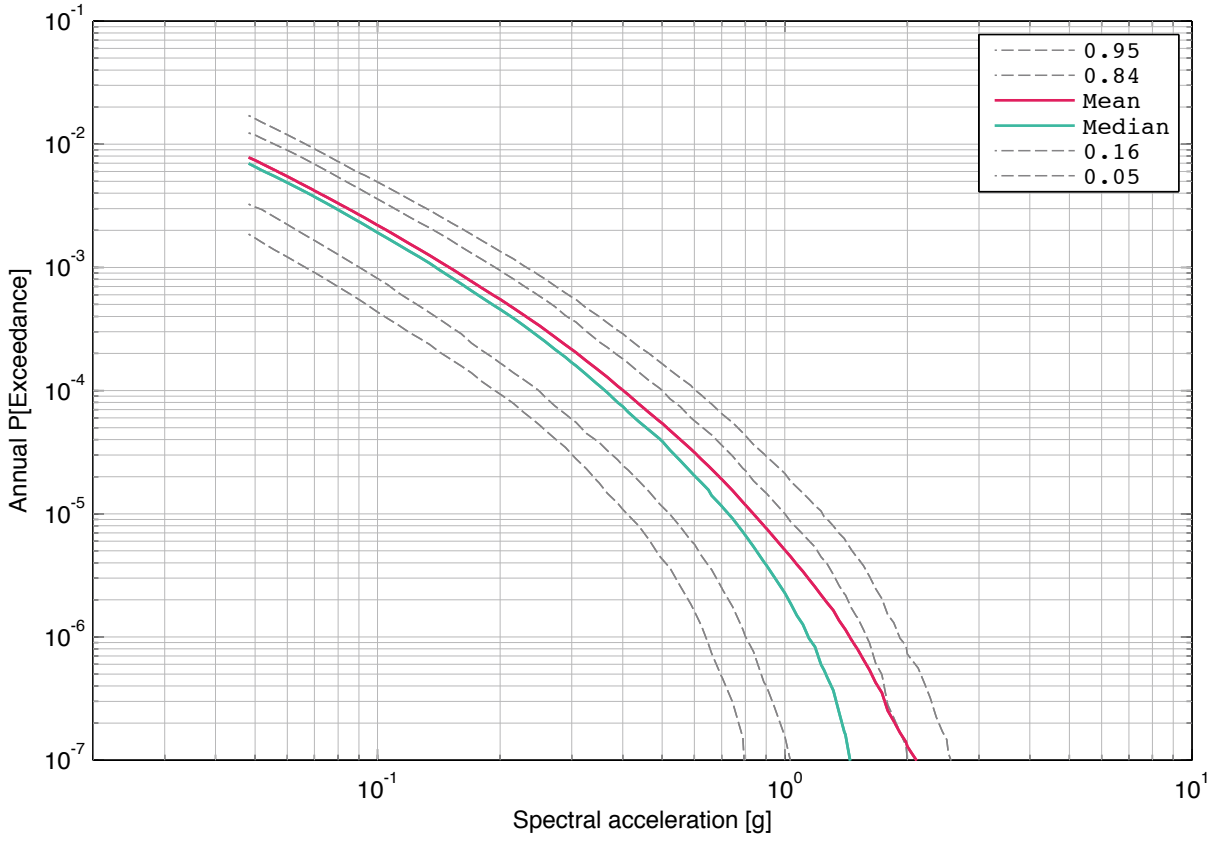

Fig. 4-3.8: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 50 Hz.

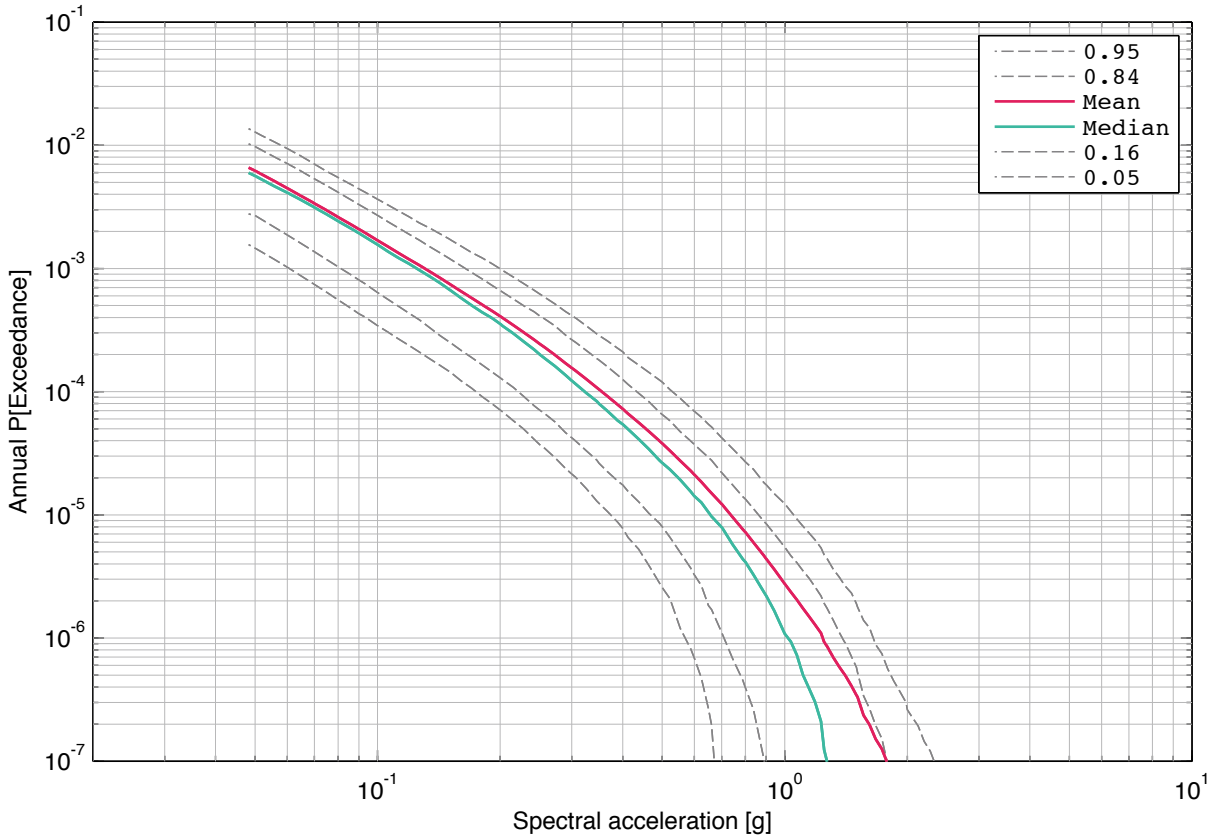

Fig. 4-3.9: Leibstadt, horizontal component, soil, -10 m, mean hazard and fractiles, 100 Hz.

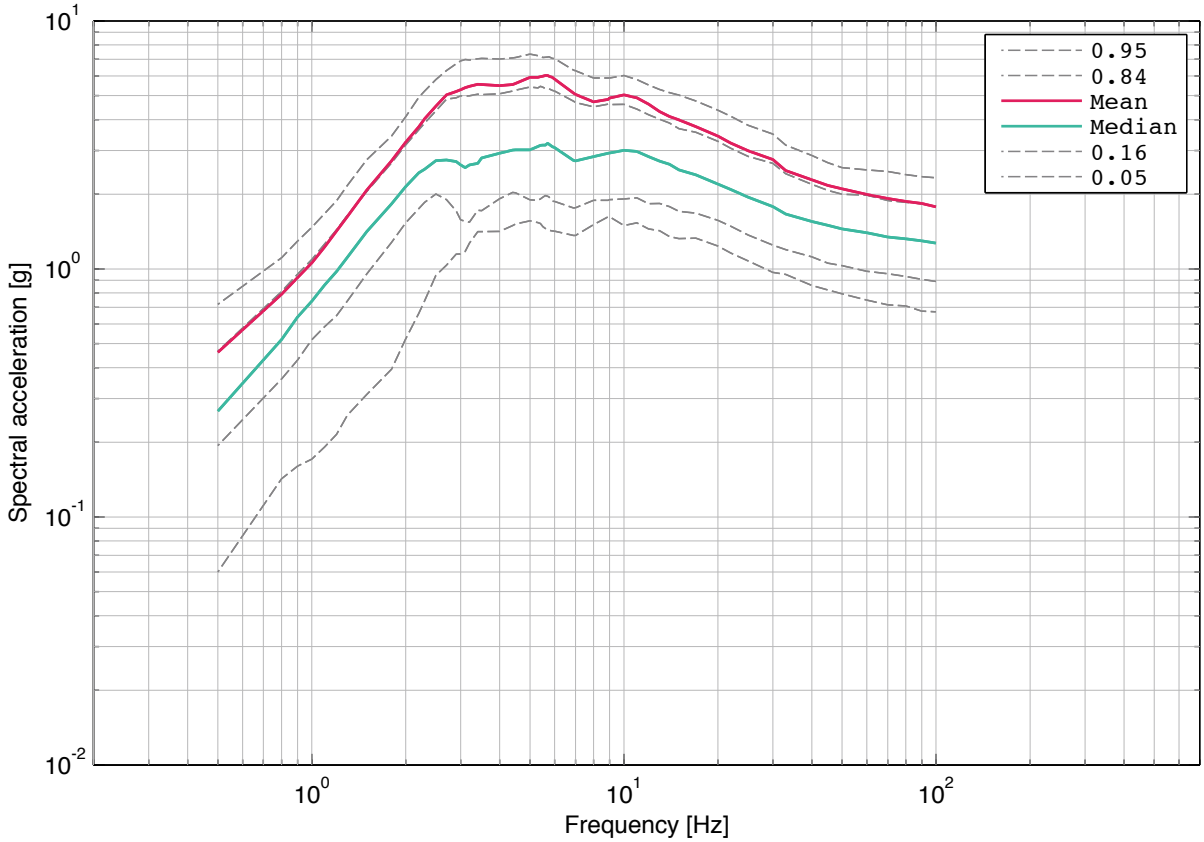

Fig. 4-3.10: Leibstadt, horizontal component, soil, -10 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

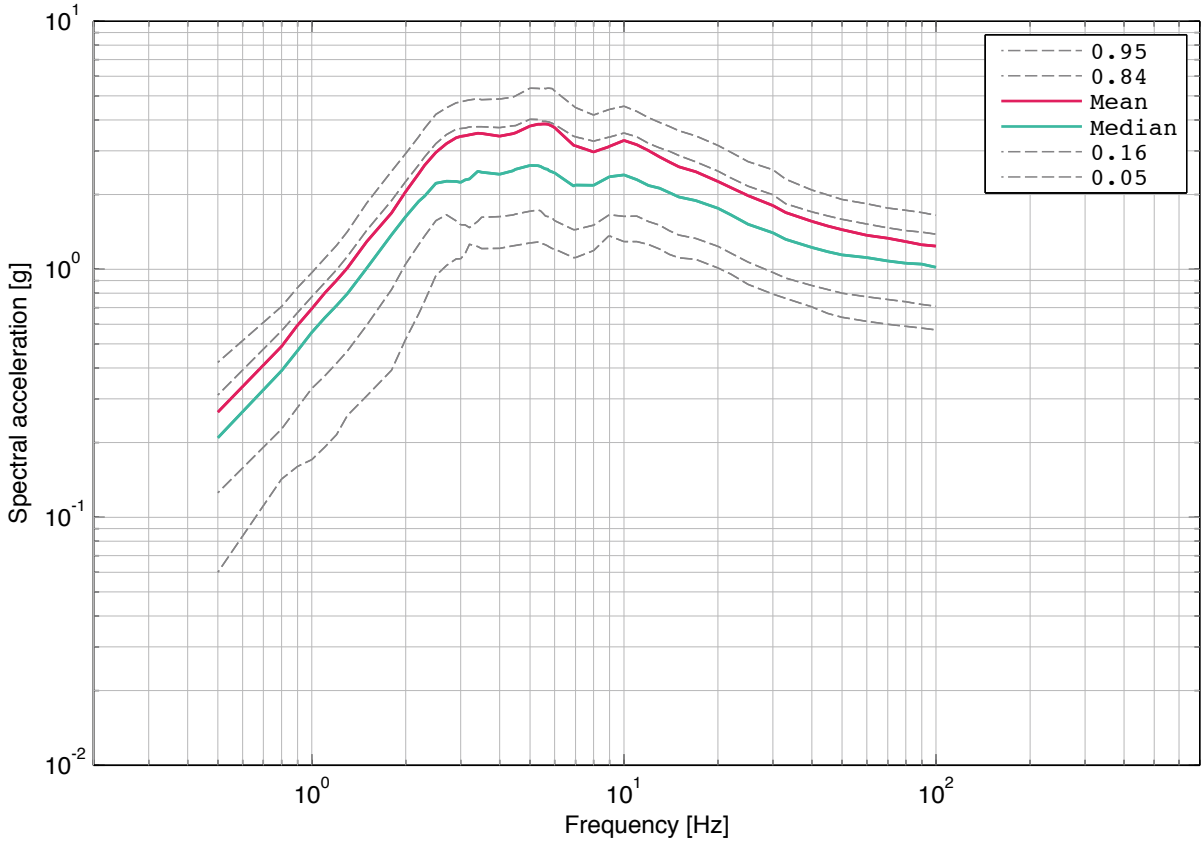

Fig. 4-3.11: Leibstadt, horizontal component, soil, -10 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

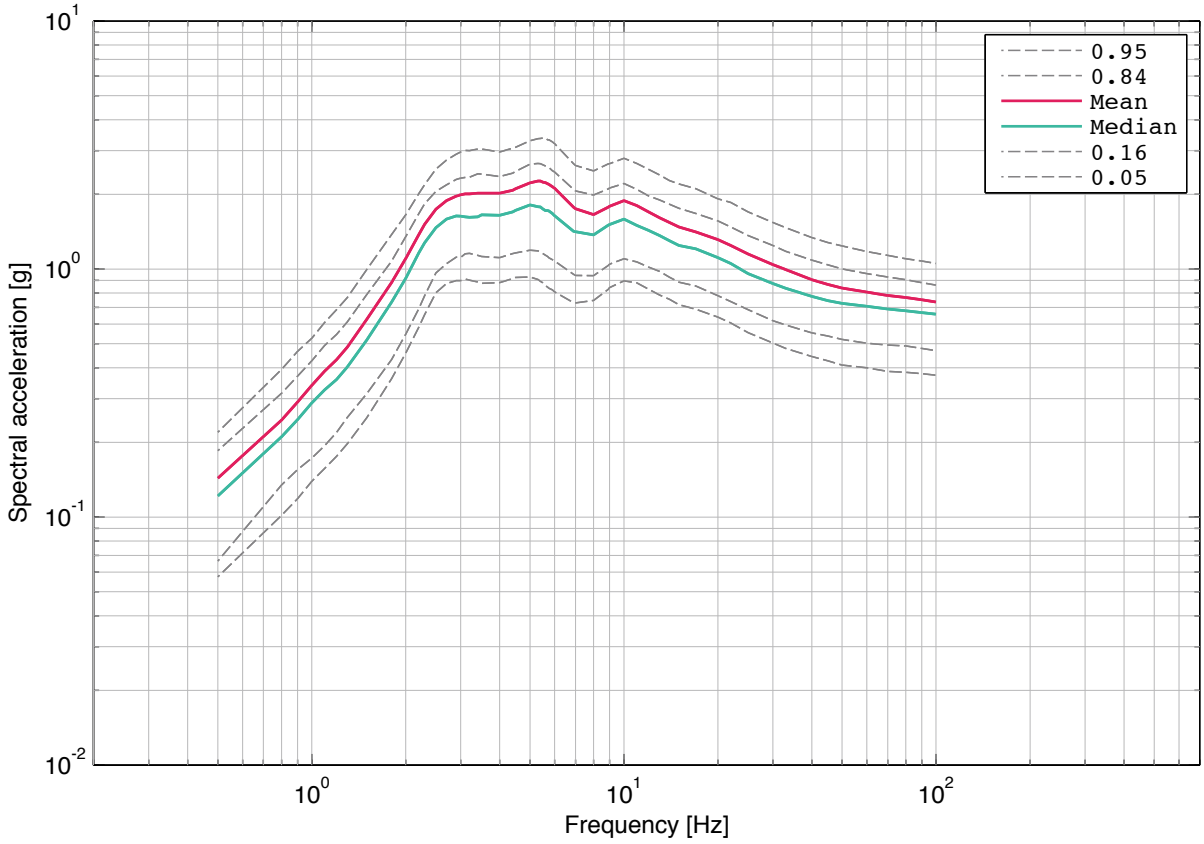

Fig. 4-3.12: Leibstadt, horizontal component, soil, -10 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

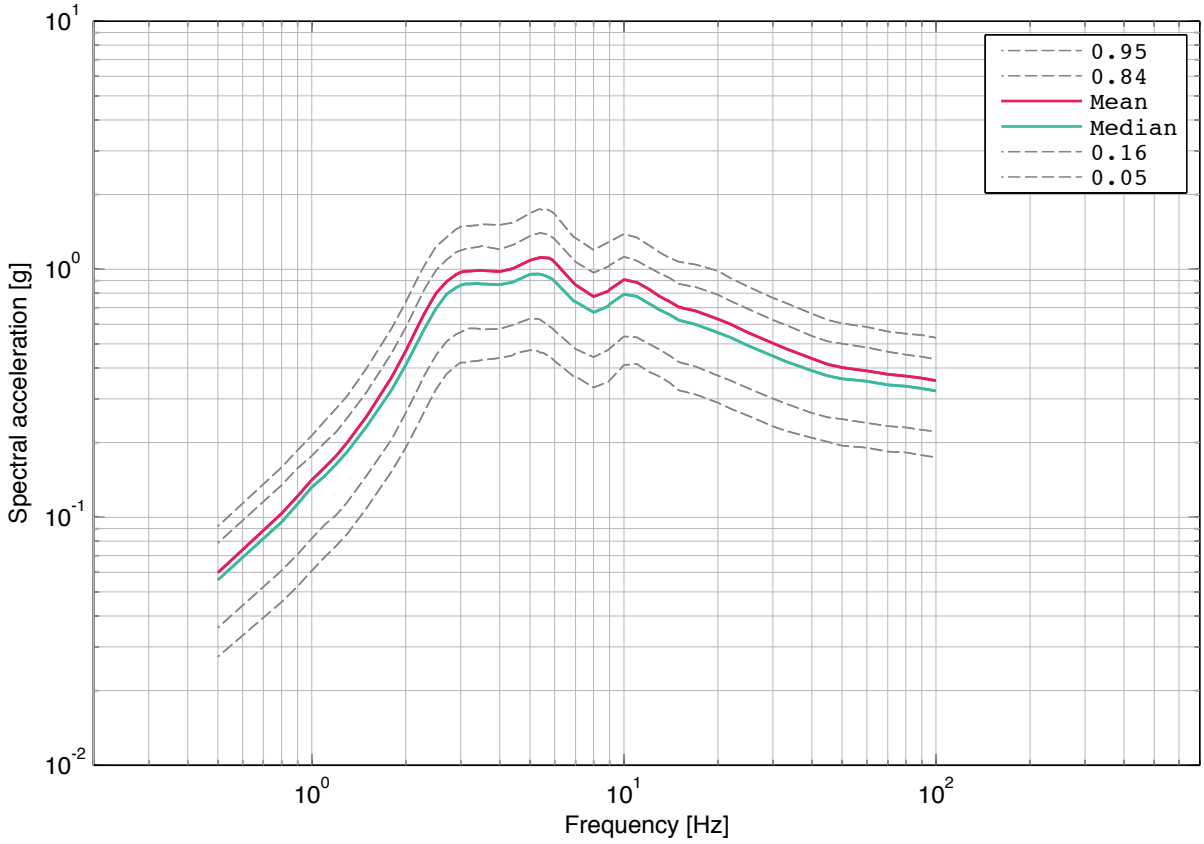

Fig. 4-3.13: Leibstadt, horizontal component, soil, -10 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

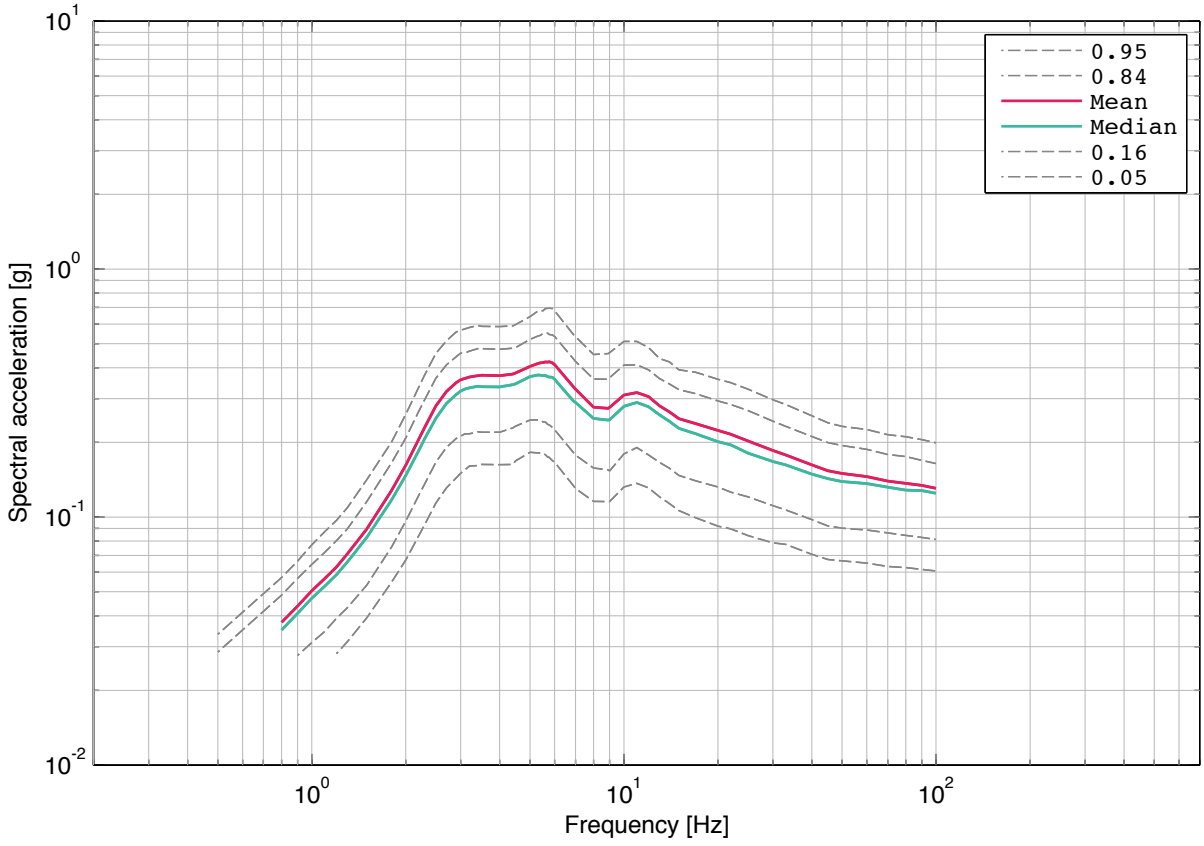

Fig. 4-3.14: Leibstadt, horizontal component, soil, -10 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

4.4 Leibstadt, Rock Hazard Deaggregation, Horizontal Component, Surface

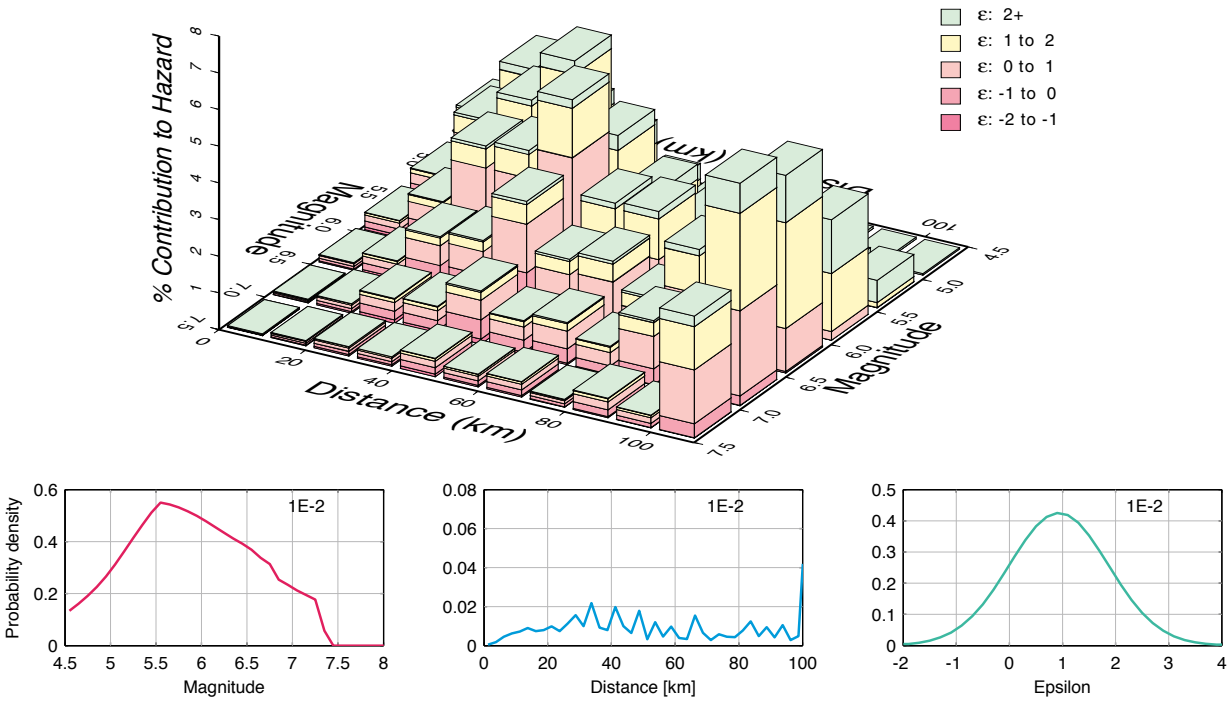

Fig. 4-4.1: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 5 Hz.

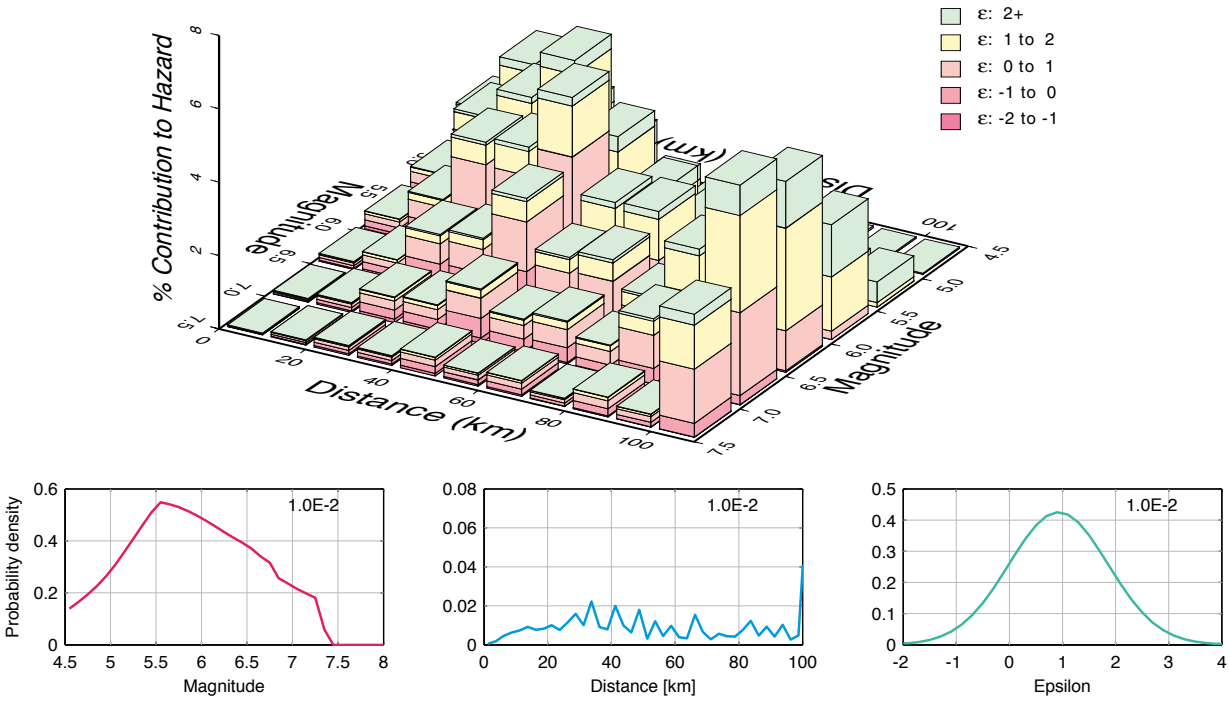

Fig. 4-4.2: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-02, 10 Hz.

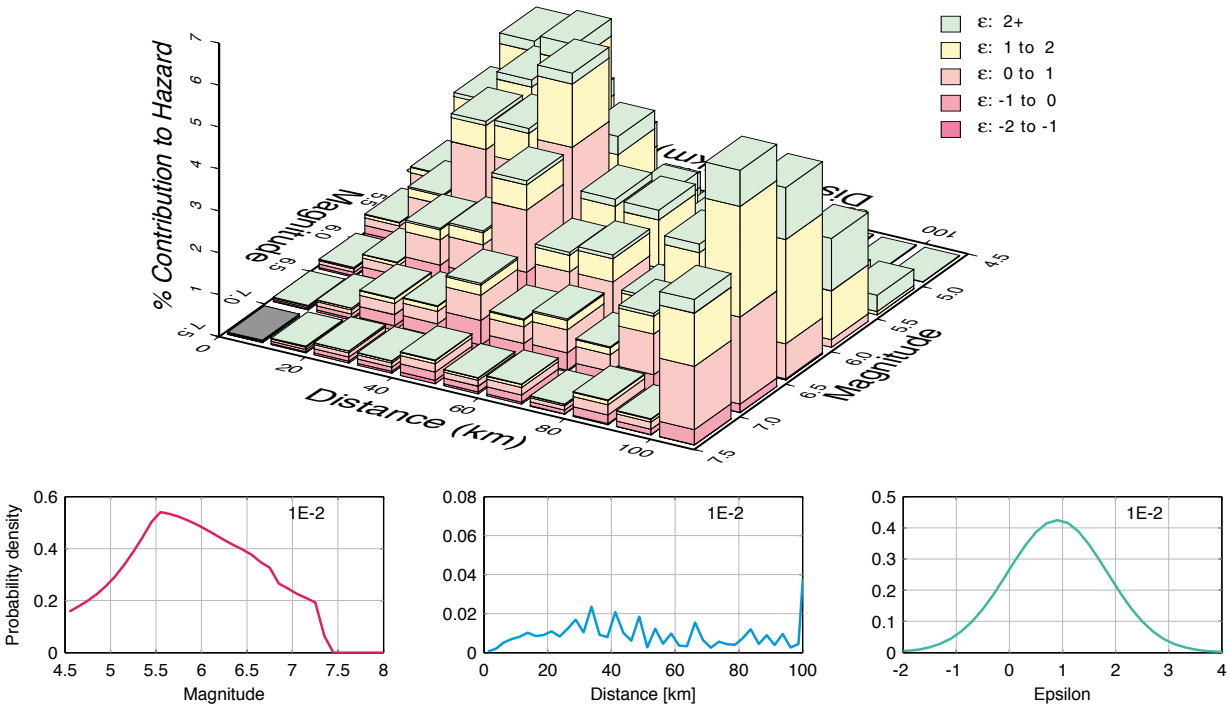

Fig. 4-4.3: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 100 Hz.

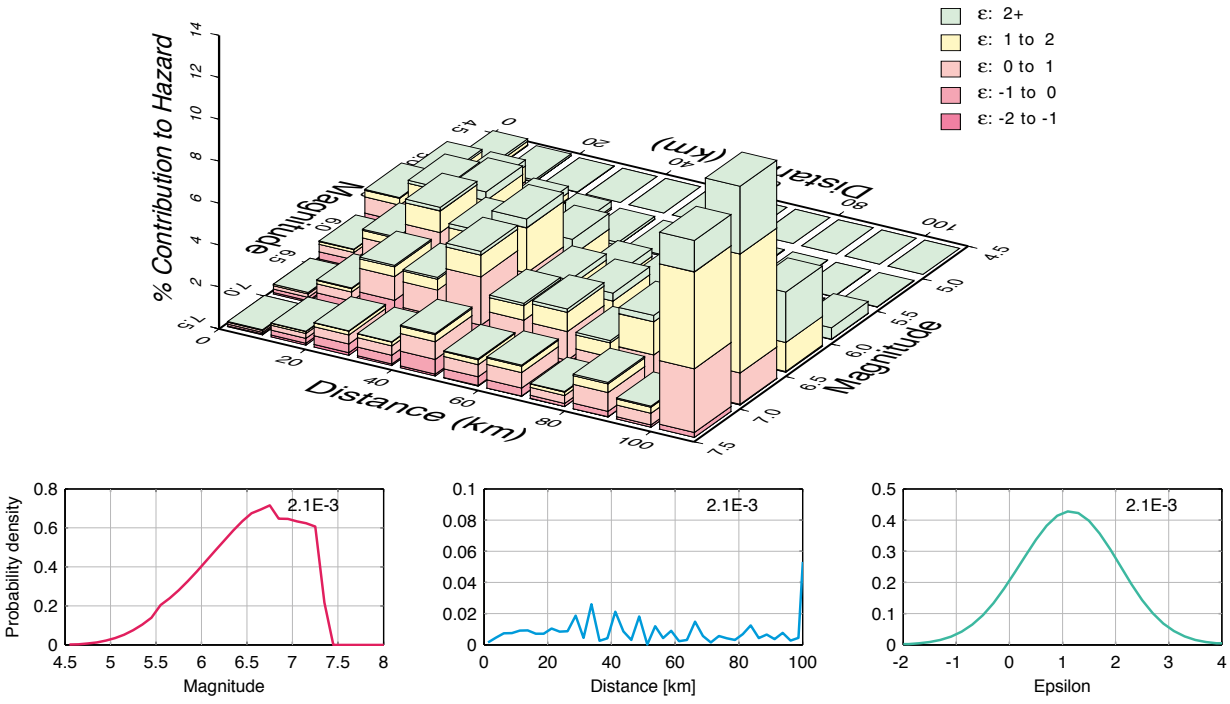

Fig. 4-4.4: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 1 Hz.

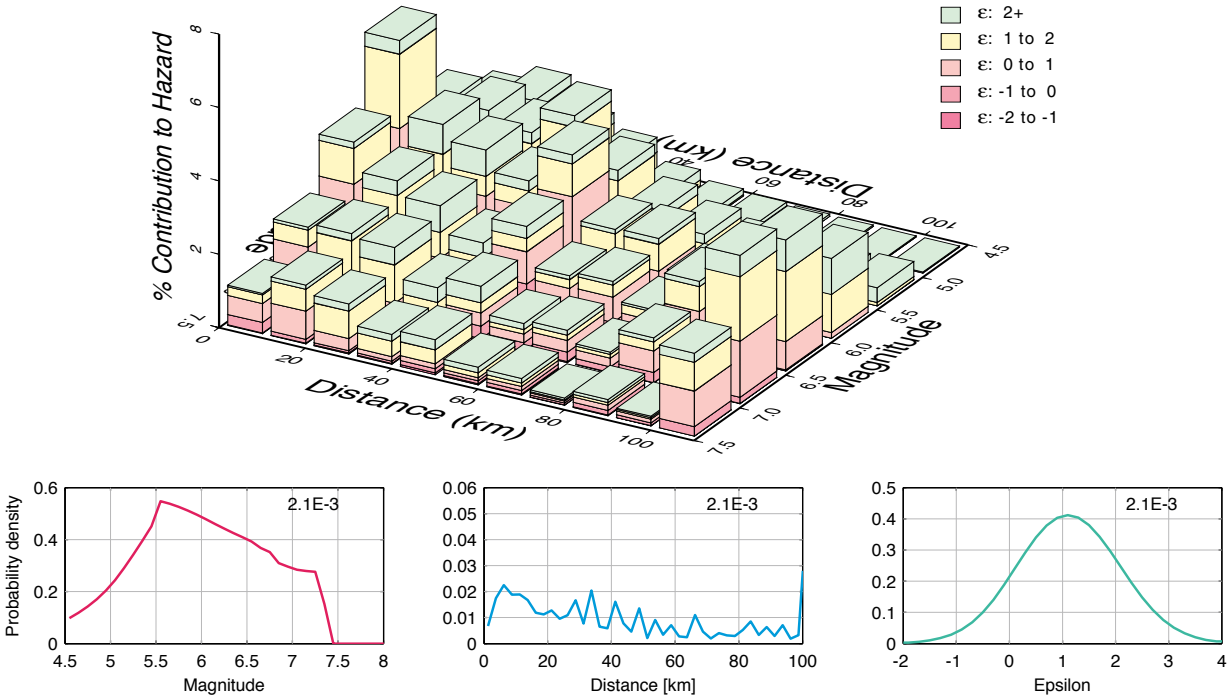

Fig. 4-4.5: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 5 Hz.

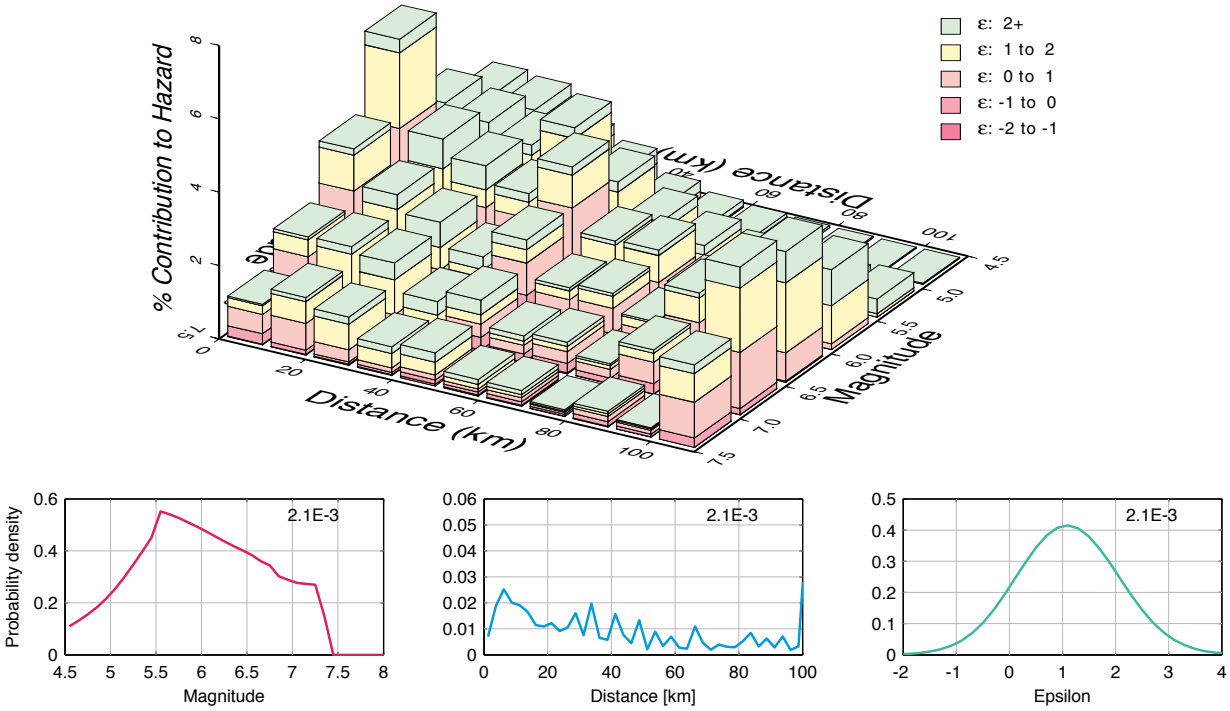

Fig. 4-4.6: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 10 Hz.

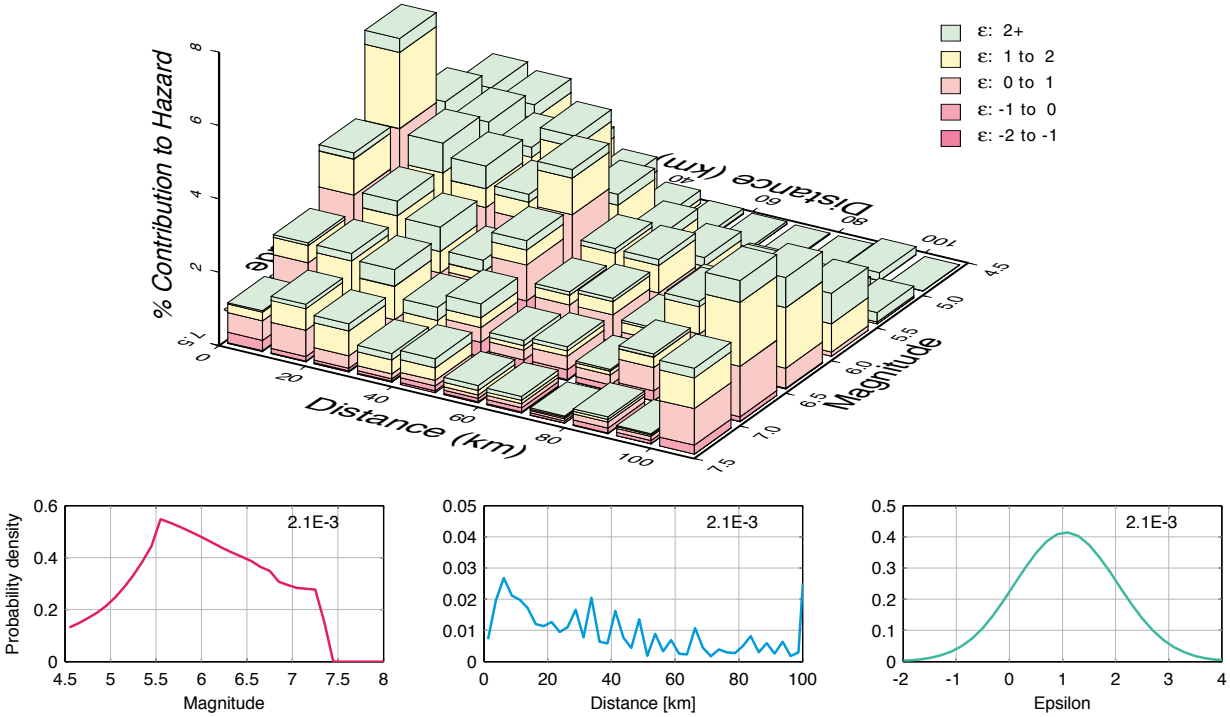

Fig. 4-4.7: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 100 Hz.

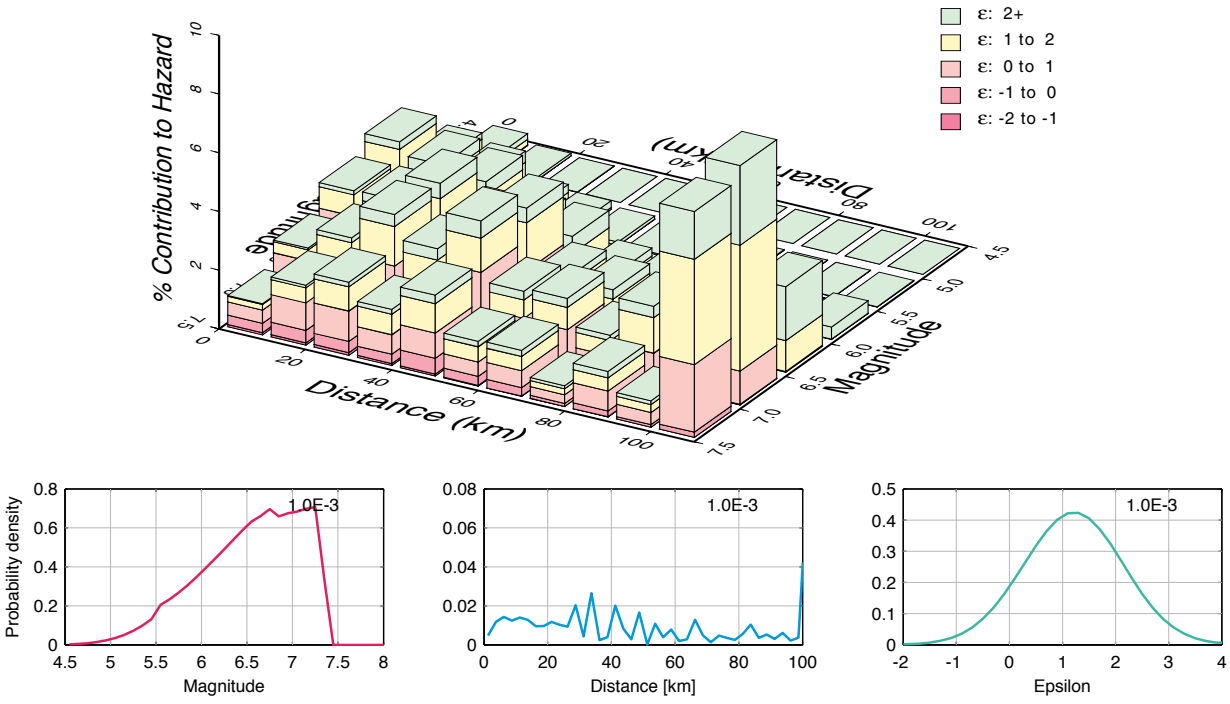

Fig. 4-4.8: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 1 Hz.

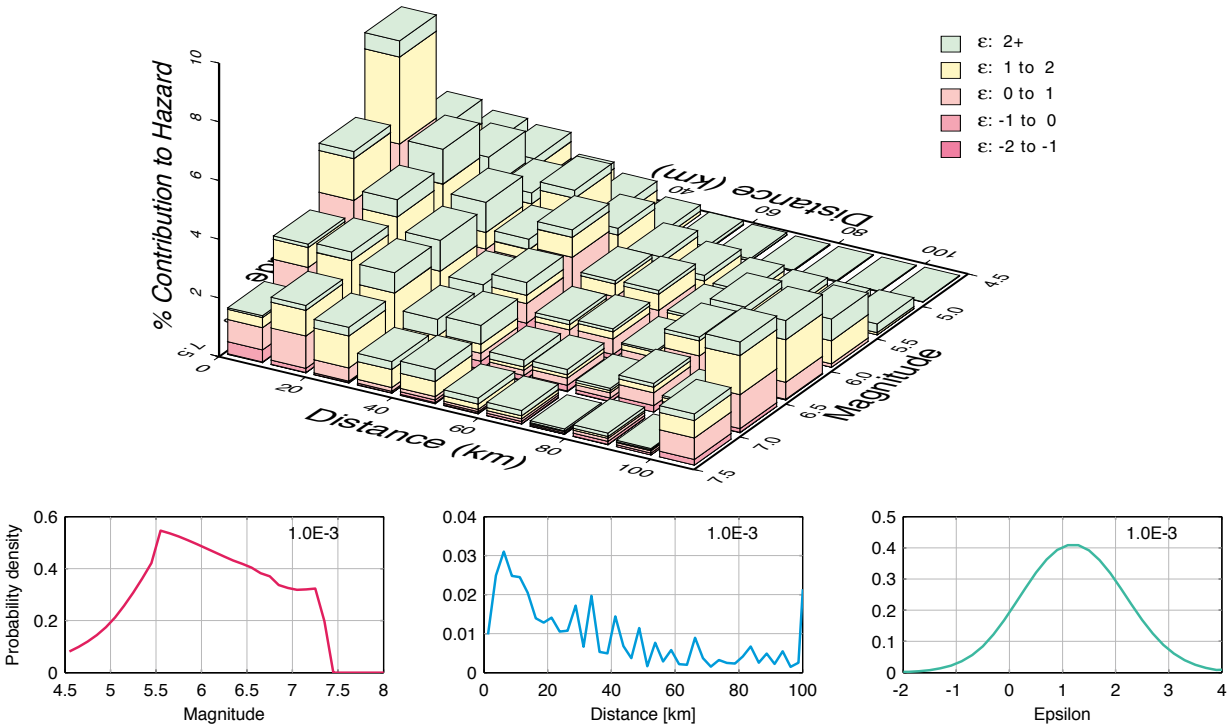

Fig. 4-4.9: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 5 Hz.

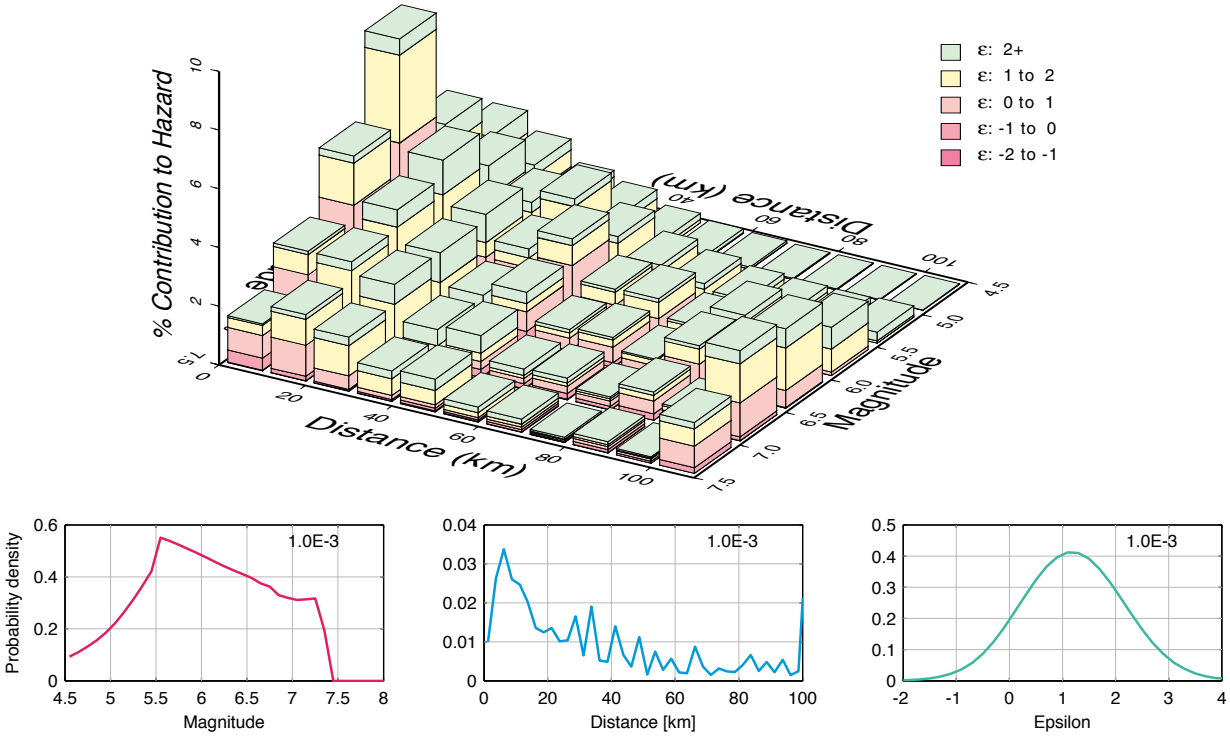

Fig. 4-4.10: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 10 Hz.

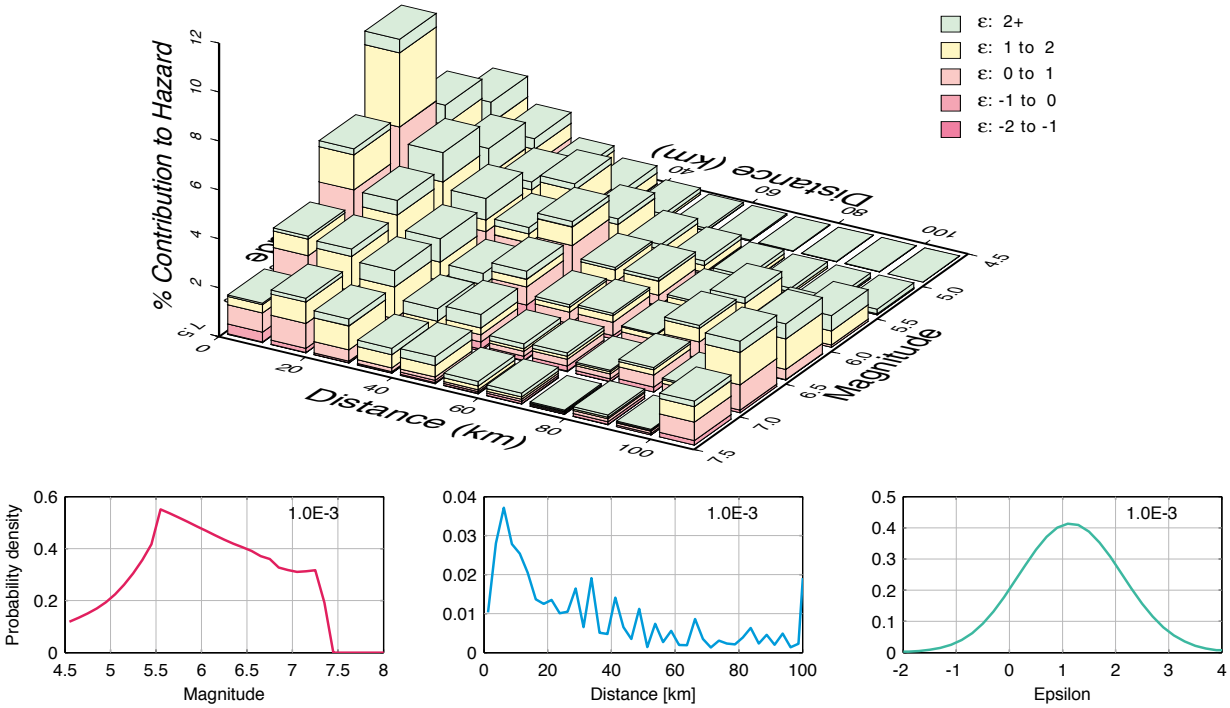

Fig. 4-4.11: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 100 Hz.

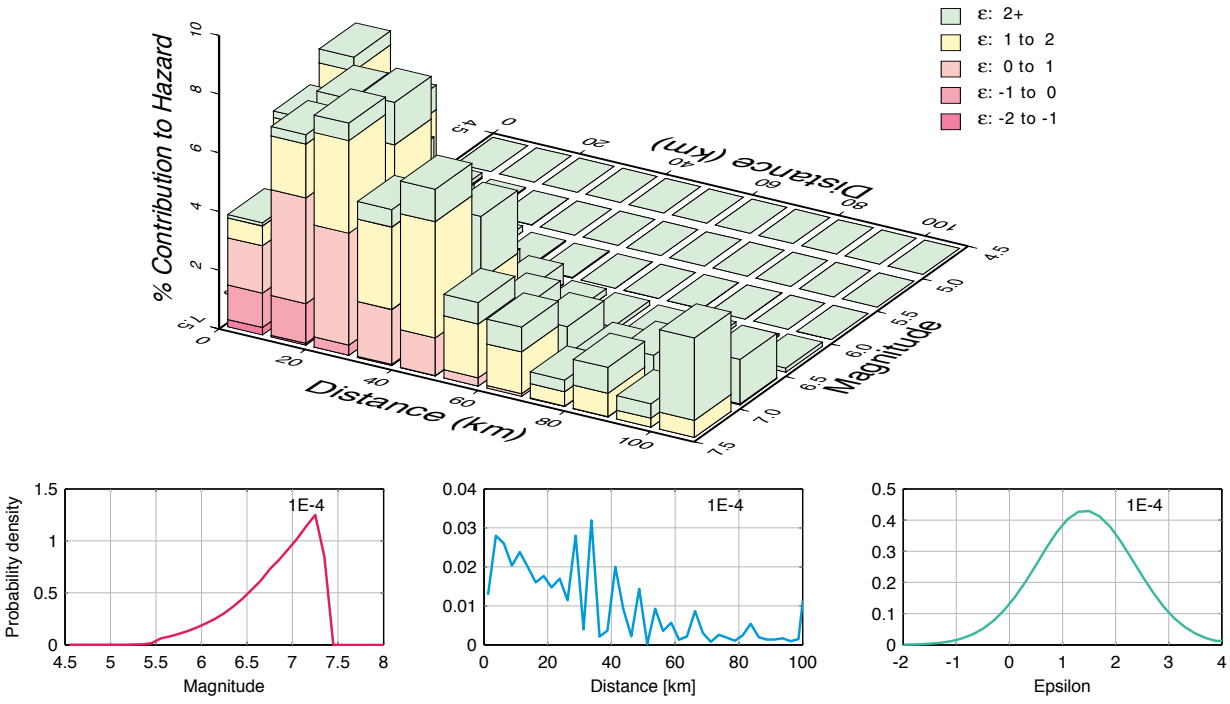

Fig. 4-4.12: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 0.5 Hz.

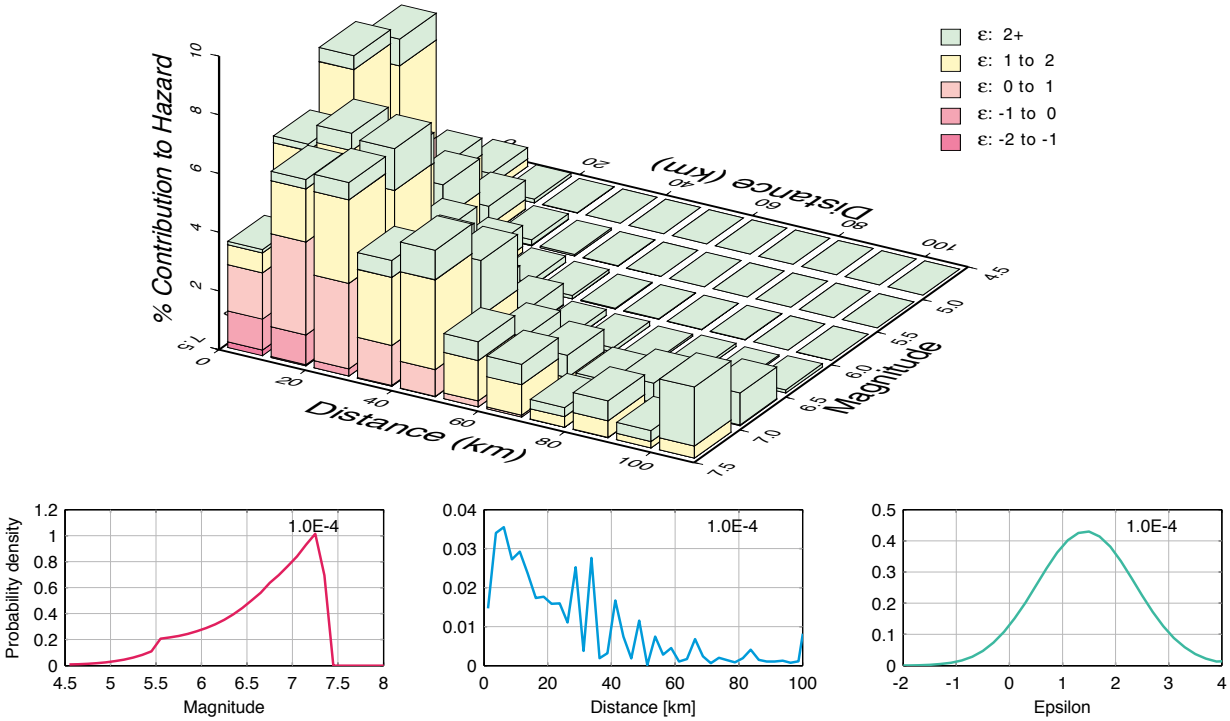

Fig. 4-4.13: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 1 Hz.

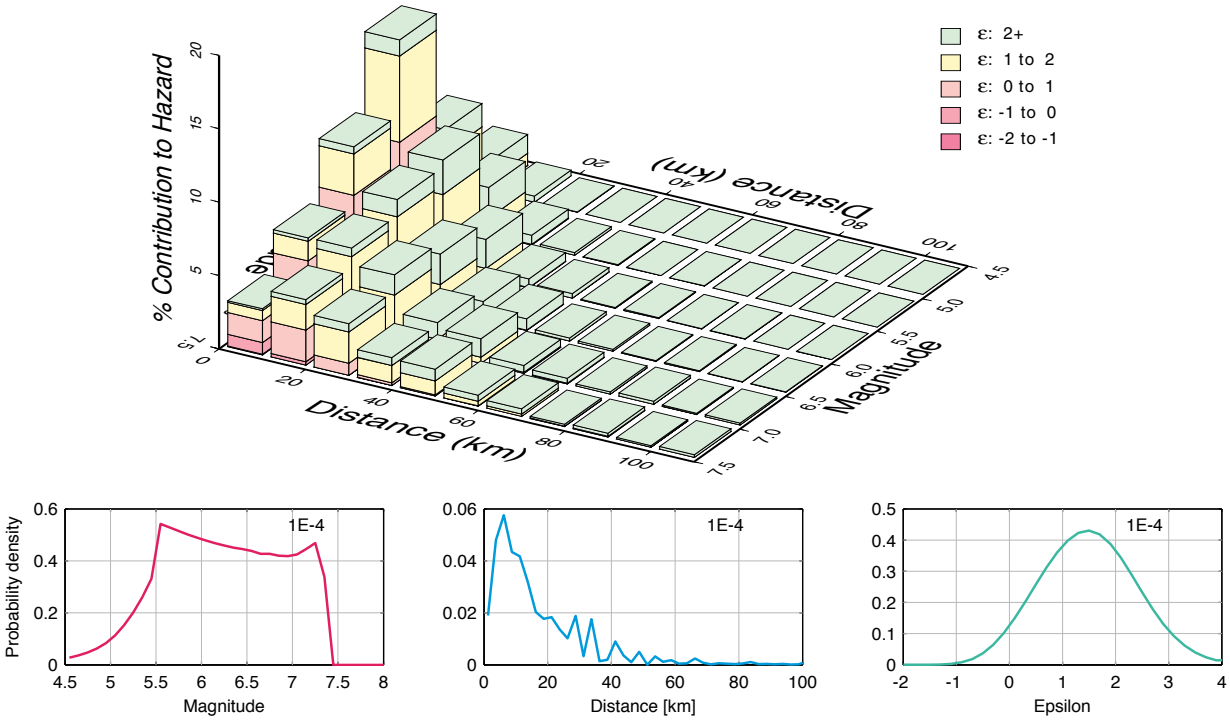

Fig. 4-4.14: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 5 Hz.

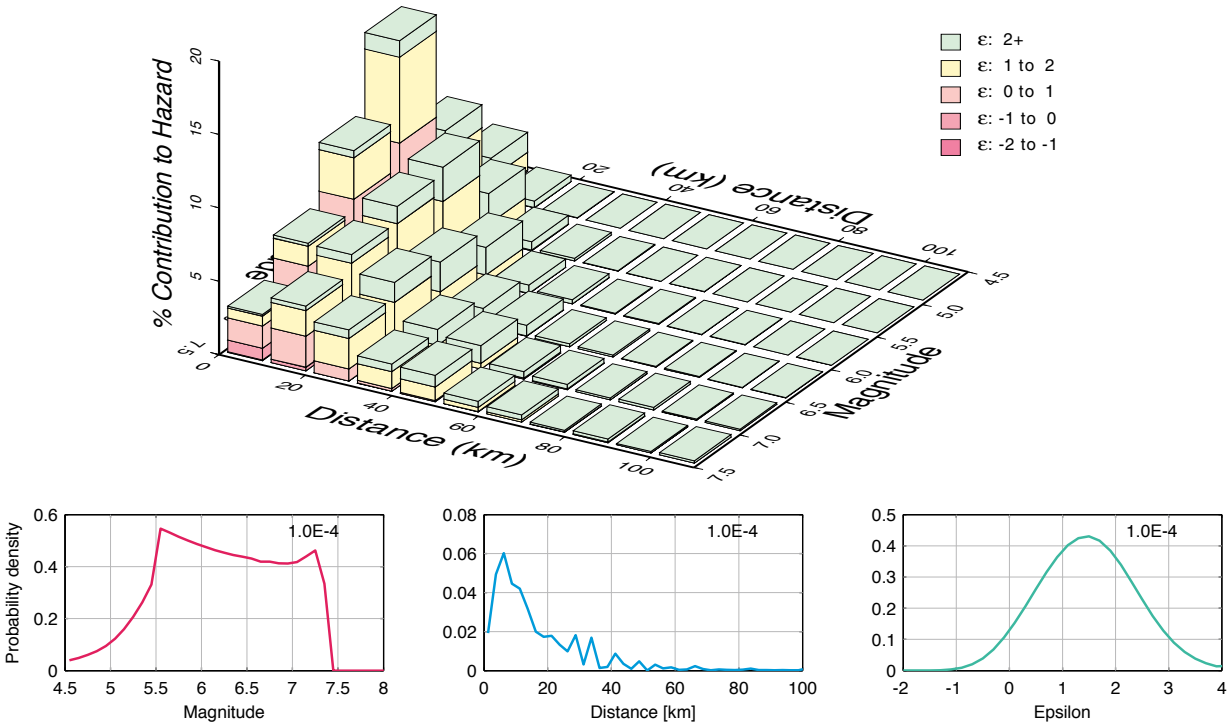

Fig. 4-4.15: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 10 Hz.

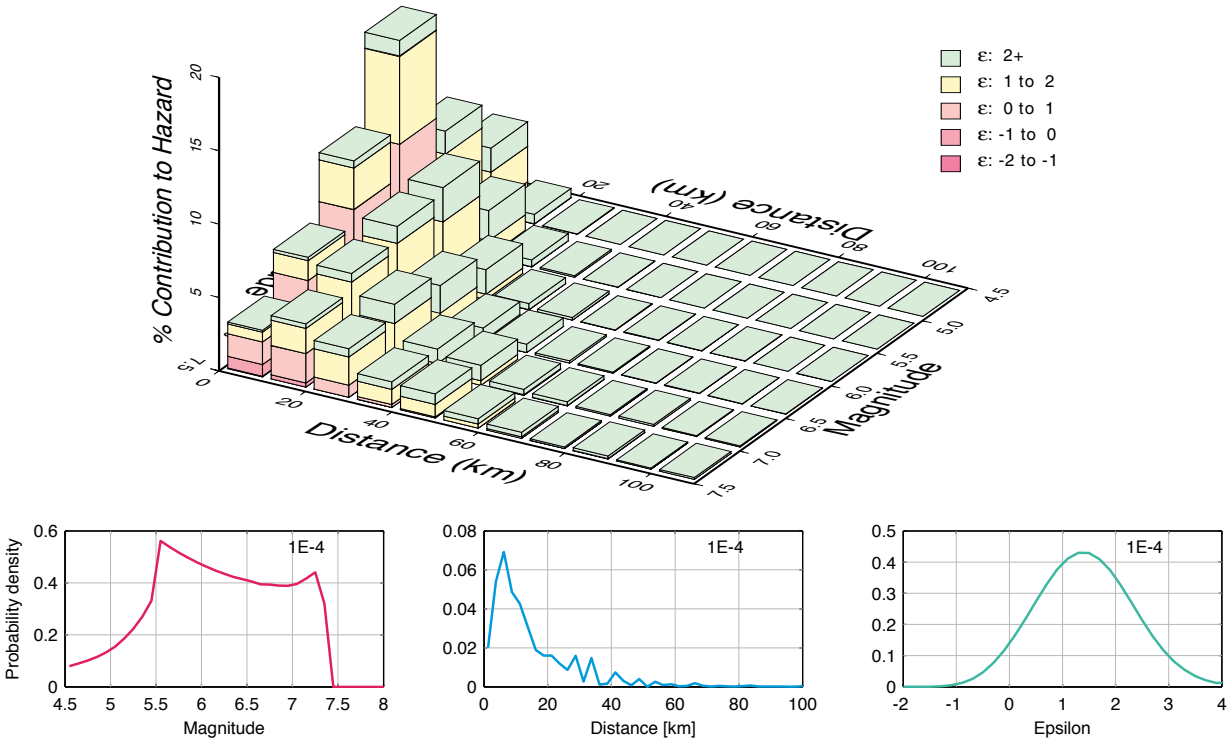

Fig. 4-4.16: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 100 Hz.

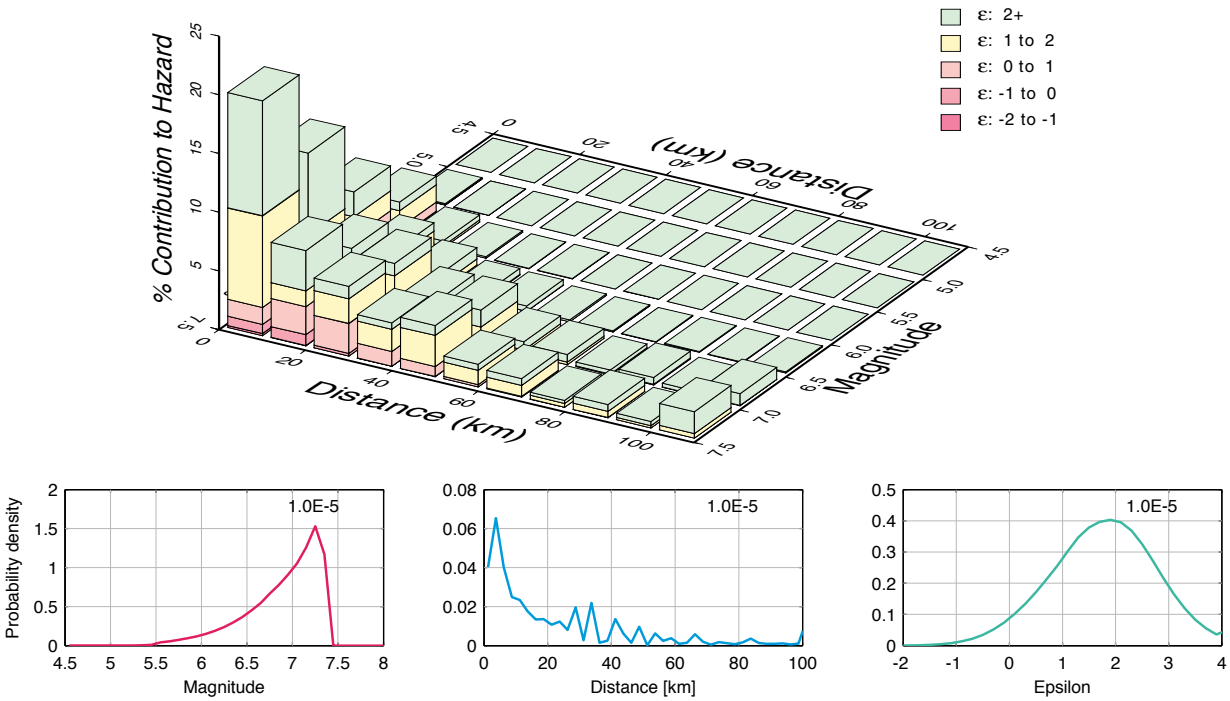

Fig. 4-4.17: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 0.5 Hz.

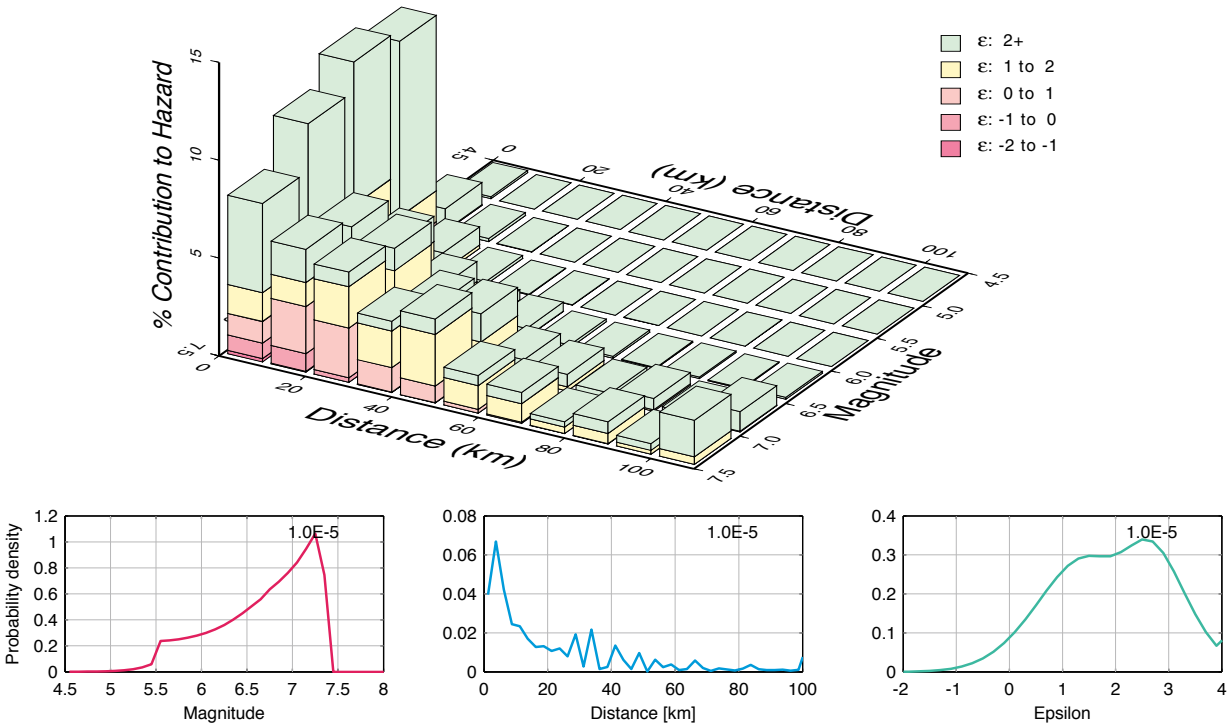

Fig. 4-4.18: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 1 Hz.

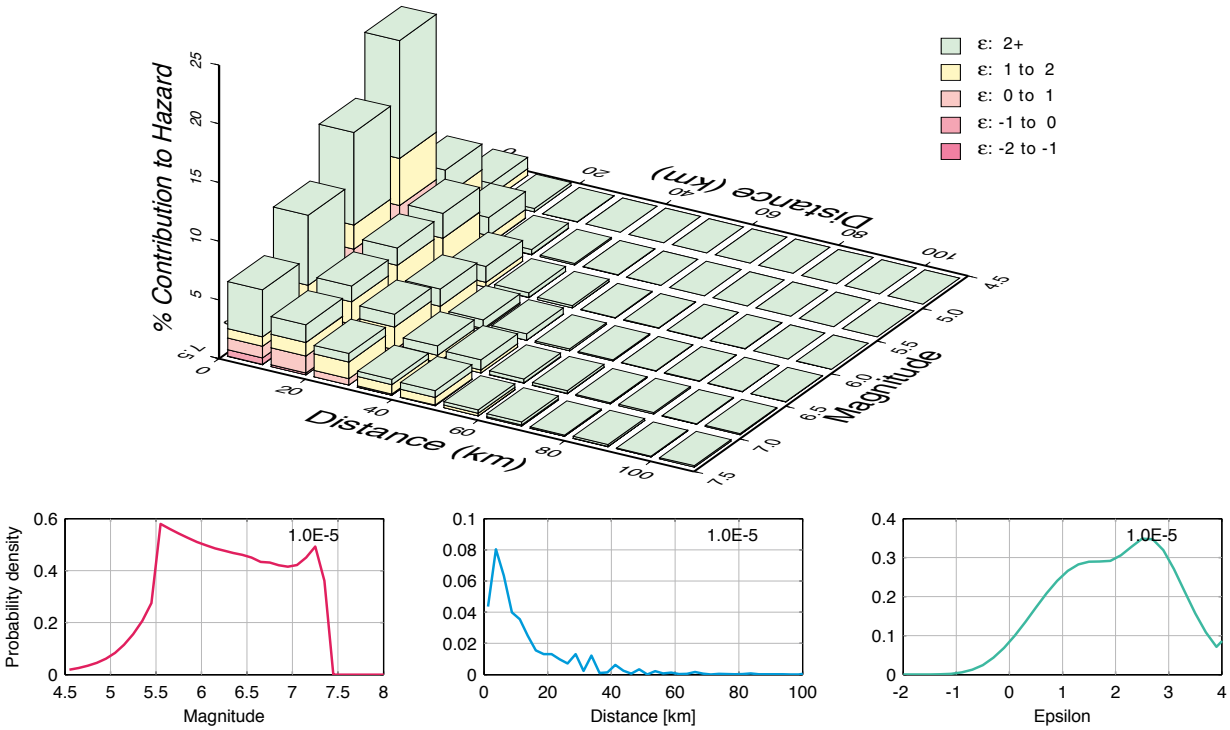

Fig. 4-4.19: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 5 Hz.

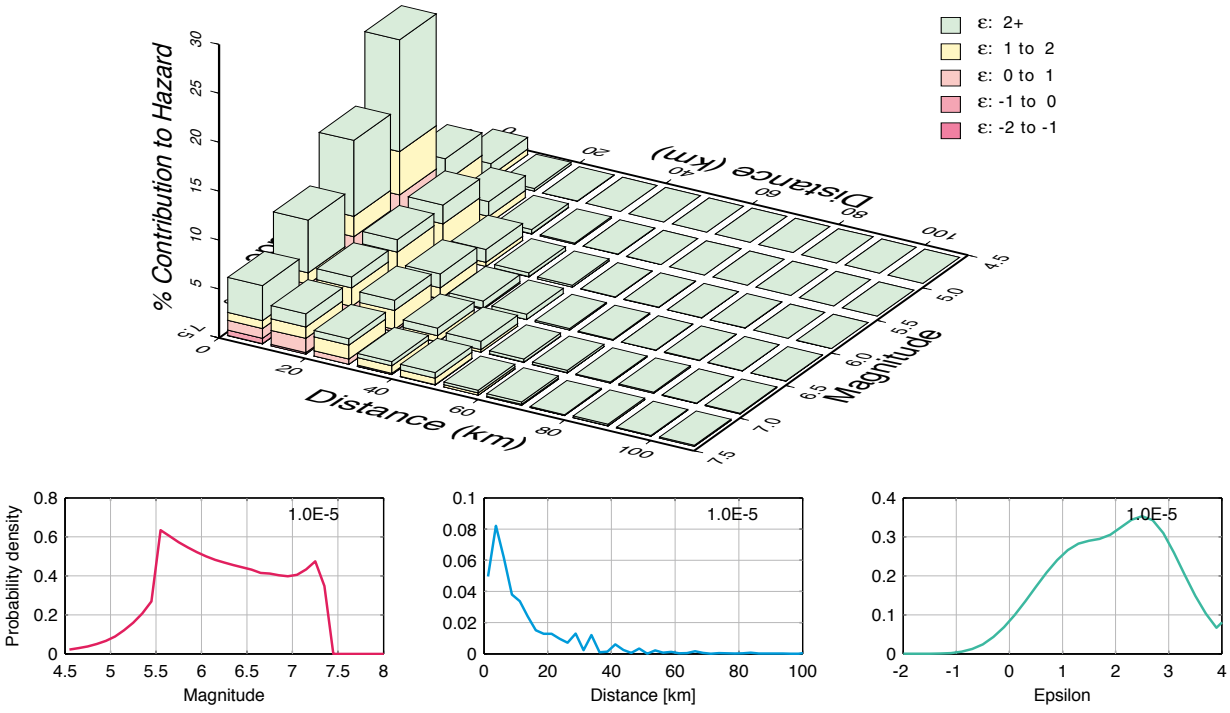

Fig. 4-4.20: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 10 Hz.

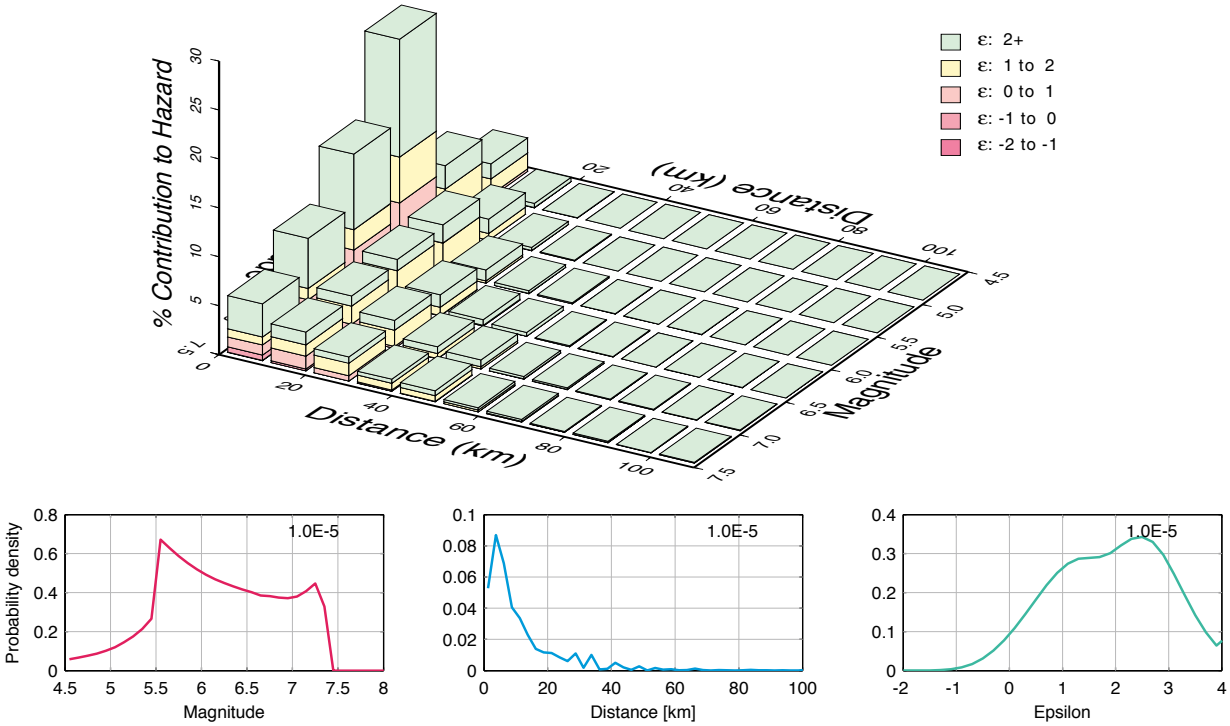

Fig. 4-4.21: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 100 Hz.

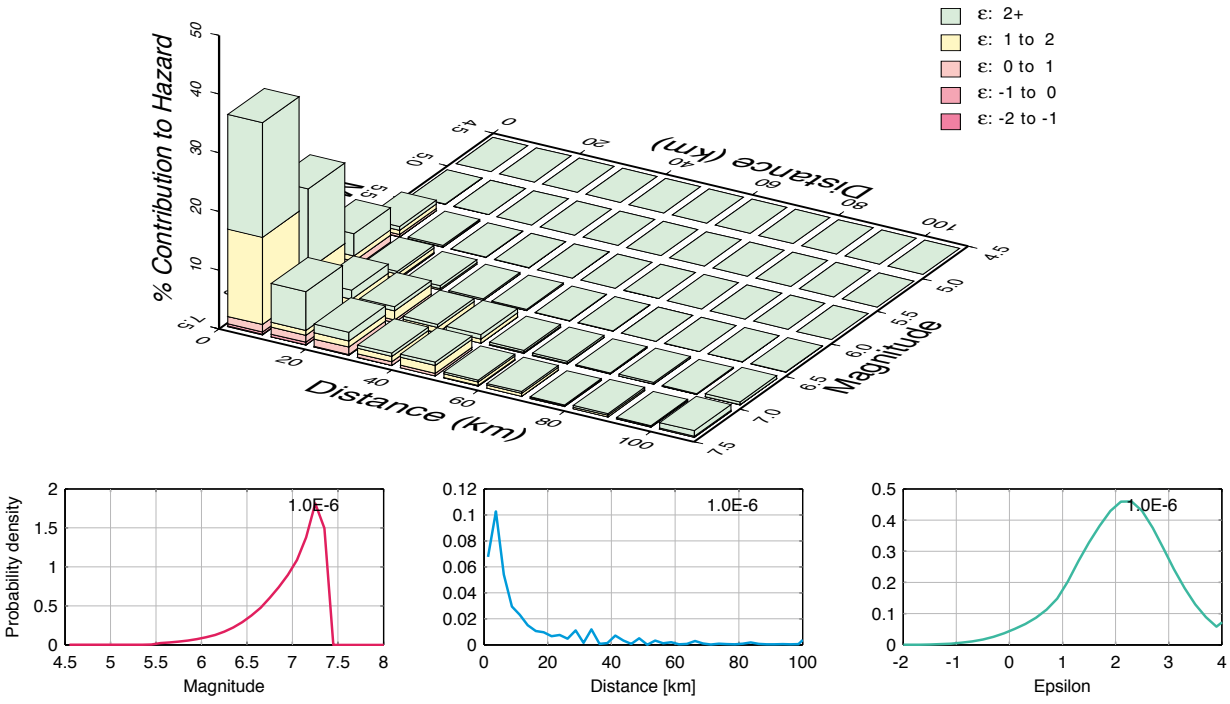

Fig. 4-4.22: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 0.5 Hz.

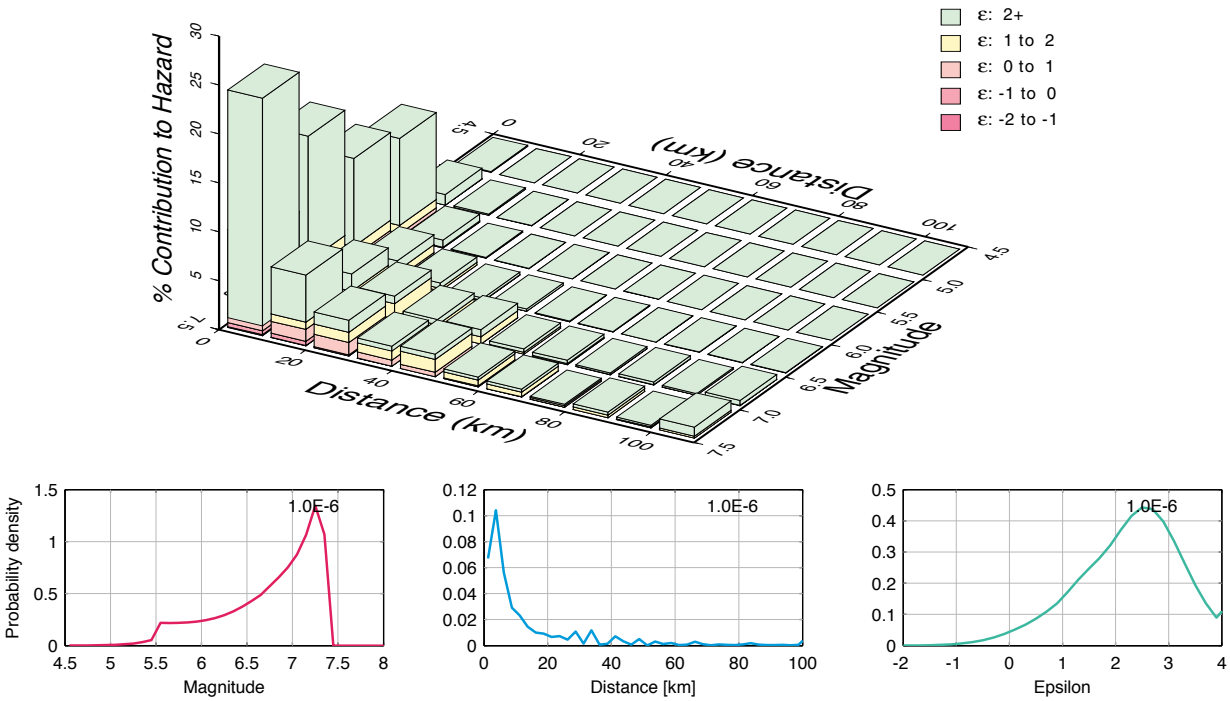

Fig. 4-4.23: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 1 Hz.

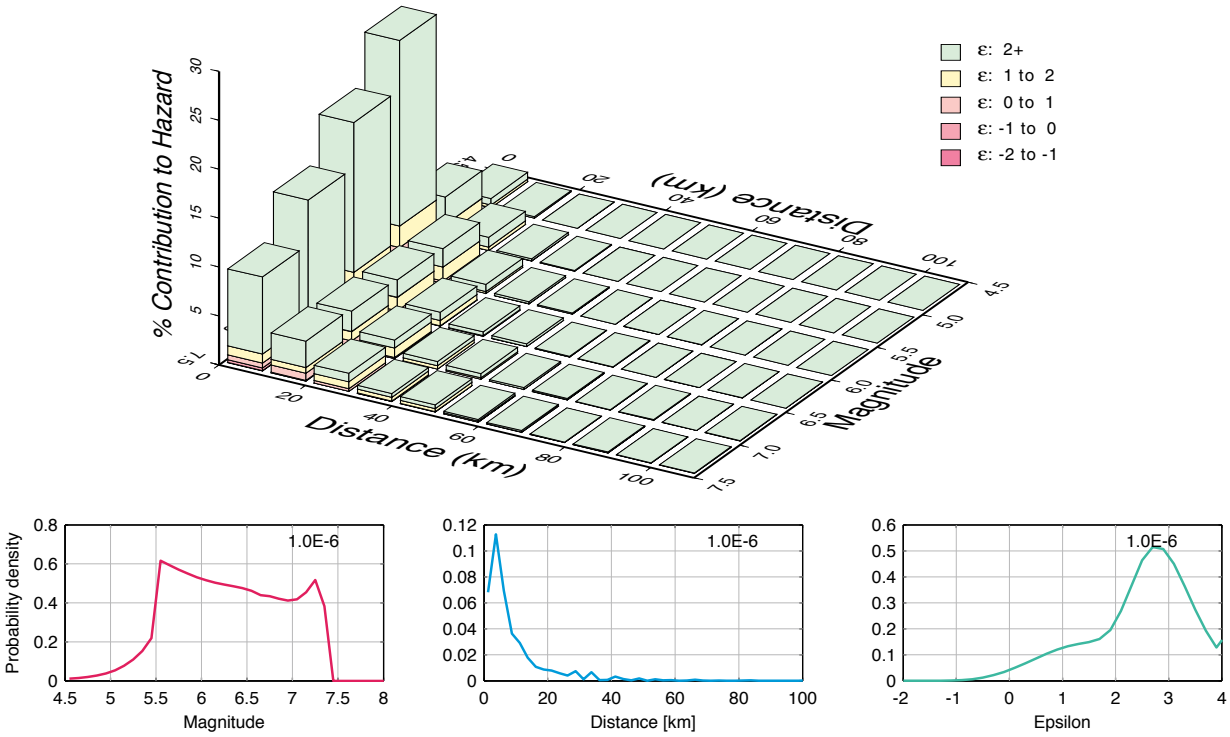

Fig. 4-4.24: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 5 Hz.

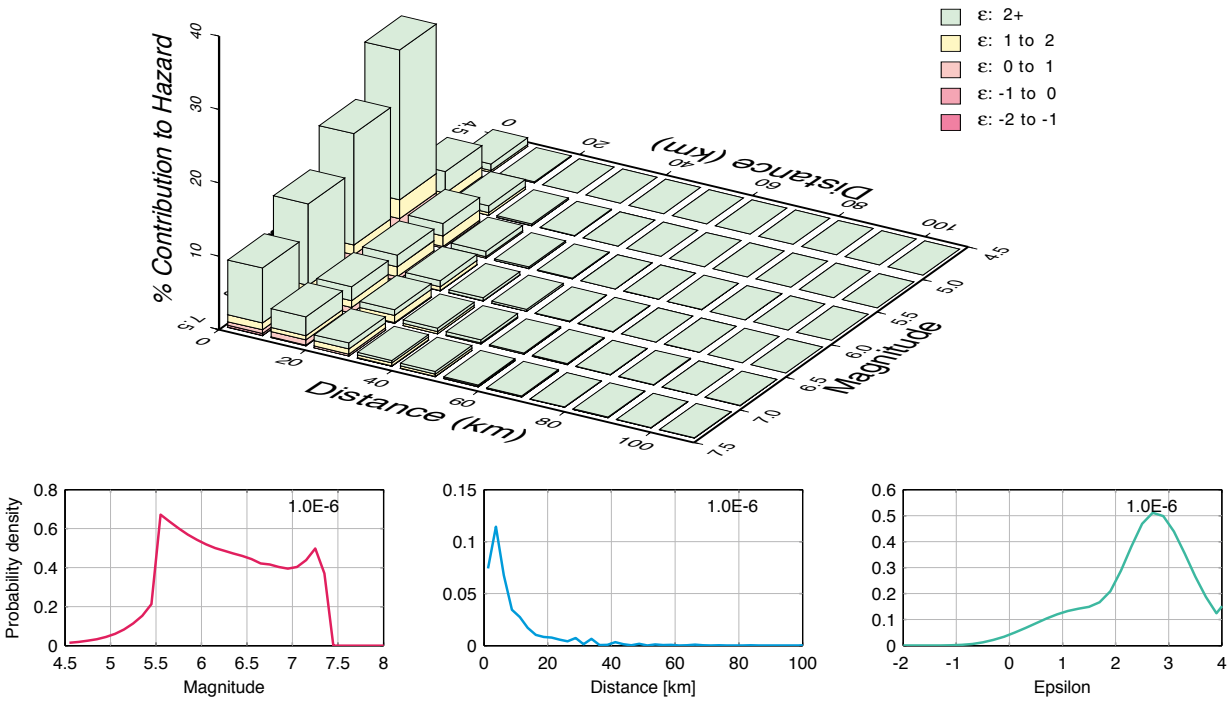

Fig. 4-4.25: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 10 Hz.

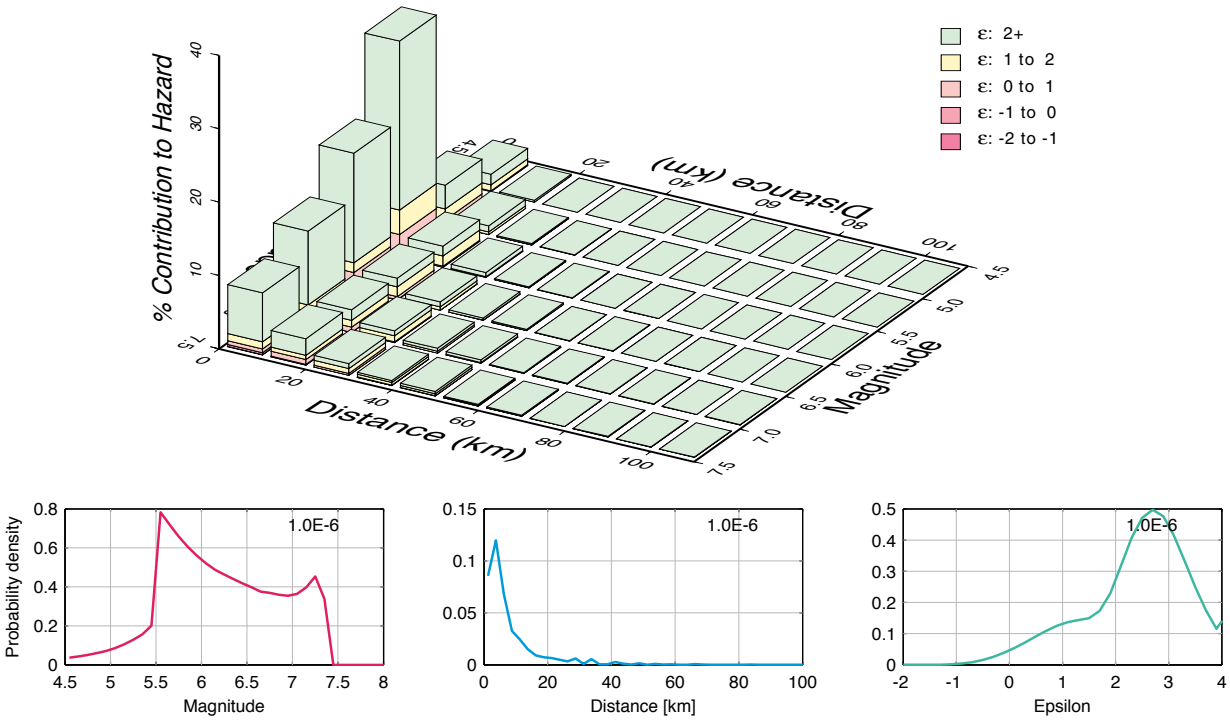

Fig. 4-4.26: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 100 Hz.

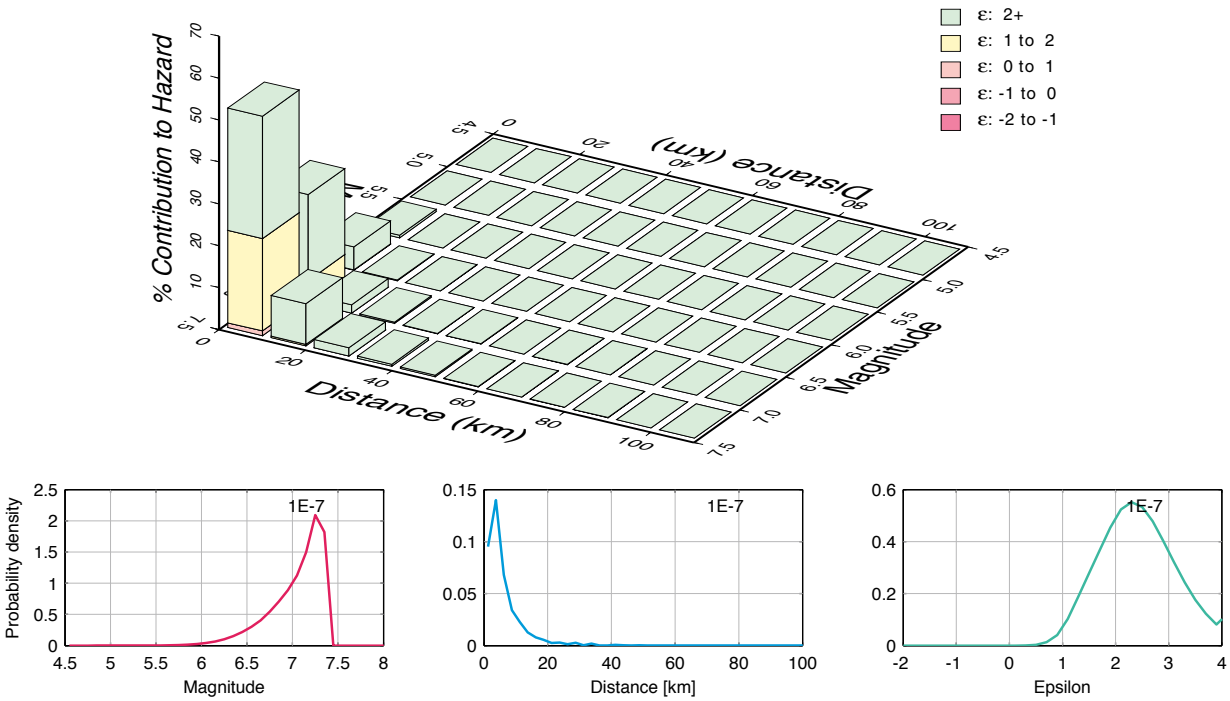

Fig. 4-4.27: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 0.5 Hz.

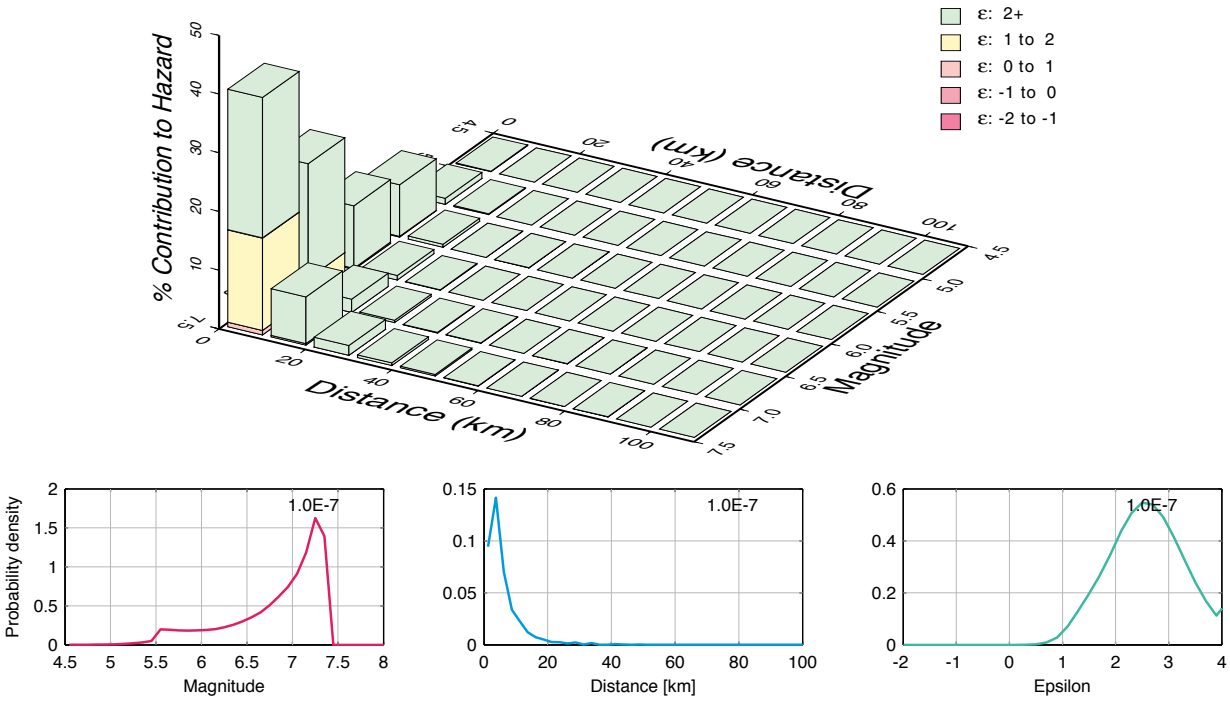

Fig. 4-4.28: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 1 Hz.

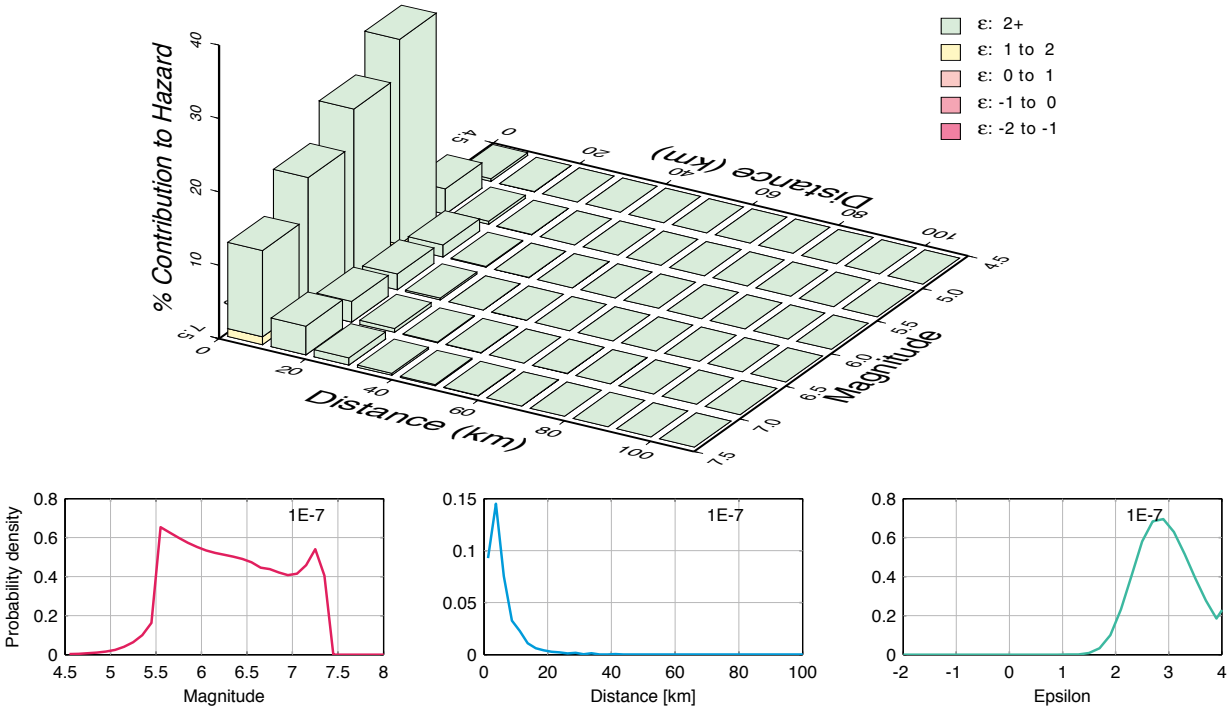

Fig. 4-4.29: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 5 Hz.

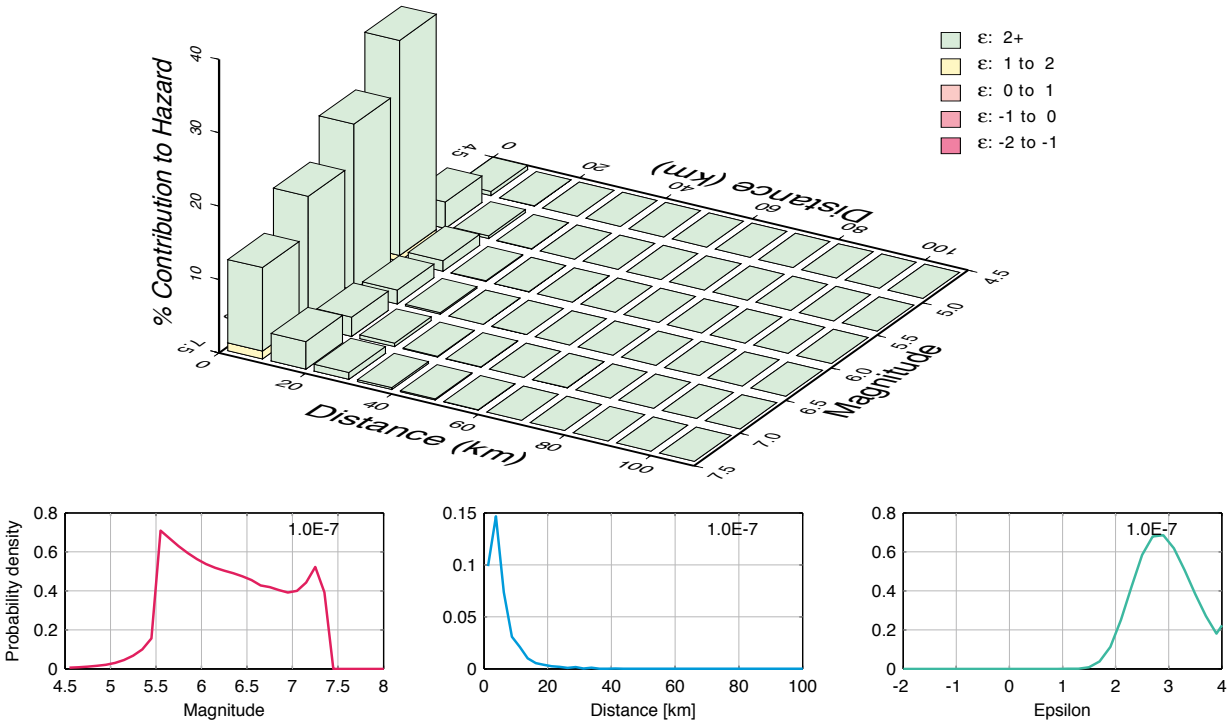

Fig. 4-4.30: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 10 Hz.

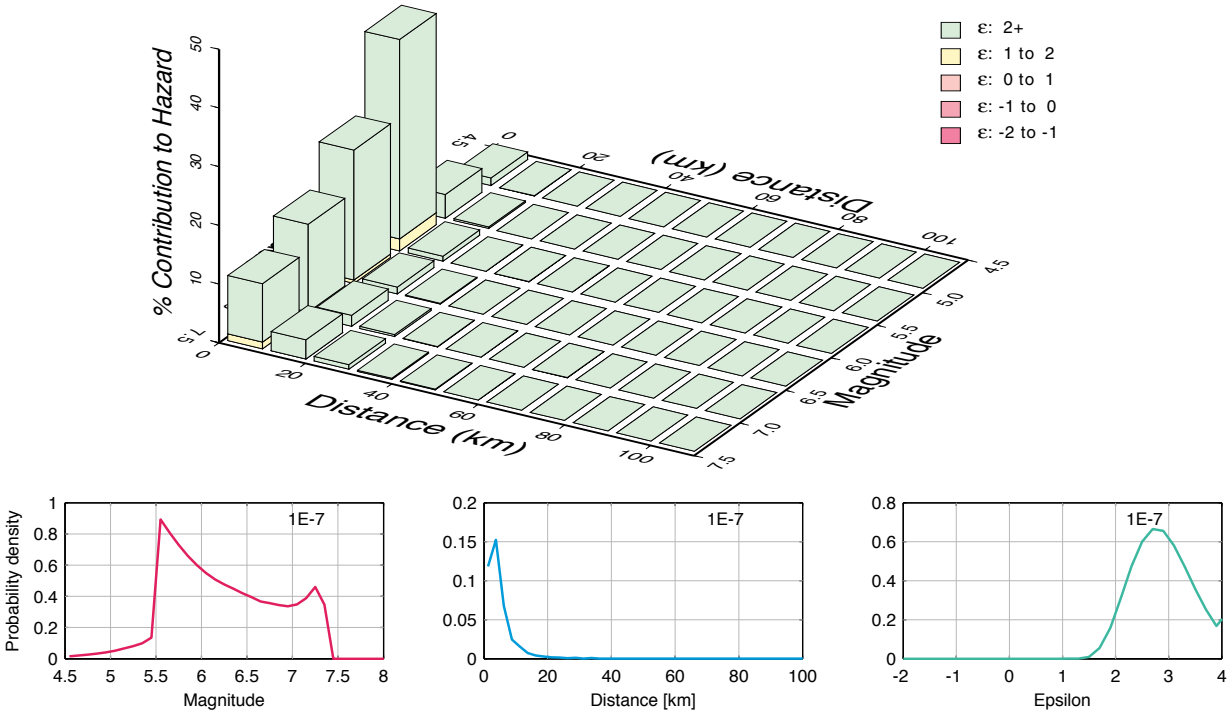

Fig. 4-4.31: Leibstadt, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 100 Hz.

4.5 Leibstadt, Horizontal Component, Mean $M - R - \varepsilon$

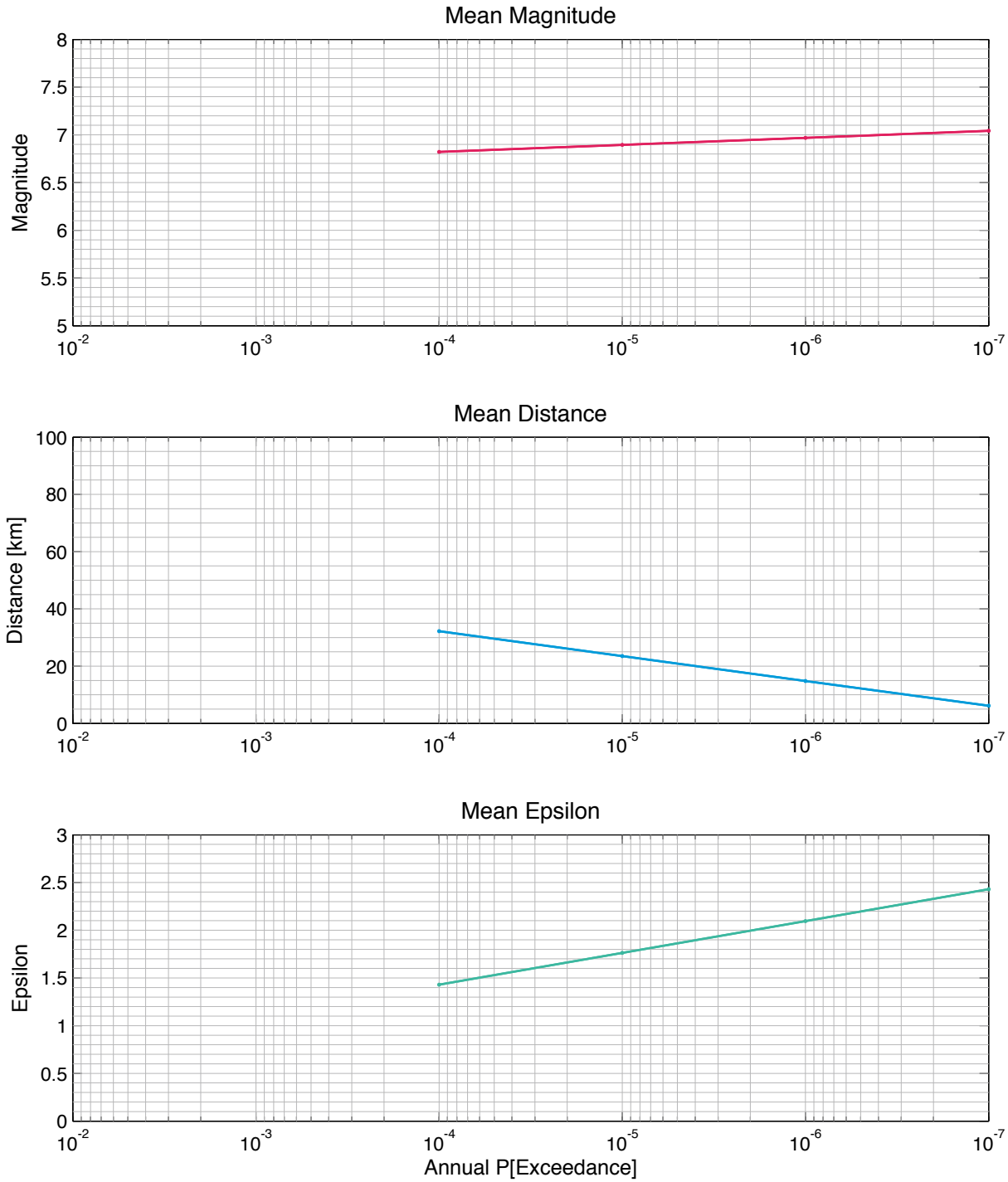

Fig. 4-9.1: Leibstadt, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 0.5 Hz.

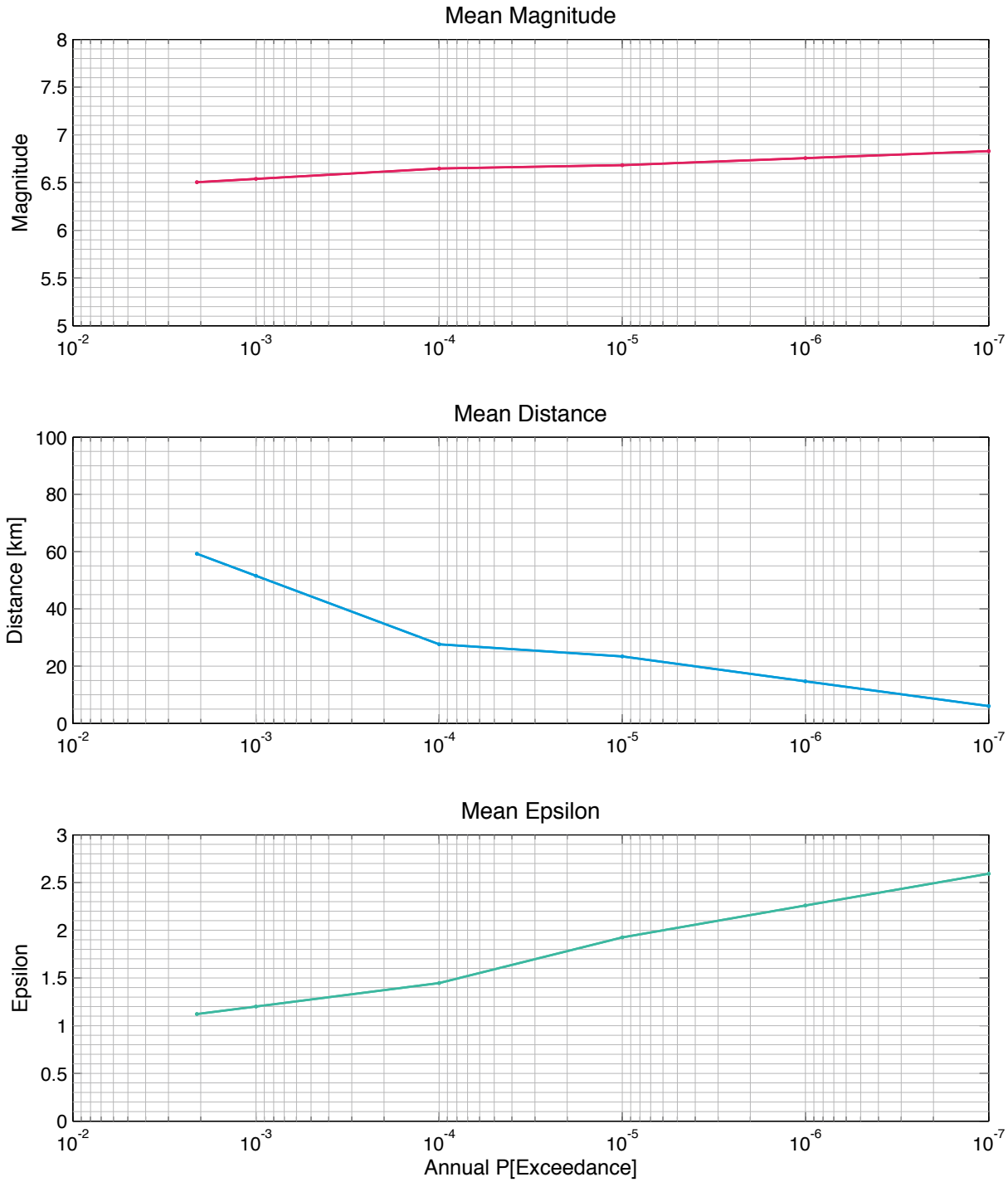

Fig. 4-9.2: Leibstadt, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 1 Hz.

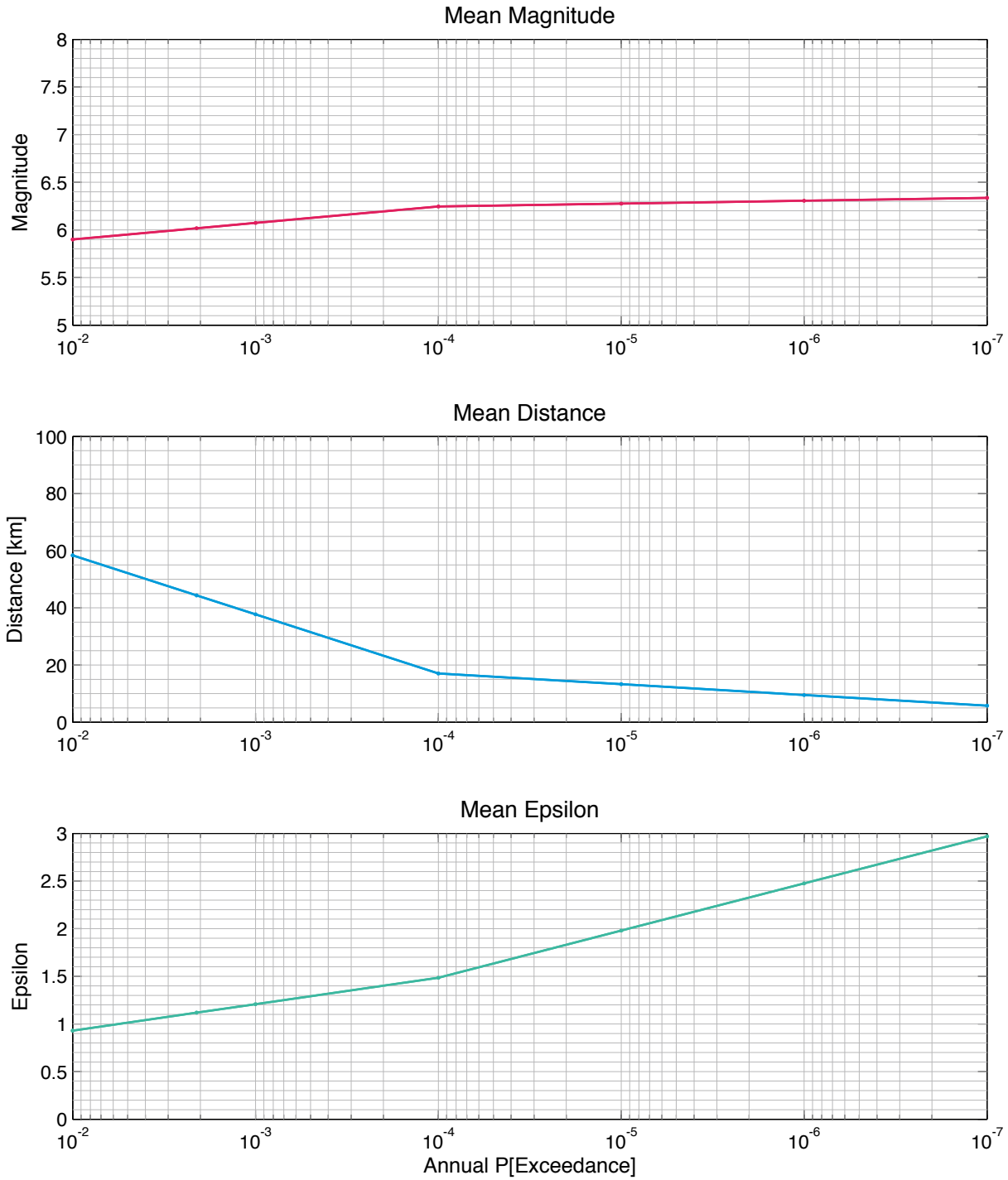

Fig. 4-9.3: Leibstadt, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 5 Hz.

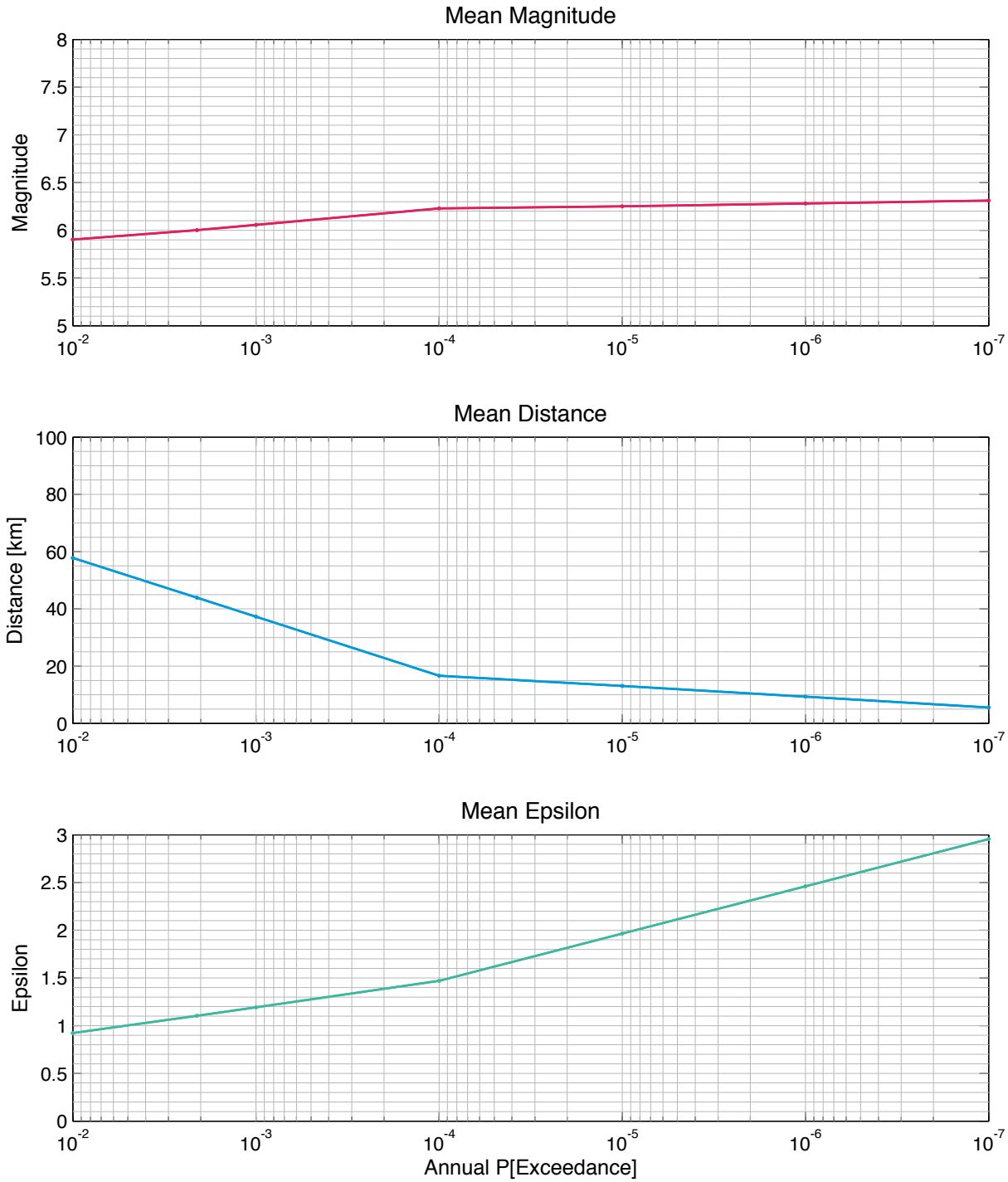

Fig. 4-9.4: Leibstadt, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 10 Hz.

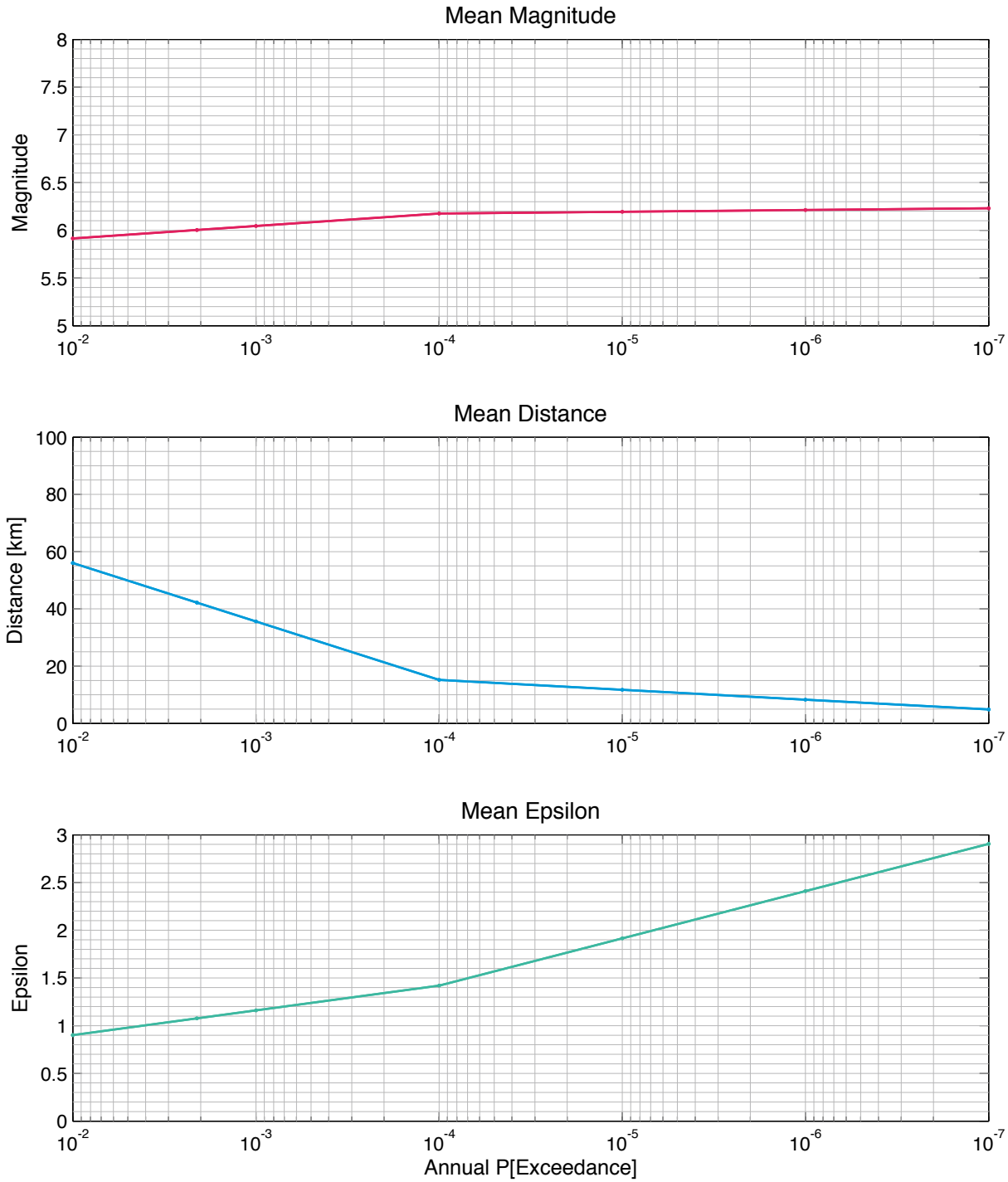

Fig. 4-9.5: Leibstadt, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 100 Hz.

4.10 Leibstadt, Rock Hazard, Vertical Component, Surface

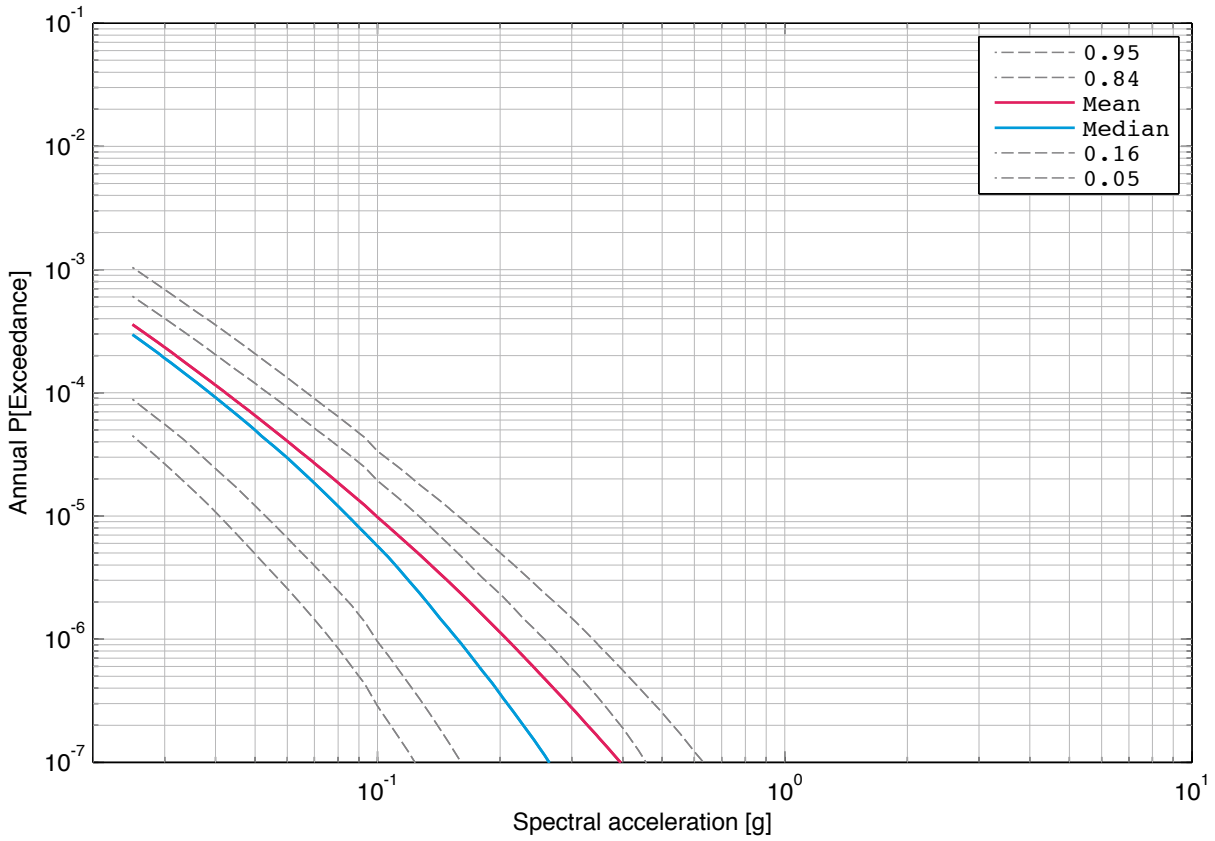

Fig. 4-10.1: Leibstadt, vertical component, rock, mean hazard and fractiles, 0.5 Hz.

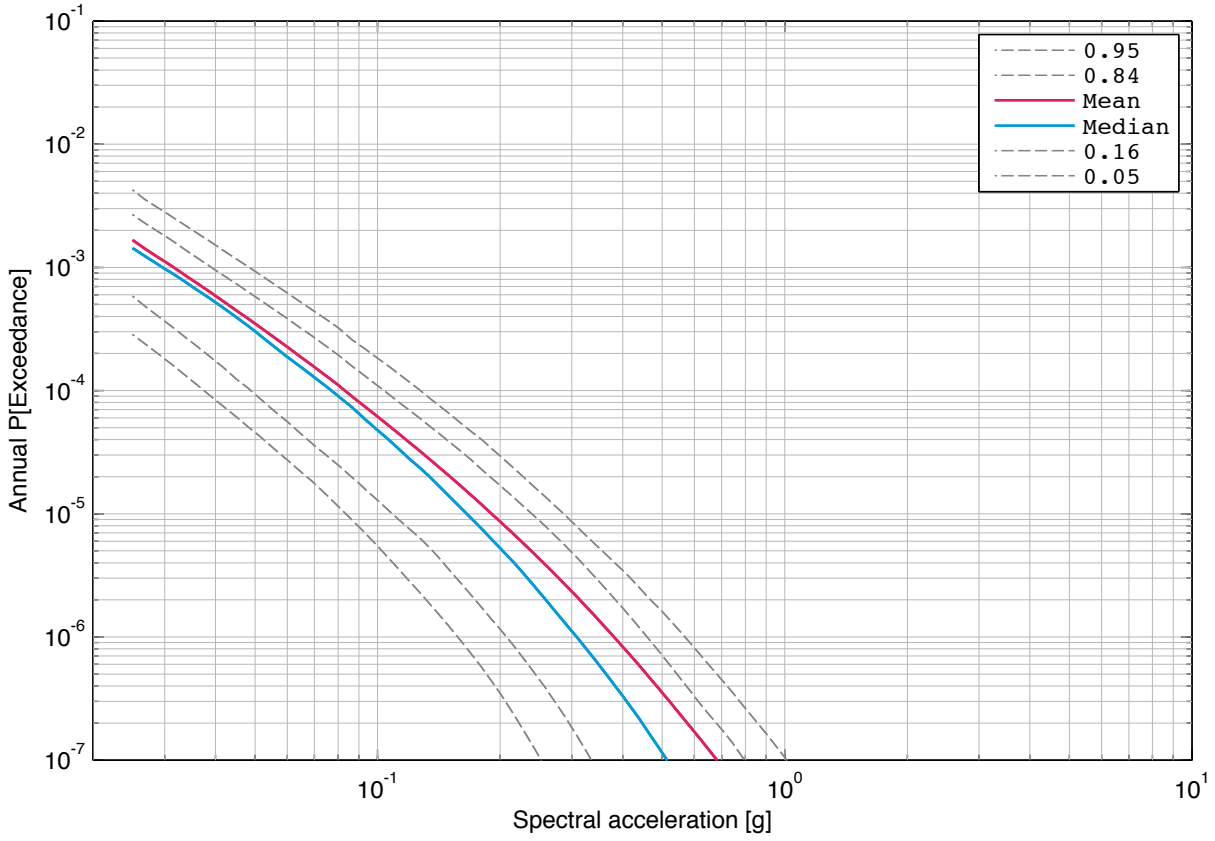

Fig. 4-10.2: Leibstadt, vertical component, rock, mean hazard and fractiles, 1 Hz.

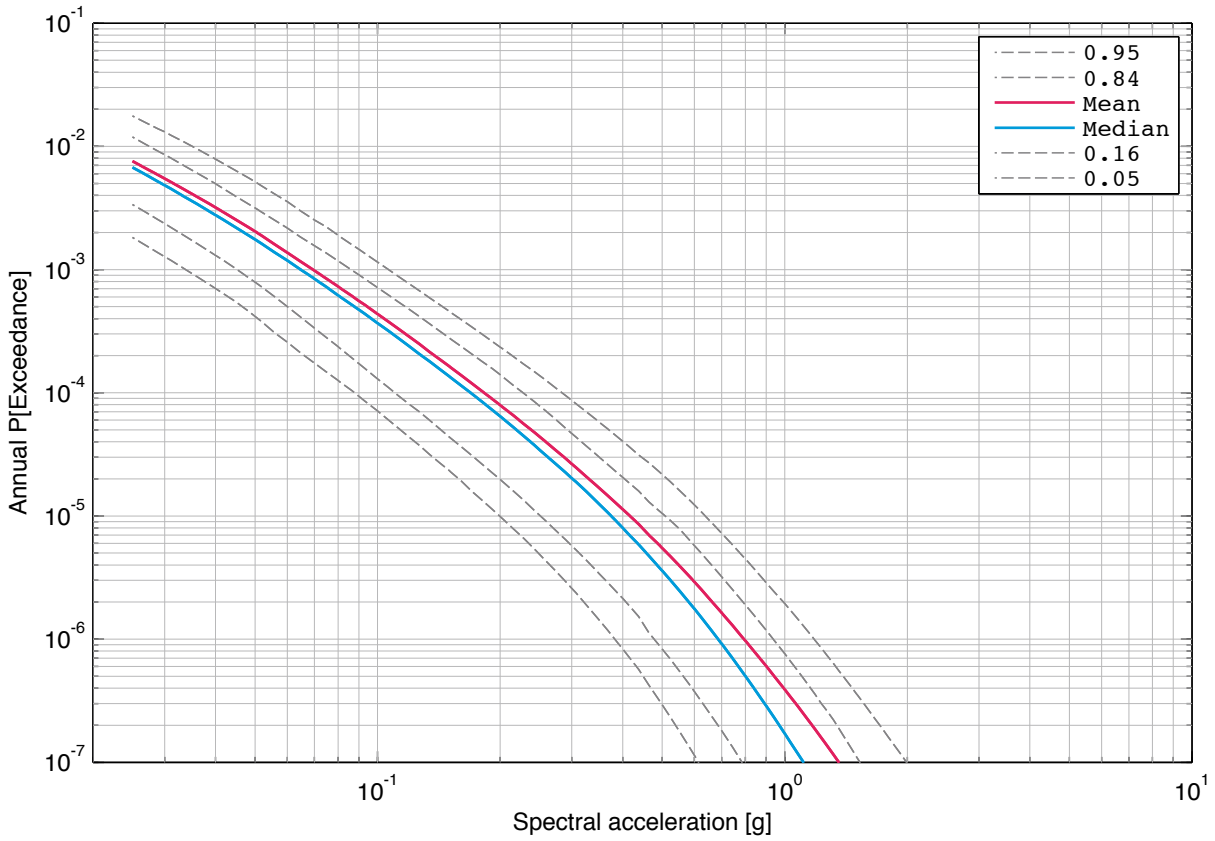

Fig. 4-10.3: Leibstadt, vertical component, rock, mean hazard and fractiles, 2.5 Hz.

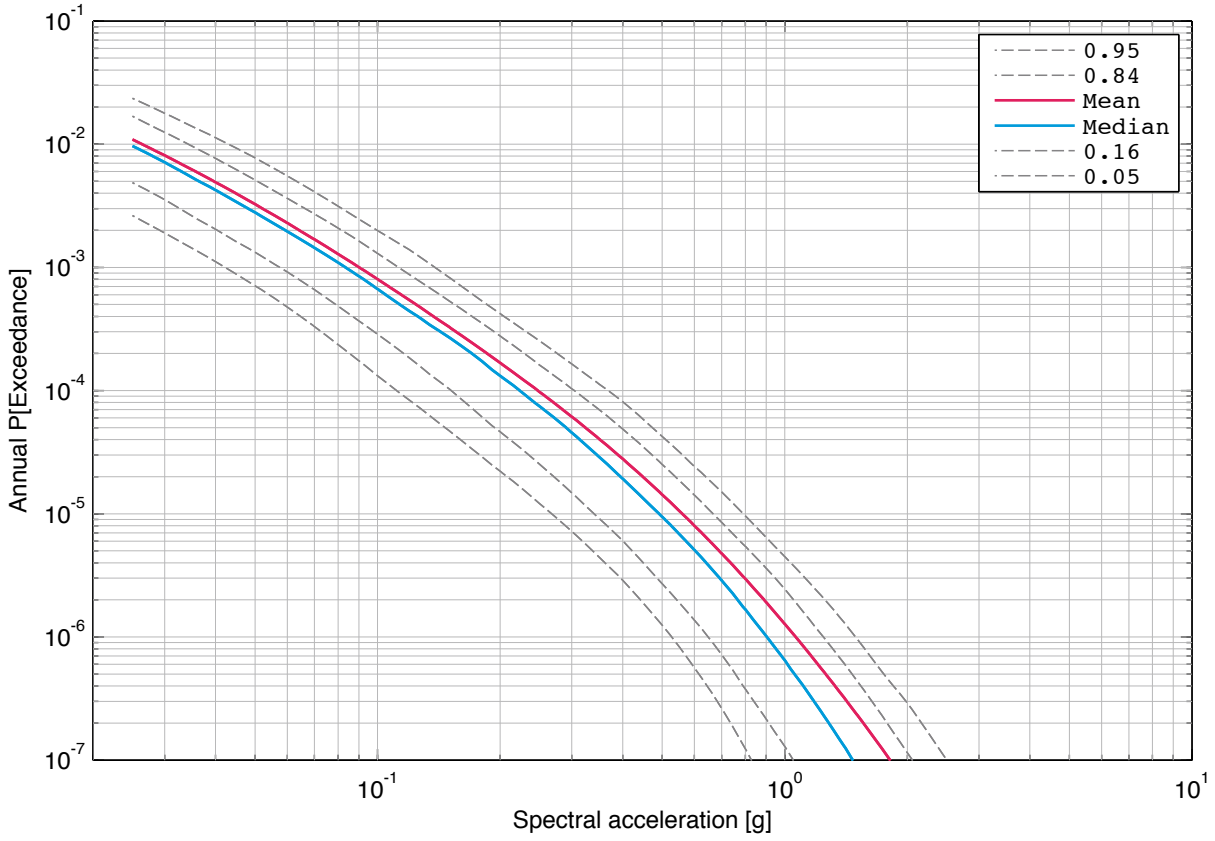

Fig. 4-10.4: Leibstadt, vertical component, rock, mean hazard and fractiles, 5 Hz.

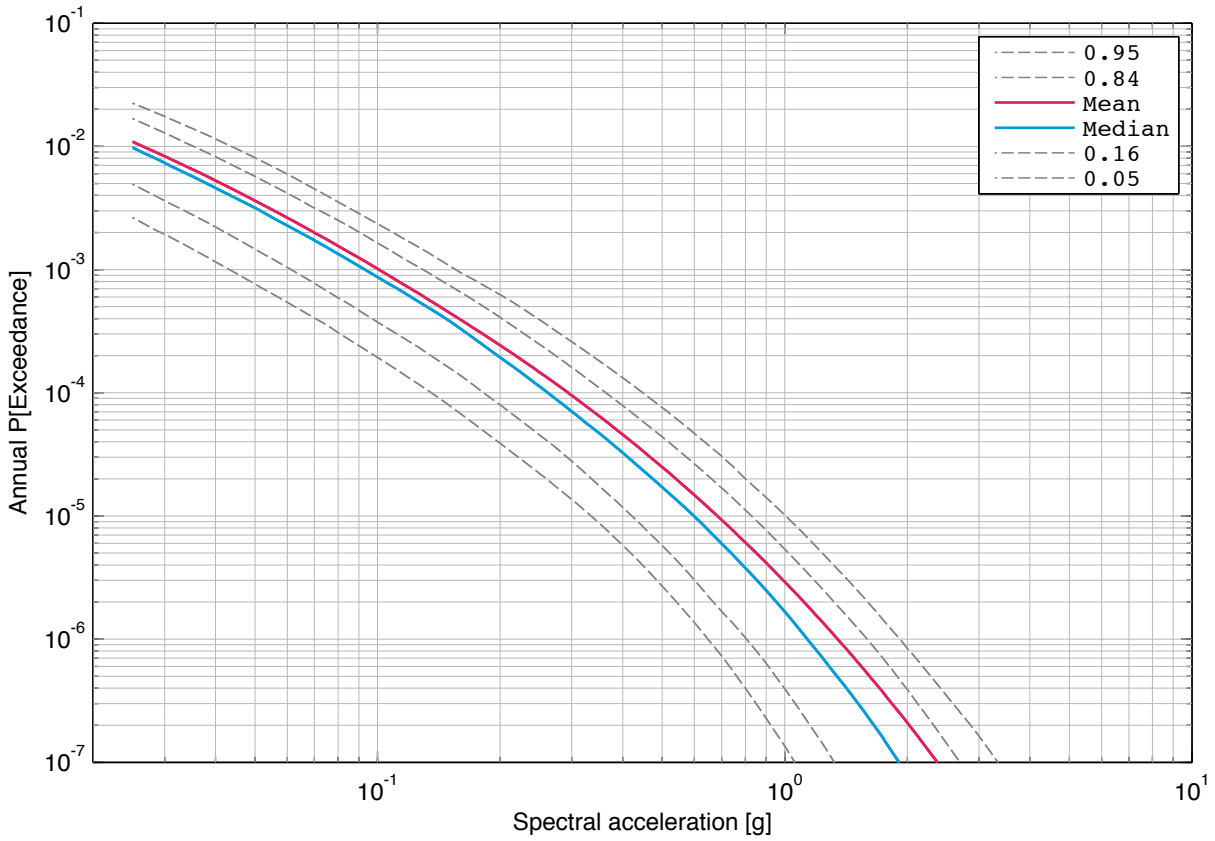

Fig. 4-10.5: Leibstadt, vertical component, rock, mean hazard and fractiles, 10 Hz.

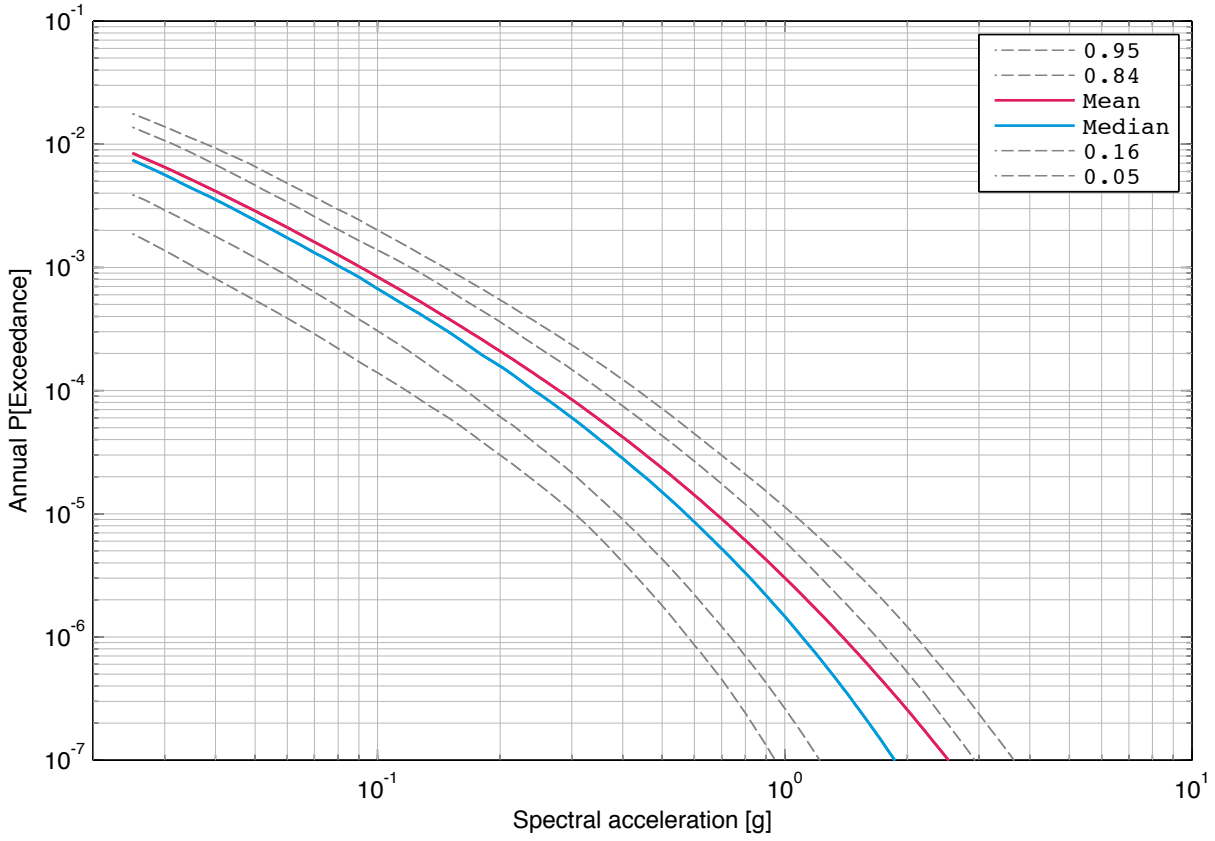

Fig. 4-10.6: Leibstadt, vertical component, rock, mean hazard and fractiles, 20 Hz.

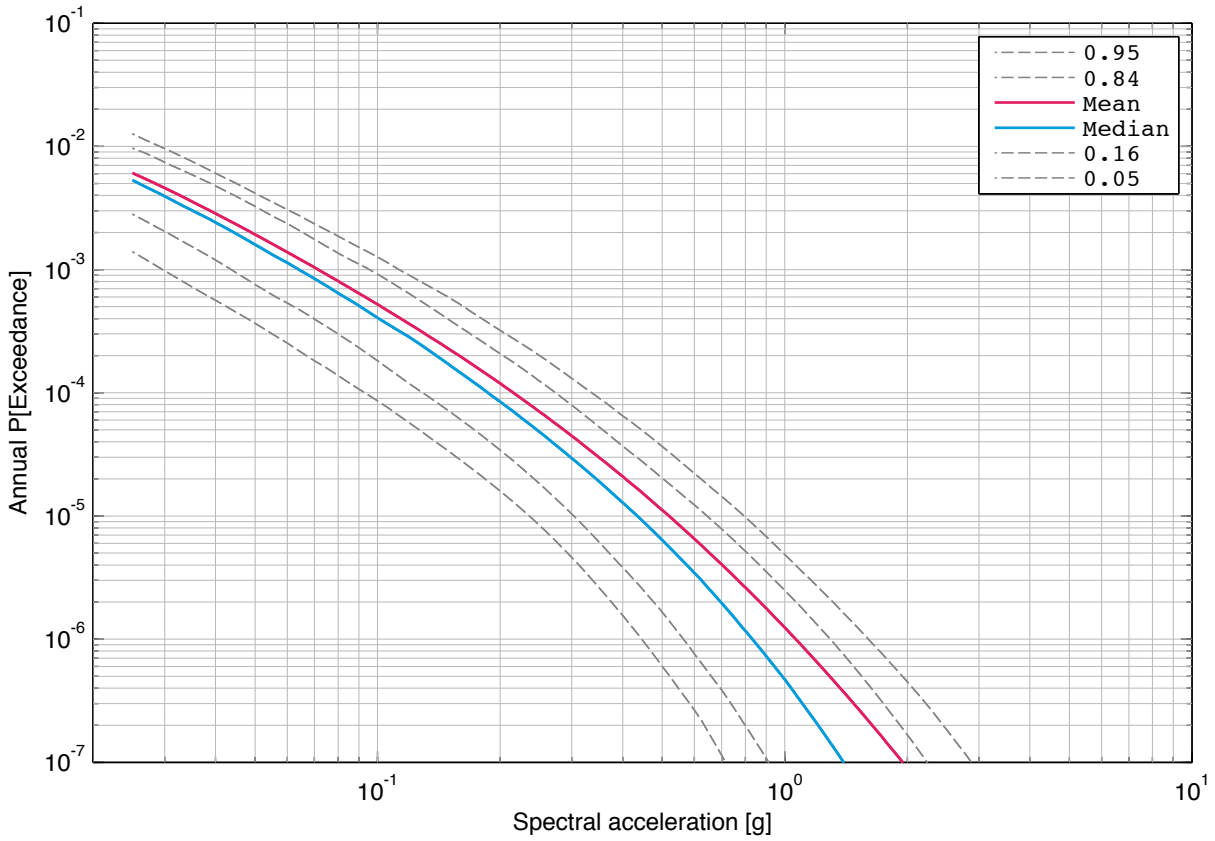

Fig. 4-10.7: Leibstadt, vertical component, rock, mean hazard and fractiles, 33 Hz.

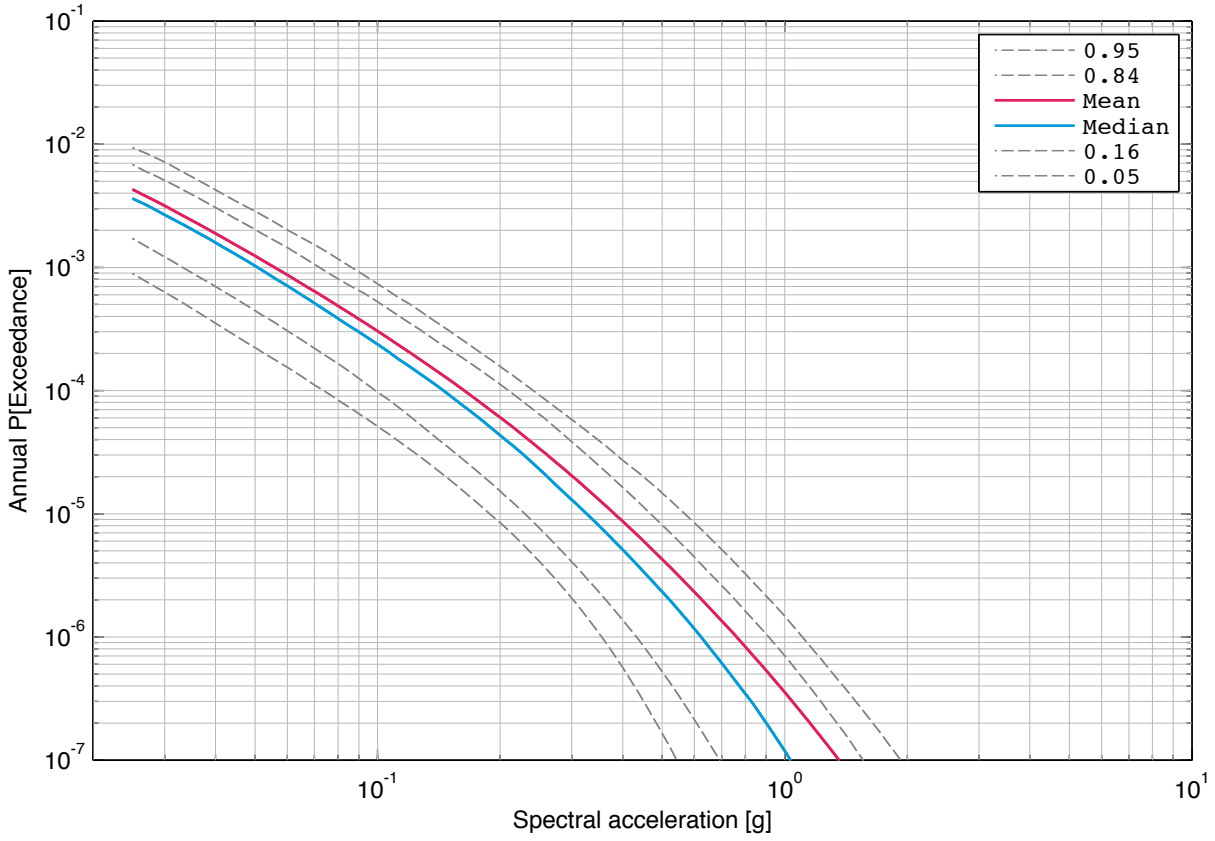

Fig. 4-10.8: Leibstadt, vertical component, rock, mean hazard and fractiles, 50 Hz.

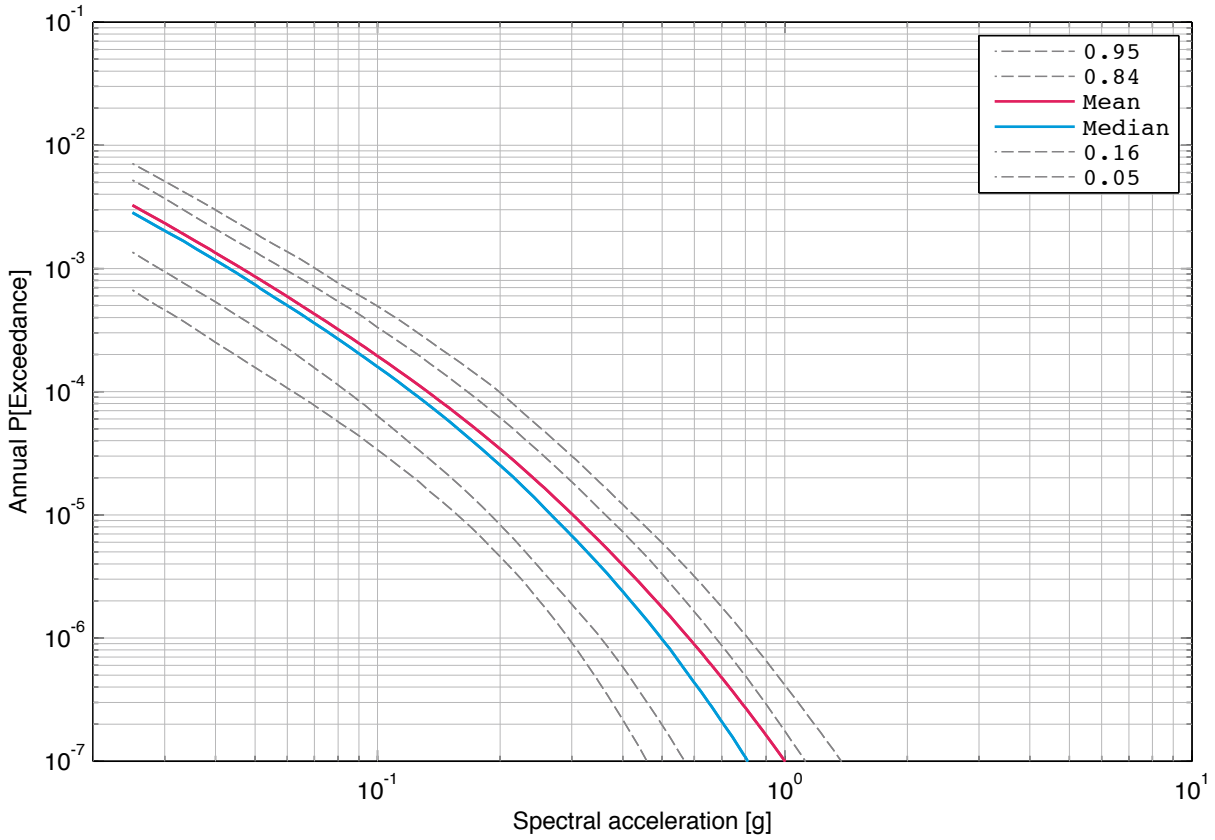

Fig. 4-10.9: Leibstadt, vertical component, rock, mean hazard and fractiles, 100 Hz.

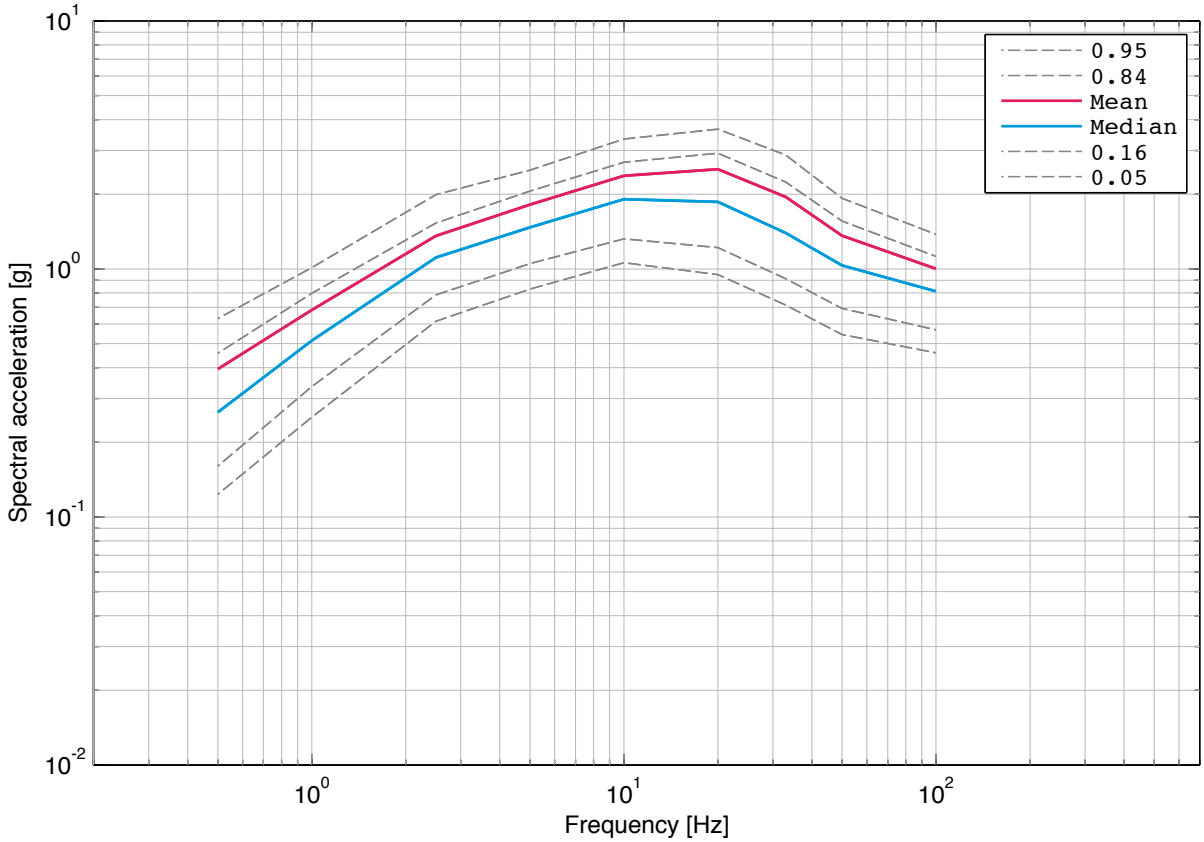

Fig. 4-10.10: Leibstadt, vertical component, rock, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

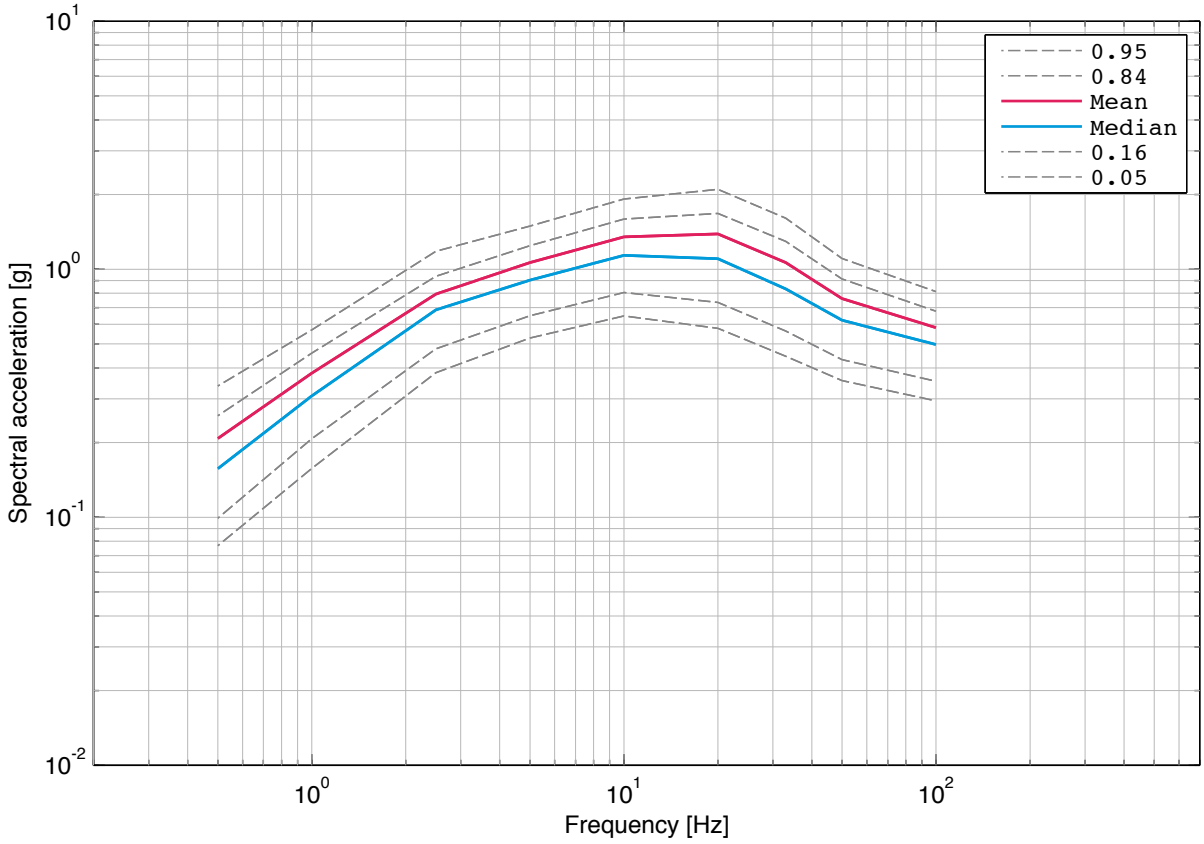

Fig. 4-10.11: Leibstadt, vertical component, rock, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

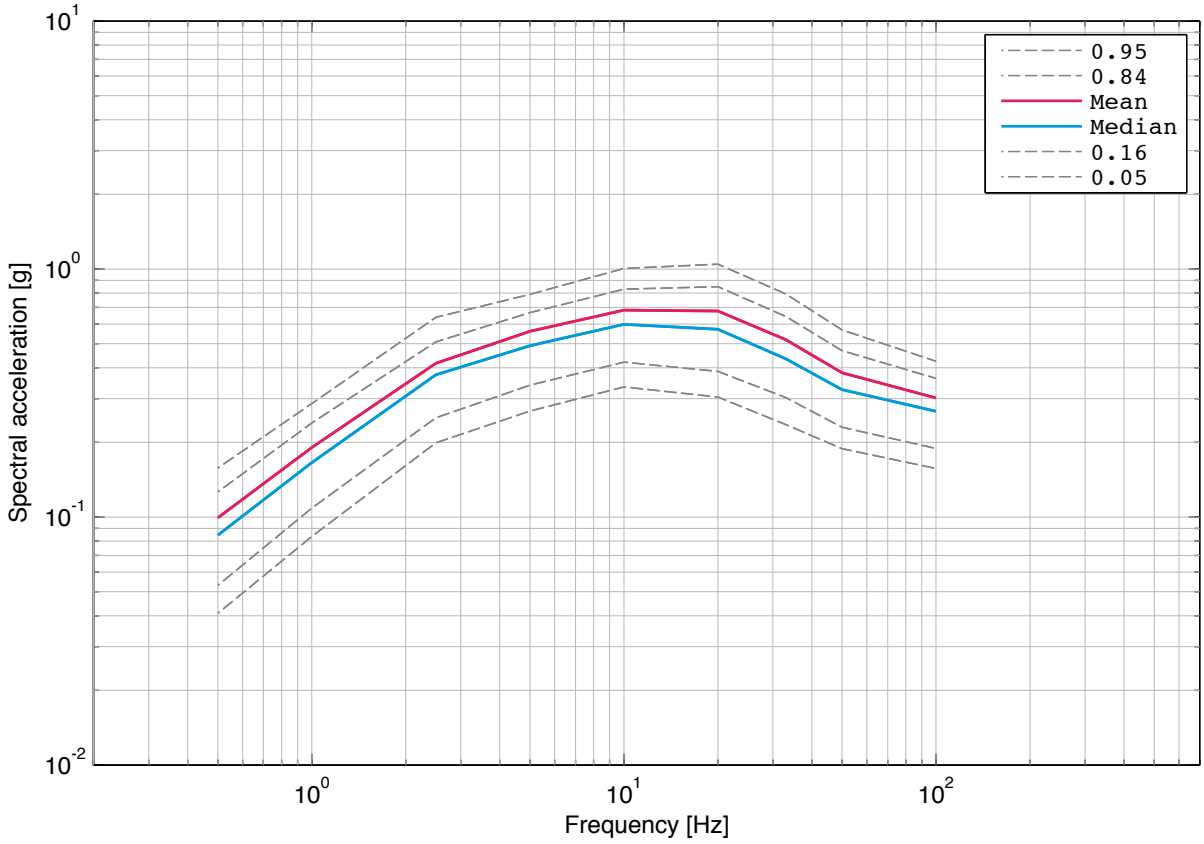

Fig. 4-10.12: Leibstadt, vertical component, rock, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

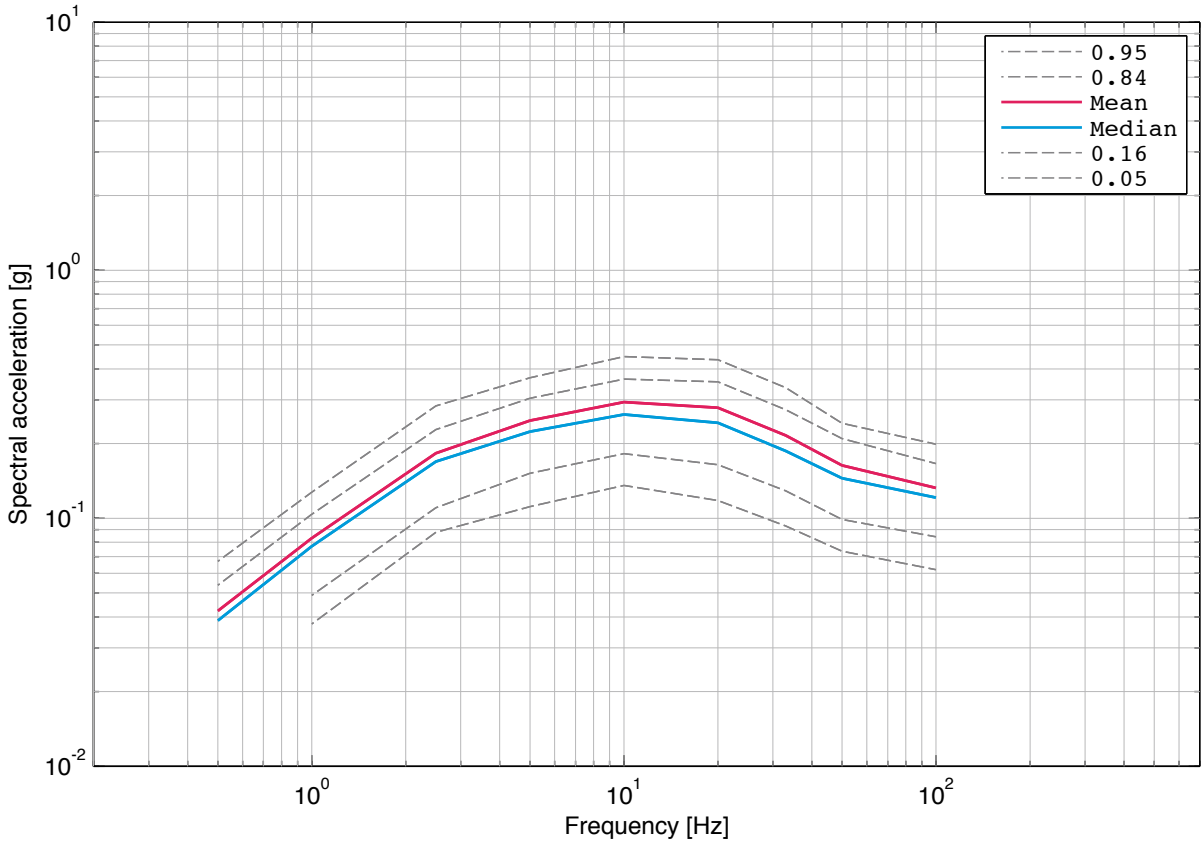

Fig. 4-10.13: Leibstadt, vertical component, rock, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

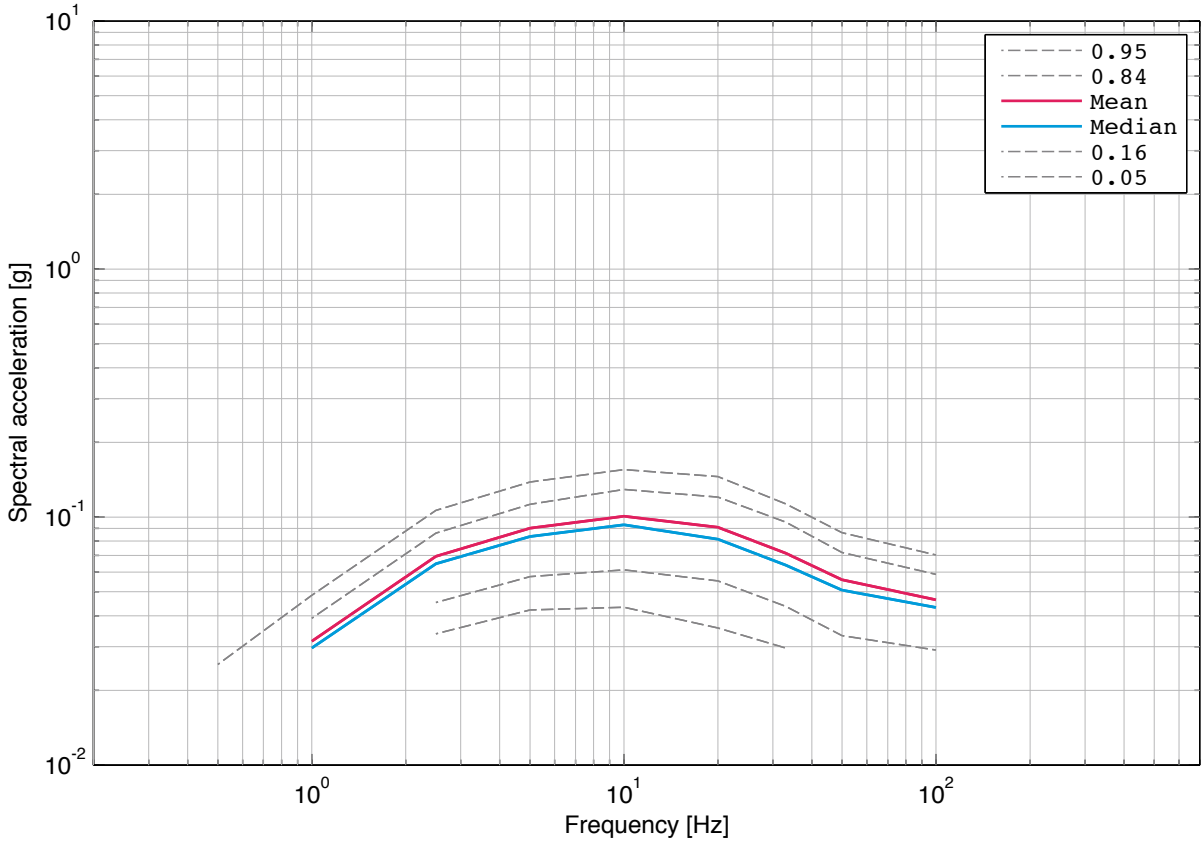

Fig. 4-10.14: Leibstadt, vertical component, rock, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

4.11 Leibstadt, Soil Hazard, Vertical Component, Surface

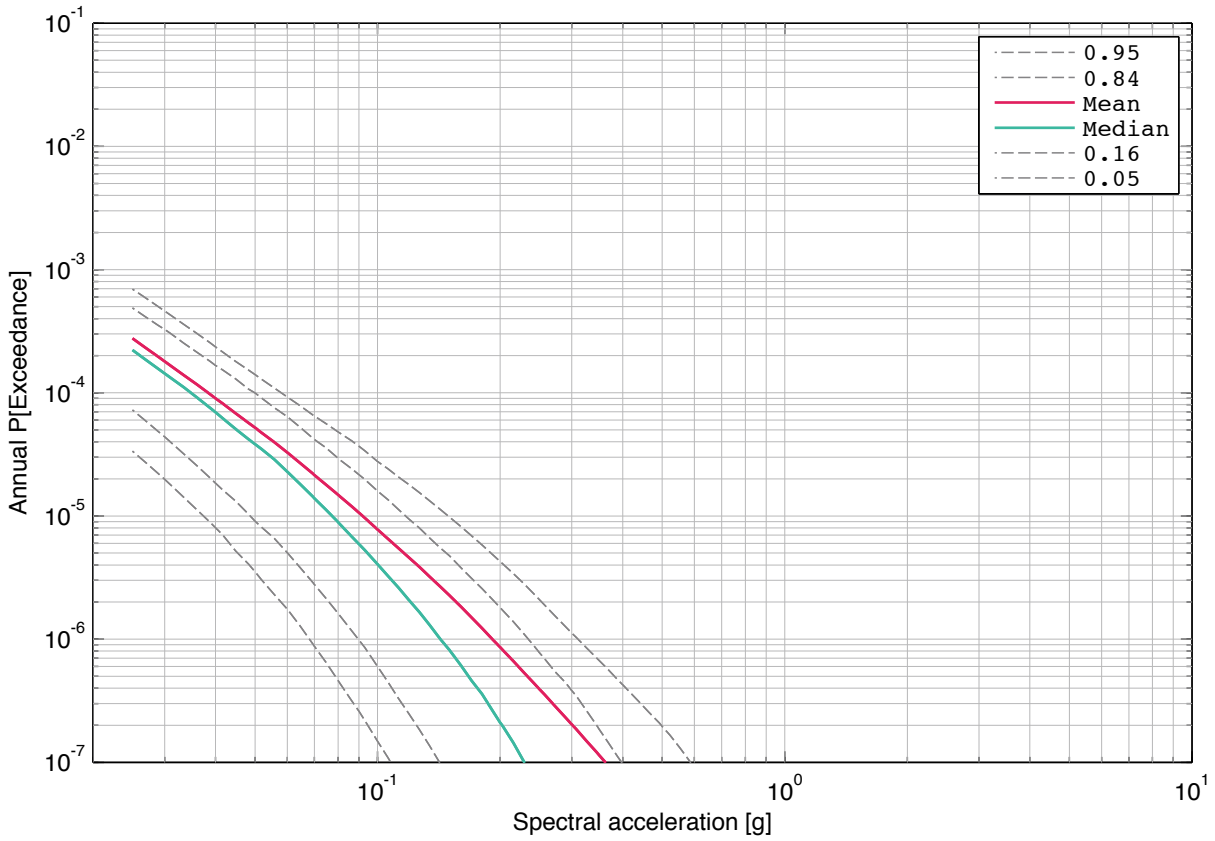

Fig. 4-11.1: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 0.5 Hz.

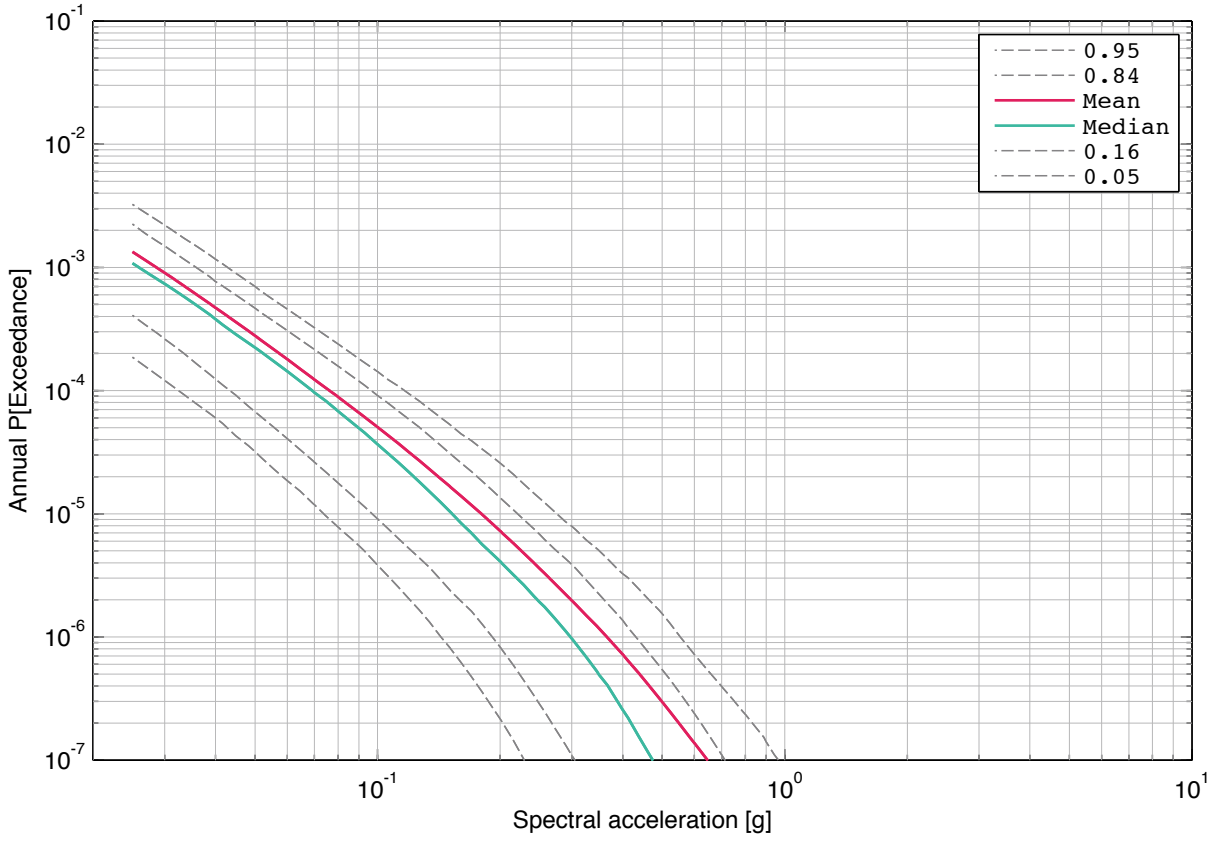

Fig. 4-11.2: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 1 Hz.

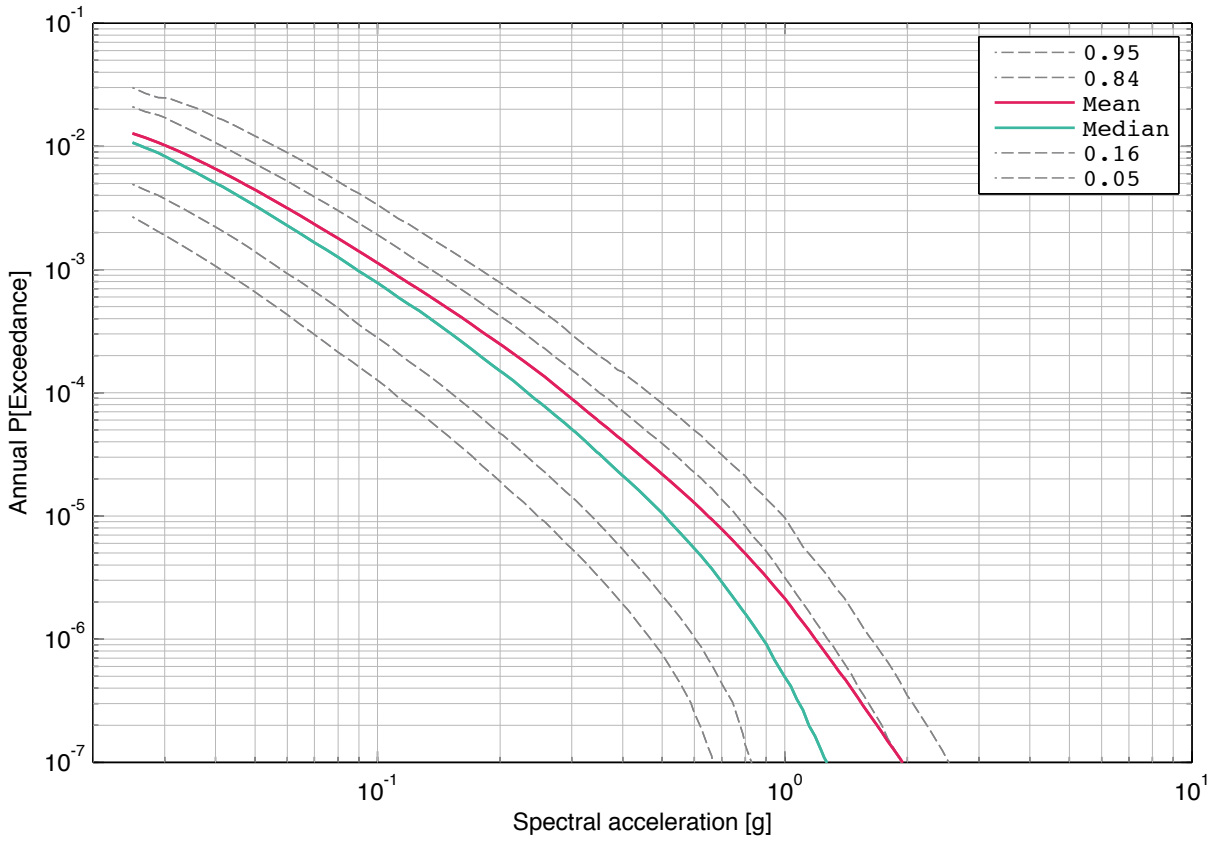

Fig. 4-11.3: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 2.5 Hz.

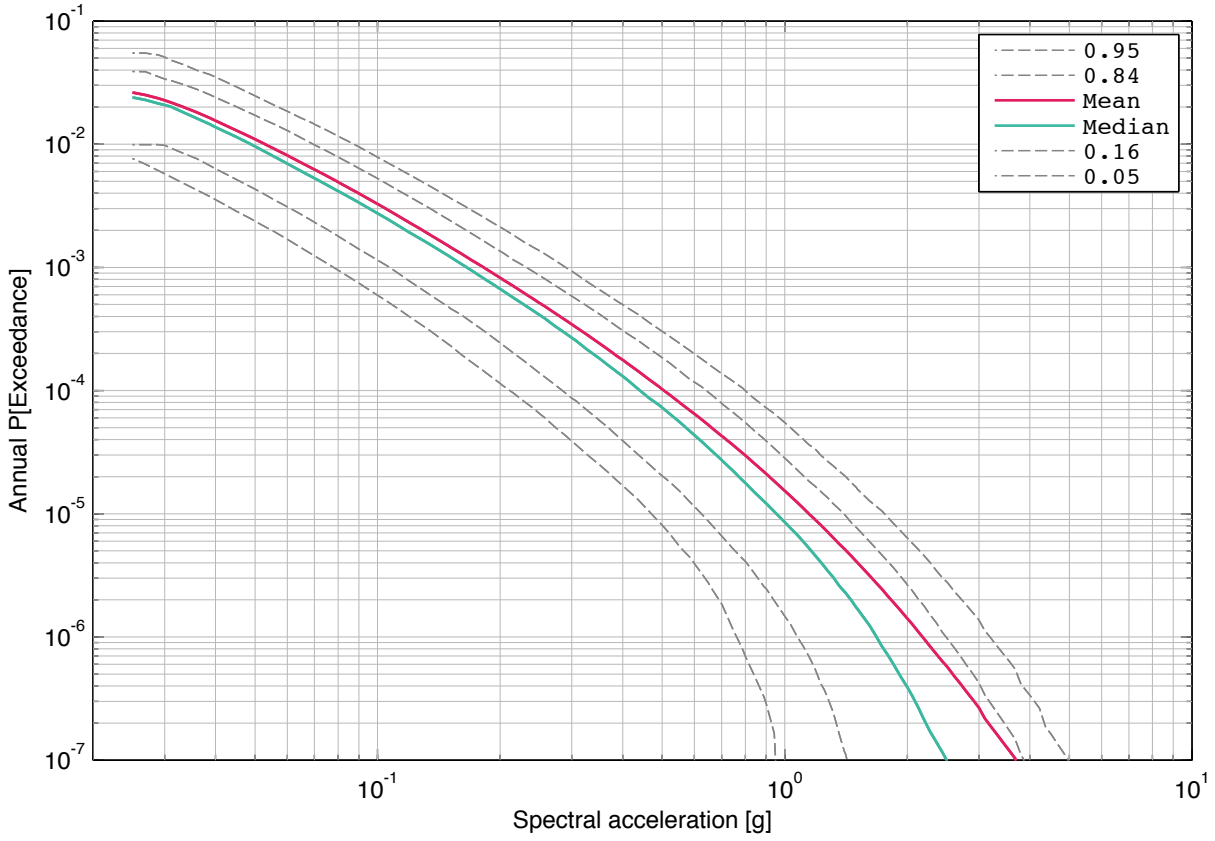

Fig. 4-11.4: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 5 Hz.

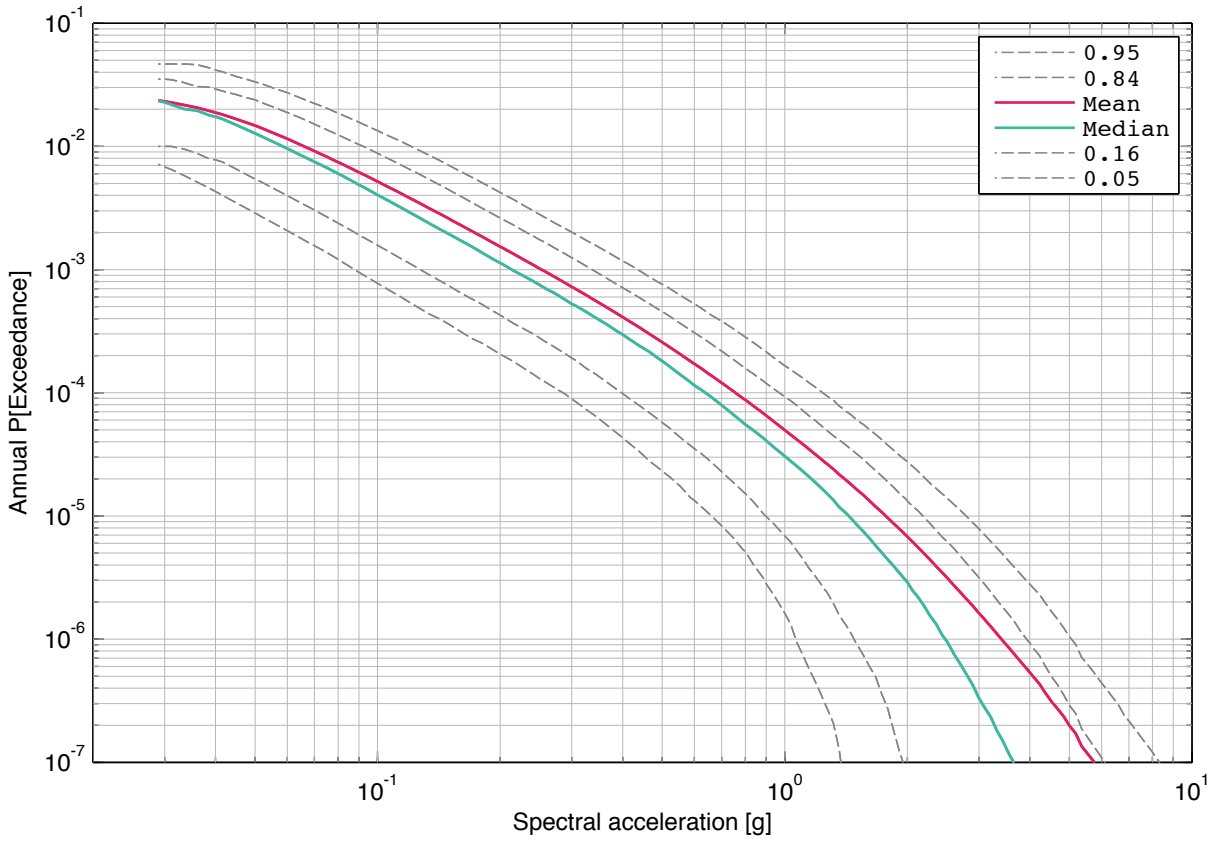

Fig. 4-11.5: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 10 Hz.

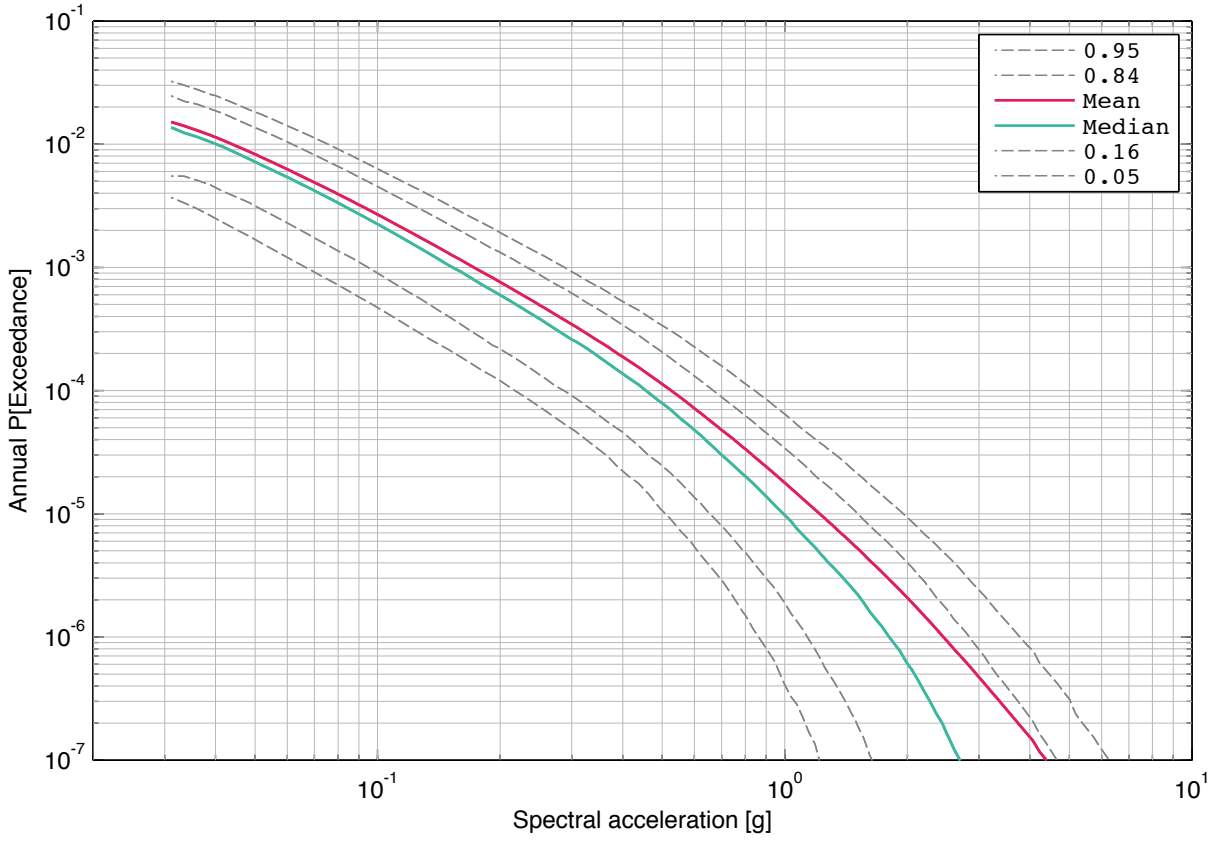

Fig. 4-11.6: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 20 Hz.

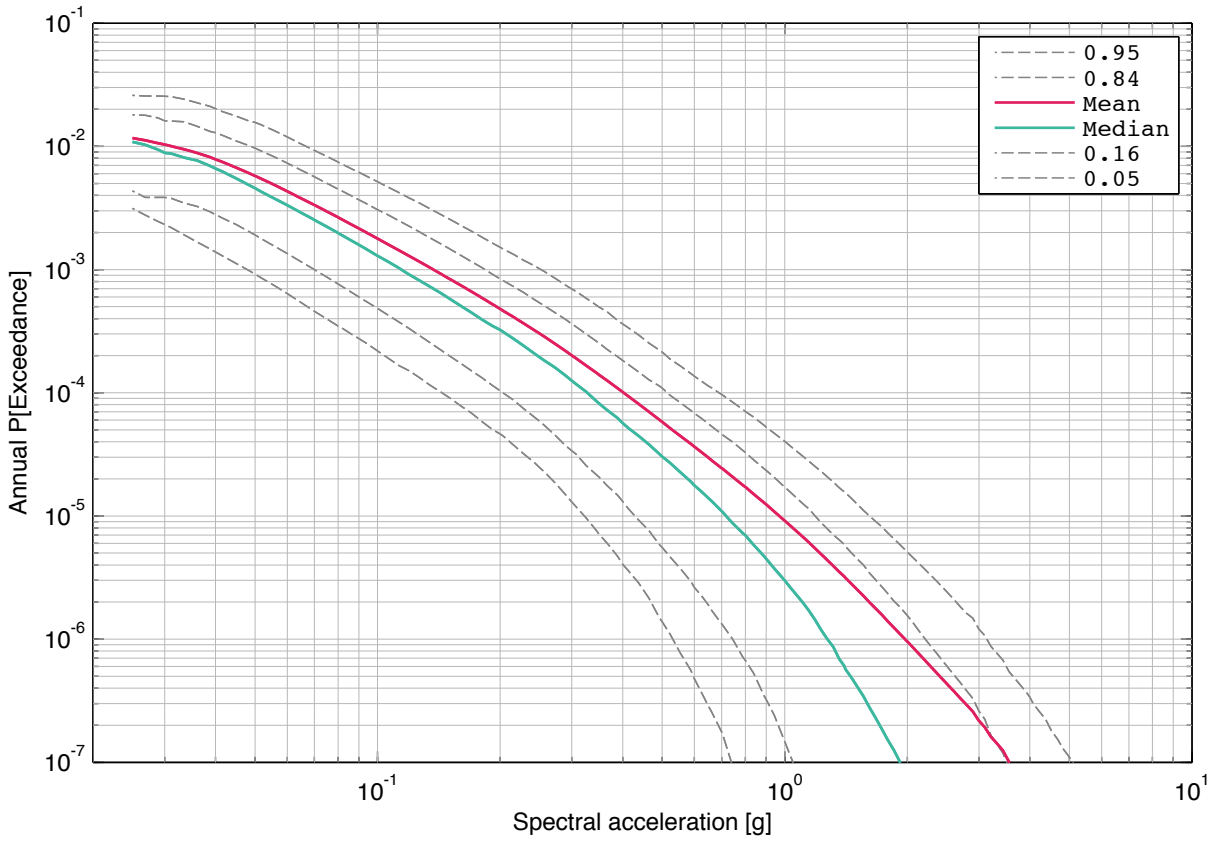

Fig. 4-11.7: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 33 Hz.

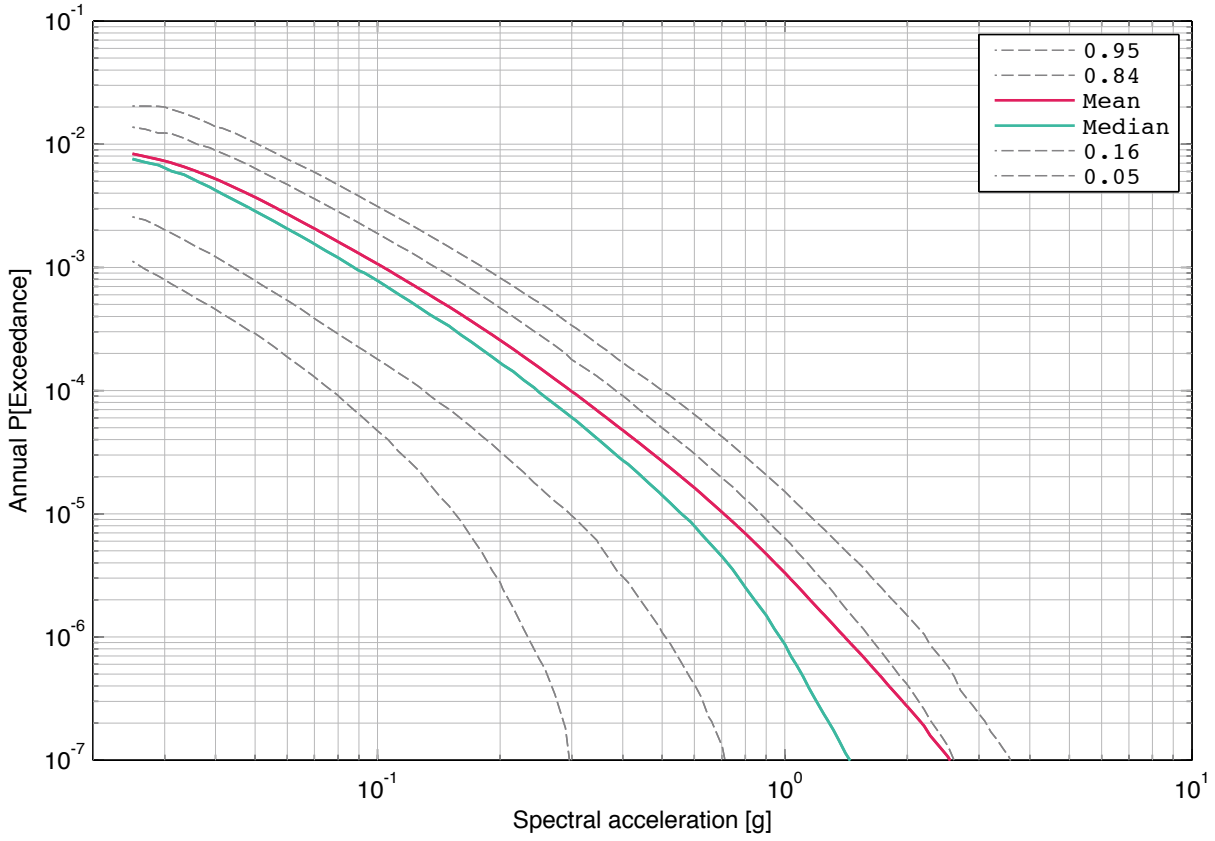

Fig. 4-11.8: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 50 Hz.

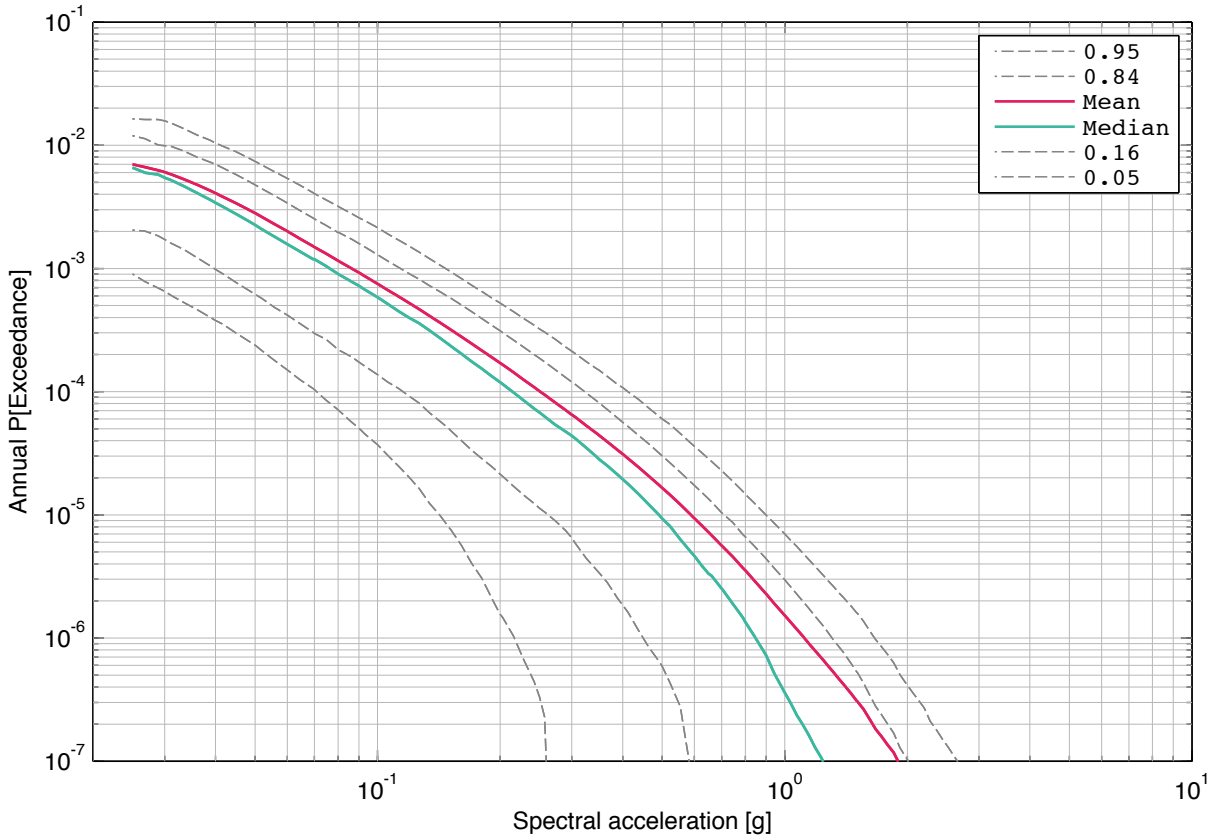

Fig. 4-11.9: Leibstadt, vertical component, soil, surface, mean hazard and fractiles, 100 Hz.

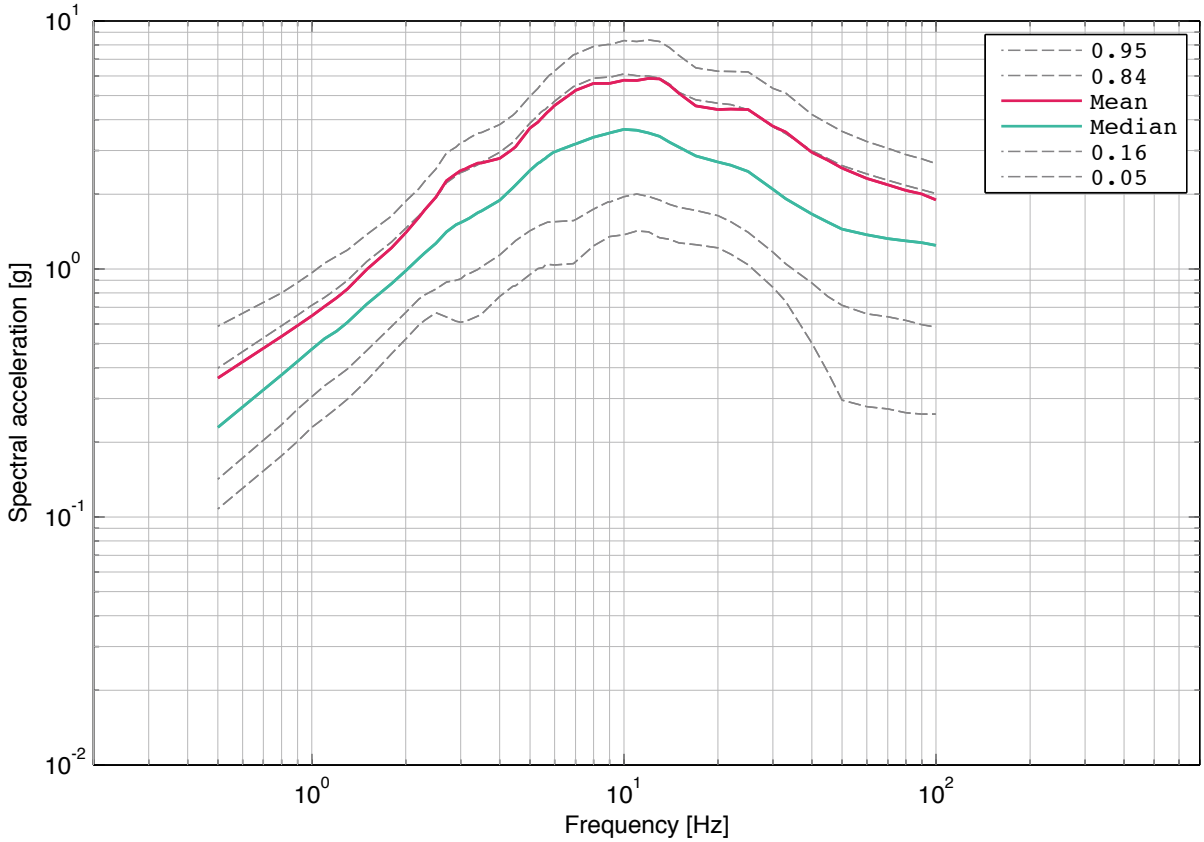

Fig. 4-11.10: Leibstadt, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-07 and 5% damping.

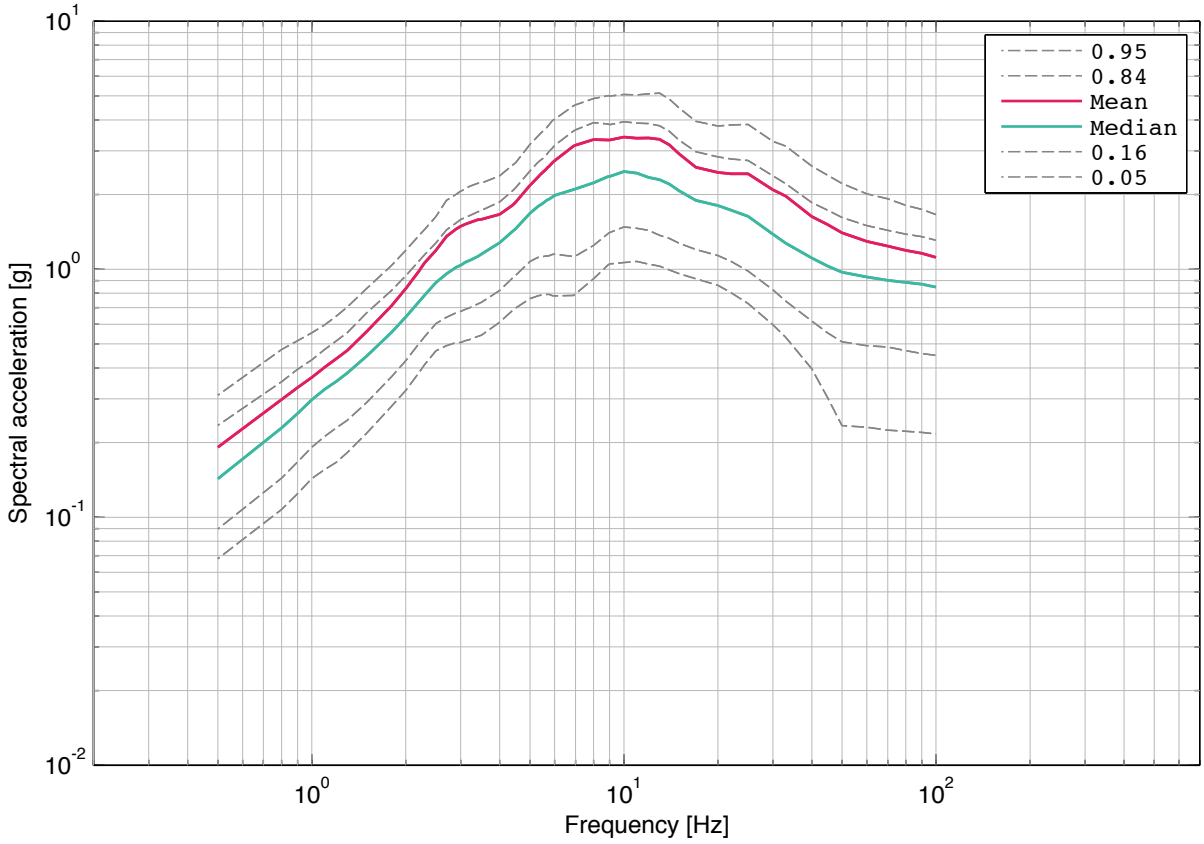

Fig. 4-11.11: Leibstadt, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-06 and 5% damping.

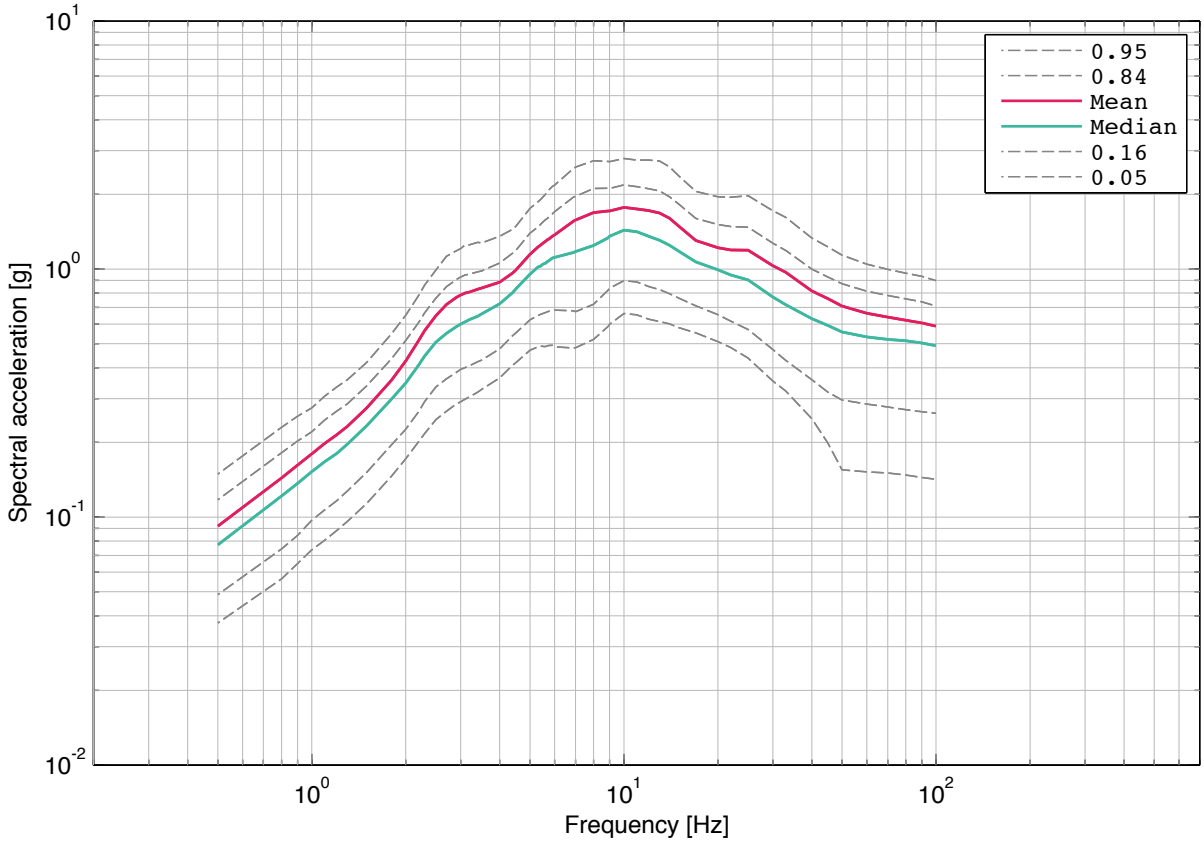

Fig. 4-11.12: Leibstadt, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-05 and 5% damping.

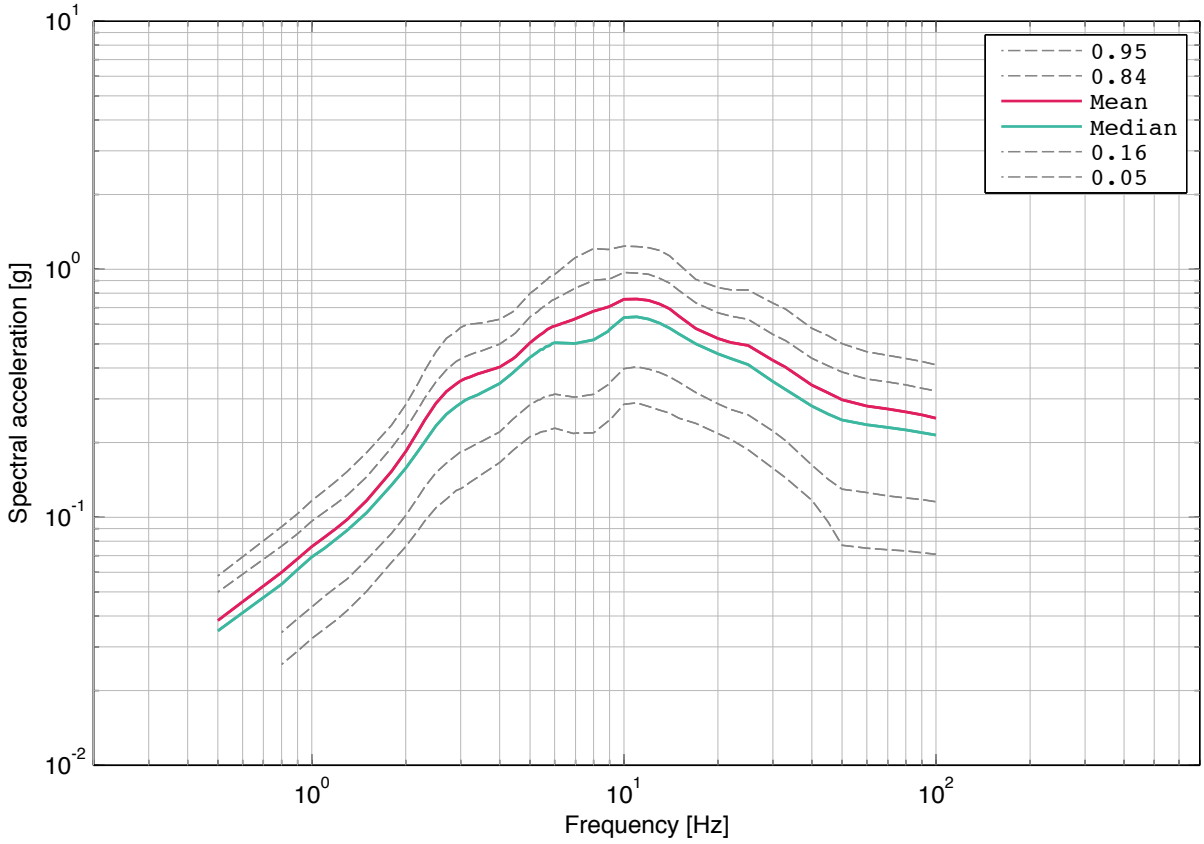

Fig. 4-11.13: Leibstadt, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-04 and 5% damping.

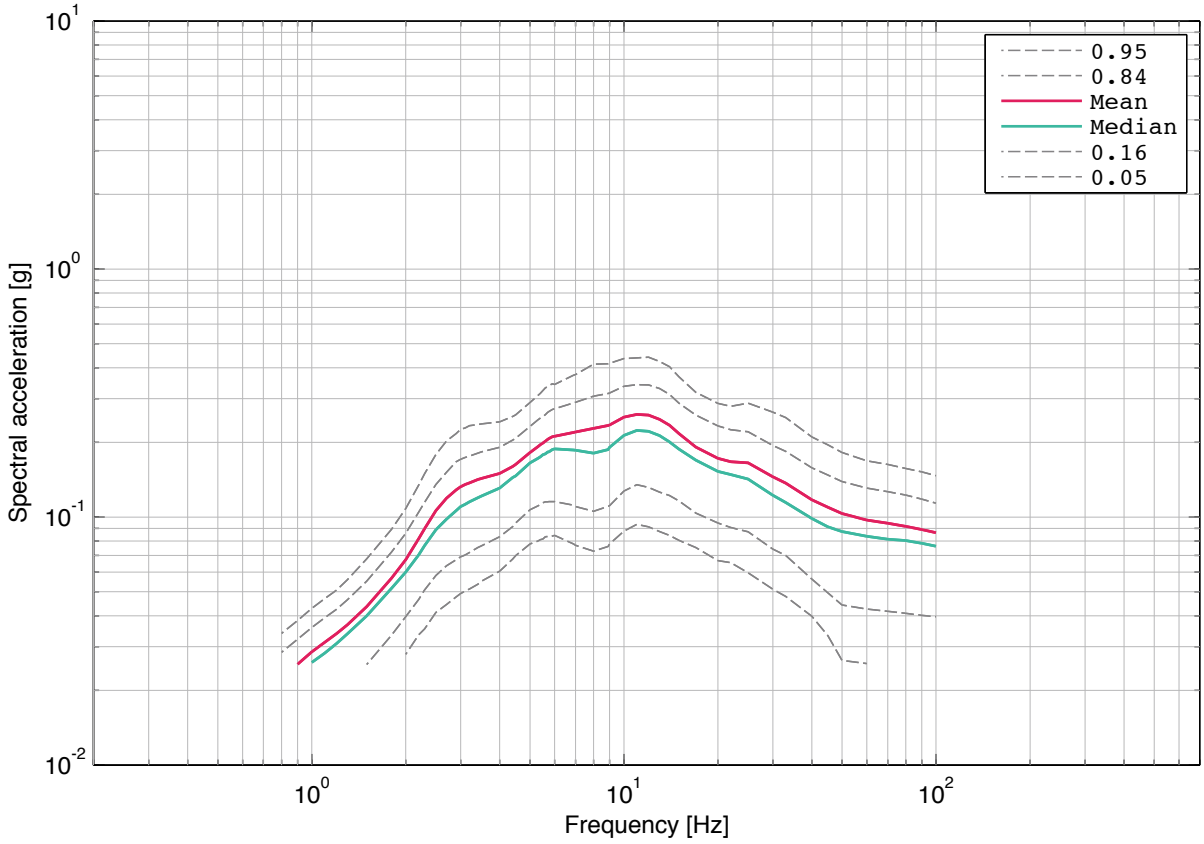

Fig. 4-11.14: Leibstadt, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-03 and 5% damping.

4.12 Leibstadt, Soil Hazard, Vertical Component, -10 m

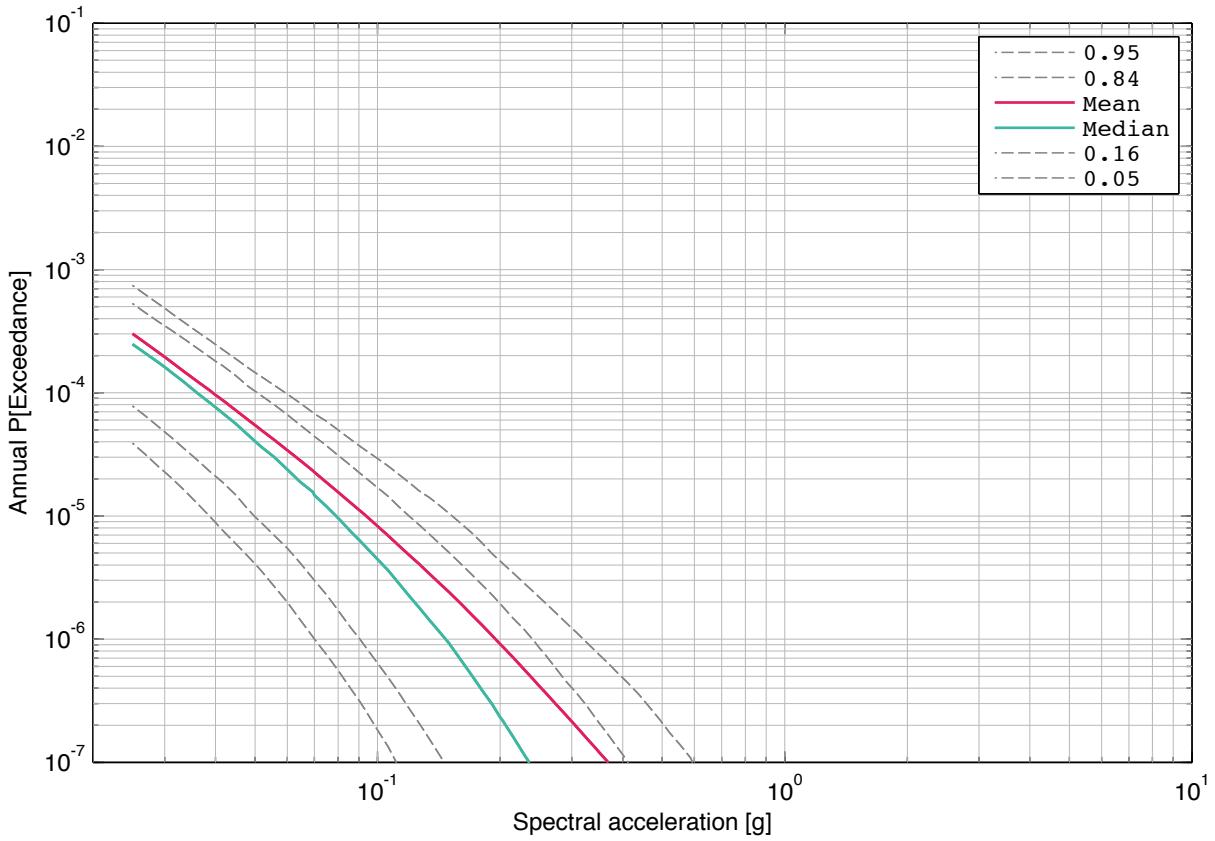

Fig. 4-12.1: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 0.5 Hz.

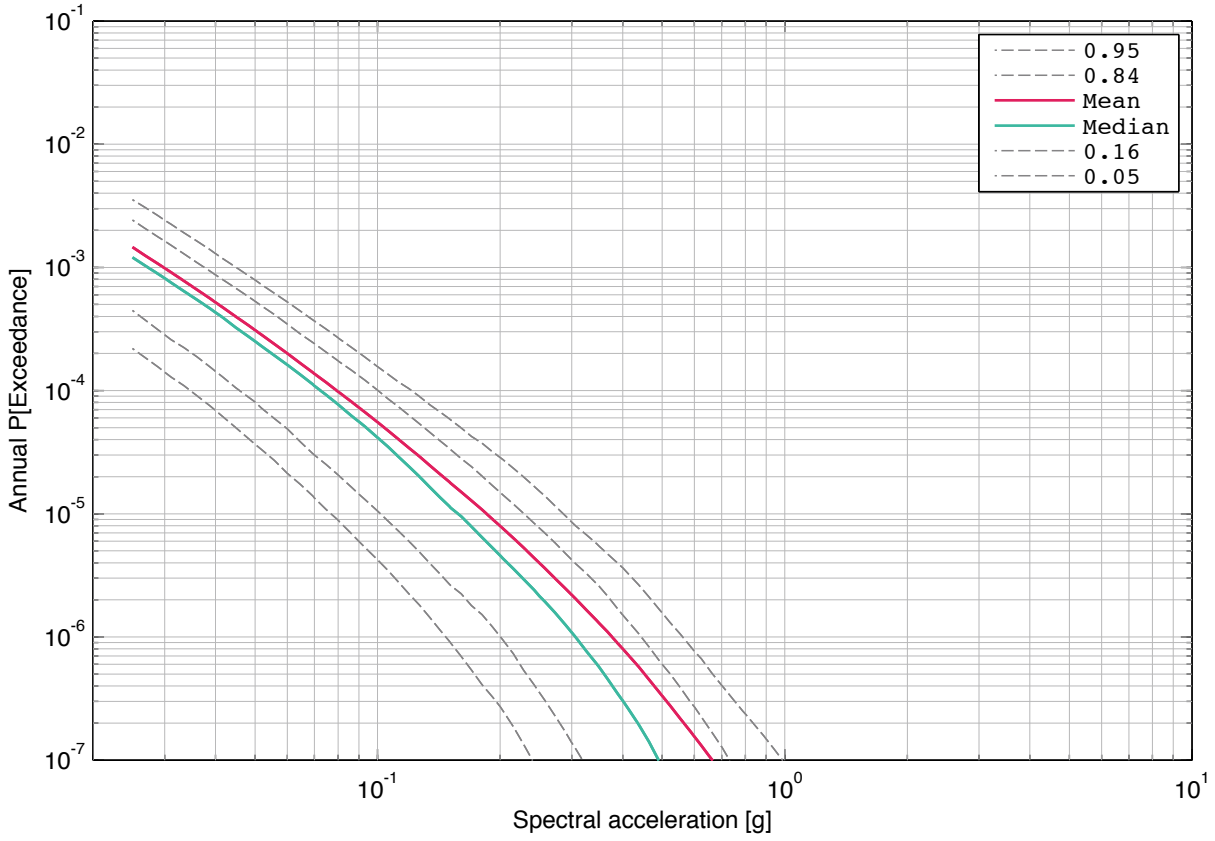

Fig. 4-12.2: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 1 Hz.

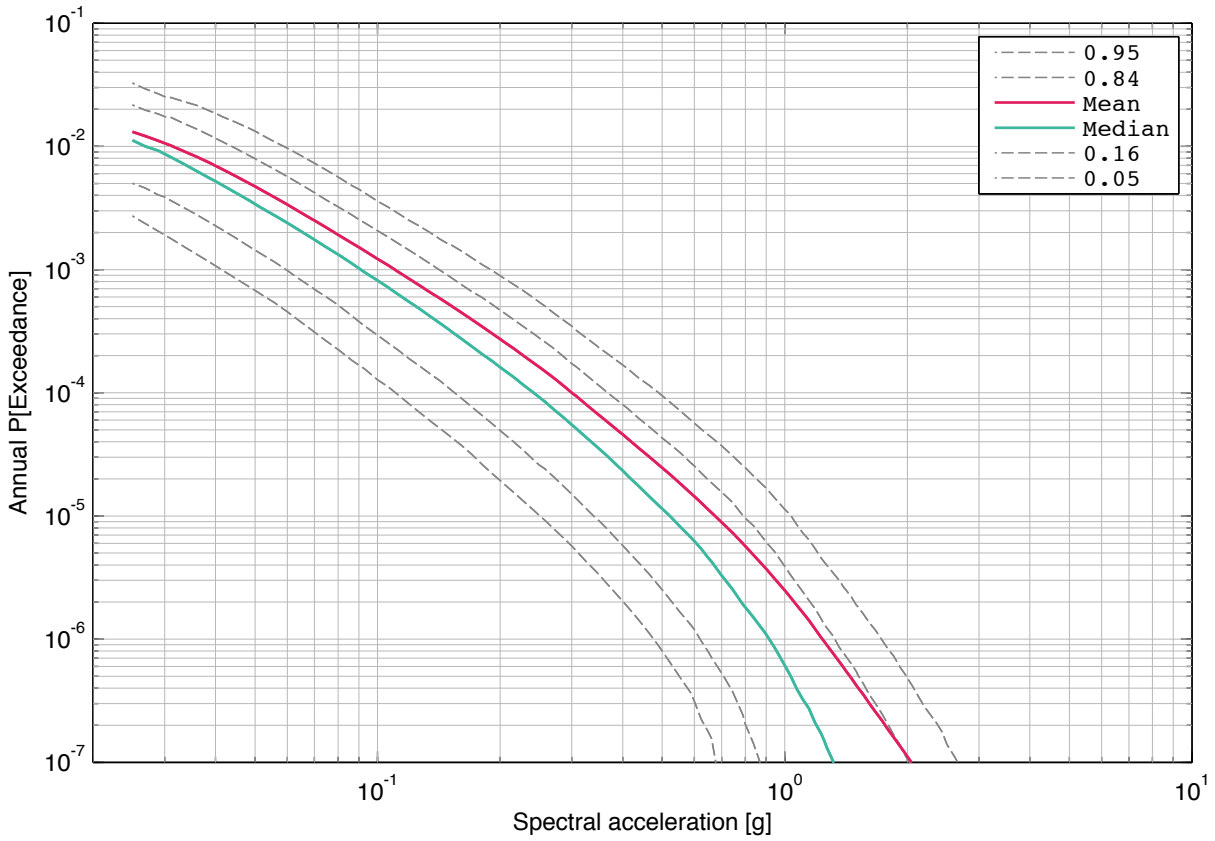

Fig. 4-12.3: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 2.5 Hz.

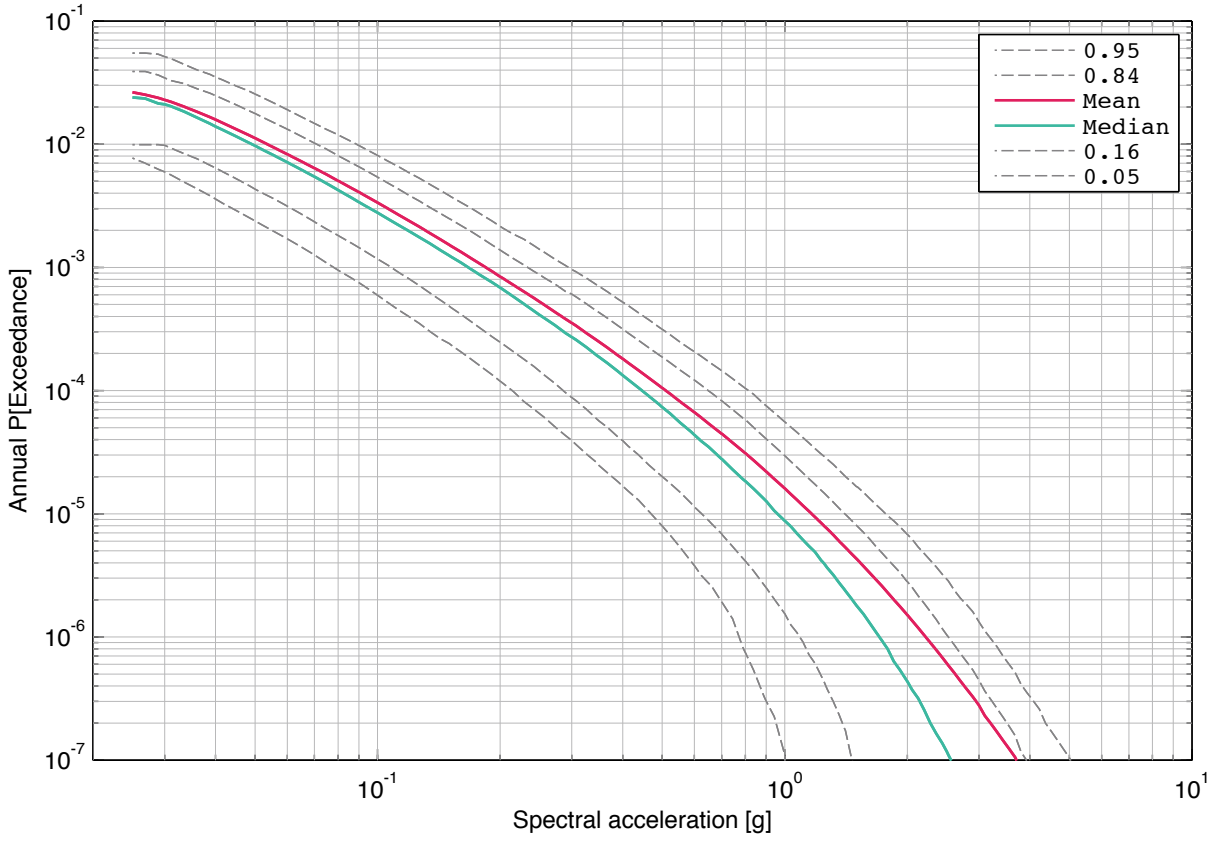

Fig. 4-12.4: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 5 Hz.

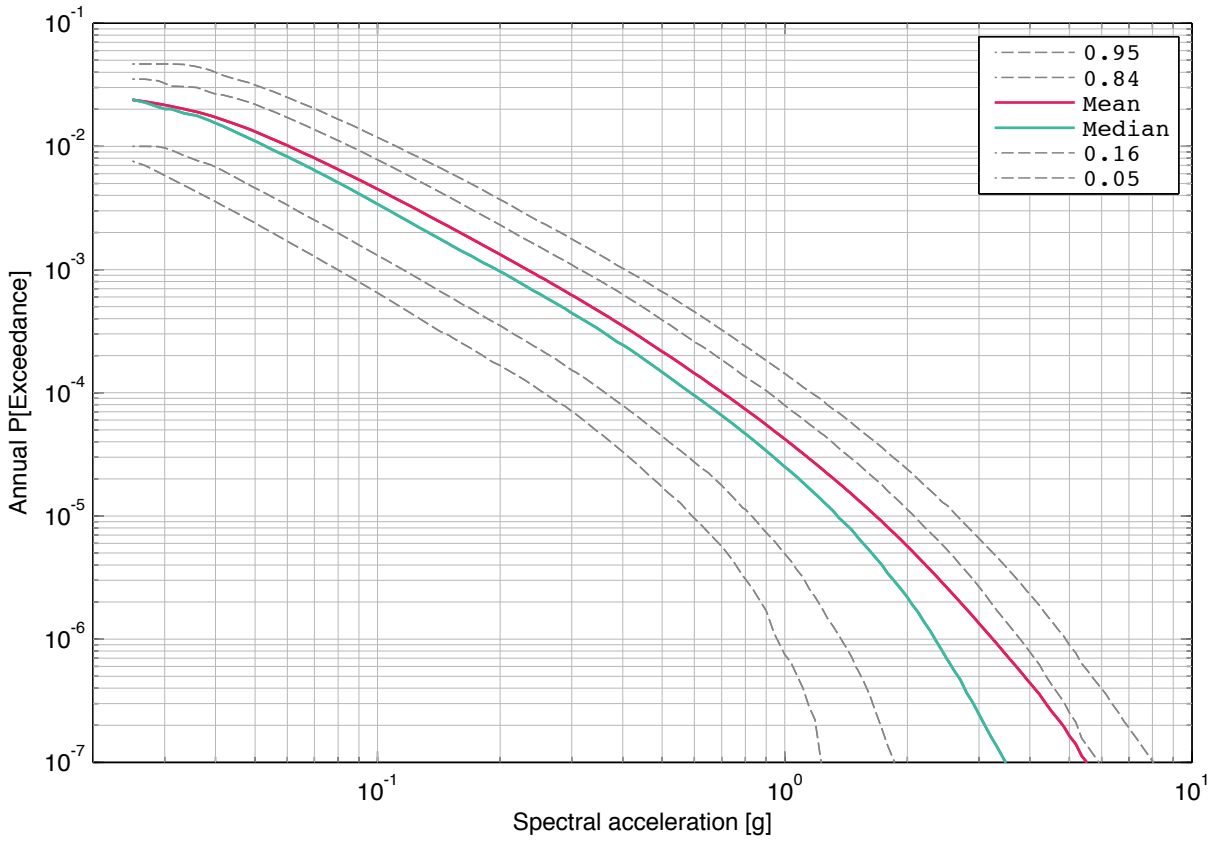

Fig. 4-12.5: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 10 Hz.

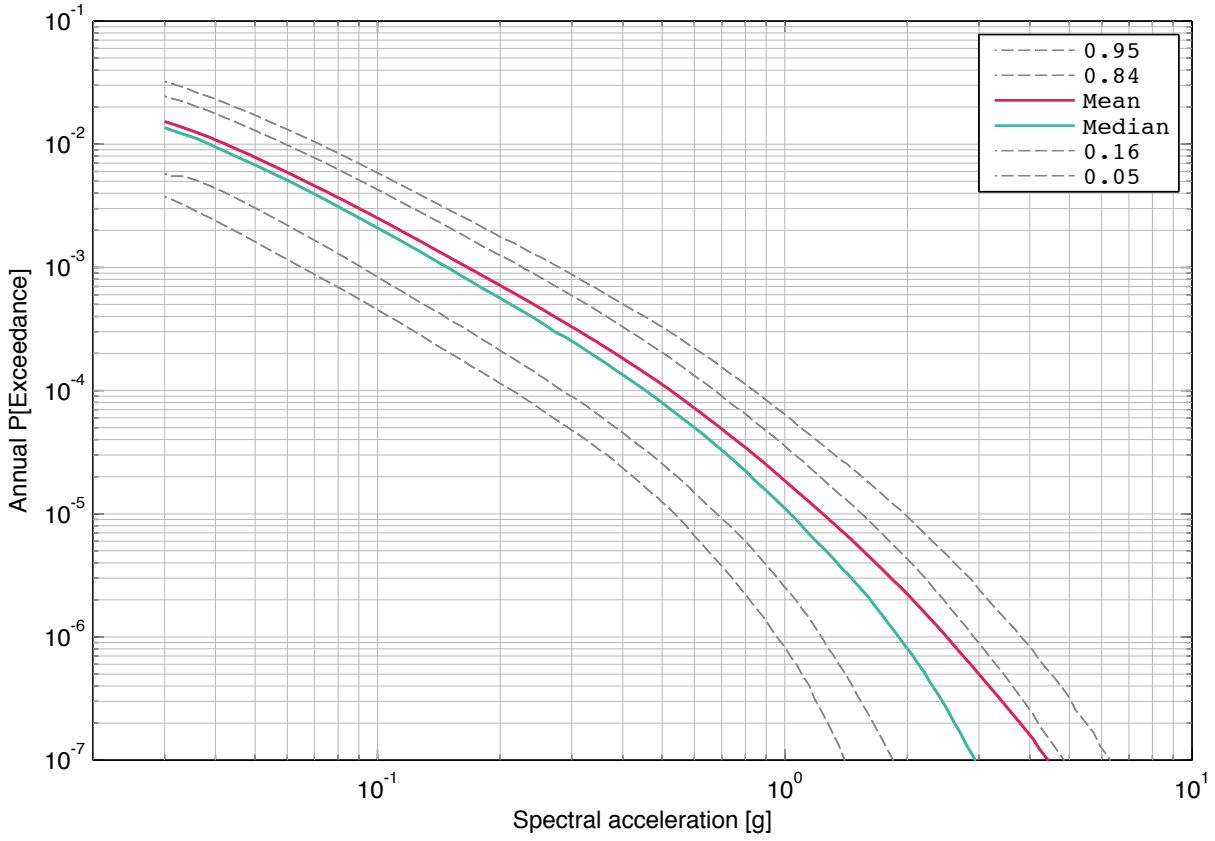

Fig. 4-12.6: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 20 Hz.

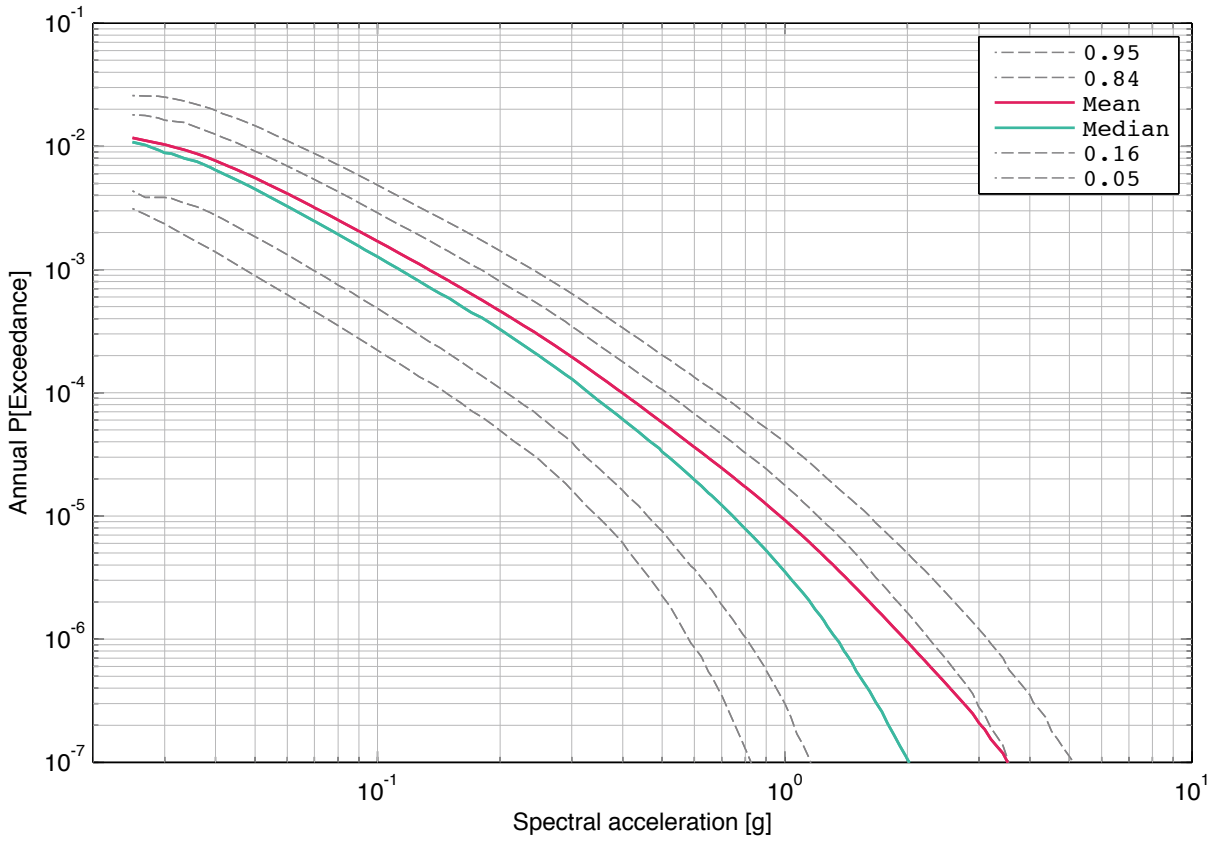

Fig. 4-12.7: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 33 Hz.

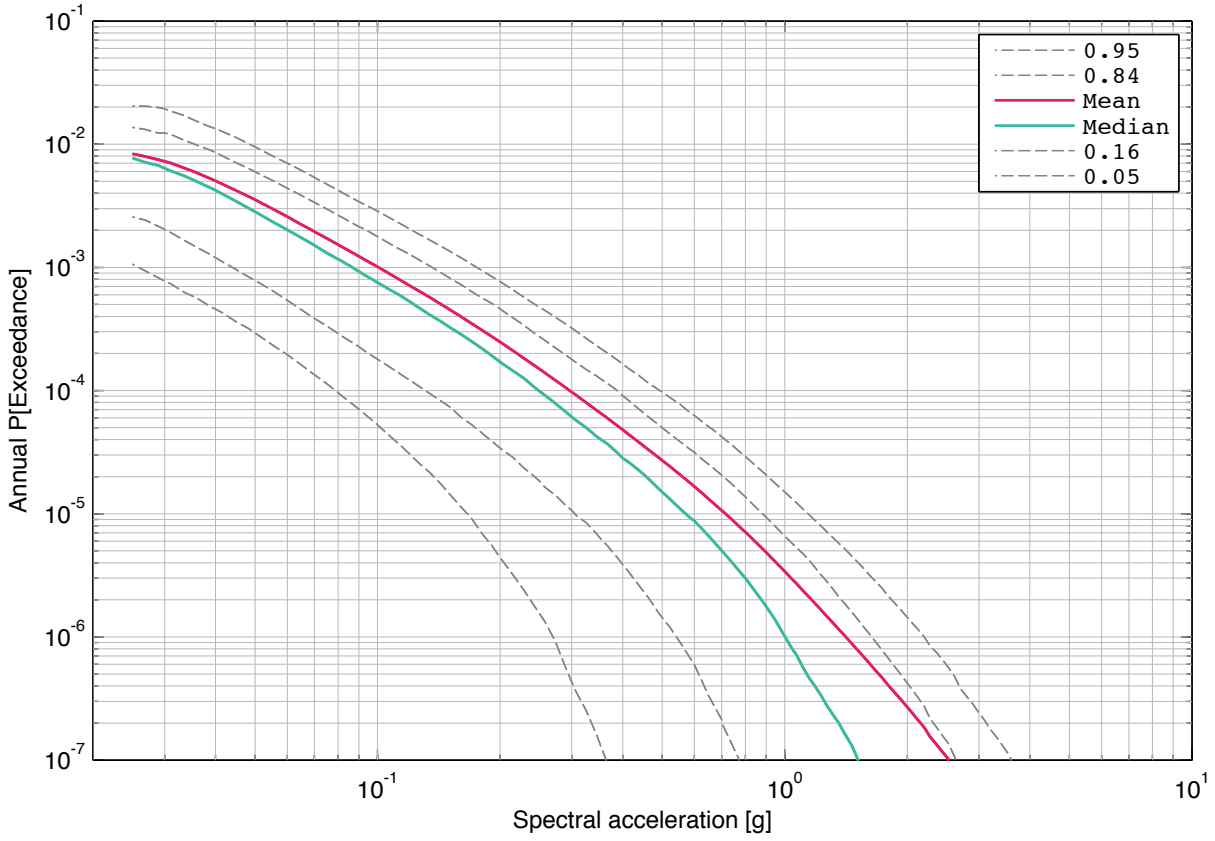

Fig. 4-12.8: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 50 Hz.

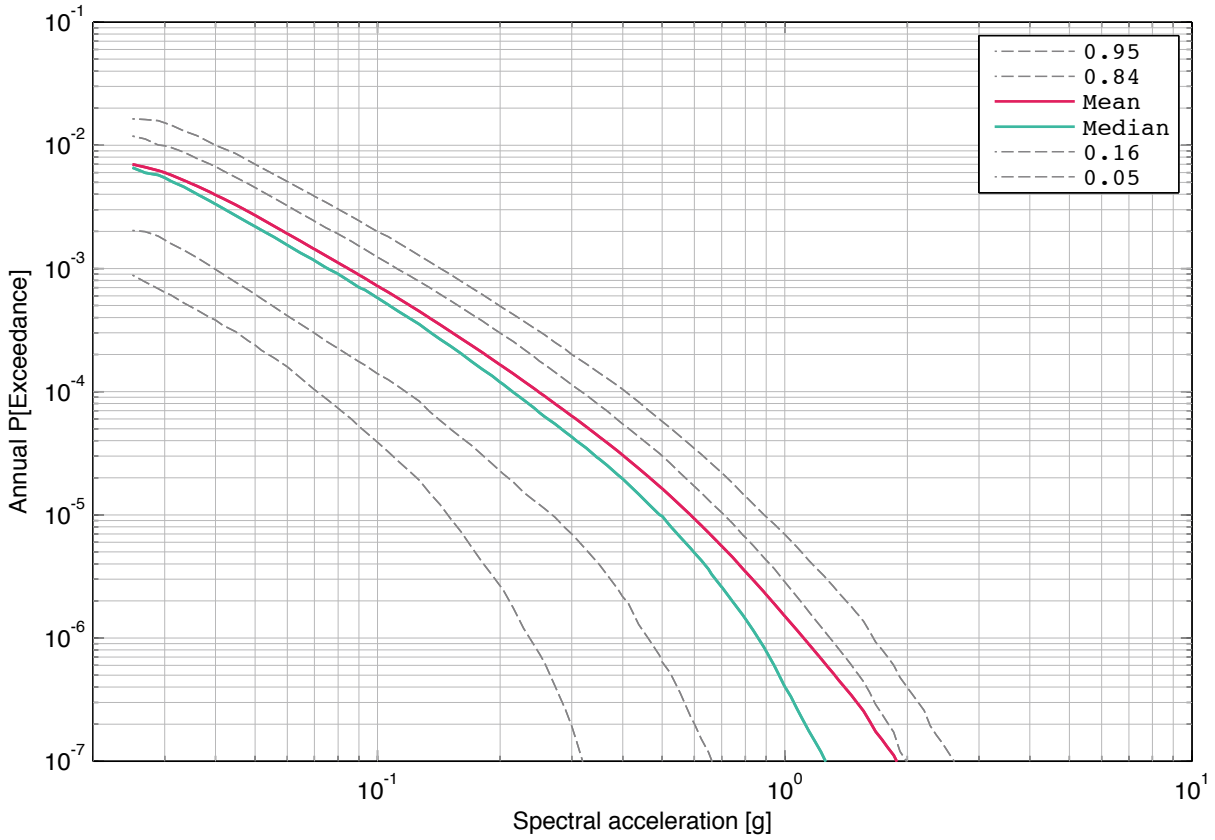

Fig. 4-12.9: Leibstadt, vertical component, soil, -10 m, mean hazard and fractiles, 100 Hz.

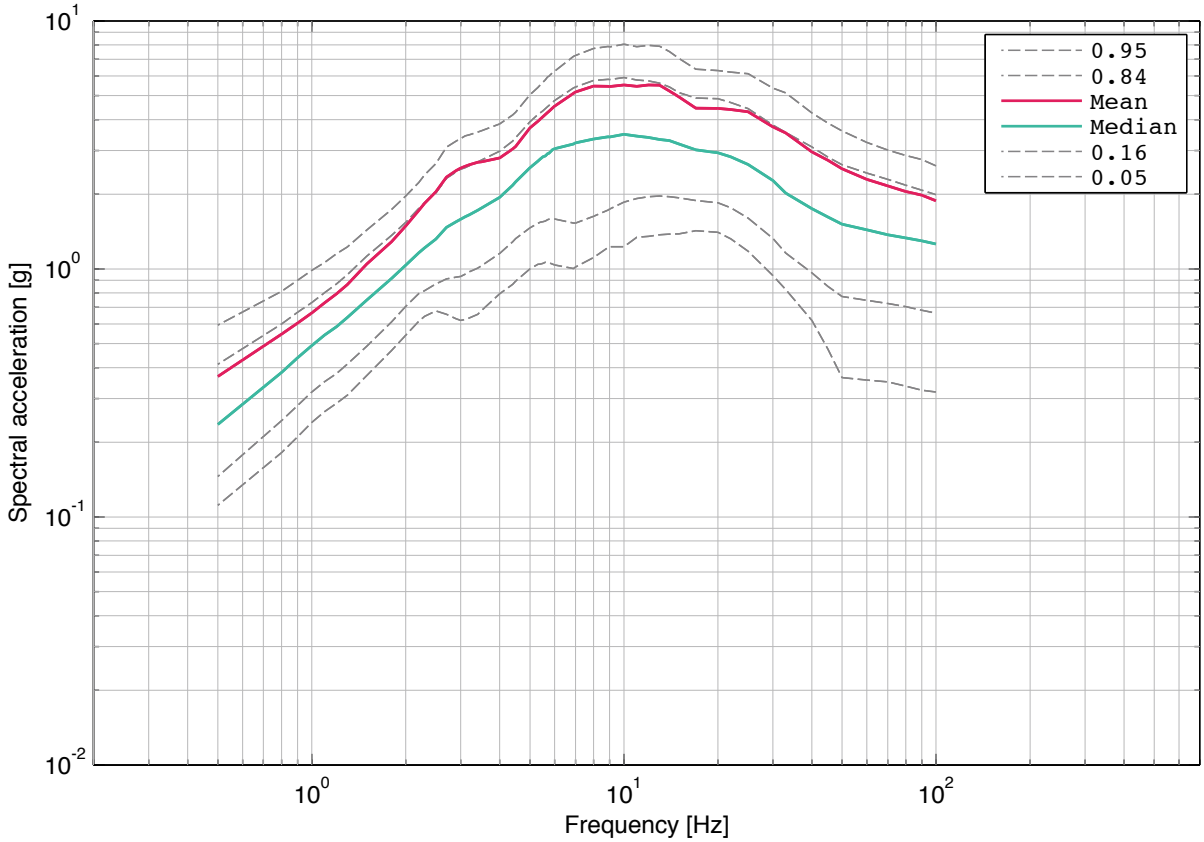

Fig. 4-12.10: Leibstadt, vertical component, soil, -10 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

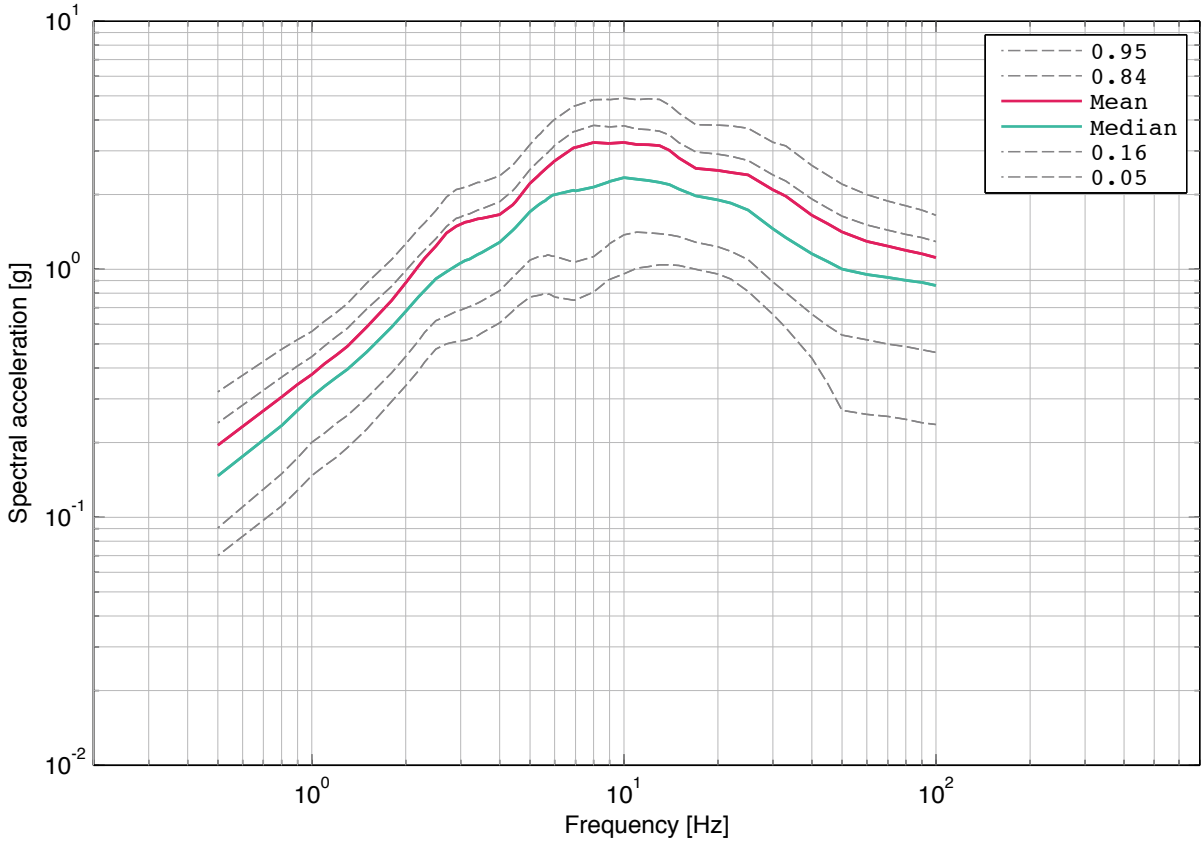

Fig. 4-12.11: Leibstadt, vertical component, soil, -10 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

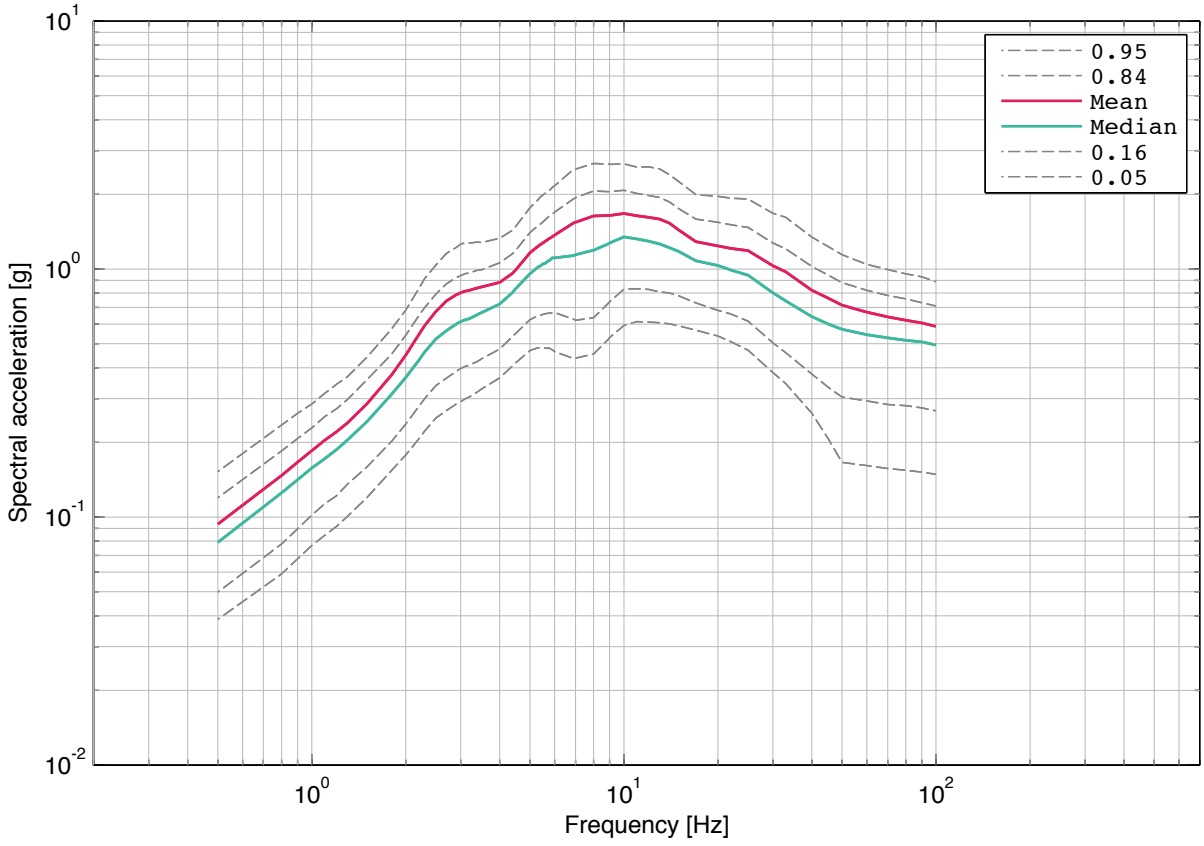

Fig. 4-12.12: Leibstadt, vertical component, soil, -10 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

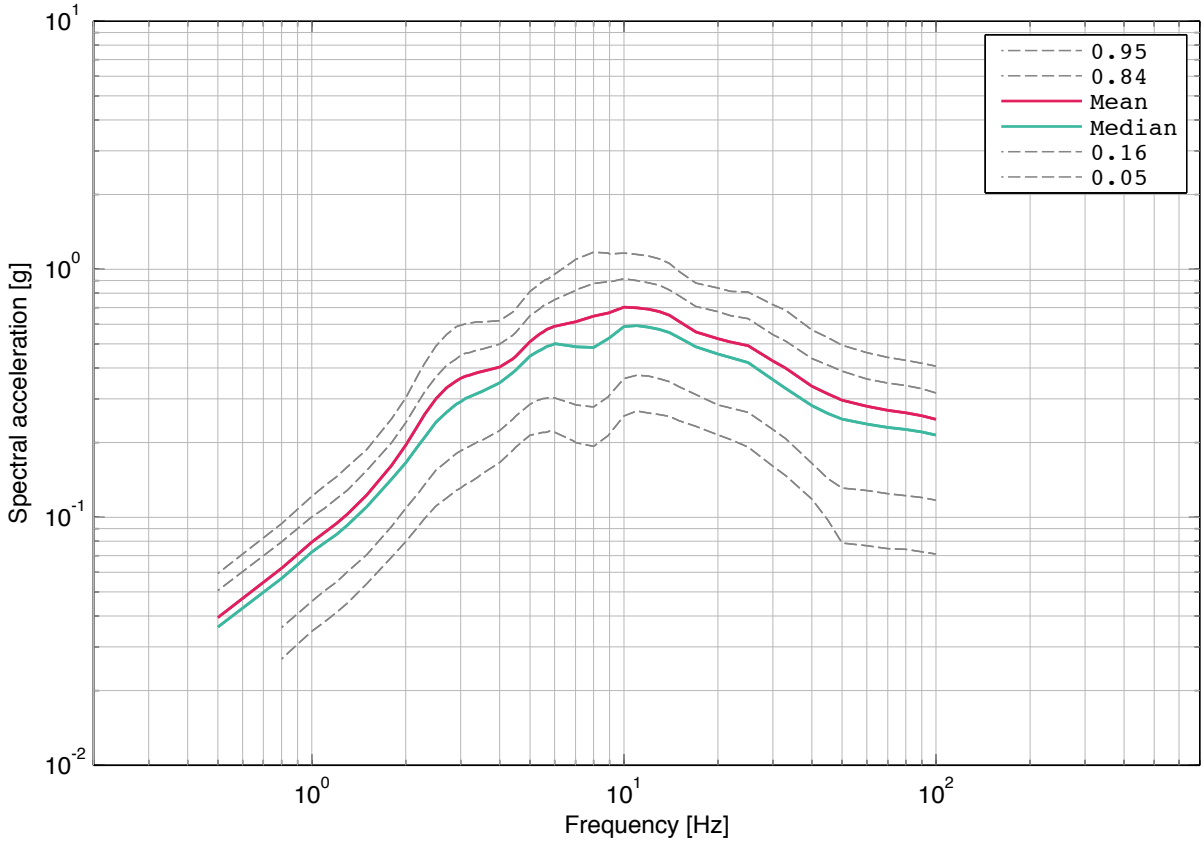

Fig. 4-12.13: Leibstadt, vertical component, soil, -10 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

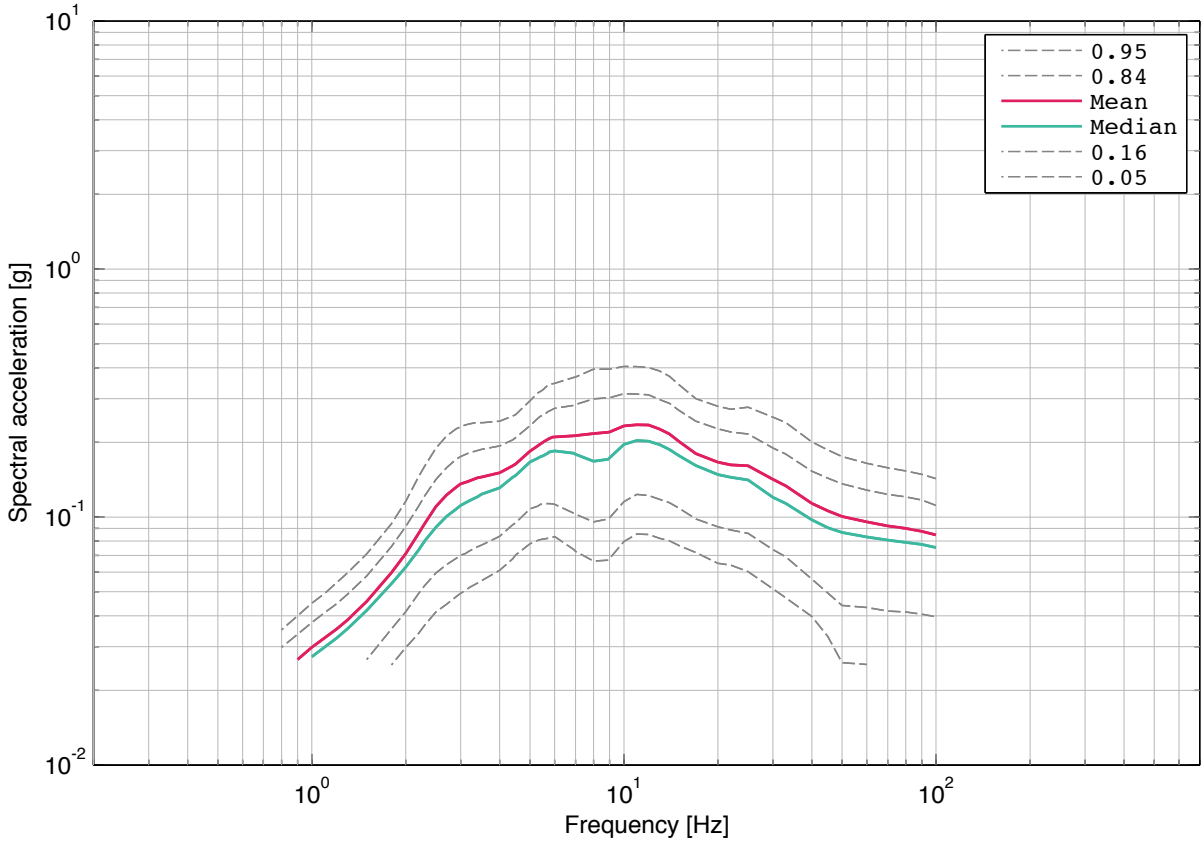

Fig. 4-12.14: Leibstadt, vertical component, soil, -10 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

5 MÜHLEBERG

5.1 Müehleberg, Rock Hazard, Horizontal Component, Surface

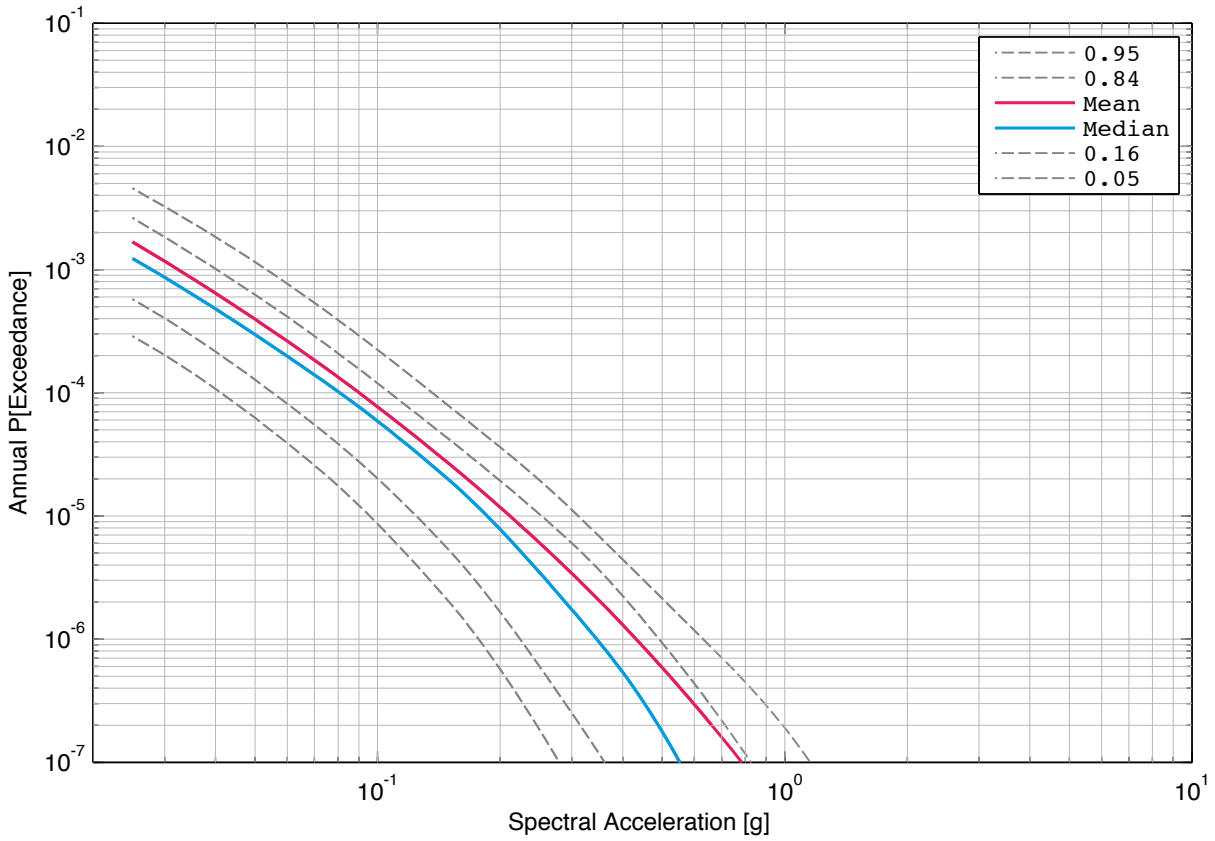

Fig. 5-1.1: Mühleberg, horizontal component, rock, mean hazard and fractiles, 0.5 Hz.

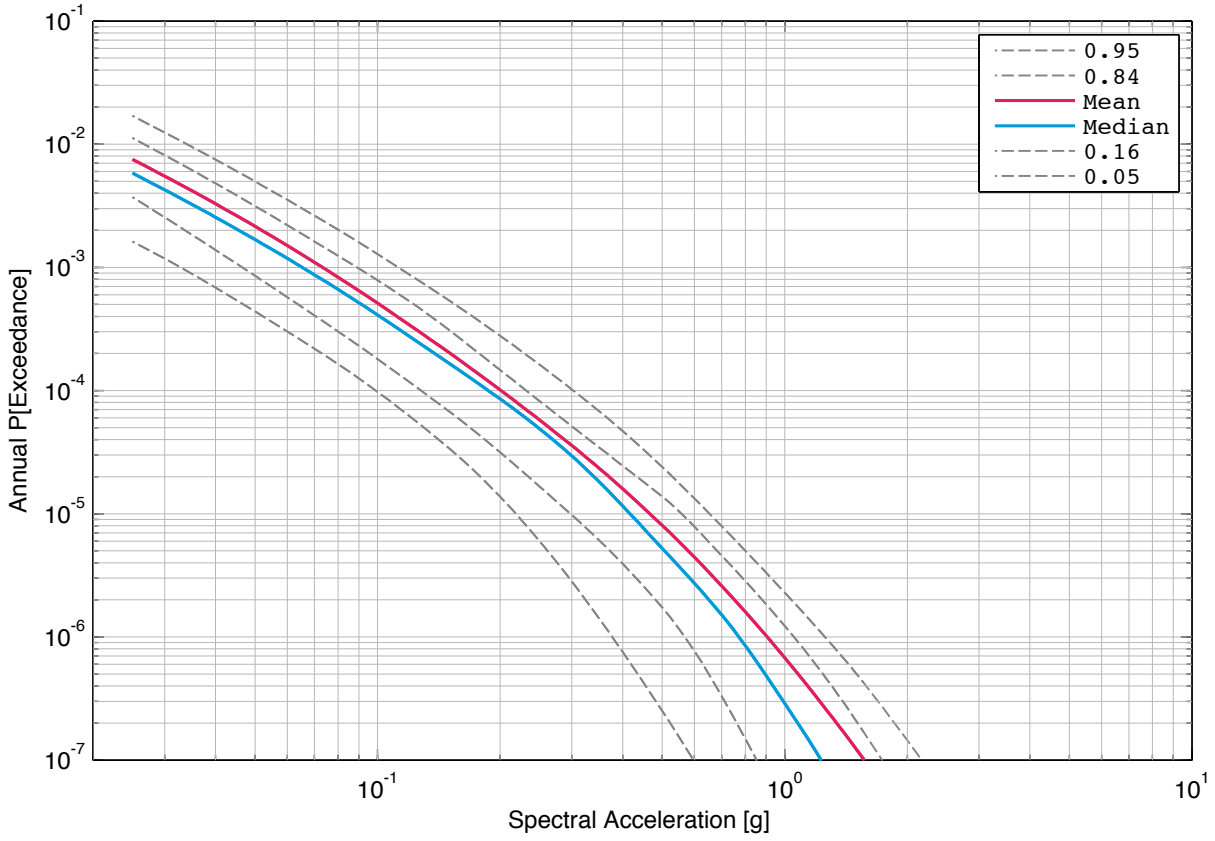

Fig. 5-1.2: Mühleberg, horizontal component, rock, mean hazard and fractiles, 1 Hz.

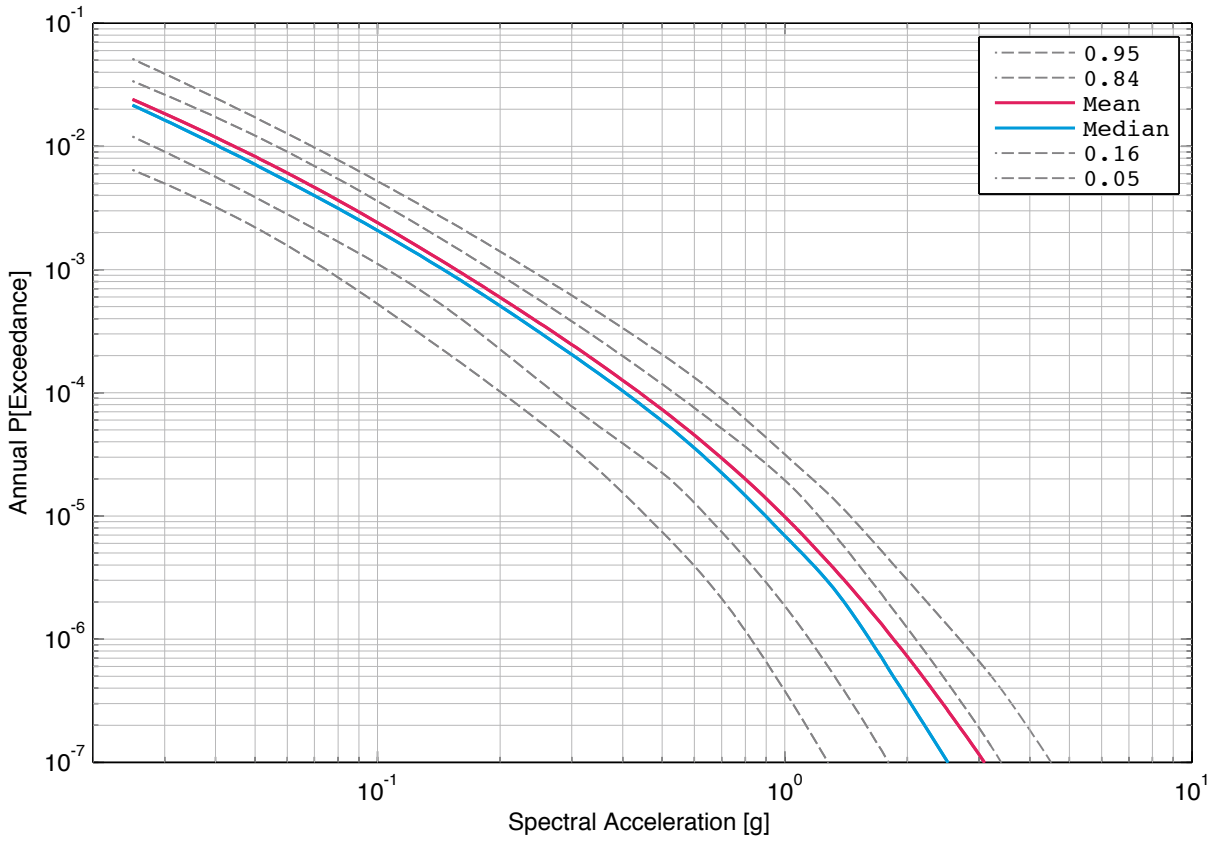

Fig. 5-1.3: Mühleberg, horizontal component, rock, mean hazard and fractiles, 2.5 Hz.

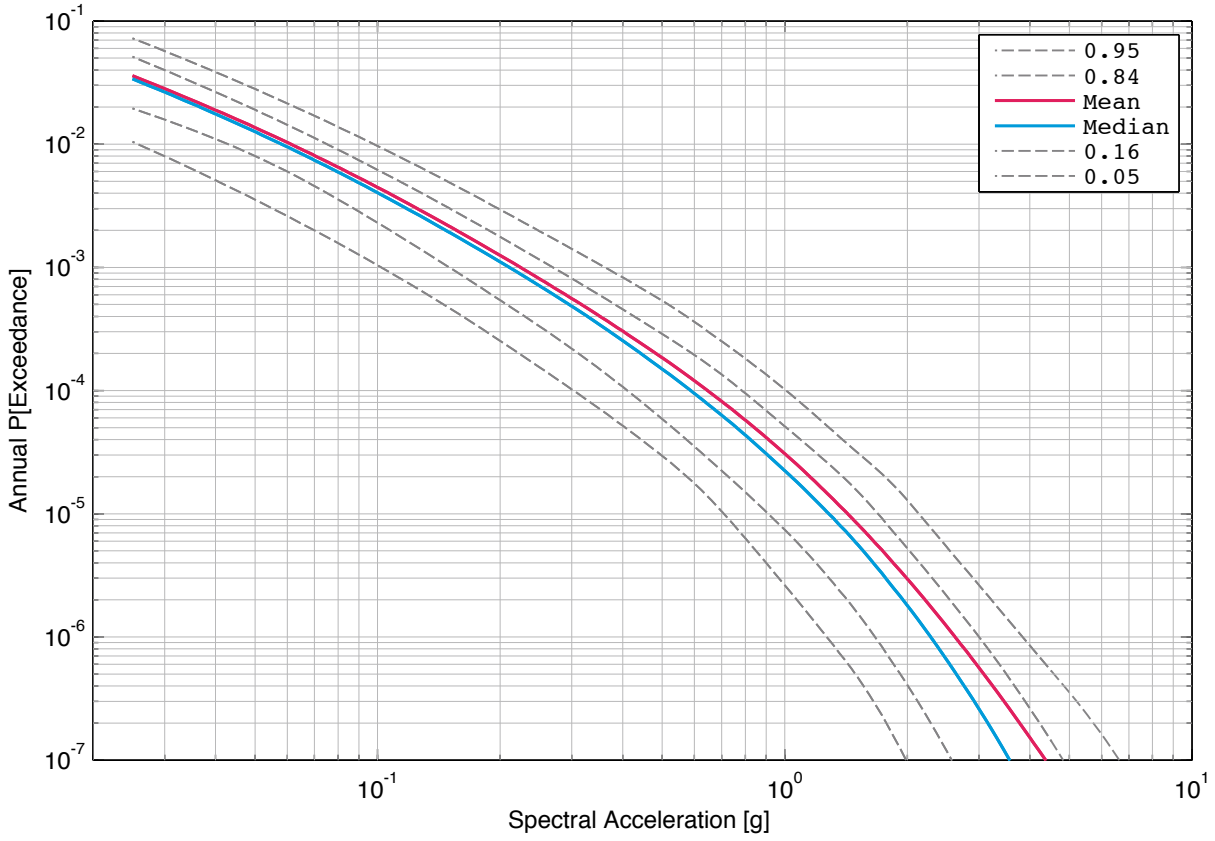

Fig. 5-1.4: Mühleberg, horizontal component, rock, mean hazard and fractiles, 5 Hz.

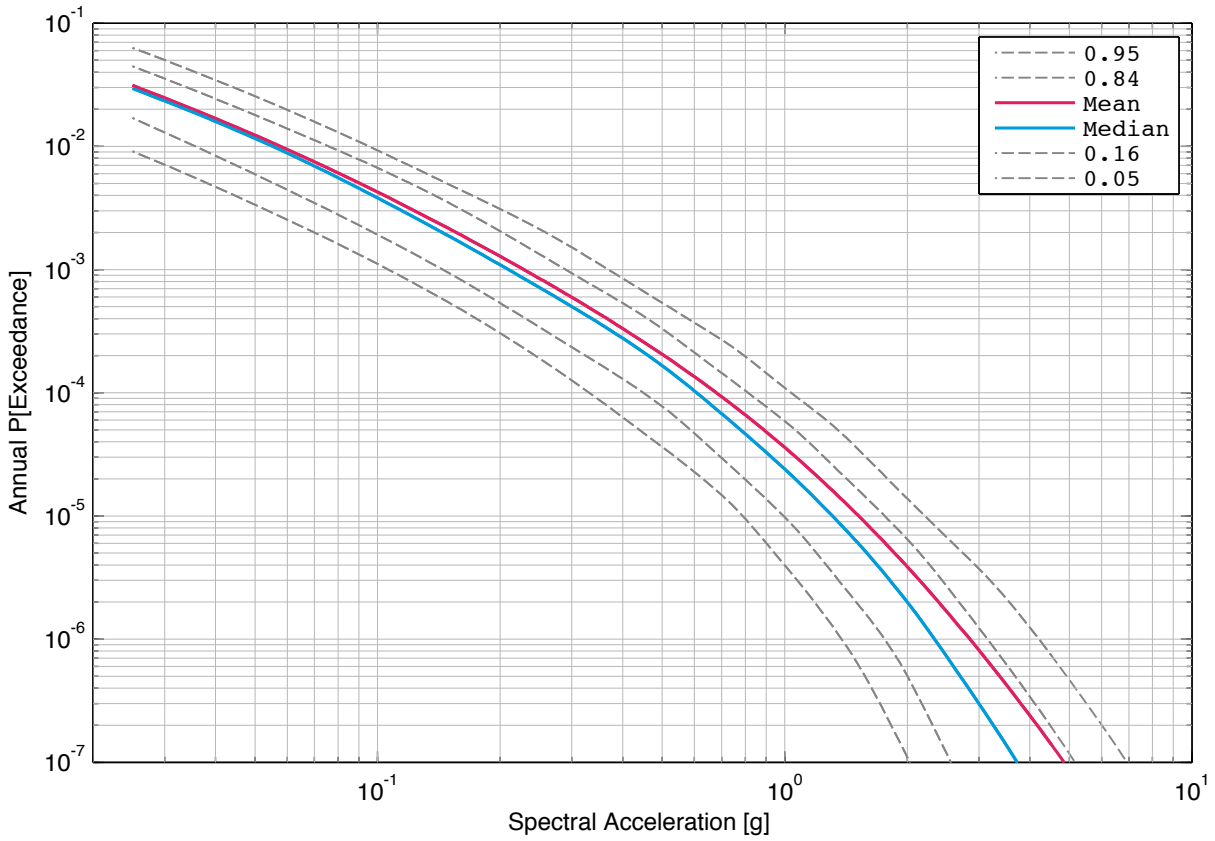

Fig. 5-1.5: Mühleberg, horizontal component, rock, mean hazard and fractiles, 10 Hz.

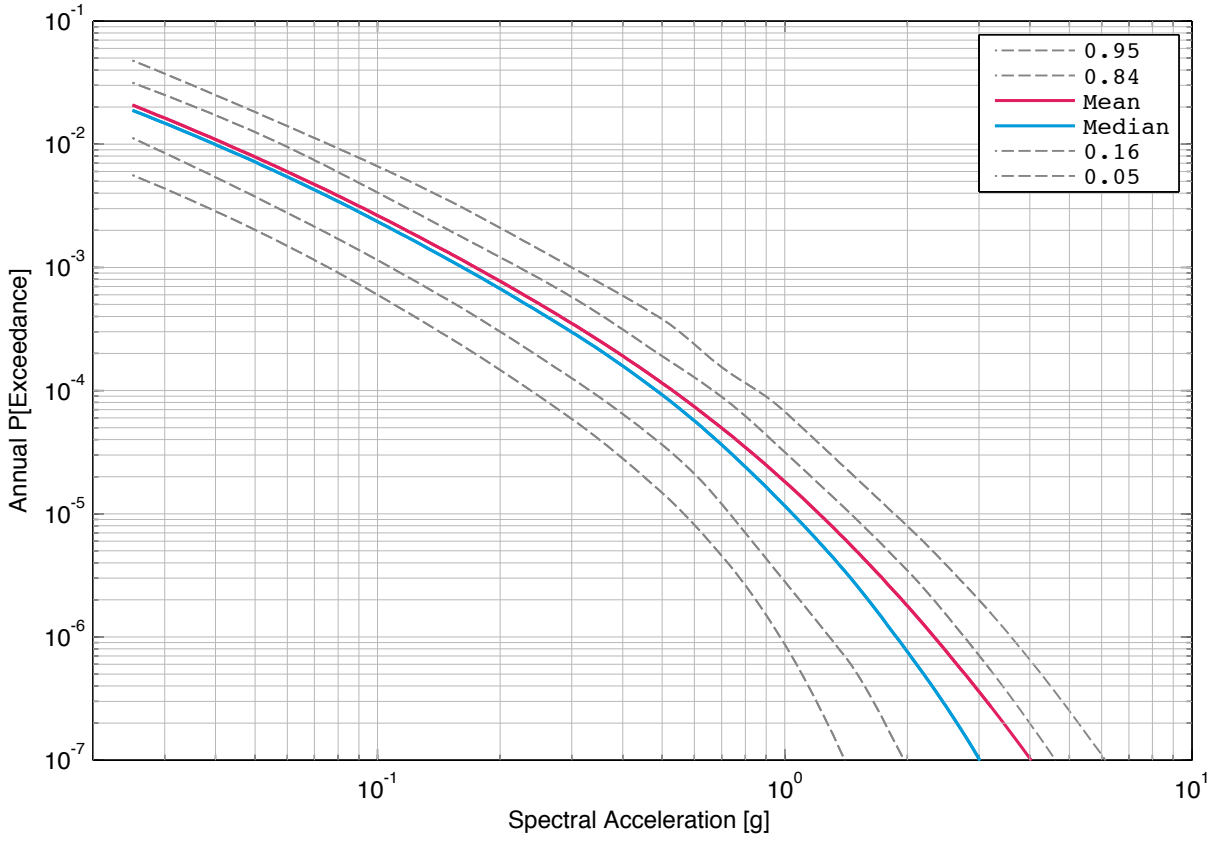

Fig. 5-1.6: Mühleberg, horizontal component, rock, mean hazard and fractiles, 20 Hz.

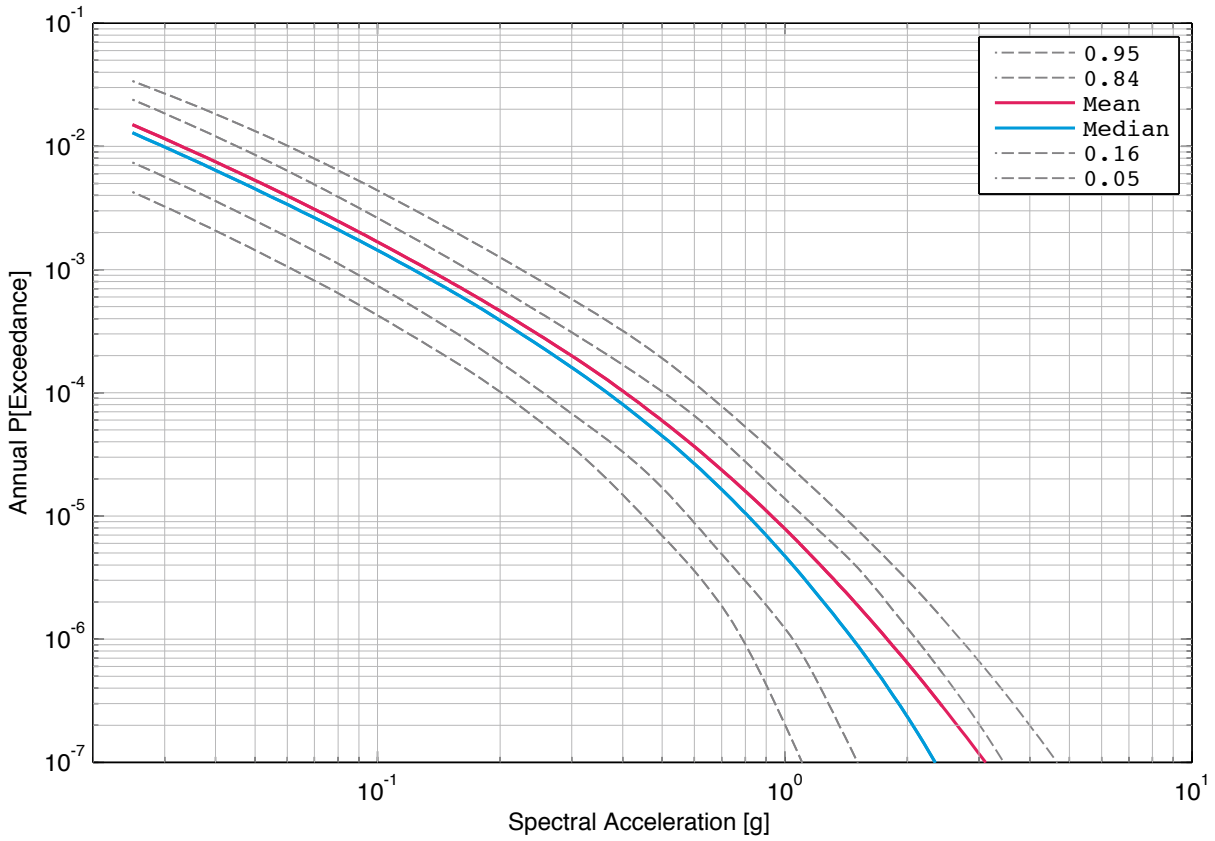

Fig. 5-1.7: Mühleberg, horizontal component, rock, mean hazard and fractiles, 33 Hz.

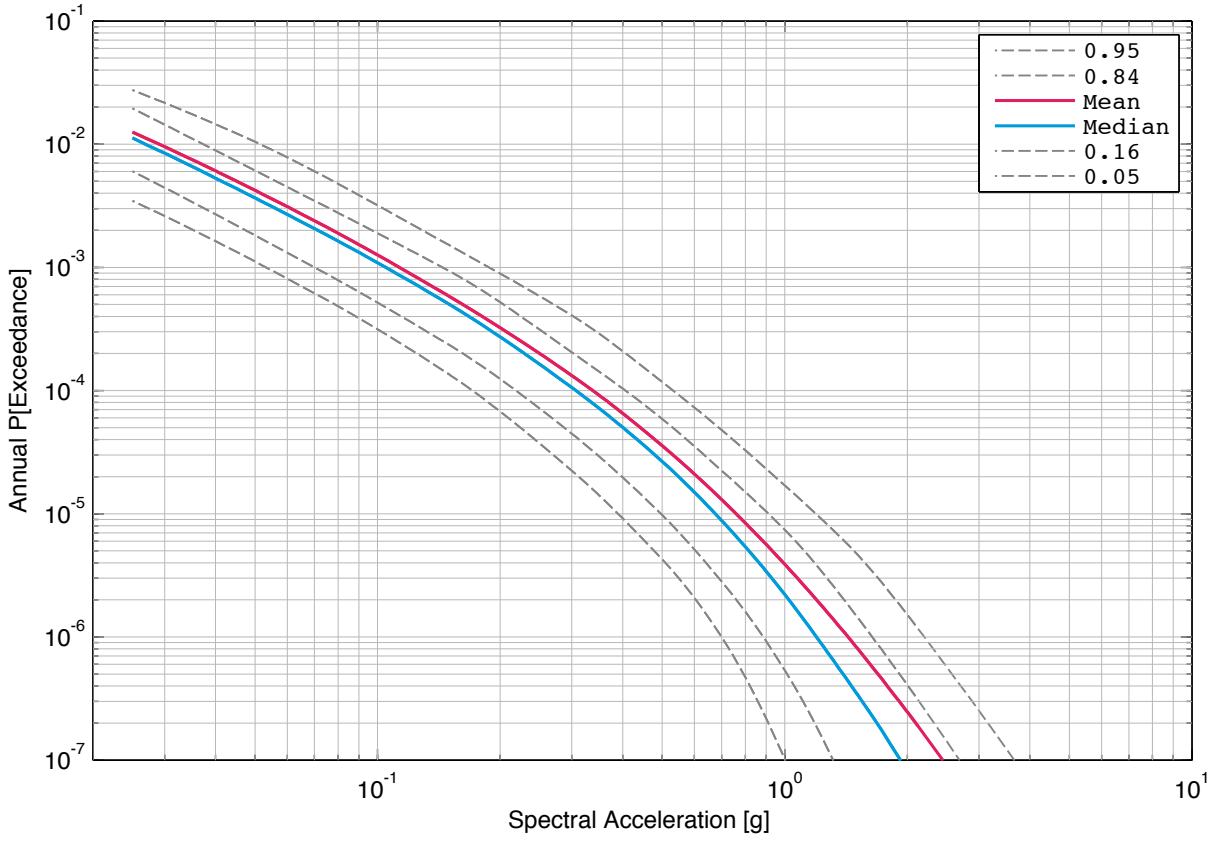

Fig. 5-1.8: Mühleberg, horizontal component, rock, mean hazard and fractiles, 50 Hz.

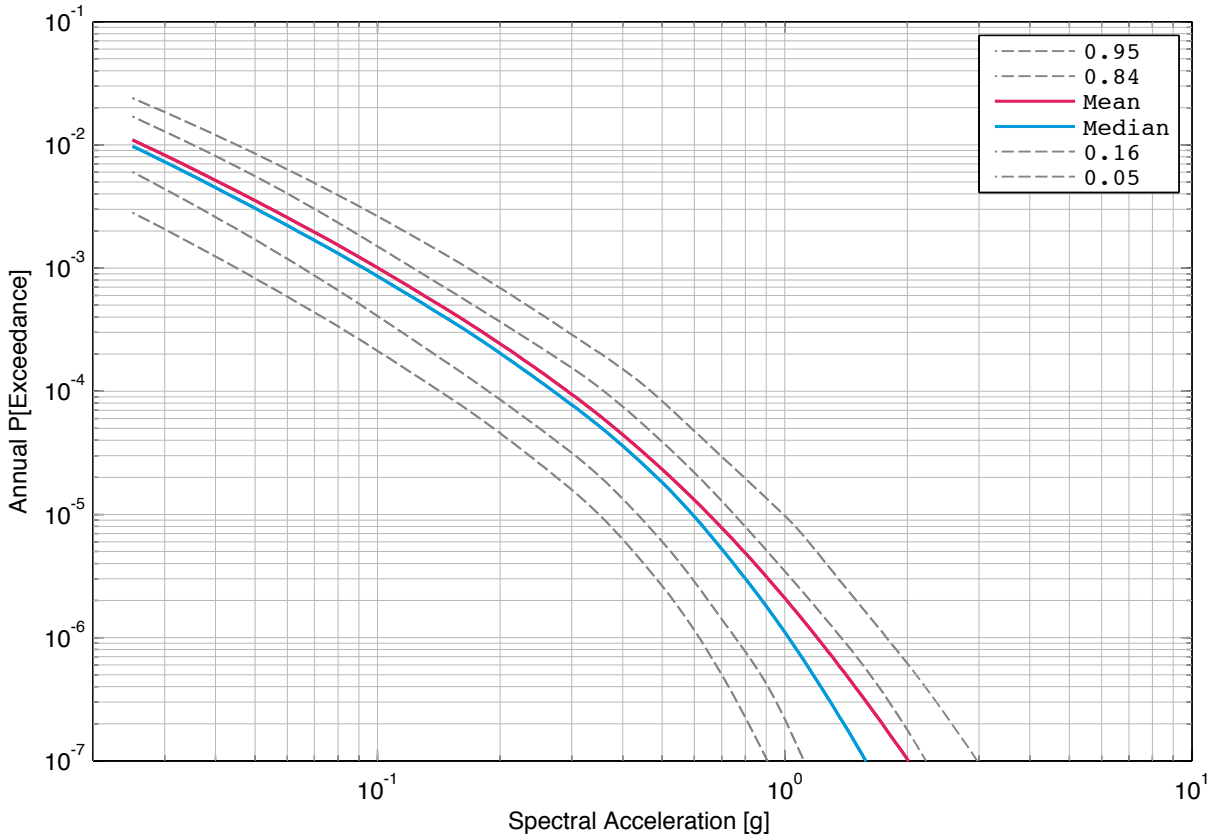

Fig. 5-1.9: Mühleberg, horizontal component, rock, mean hazard and fractiles, 100 Hz.

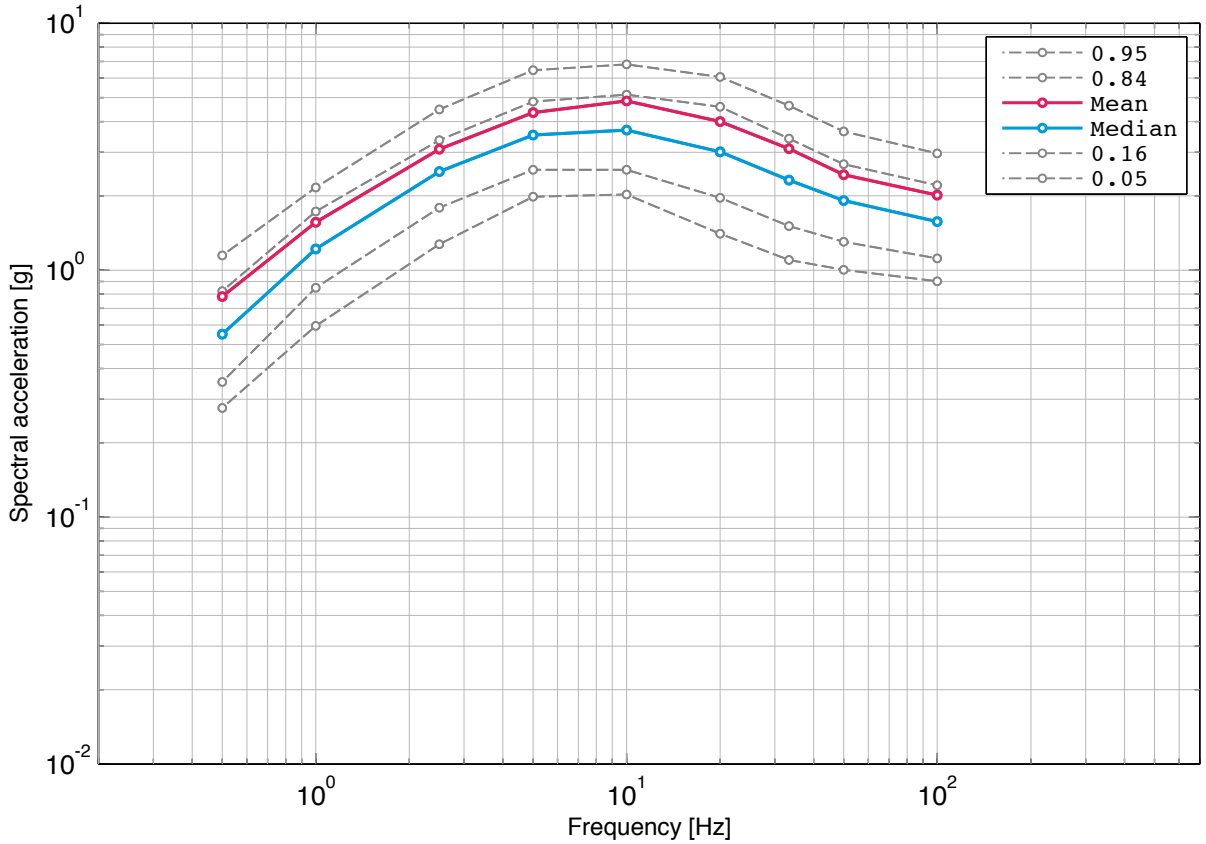

Fig. 5-1.10: Mühleberg, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-07 and 5% damping.

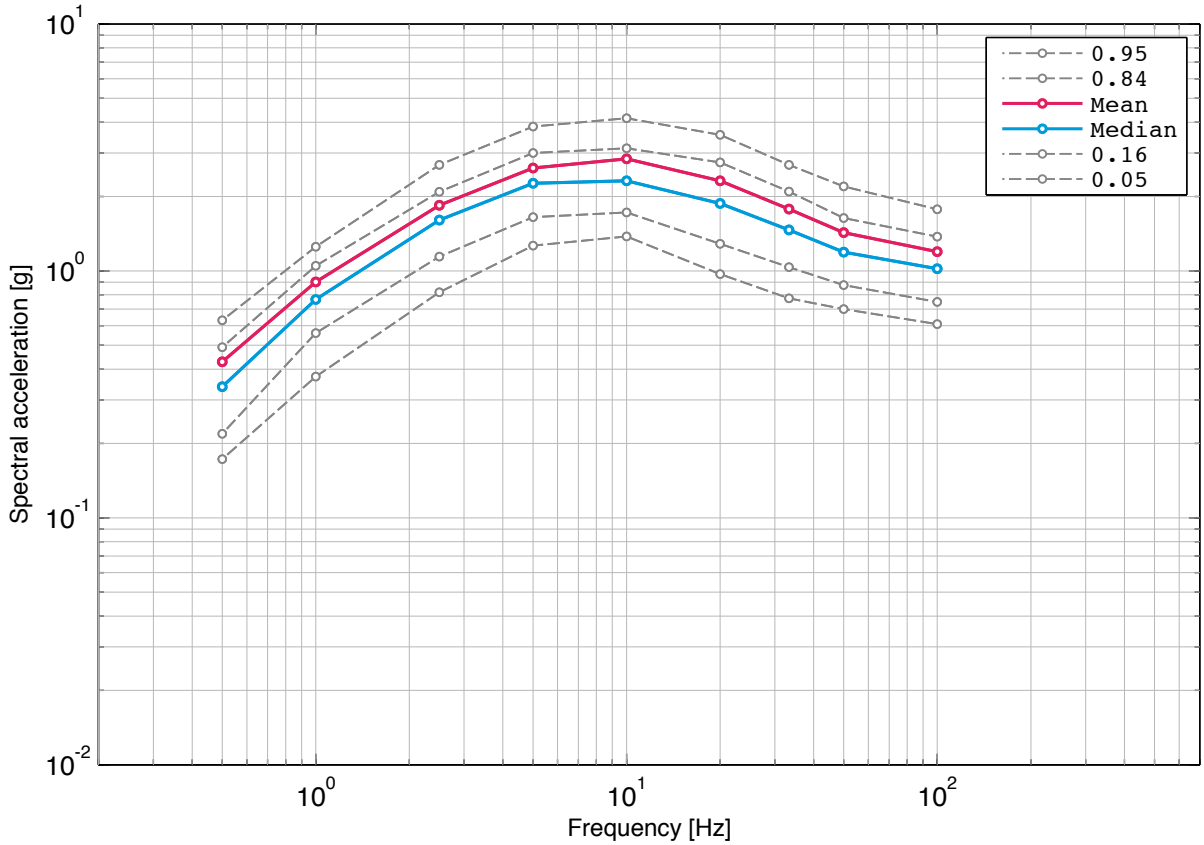

Fig. 5-1.11: Mühleberg, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-06 and 5% damping.

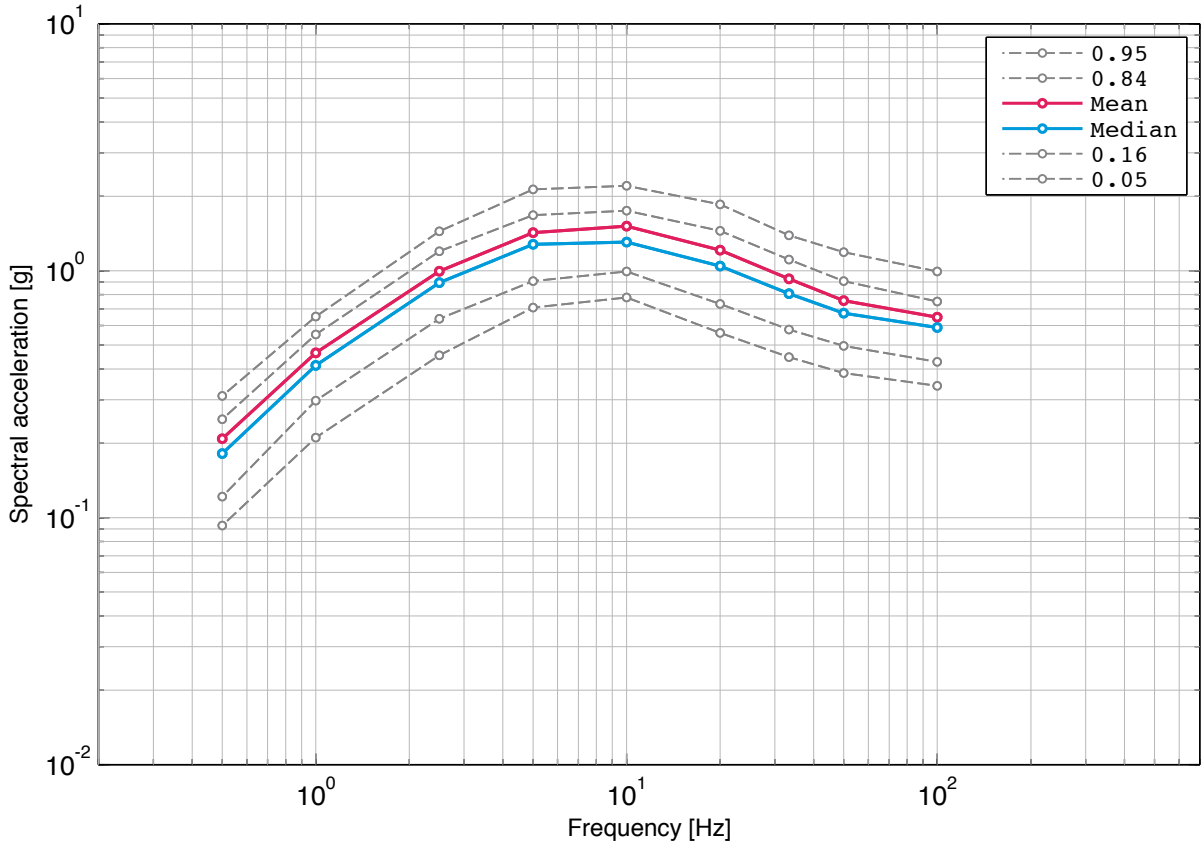

Fig. 5-1.12: Mühleberg, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-05 and 5% damping.

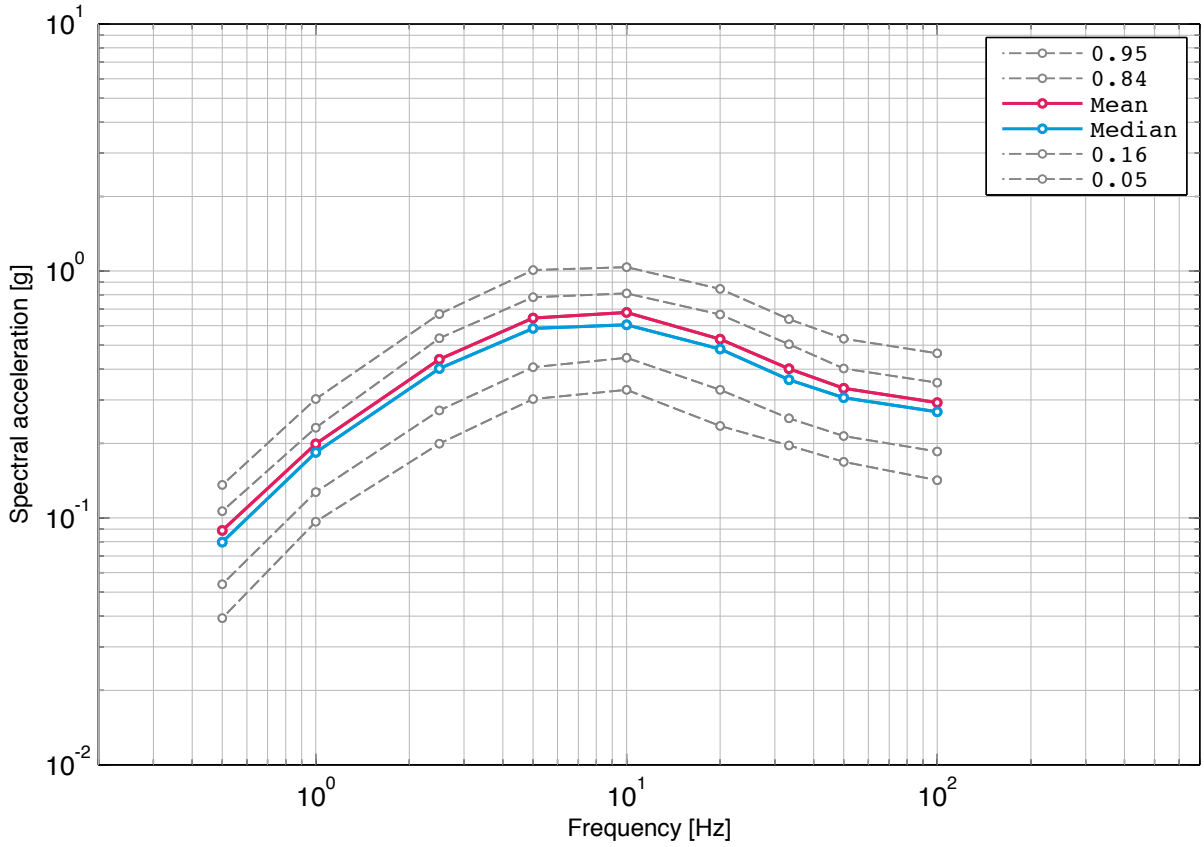

Fig. 5-1.13: Mühleberg, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-04 and 5% damping.

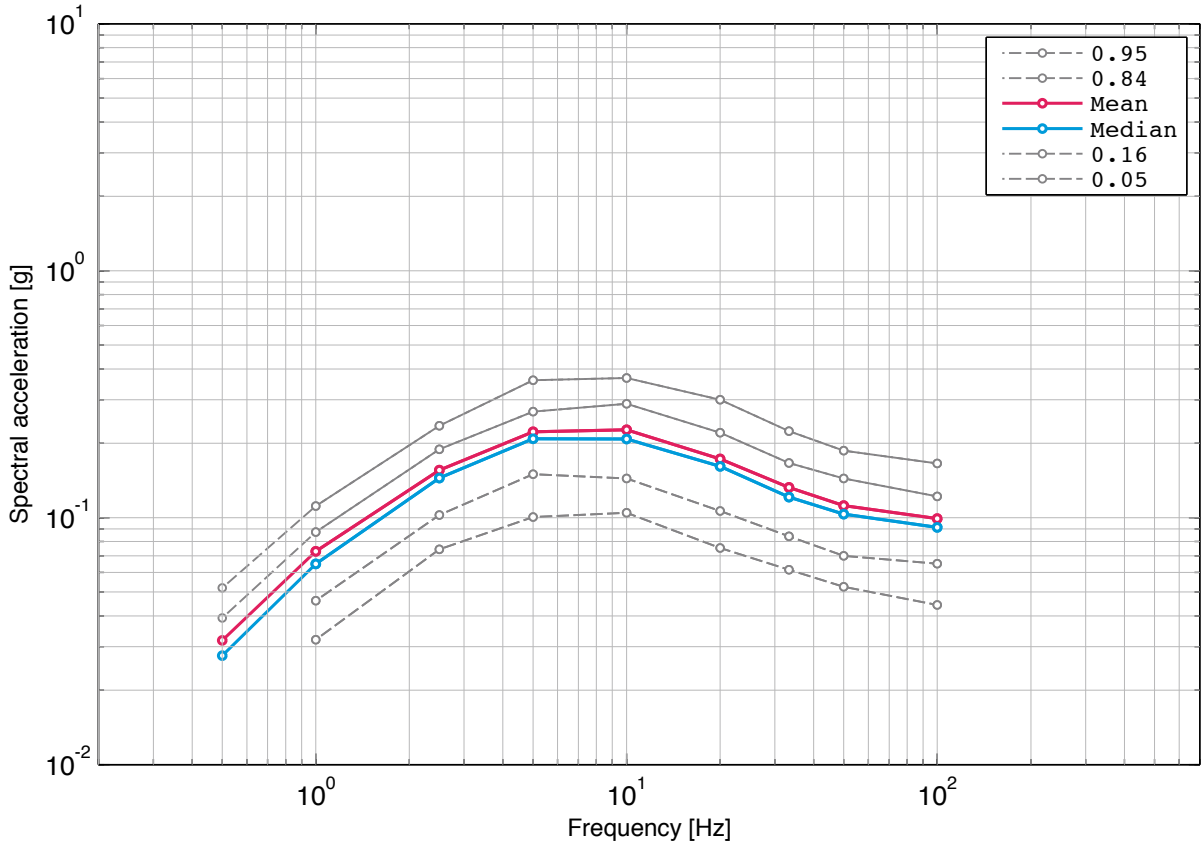

Fig. 5-1.14: Mühleberg, horizontal component, rock, uniform hazard spectra for an annual probability of exceedance of 1E-03 and 5% damping.

5.2 Mühleberg, Soil Hazard, Horizontal Component, Surface

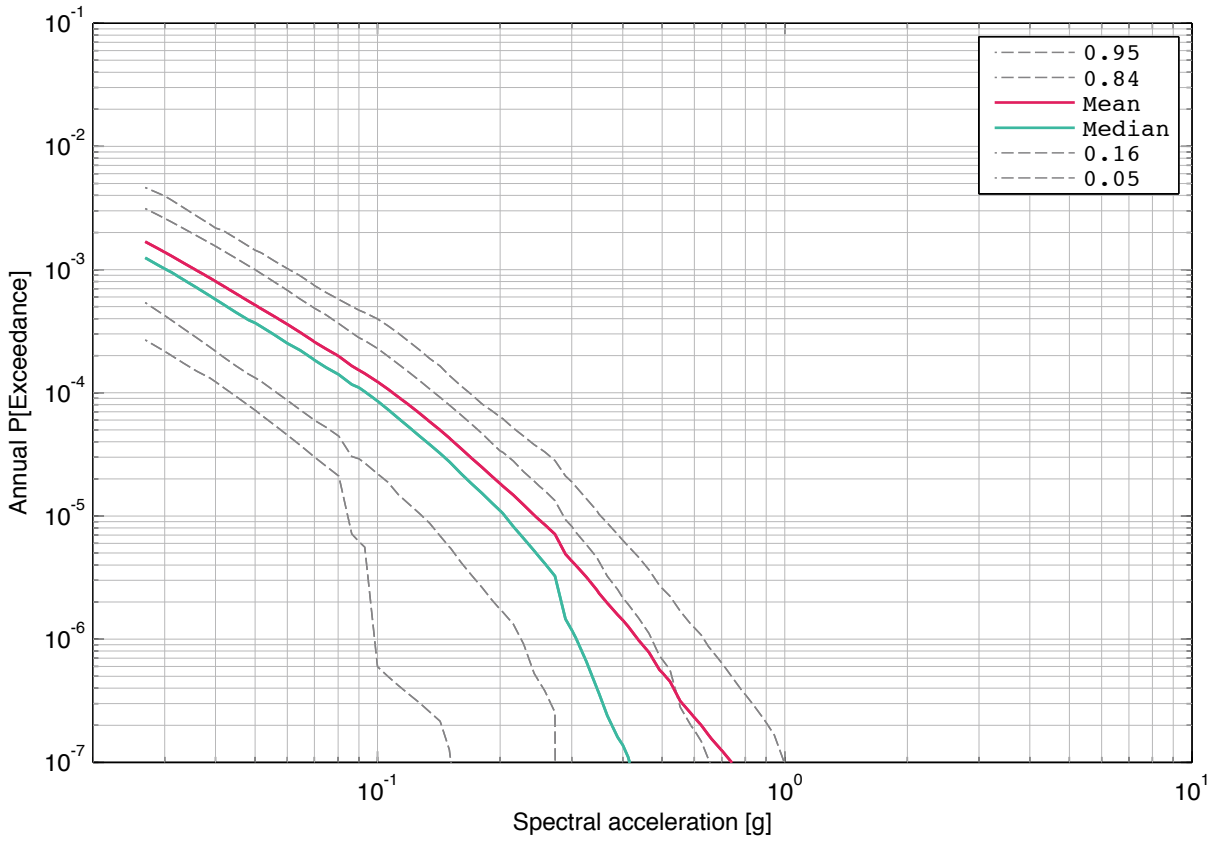

Fig. 5-2.1: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 0.5 Hz.

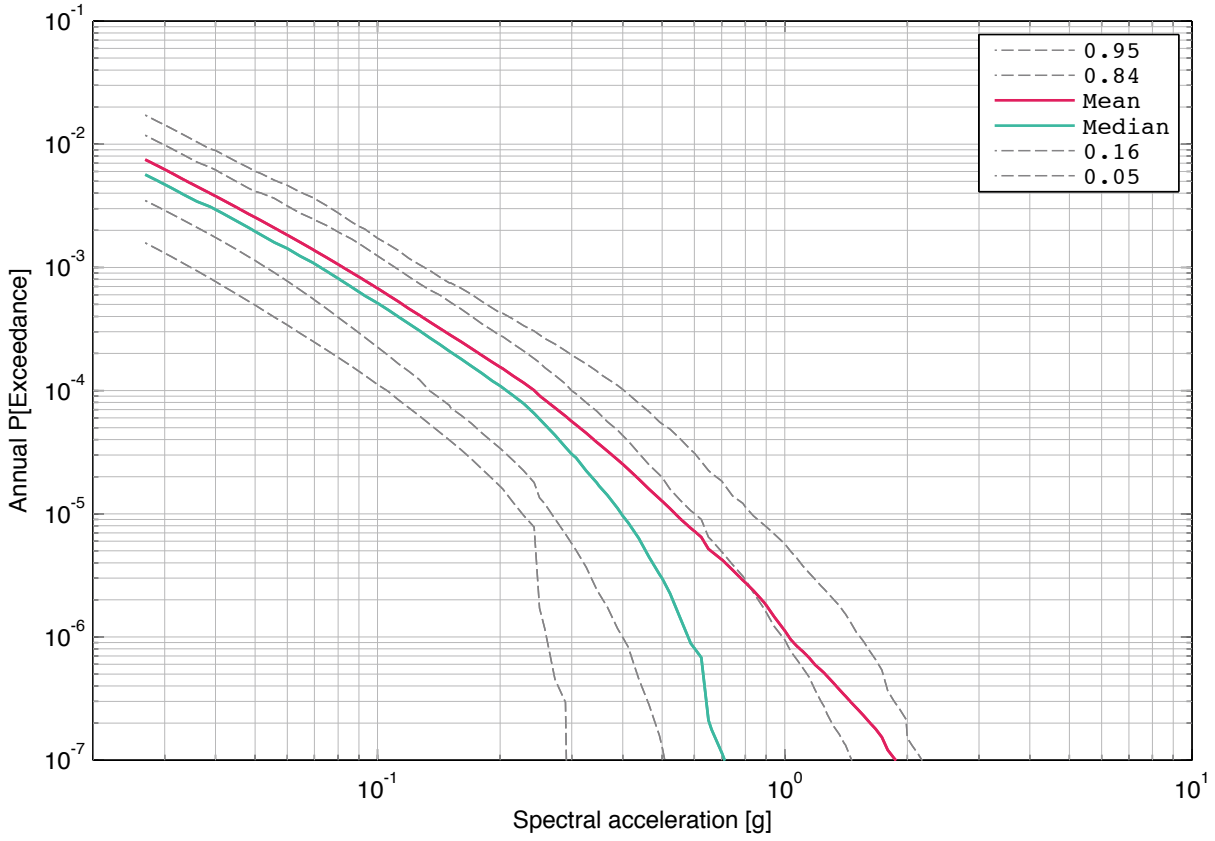

Fig. 5-2.2: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 1 Hz.

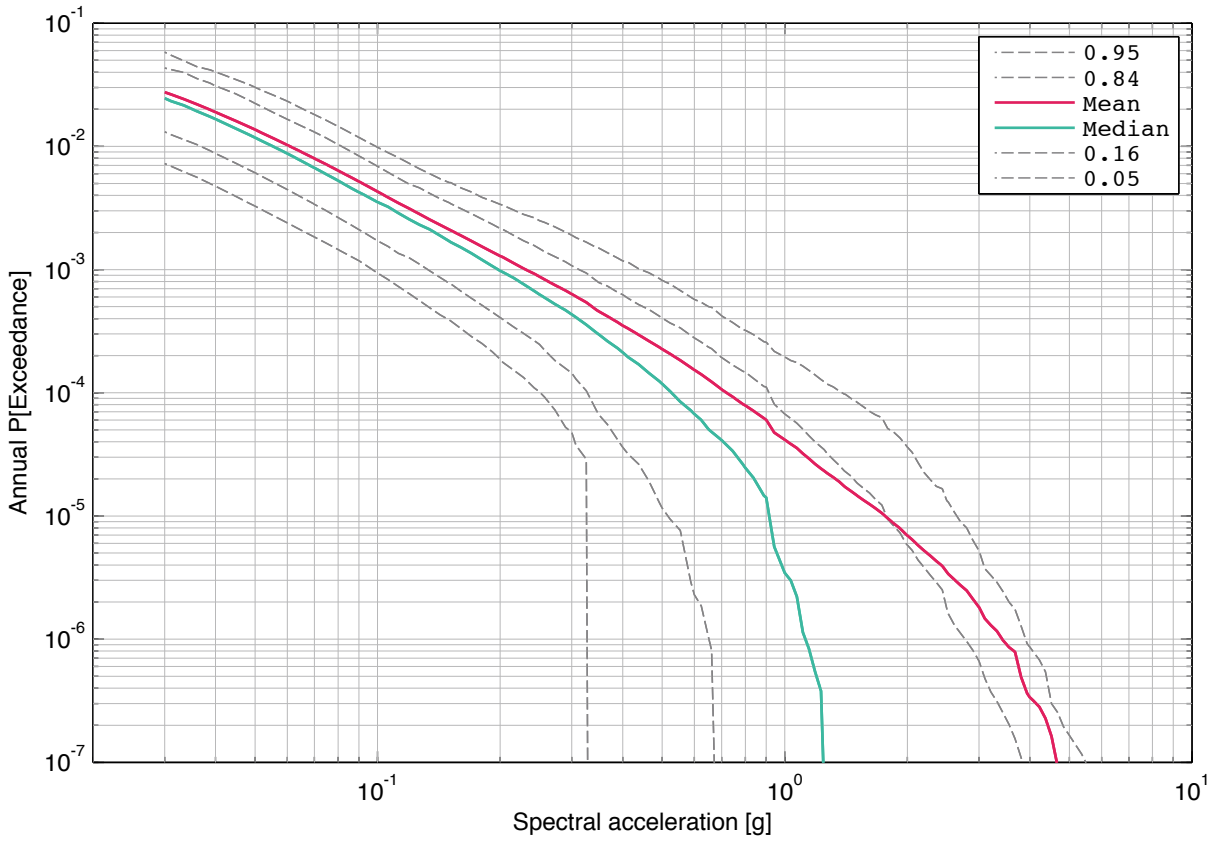

Fig. 5-2.3: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 2.5 Hz.

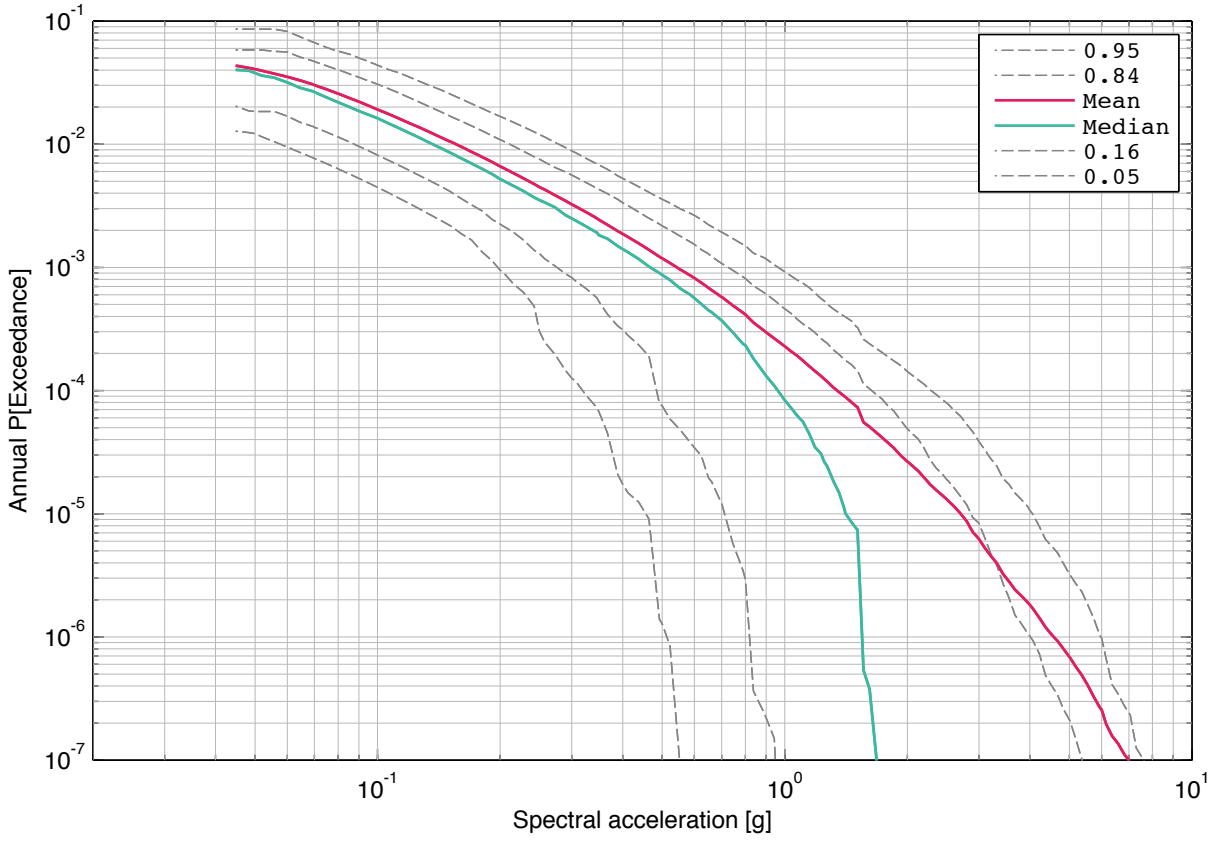

Fig. 5-2.4: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 5 Hz.

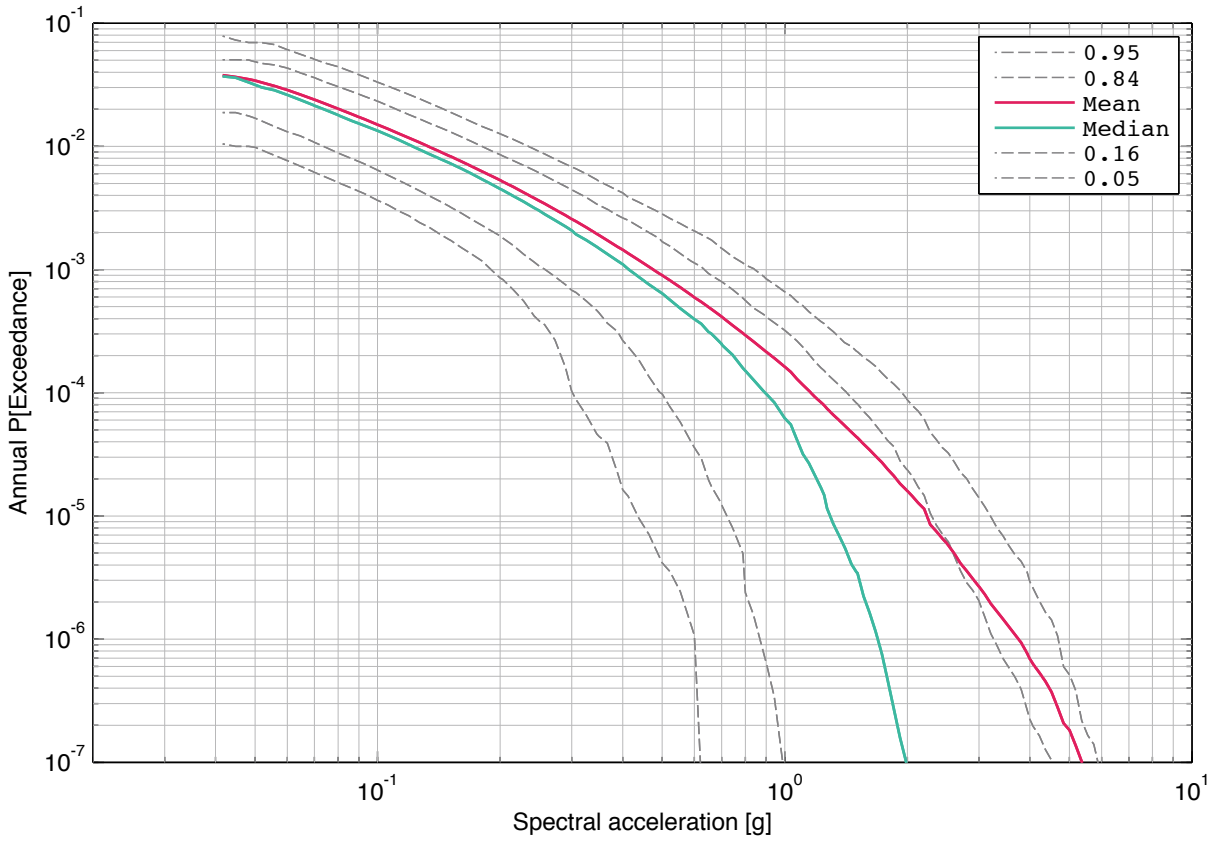

Fig. 5-2.5: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 10 Hz.

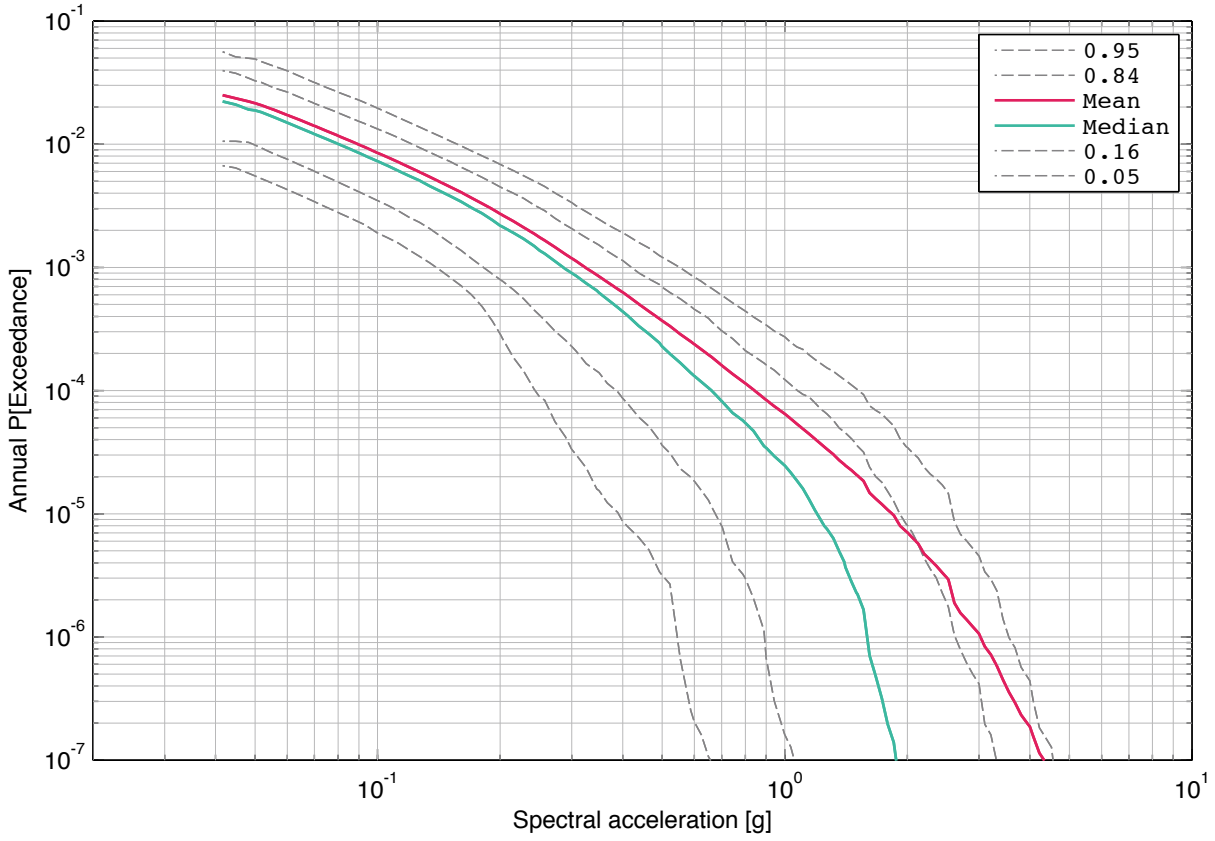

Fig. 5-2.6: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 20 Hz.

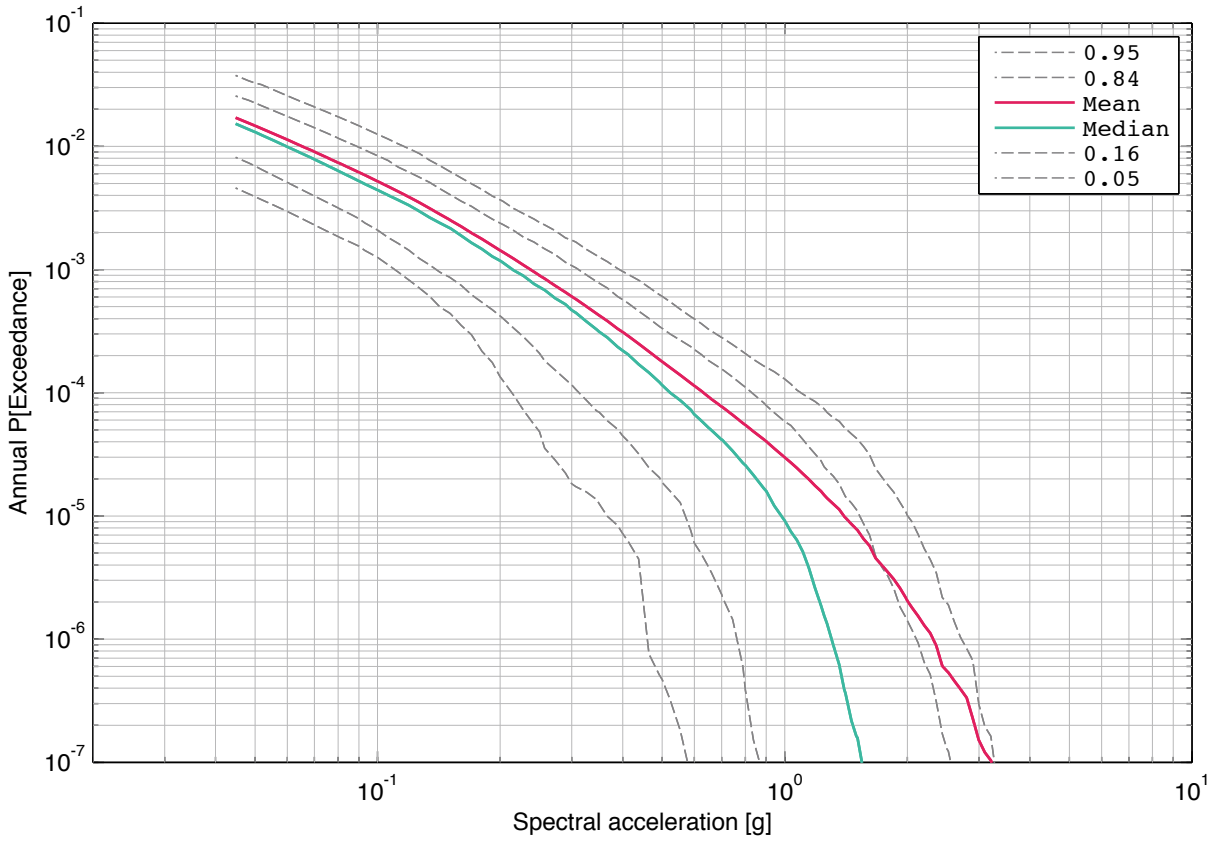

Fig. 5-2.7: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 33 Hz.

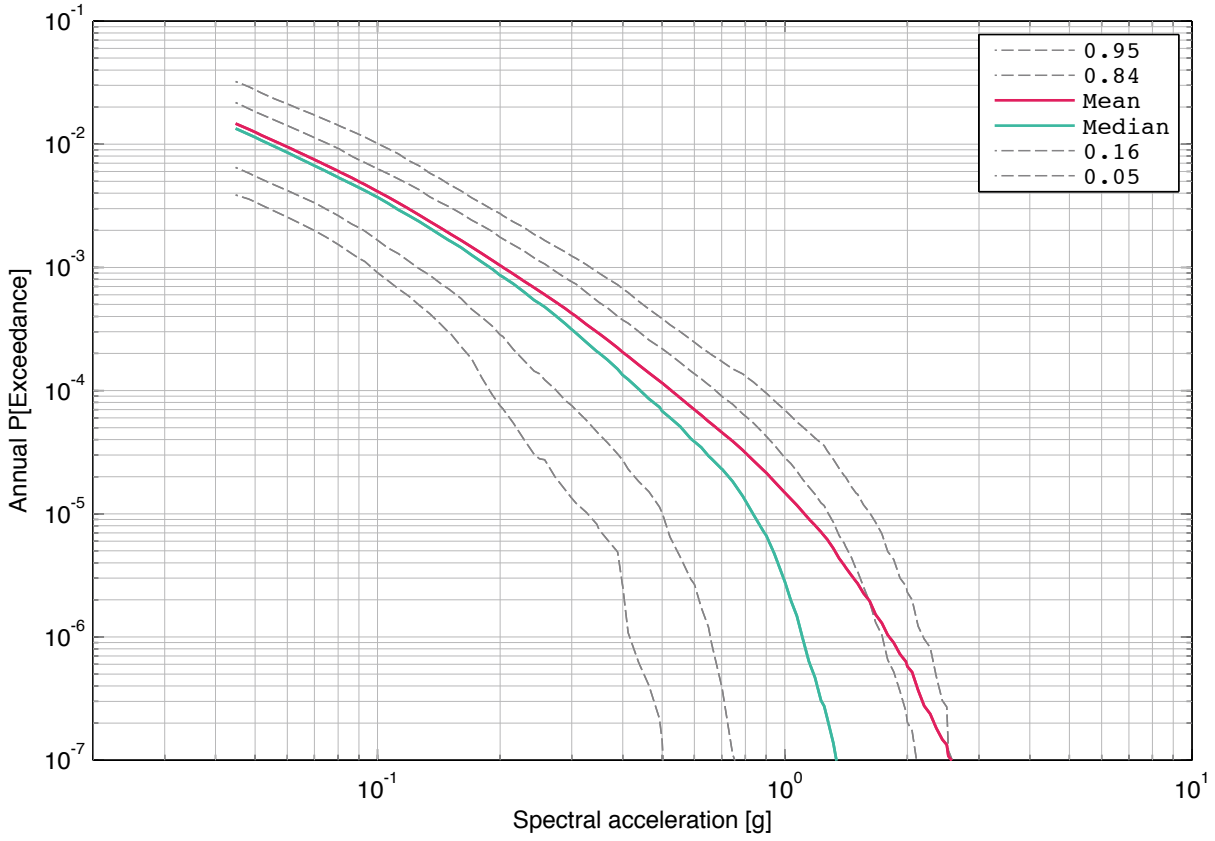

Fig. 5-2.8: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 50 Hz.

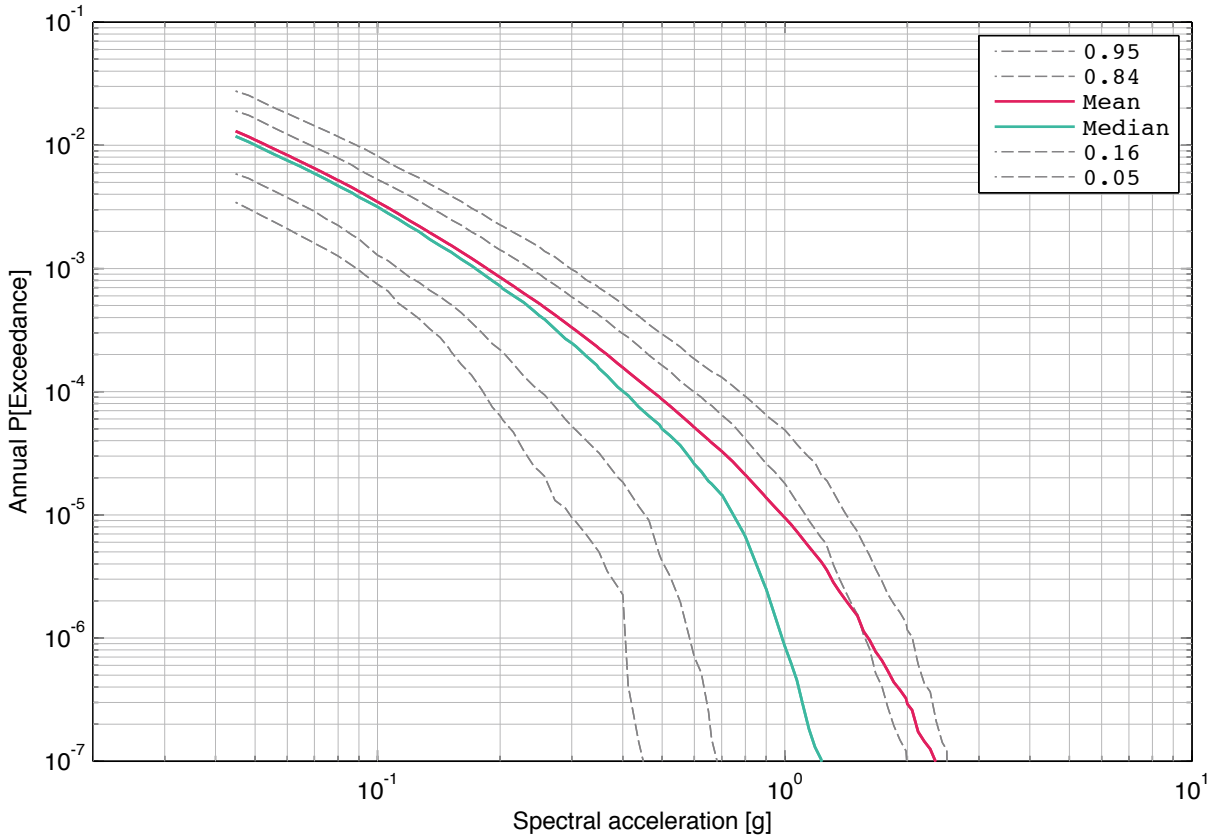

Fig. 5-2.9: Mühleberg, horizontal component, soil, surface, mean hazard and fractiles, 100 Hz.

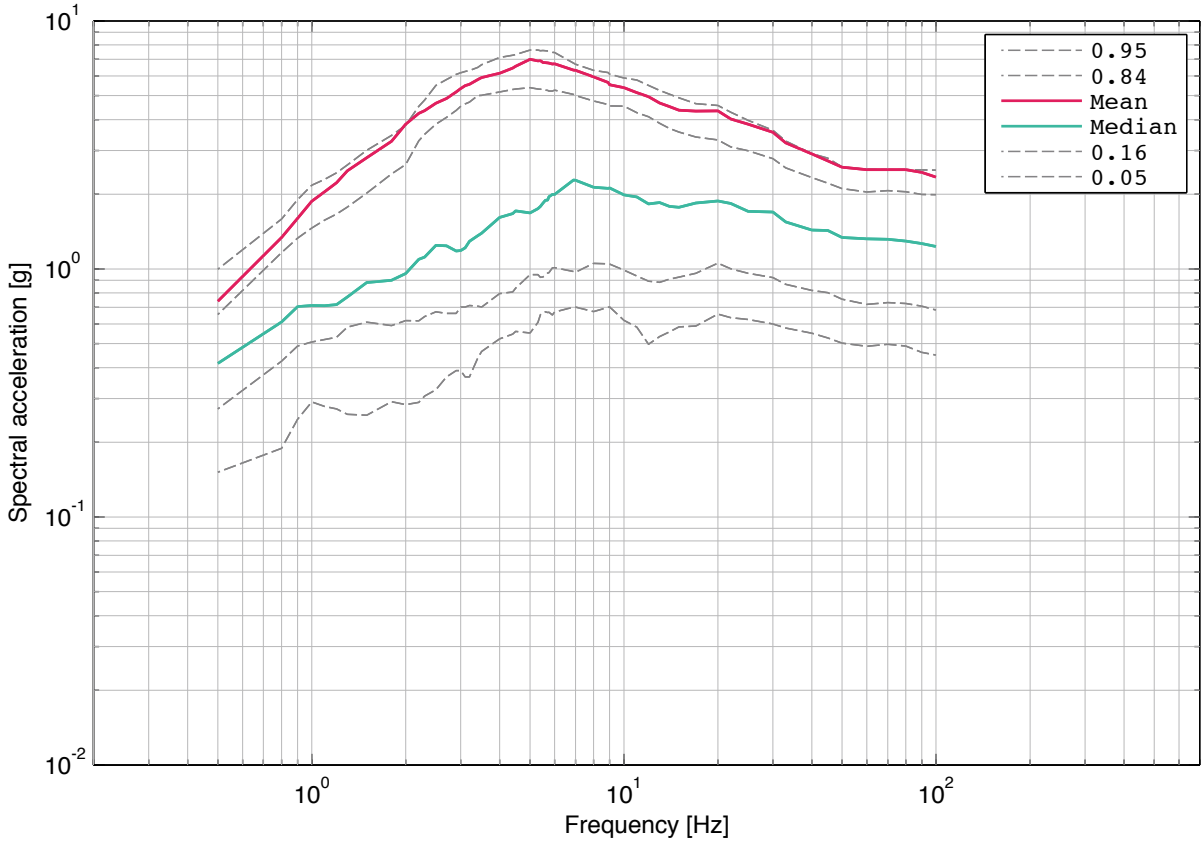

Fig. 5-2.10: Mühleberg, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

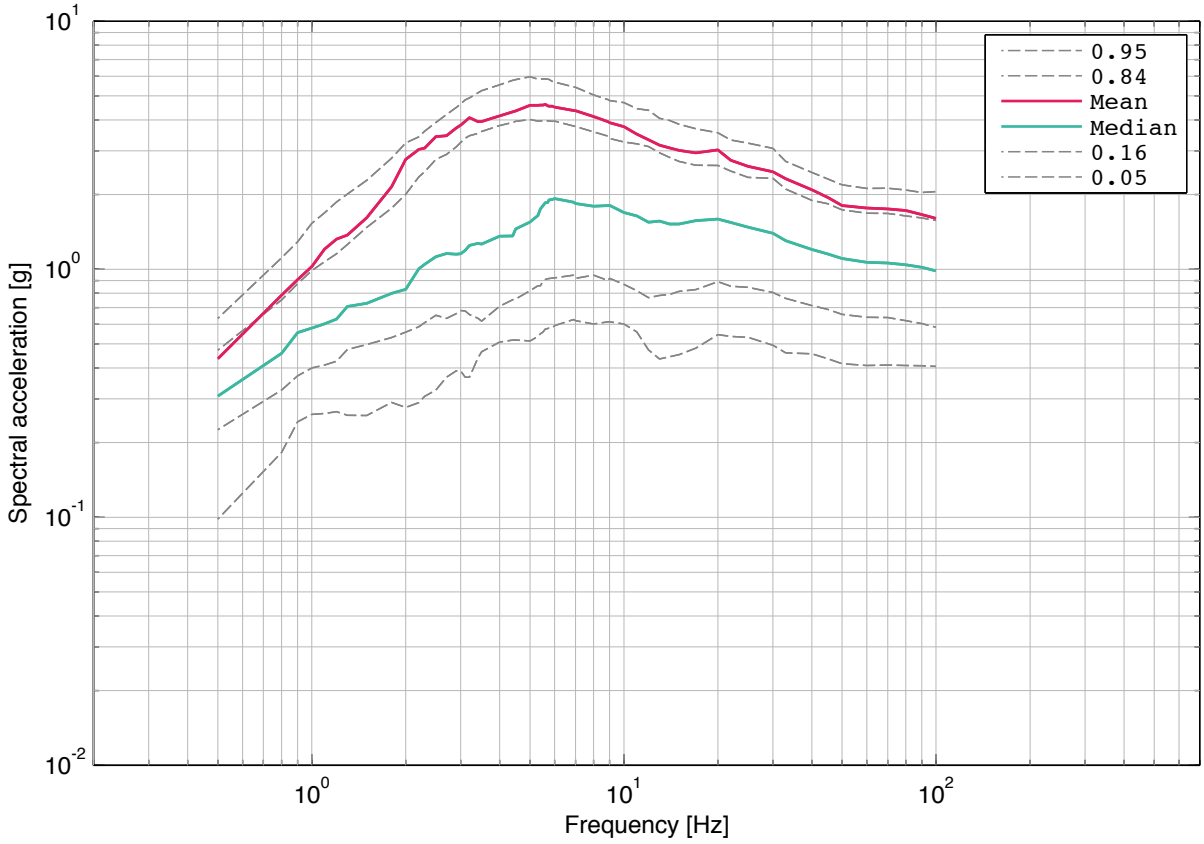

Fig. 5-2.11: Mühleberg, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

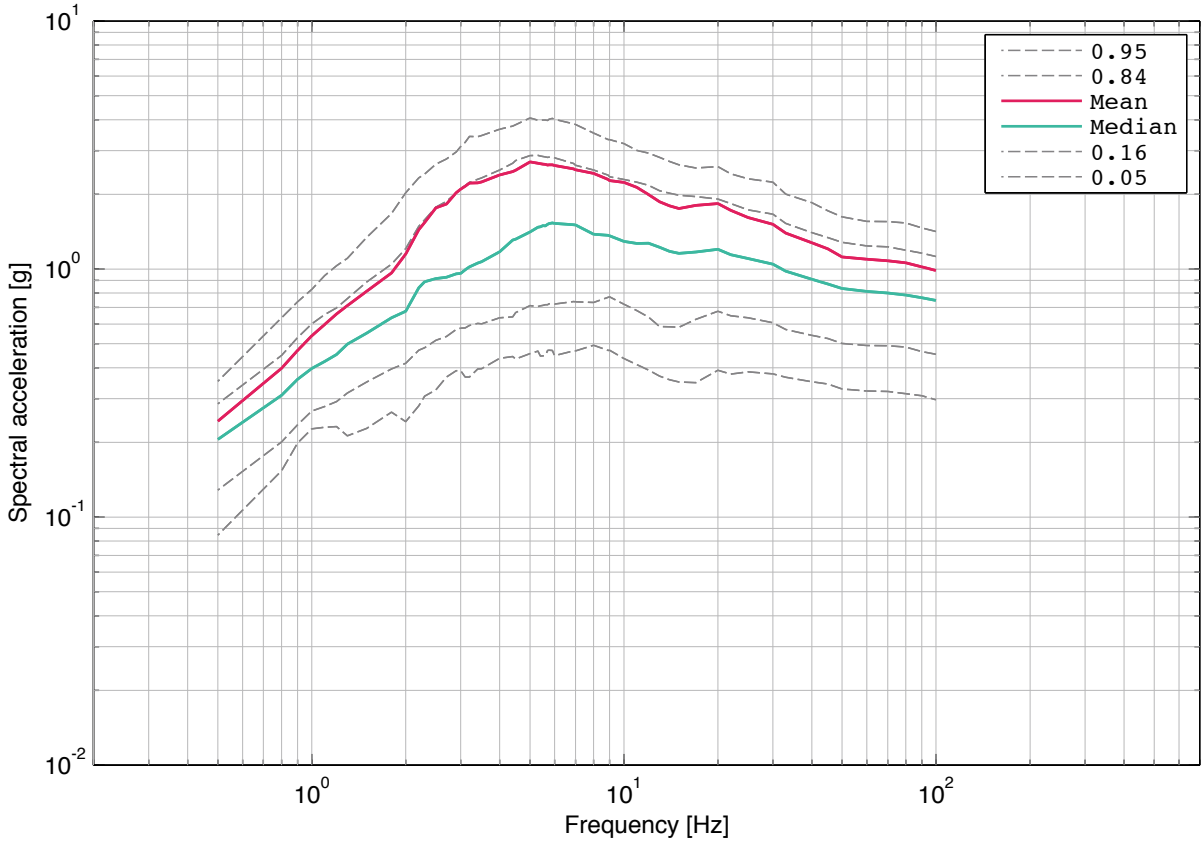

Fig. 5-2.12: Mühleberg, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

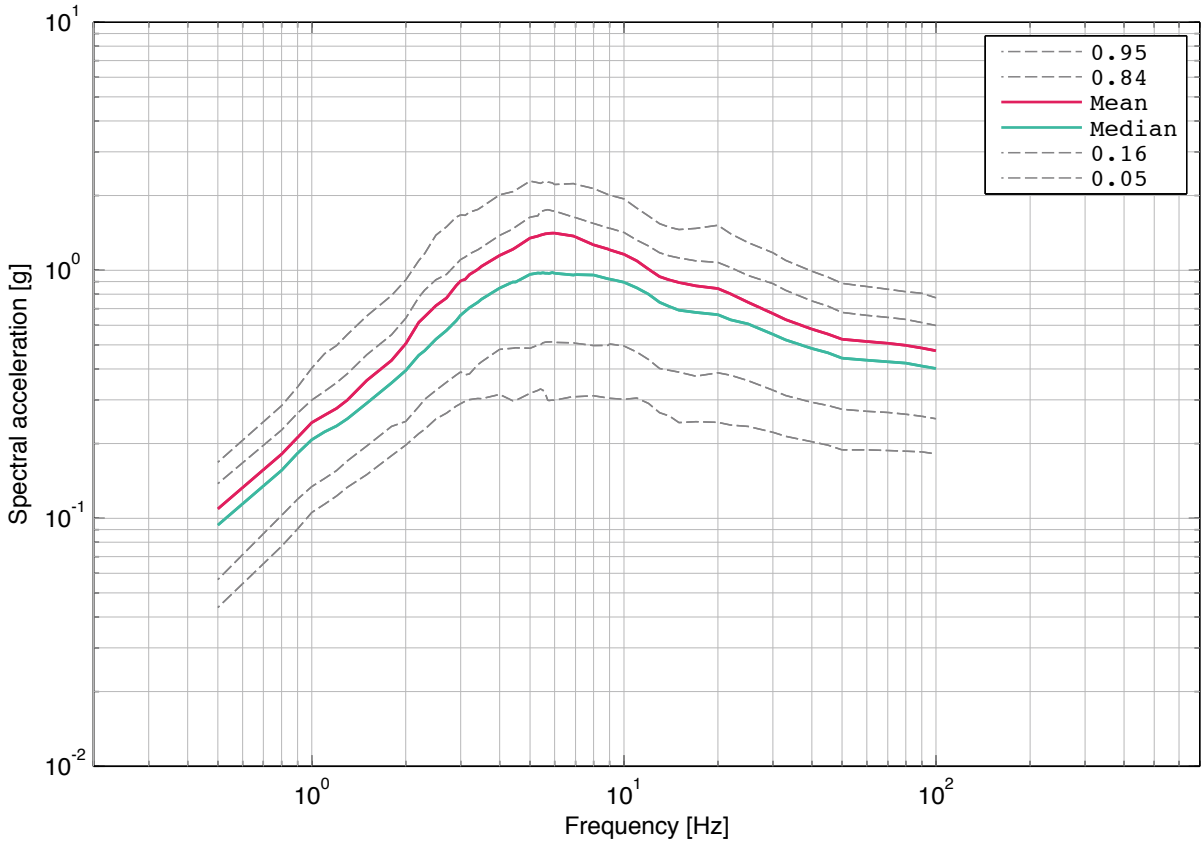

Fig. 5-2.13: Mühleberg, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

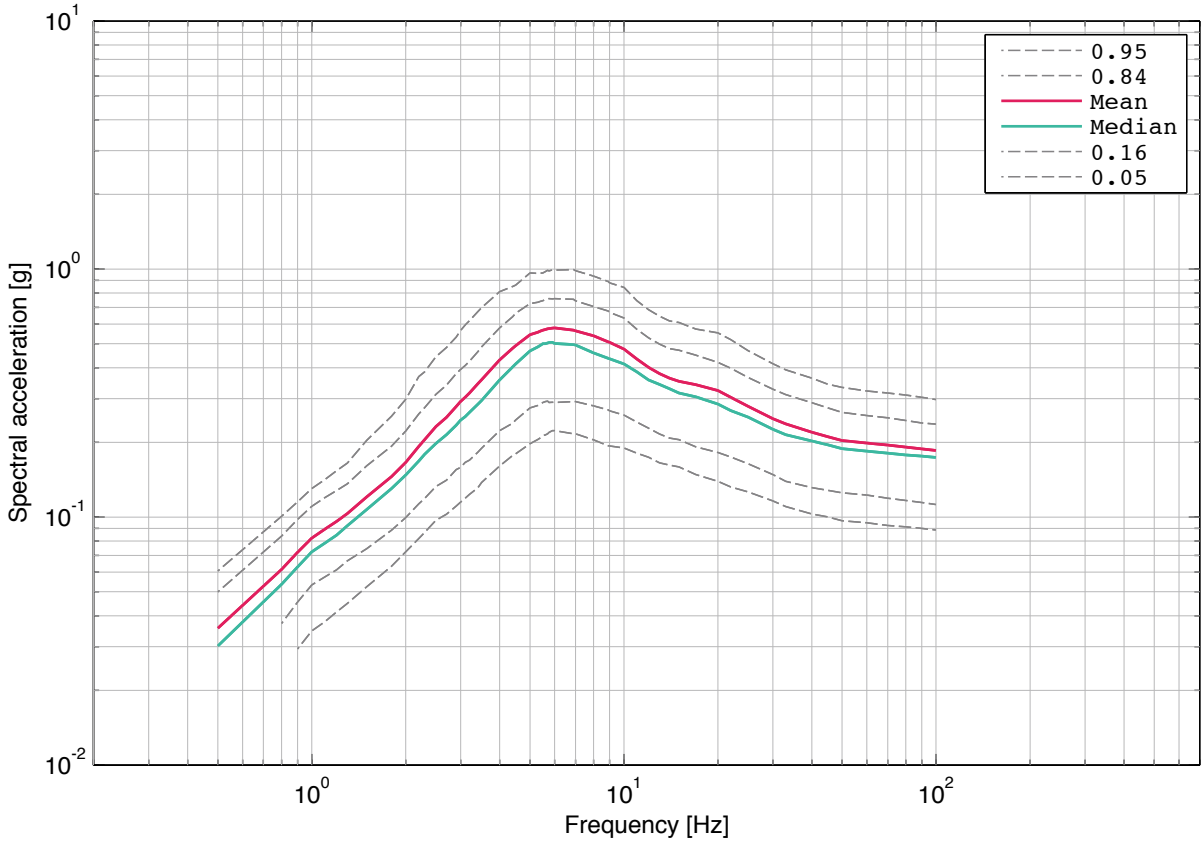

Fig. 5-2.14: Mühleberg, horizontal component, soil, surface, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

5.3 Mühleberg, Soil Hazard, Horizontal Component, -7 m

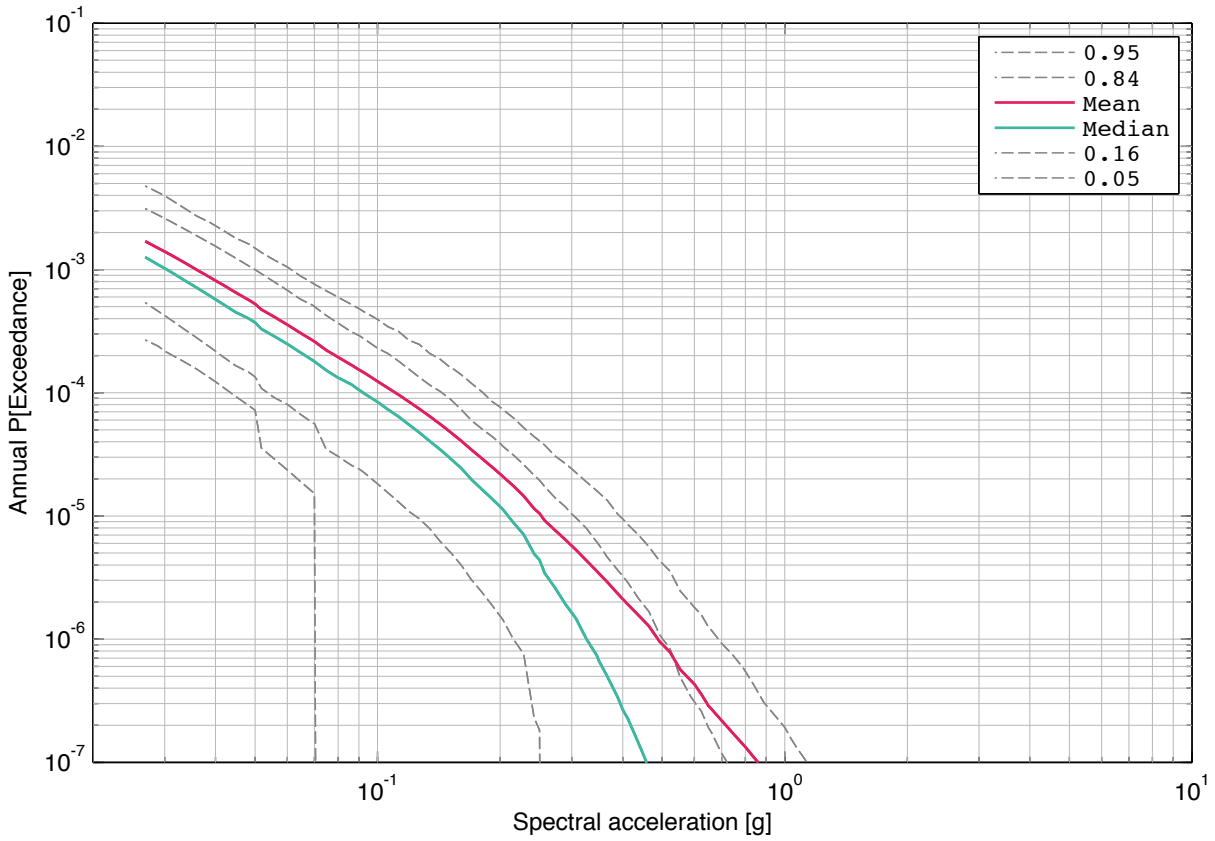

Fig. 5-3.1: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 0.5 Hz.

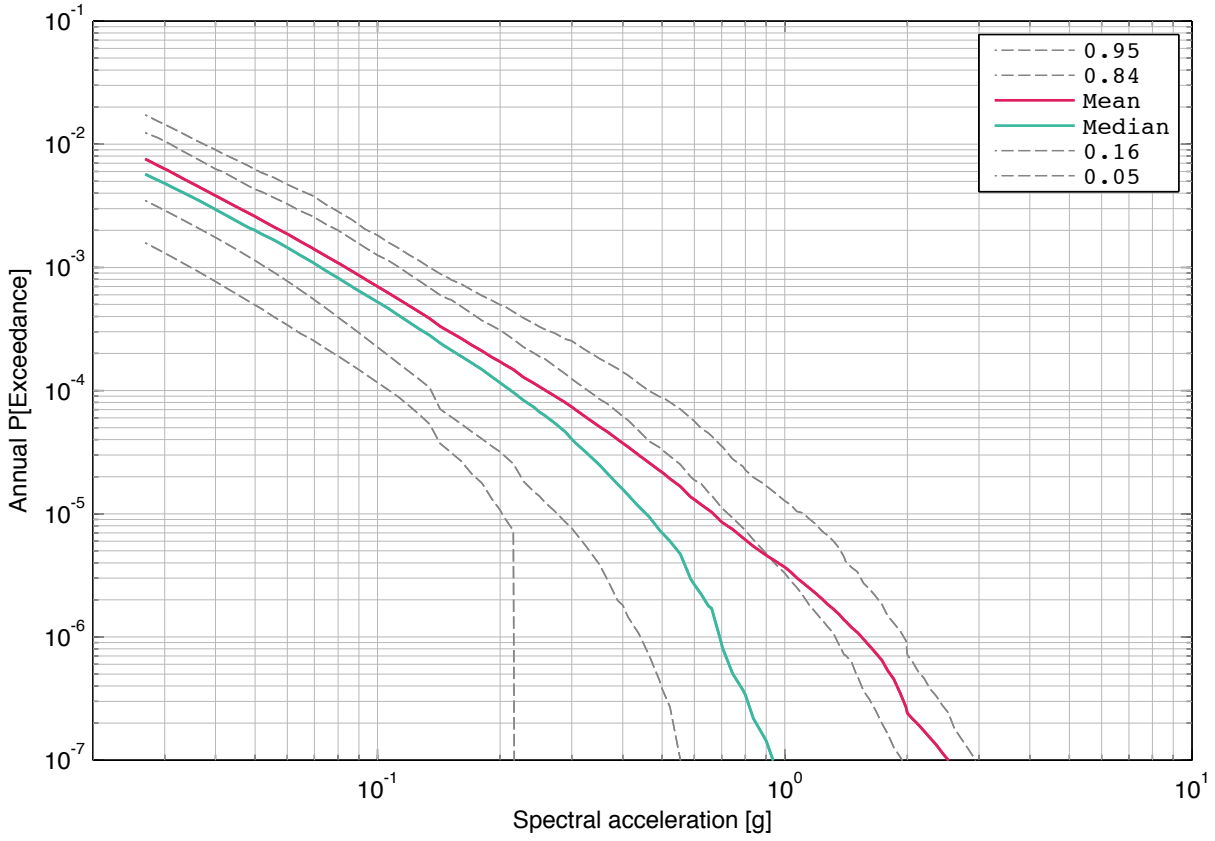

Fig. 5-3.2: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 1 Hz.

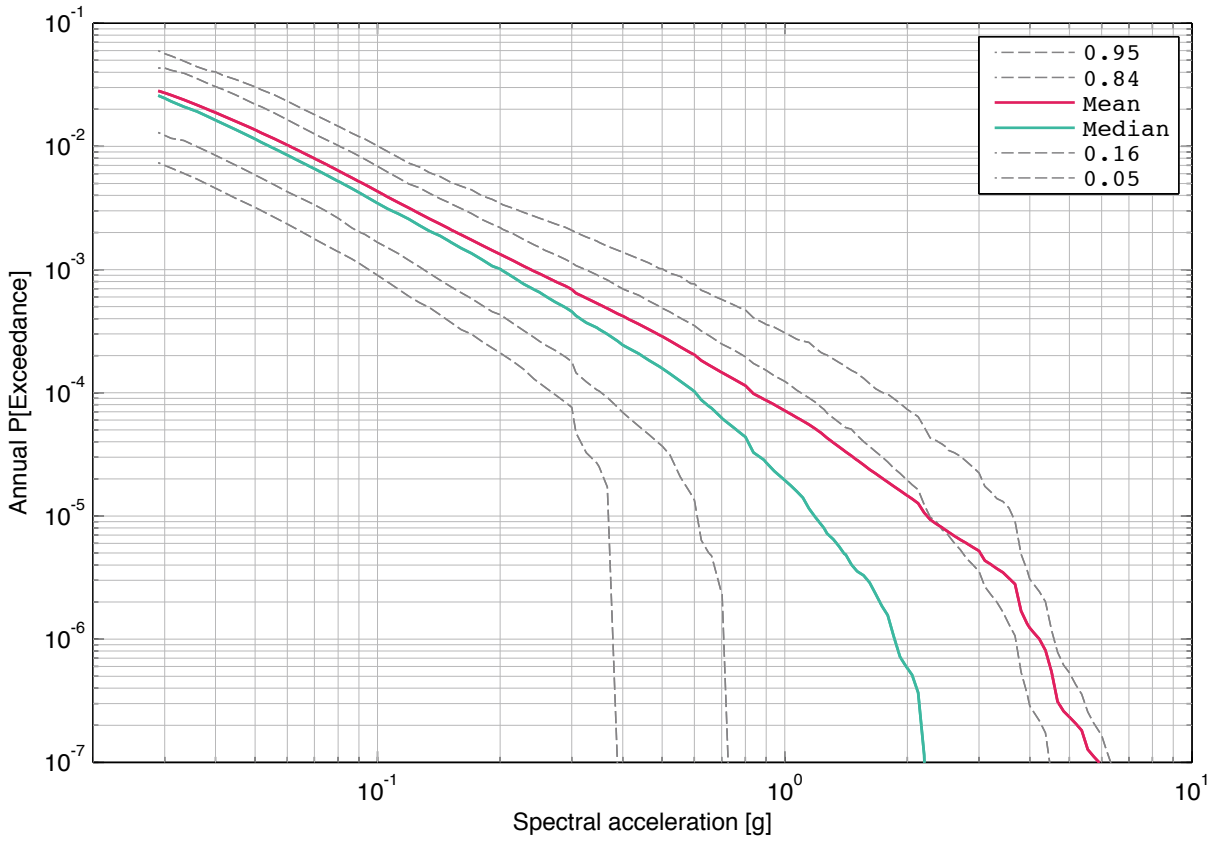

Fig. 5-3.3: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 2.5 Hz.

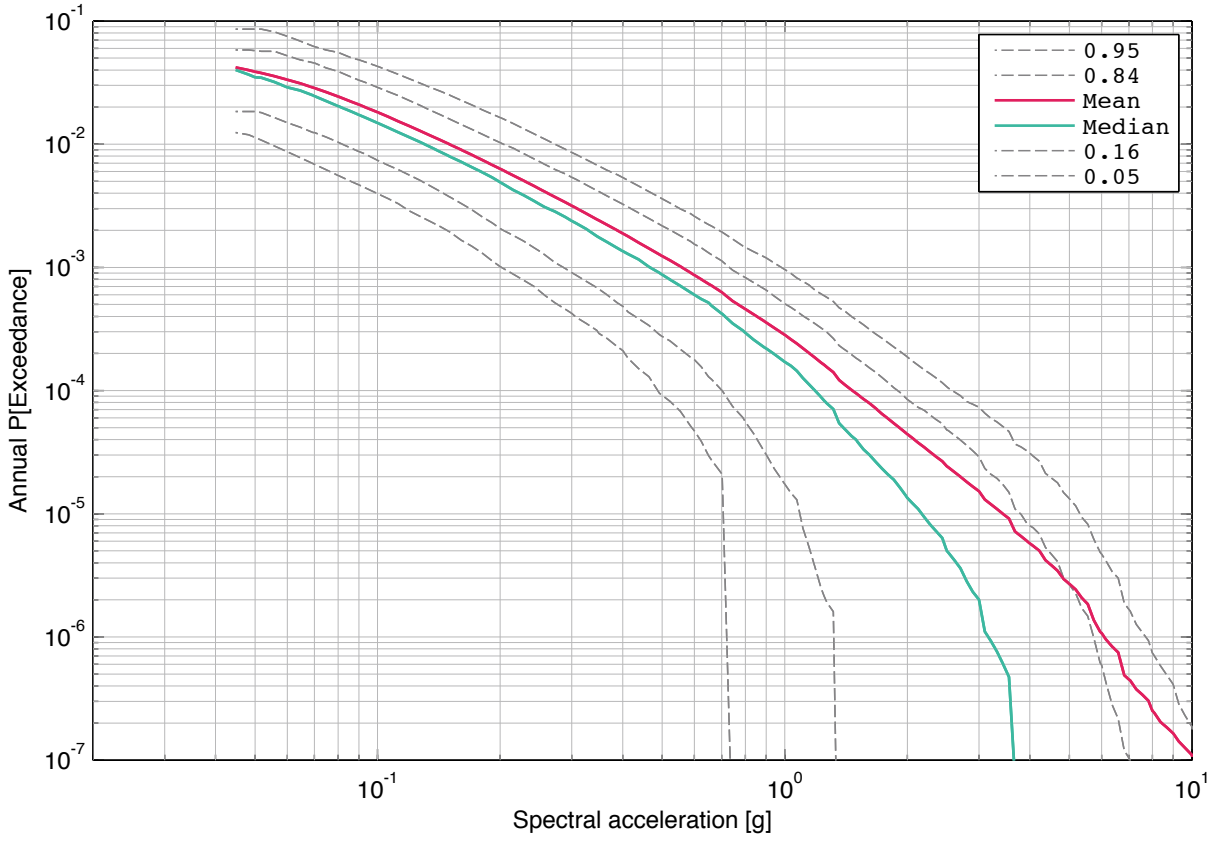

Fig. 5-3.4: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 5 Hz.

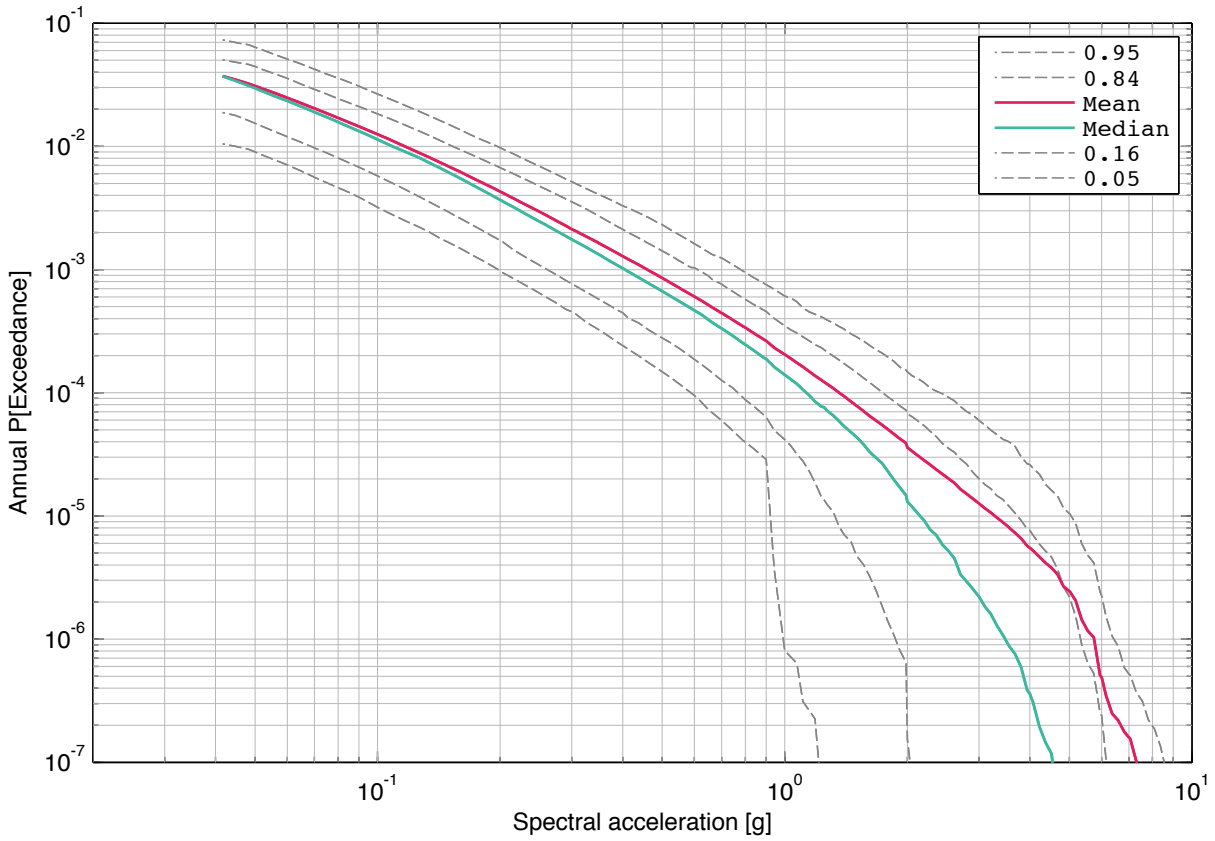

Fig. 5-3.5: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 10 Hz.

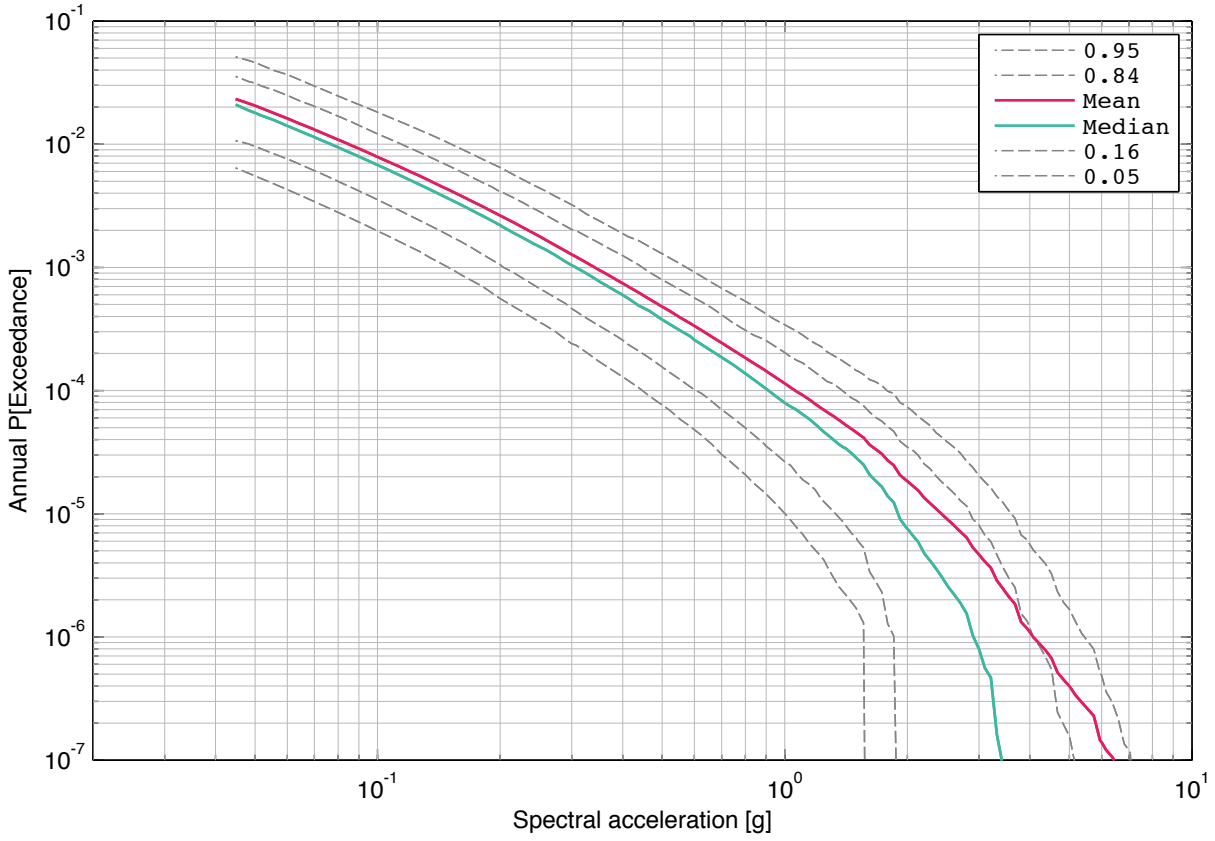

Fig. 5-3.6: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 20 Hz.

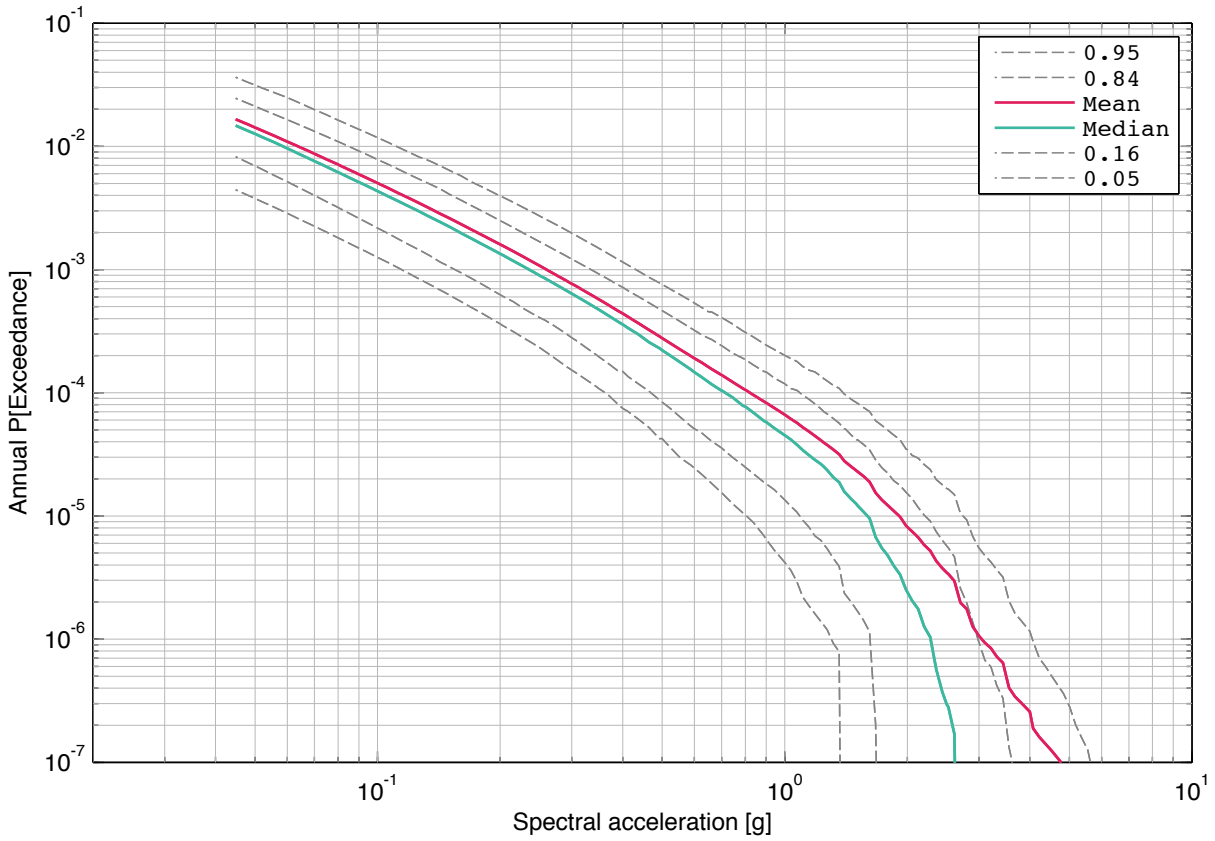

Fig. 5-3.7: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 33 Hz.

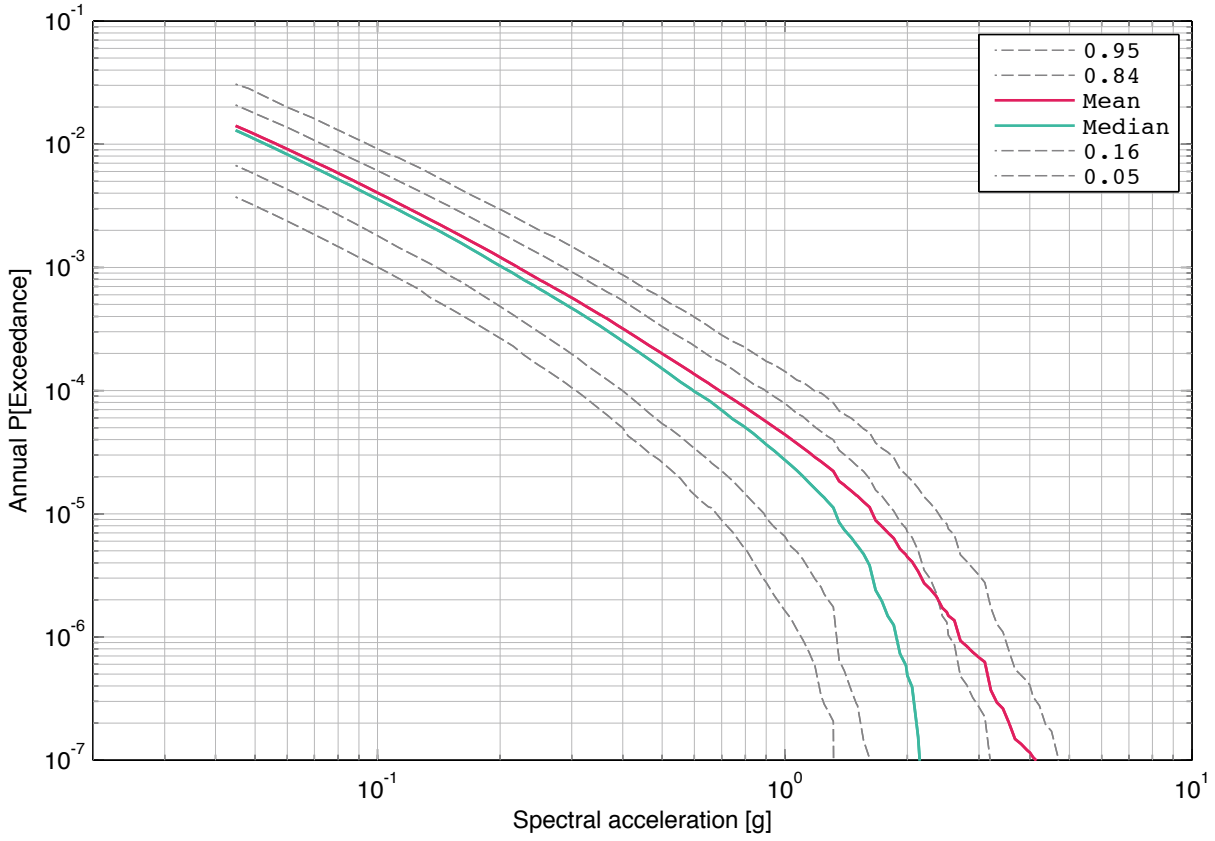

Fig. 5-3.8: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 50 Hz.

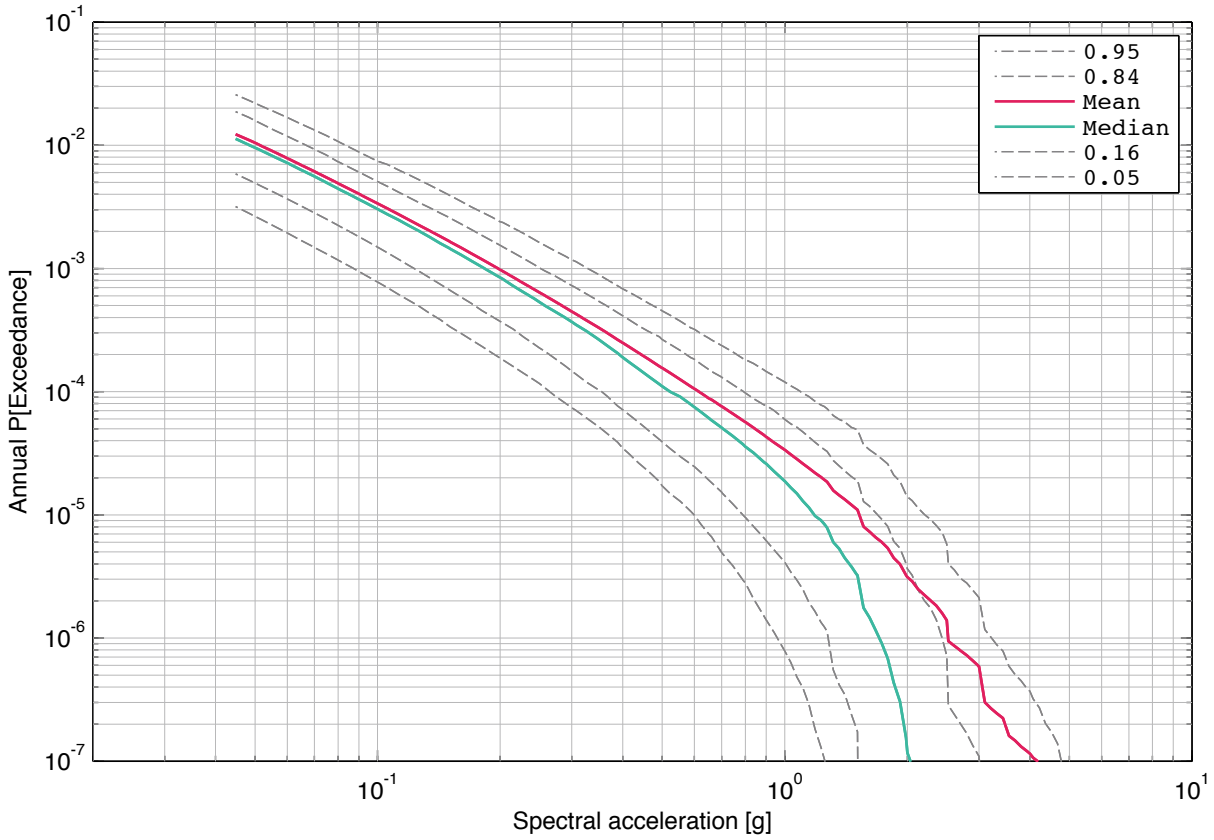

Fig. 5-3.9: Mühleberg, horizontal component, soil, -7 m, mean hazard and fractiles, 100 Hz.

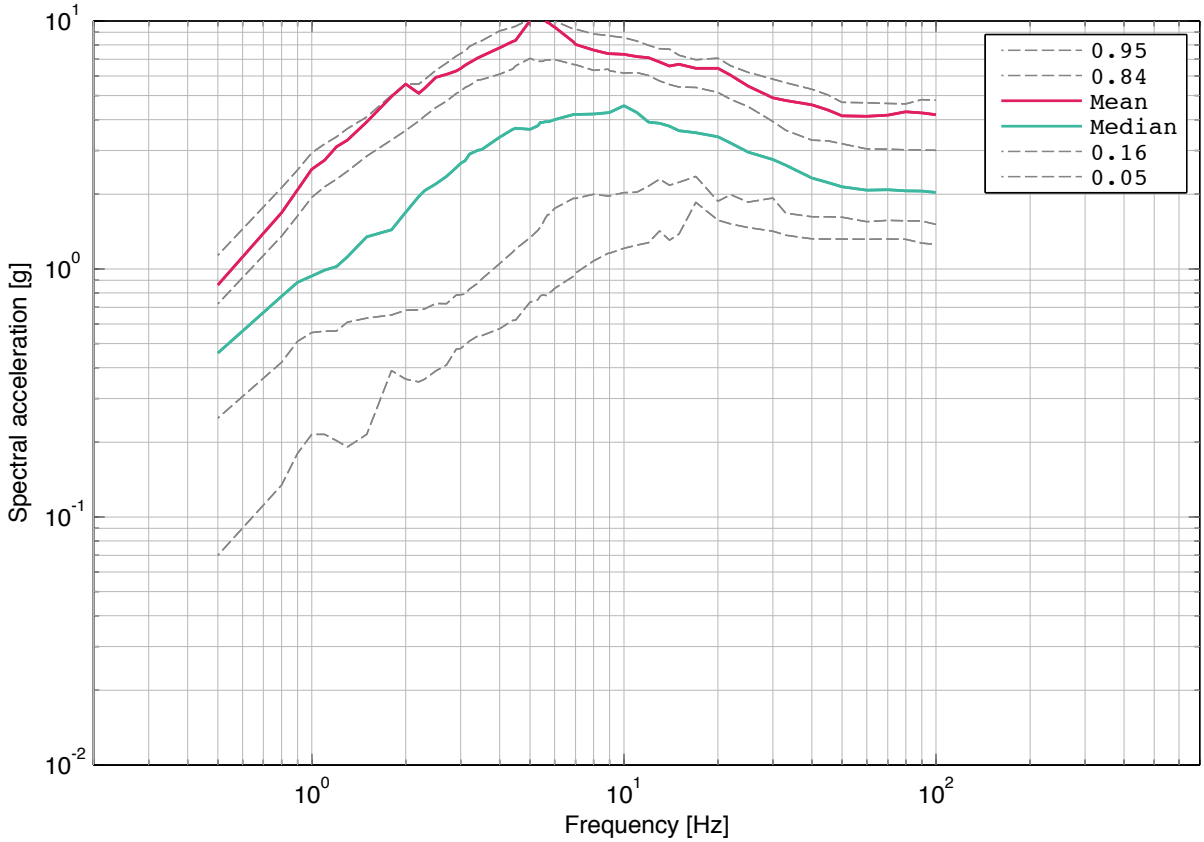

Fig. 5-3.10: Mühleberg, horizontal component, soil, -7 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

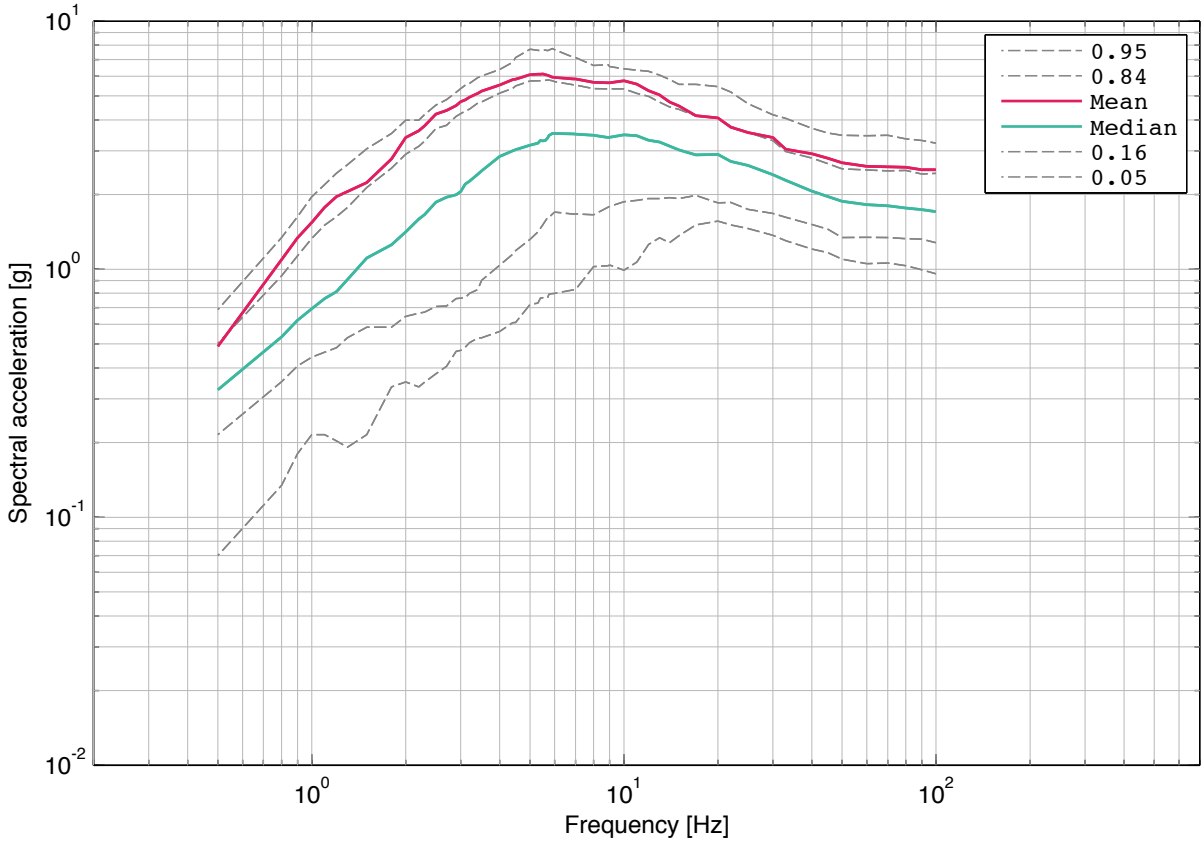

Fig. 5-3.11: Mühleberg, horizontal component, soil, -7 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

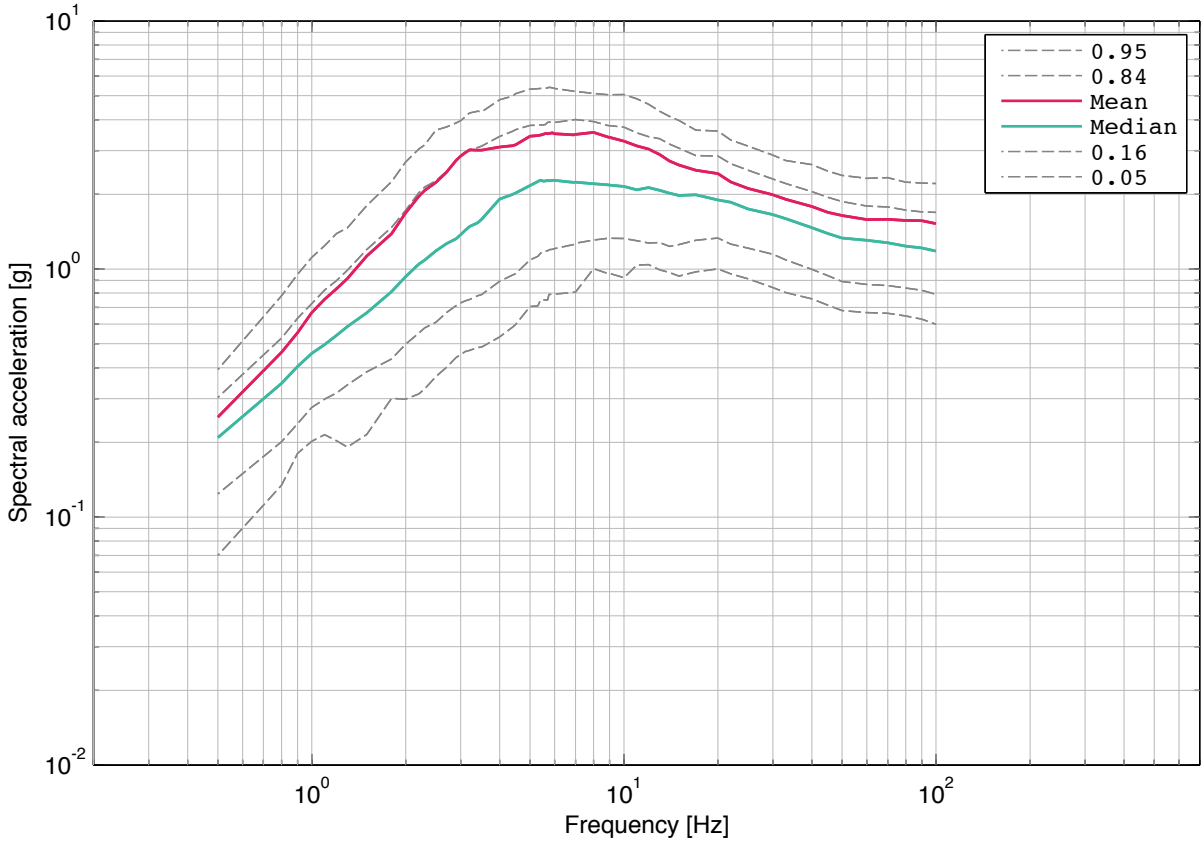

Fig. 5-3.12: Mühleberg, horizontal component, soil, -7 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

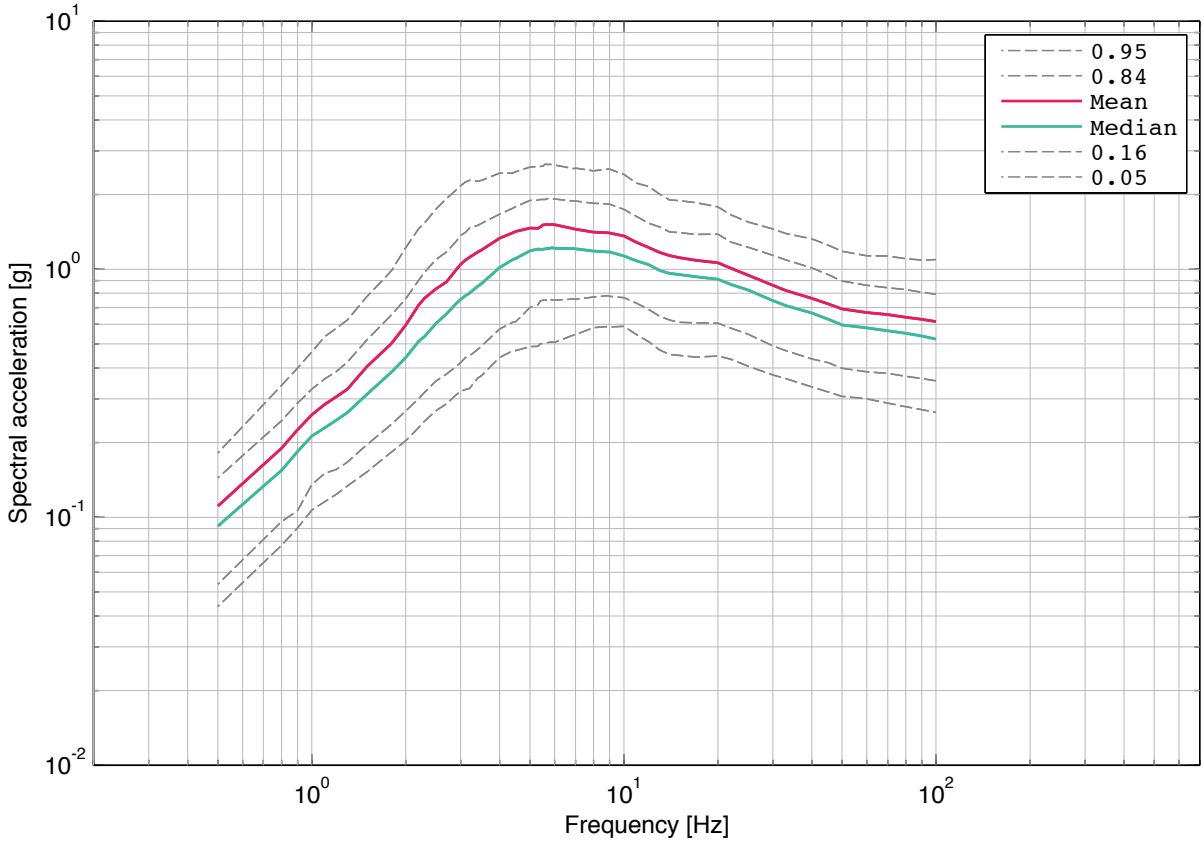

Fig. 5-3.13: Mühleberg, horizontal component, soil, -7 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

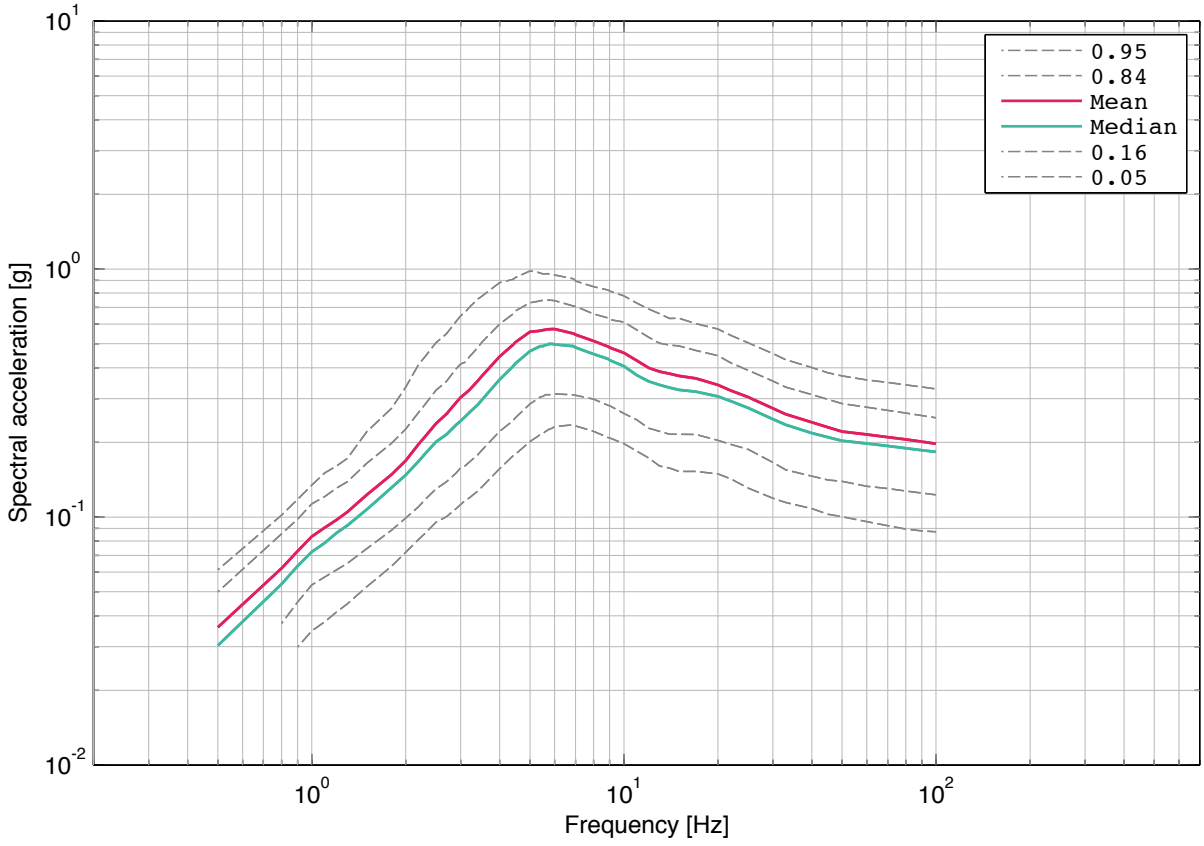

Fig. 5-3.14: Mühleberg, horizontal component, soil, -7 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

5.4 Mühleberg, Soil Hazard, Horizontal Component, -14 m

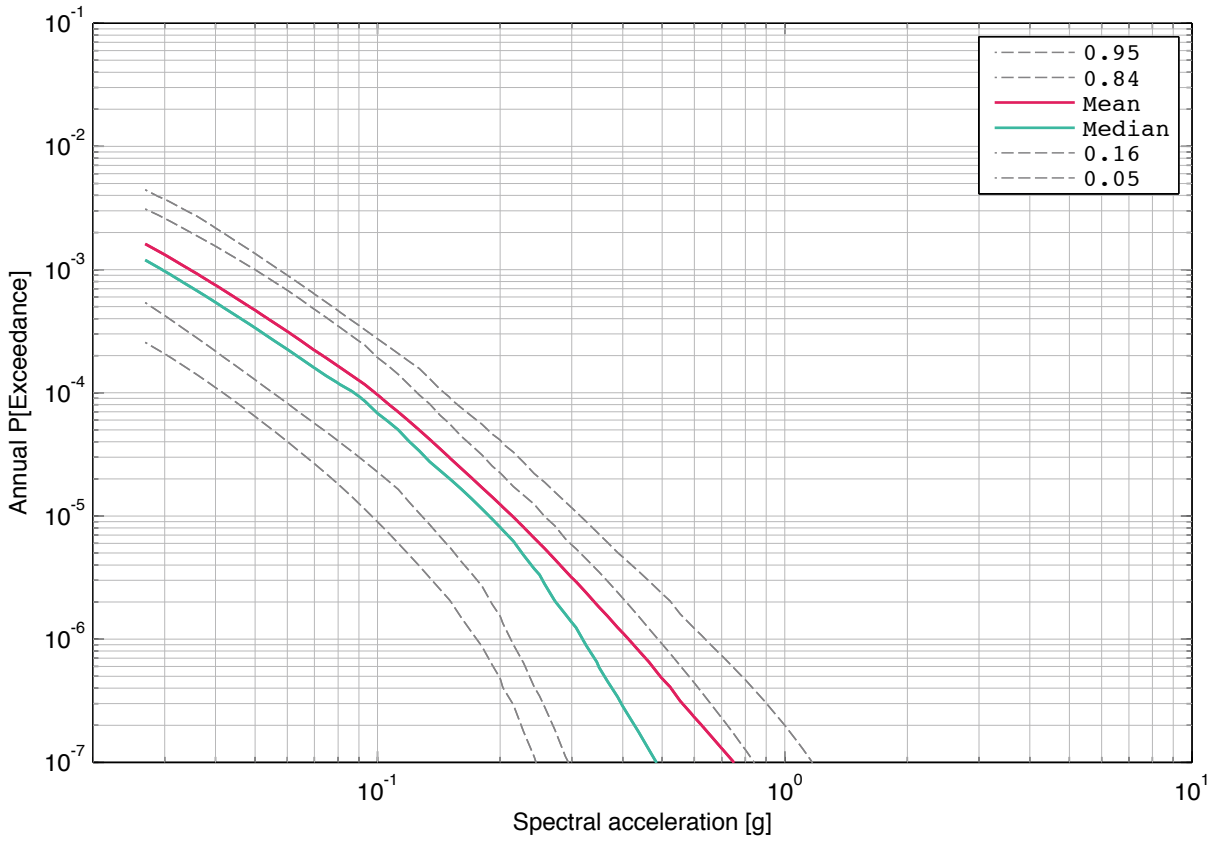

Fig. 5-4.1: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 0.5 Hz.

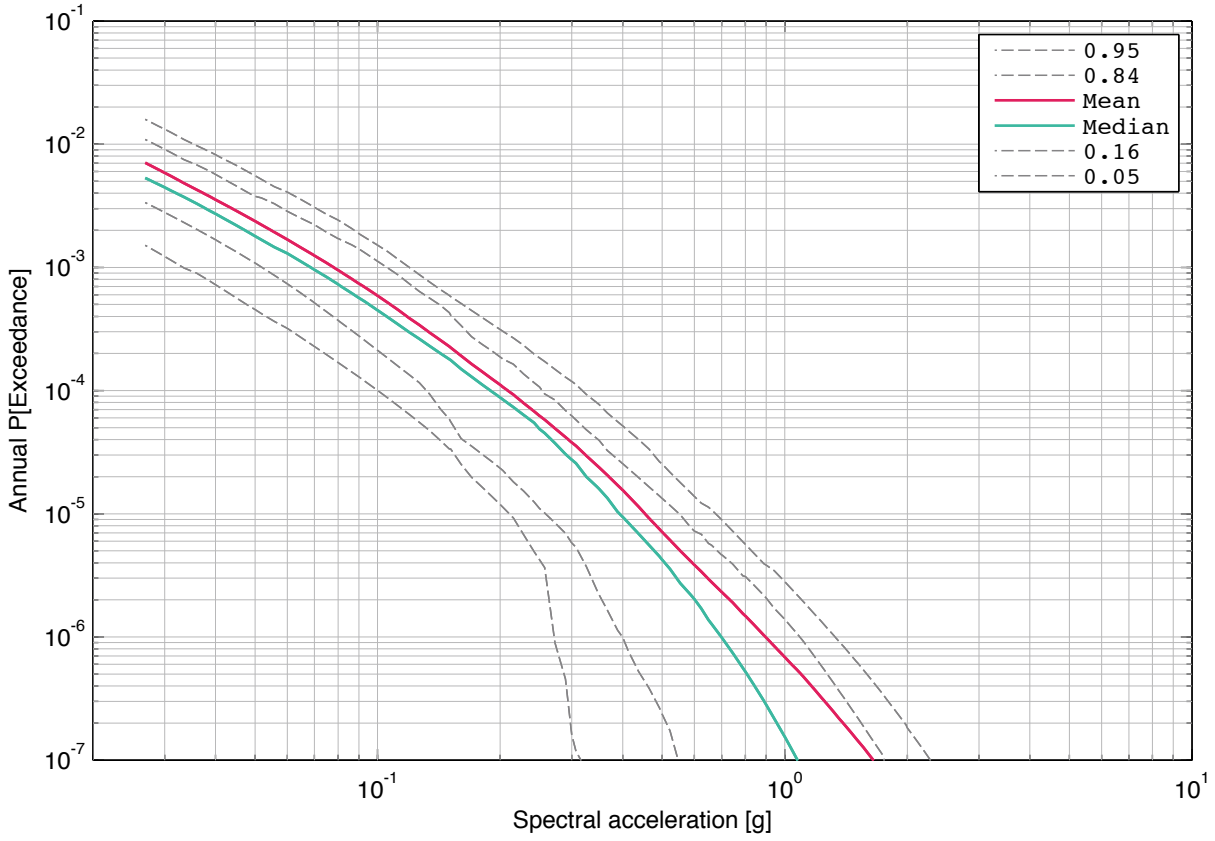

Fig. 5-4.2: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 1 Hz.

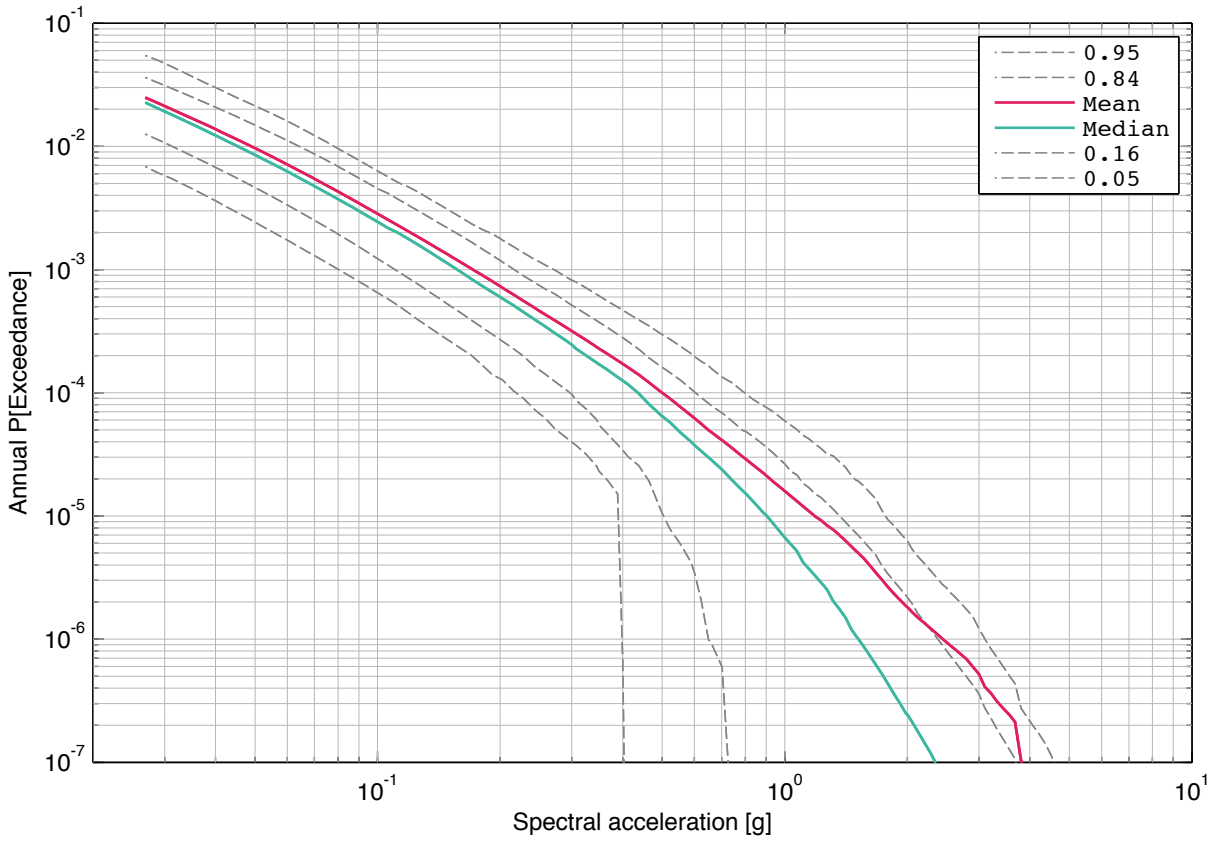

Fig. 5-4.3: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 2.5 Hz.

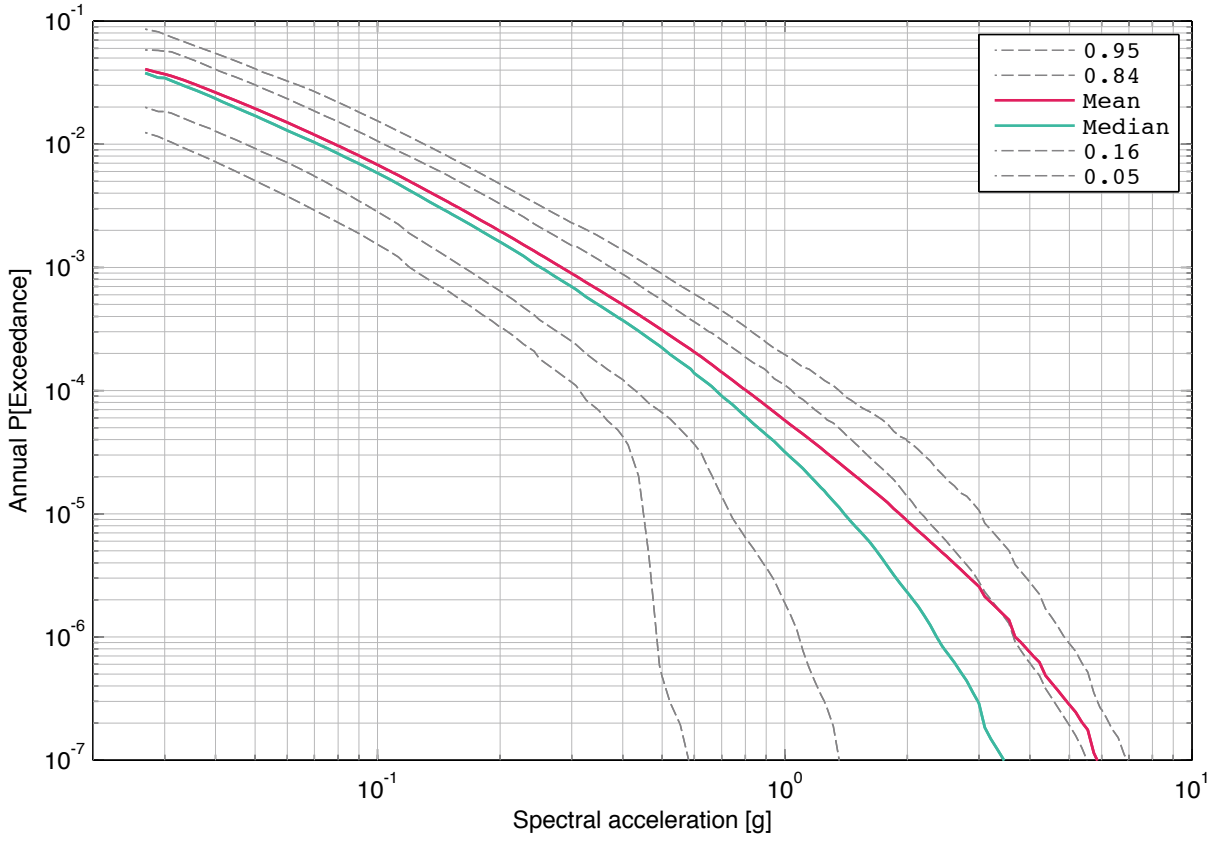

Fig. 5-4.4: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 5 Hz.

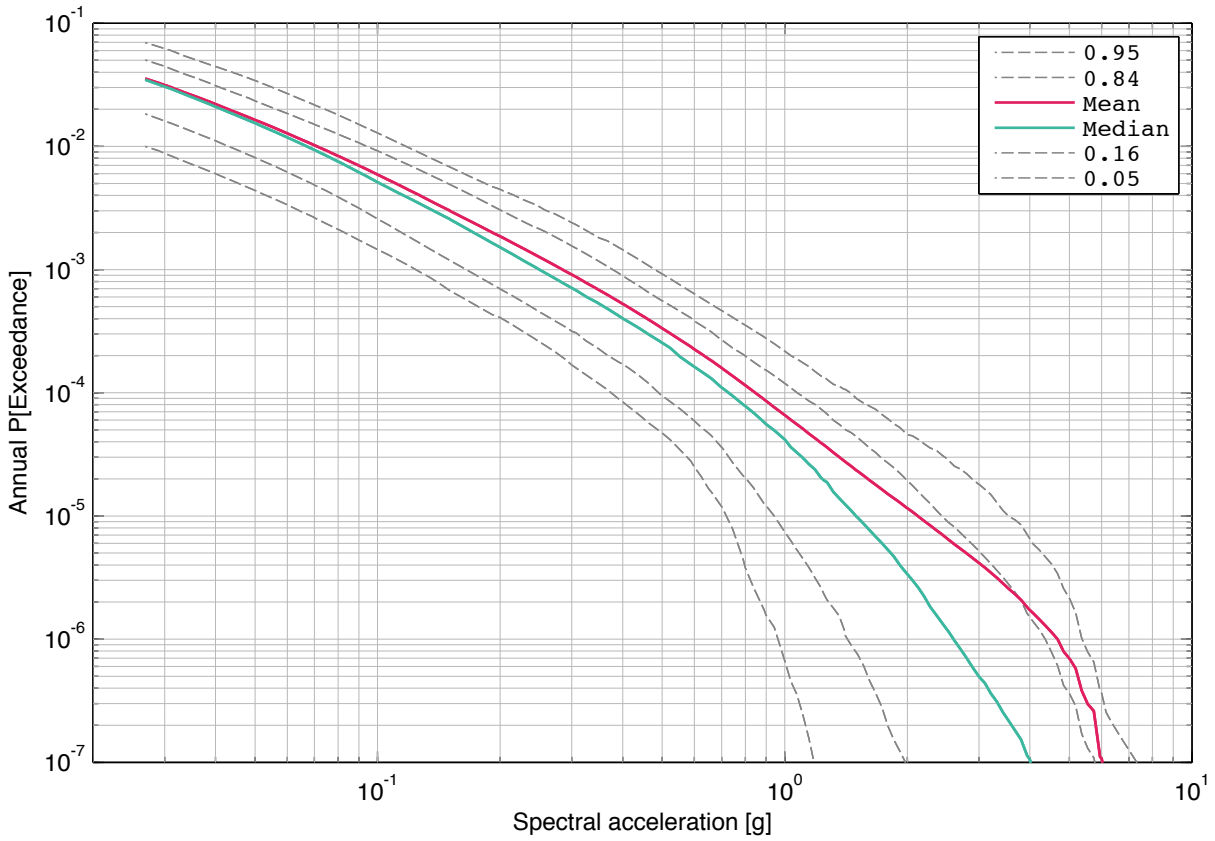

Fig. 5-4.5: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 10 Hz.

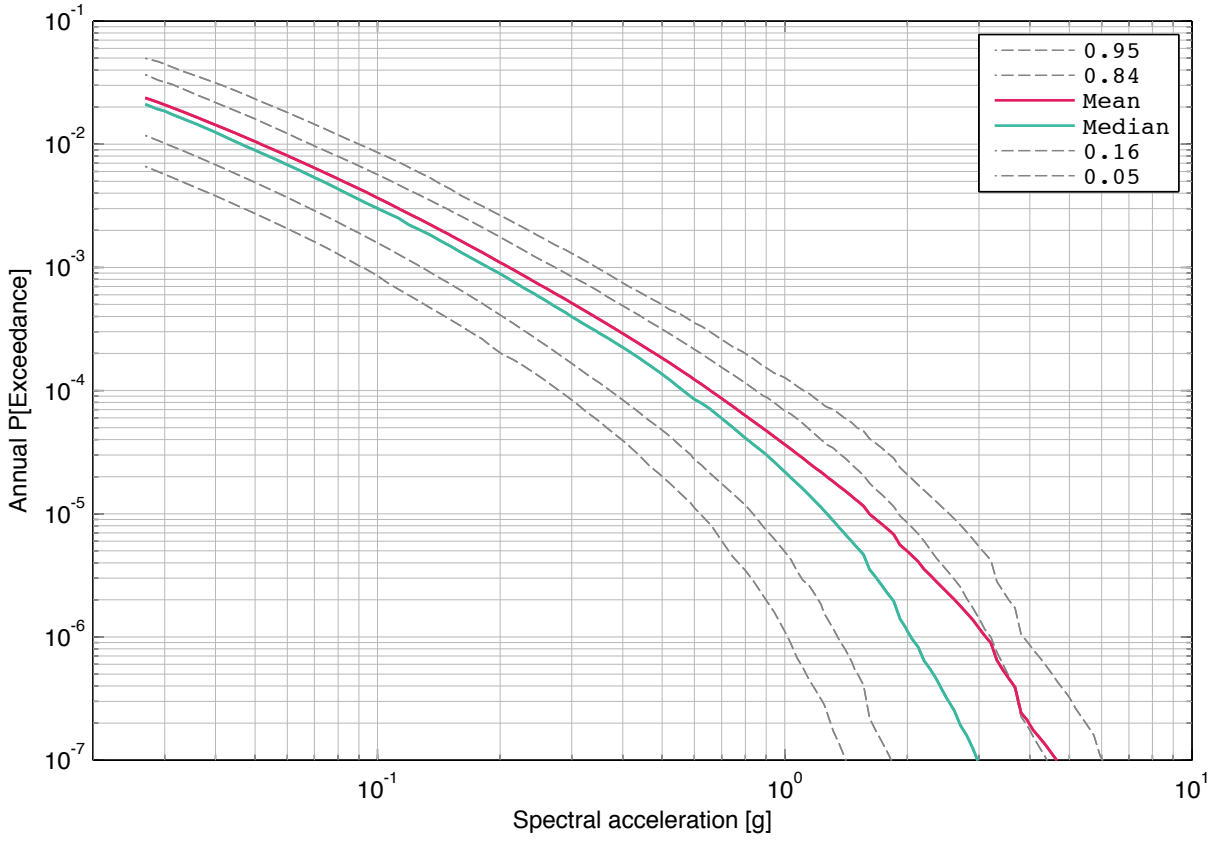

Fig. 5-4.6: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 20 Hz.

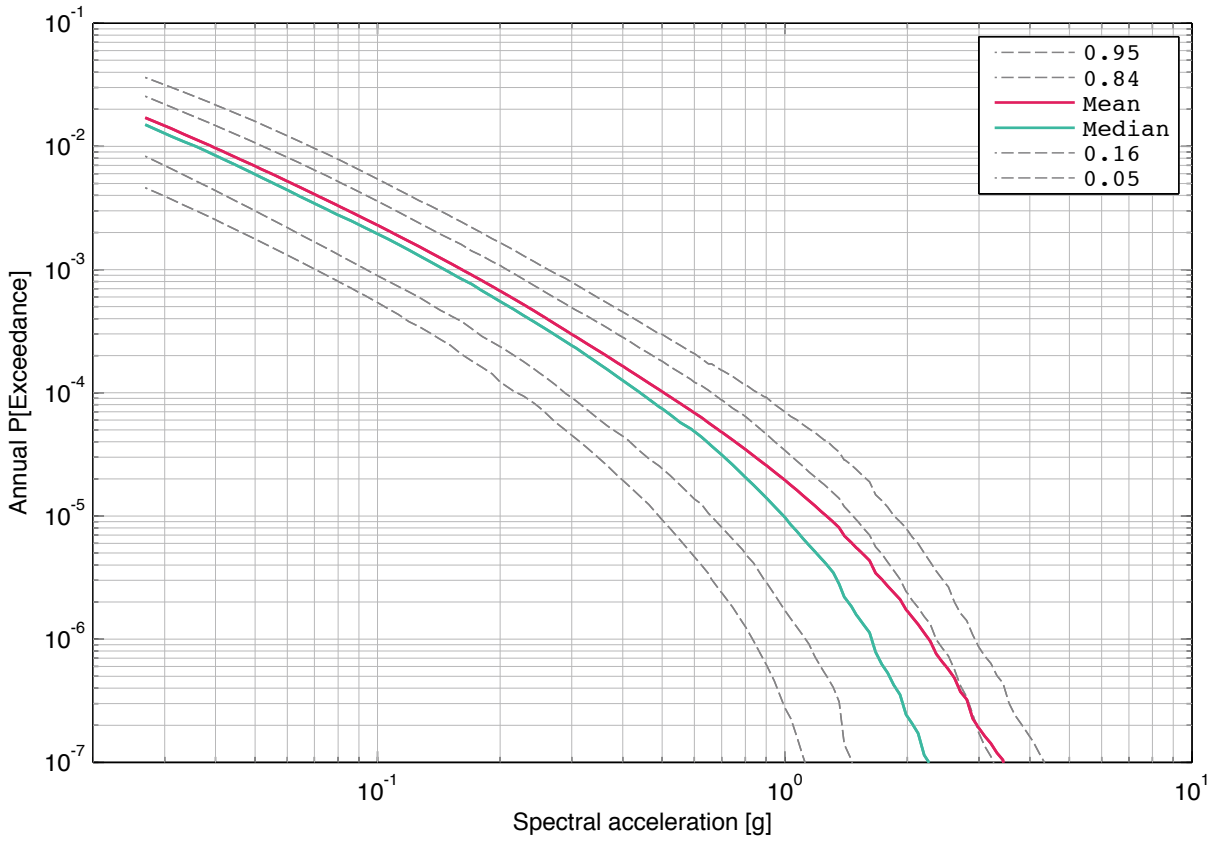

Fig. 5-4.7: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 33 Hz.

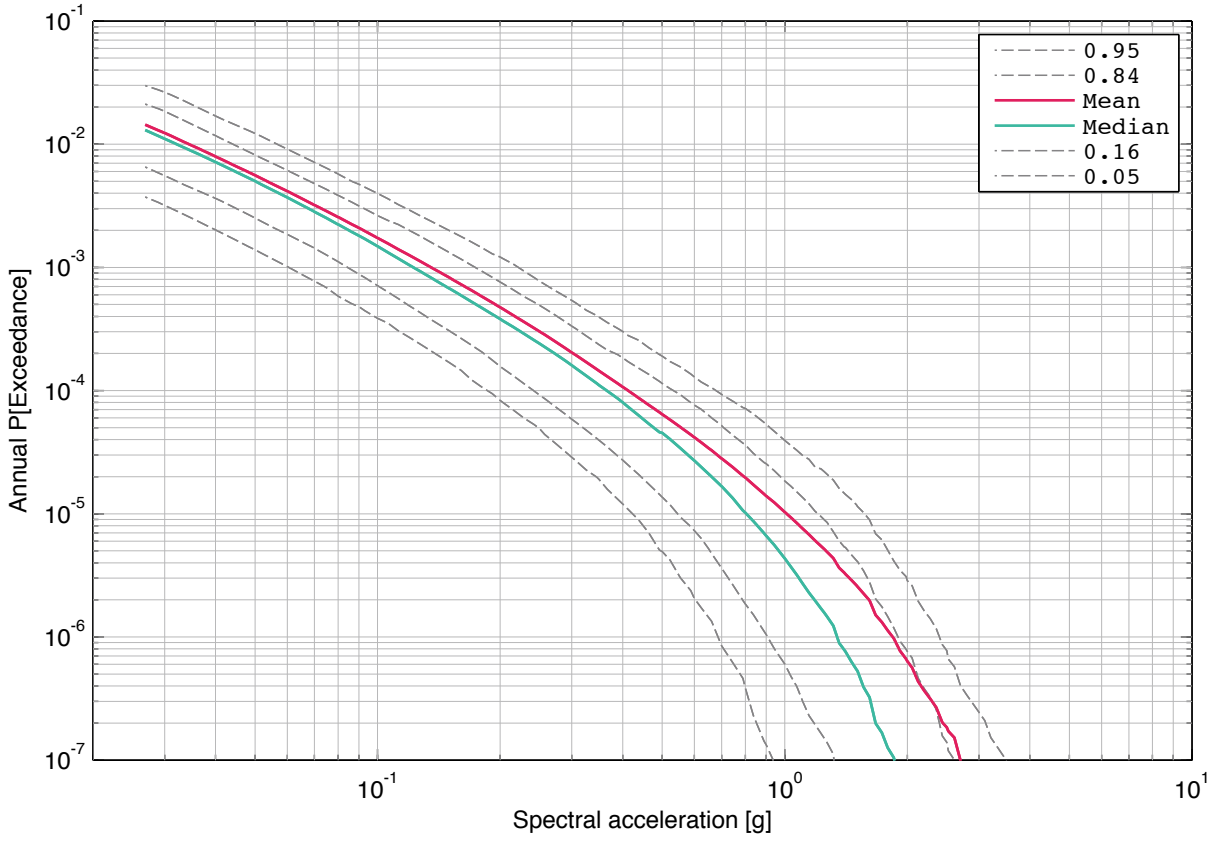

Fig. 5-4.8: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 50 Hz.

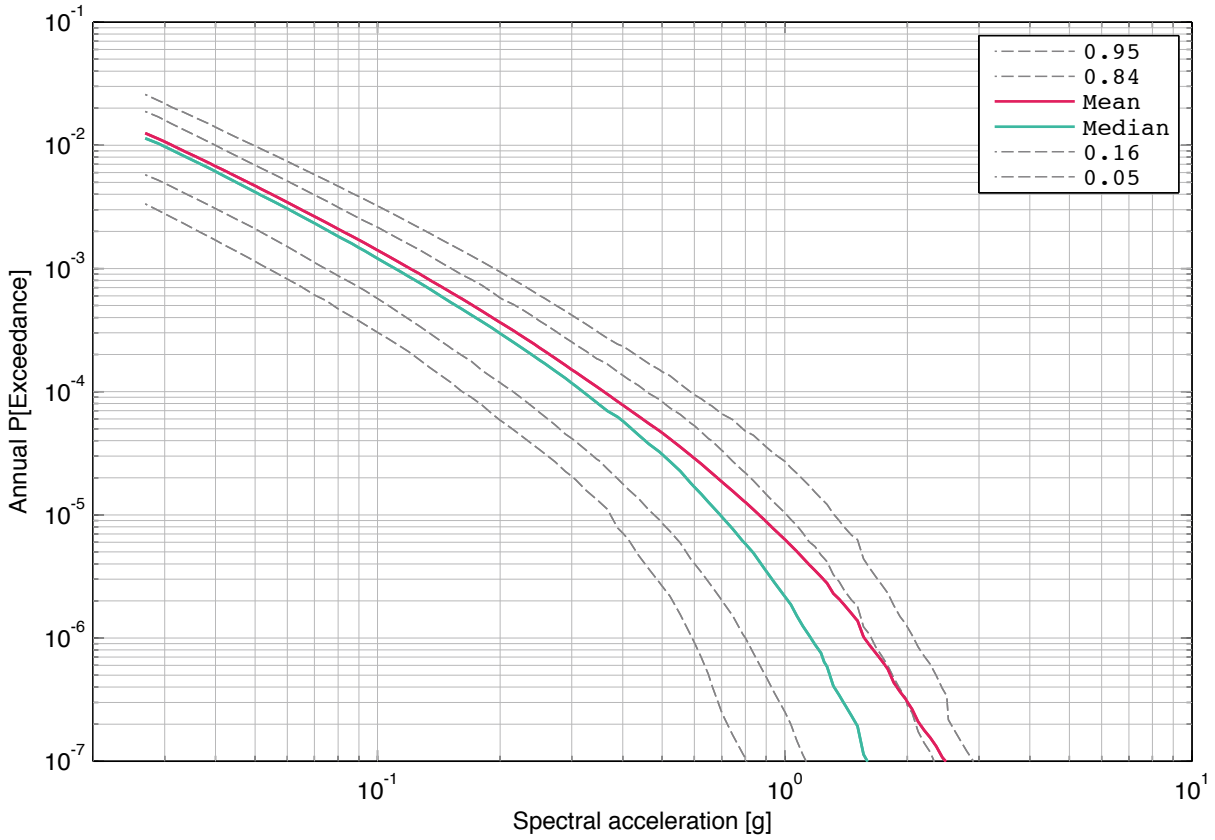

Fig. 5-4.9: Mühleberg, horizontal component, soil, -14 m, mean hazard and fractiles, 100 Hz.

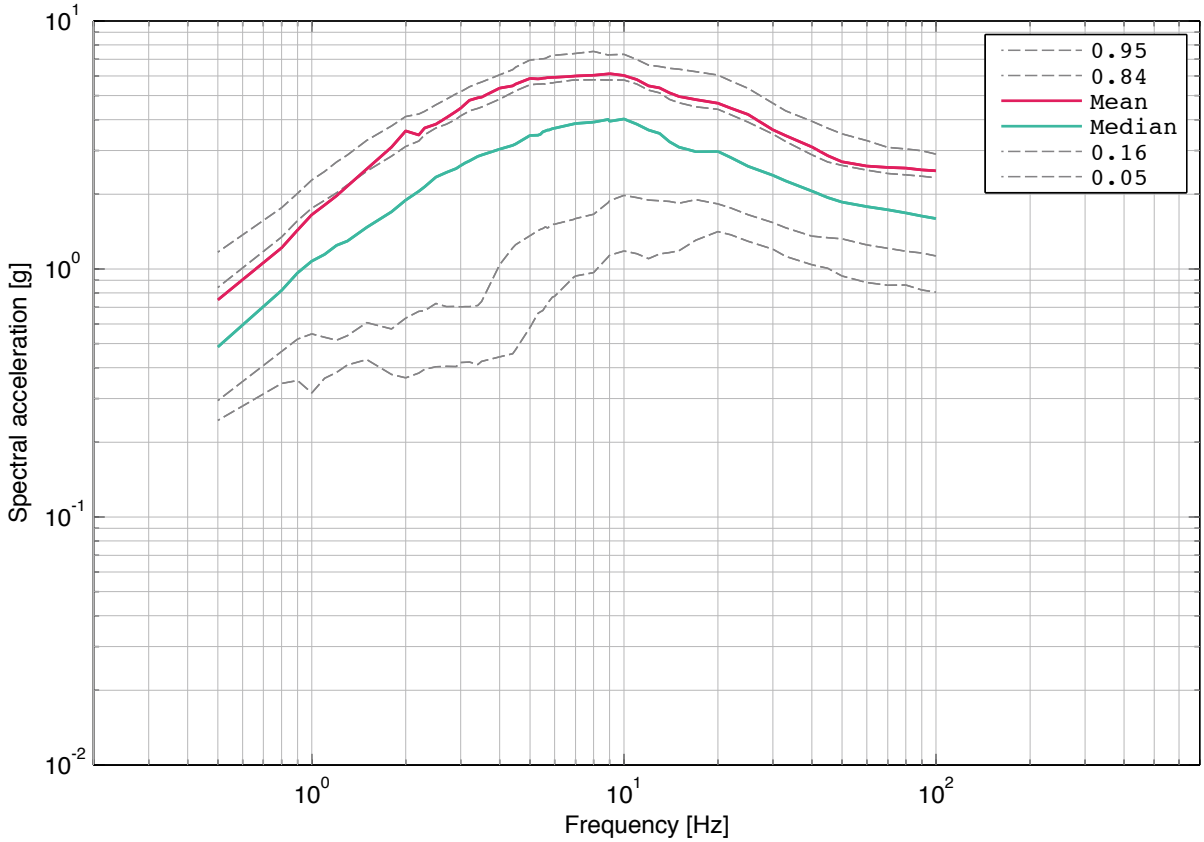

Fig. 5-4.10: Mühleberg, horizontal component, soil, -14 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

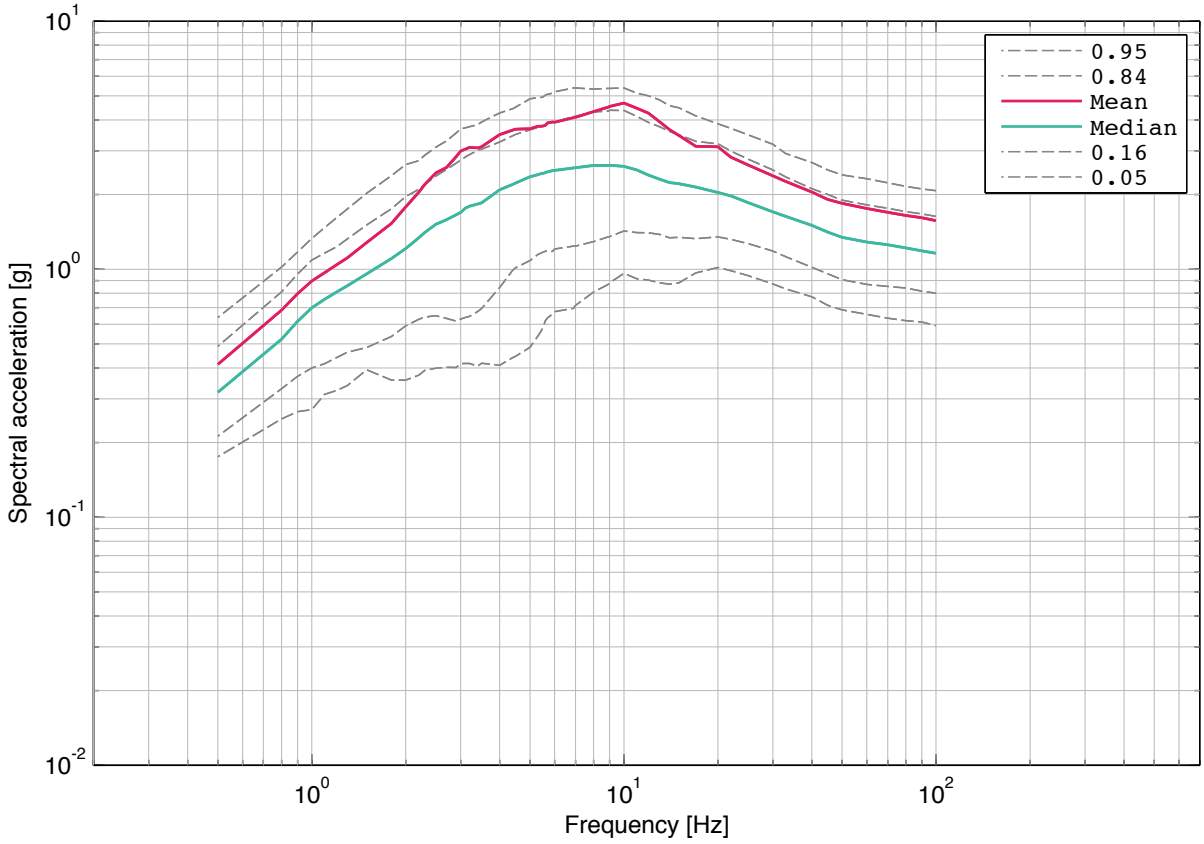

Fig. 5-4.11: Mühleberg, horizontal component, soil, -14 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

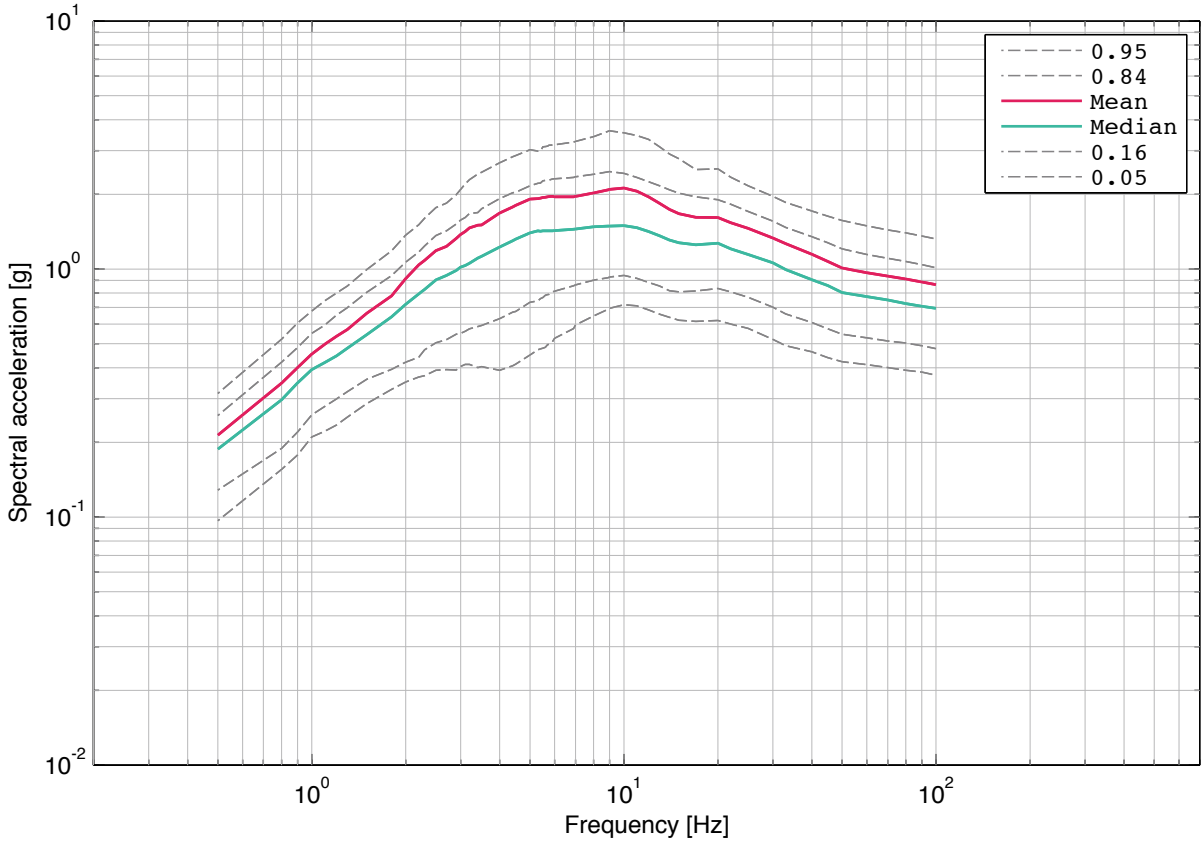

Fig. 5-4.12: Mühleberg, horizontal component, soil, -14 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

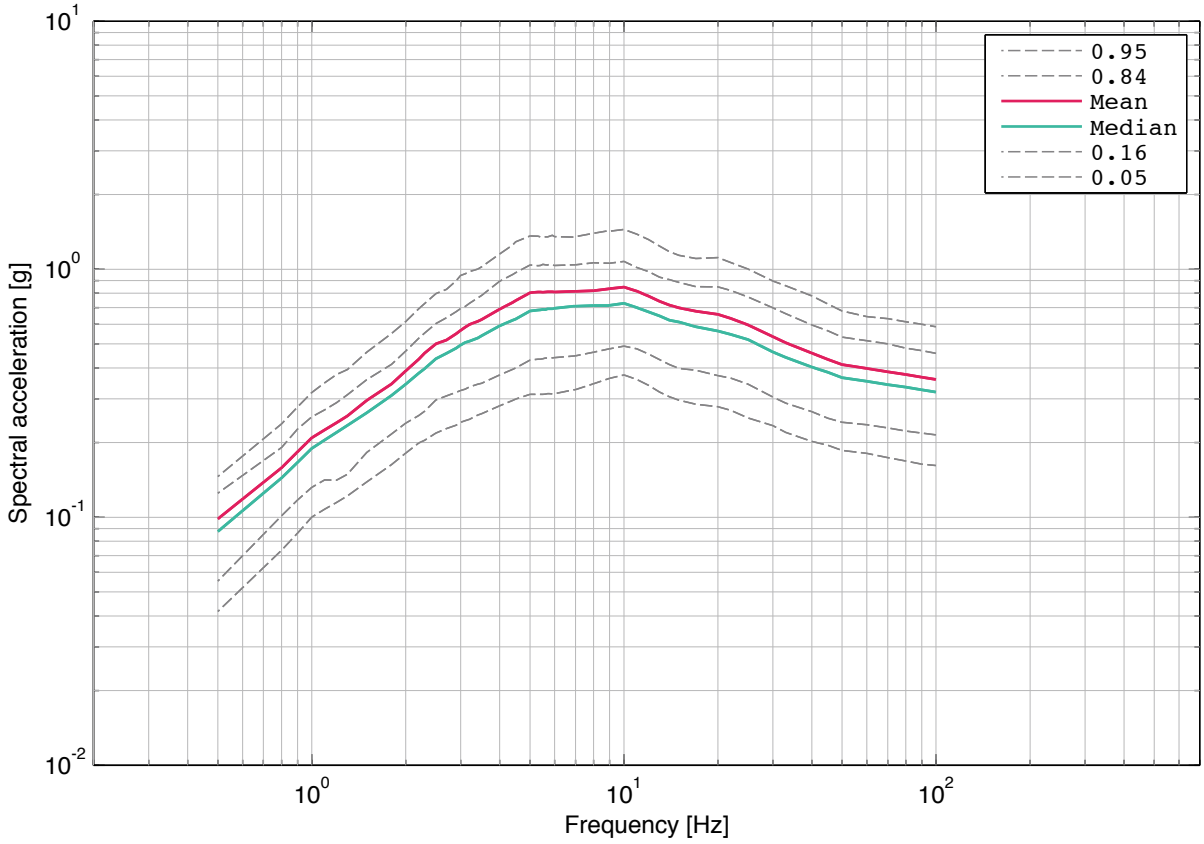

Fig. 5-4.13: Mühleberg, horizontal component, soil, -14 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

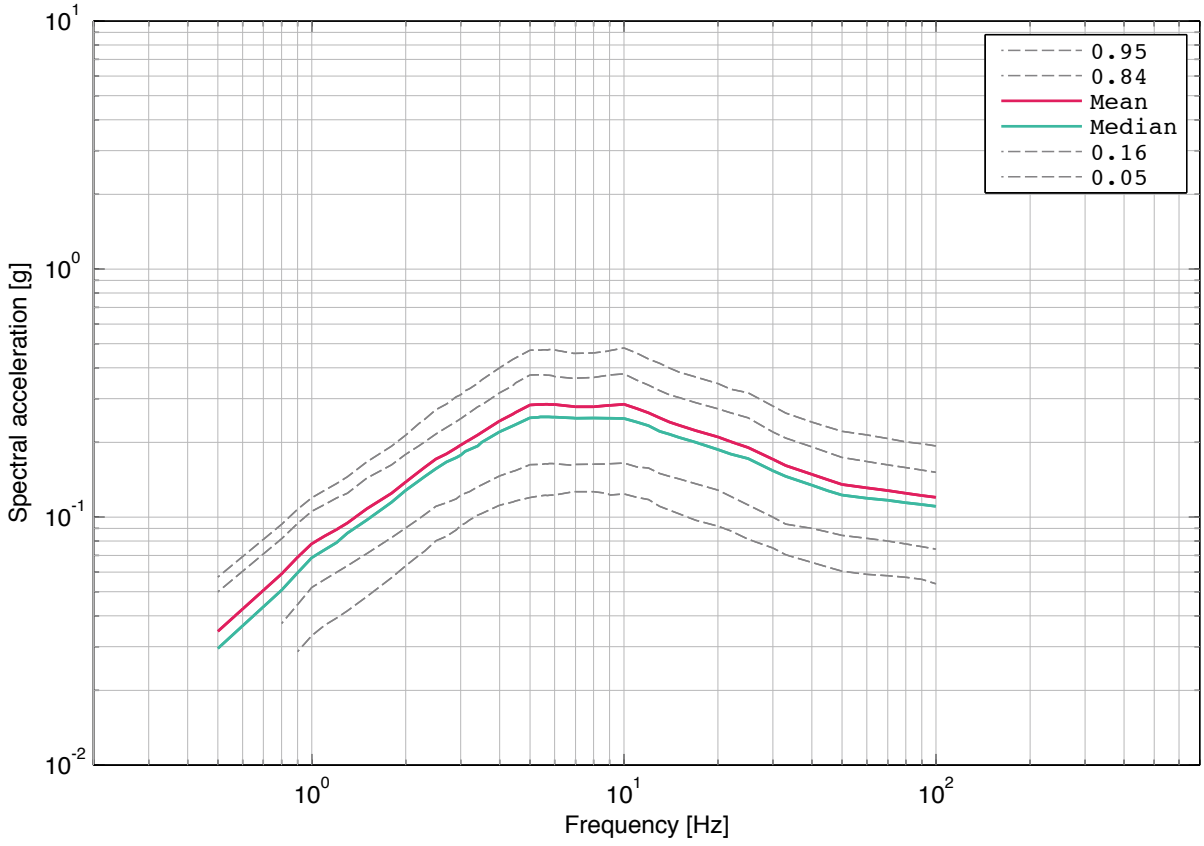

Fig. 5-4.14: Mühleberg, horizontal component, soil, -14 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

5.5 Mühleberg, Rock Hazard Deaggregation, Horizontal Component, Surface

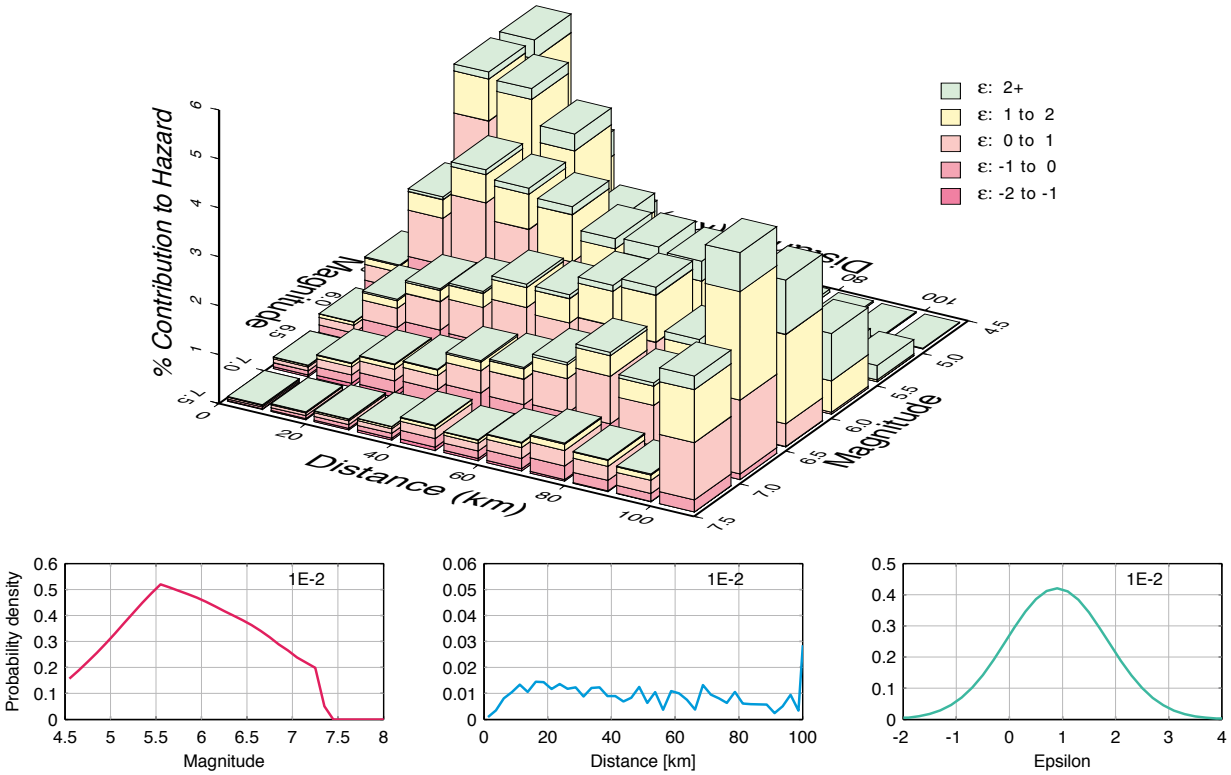

Fig. 5-5.1: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 5 Hz.

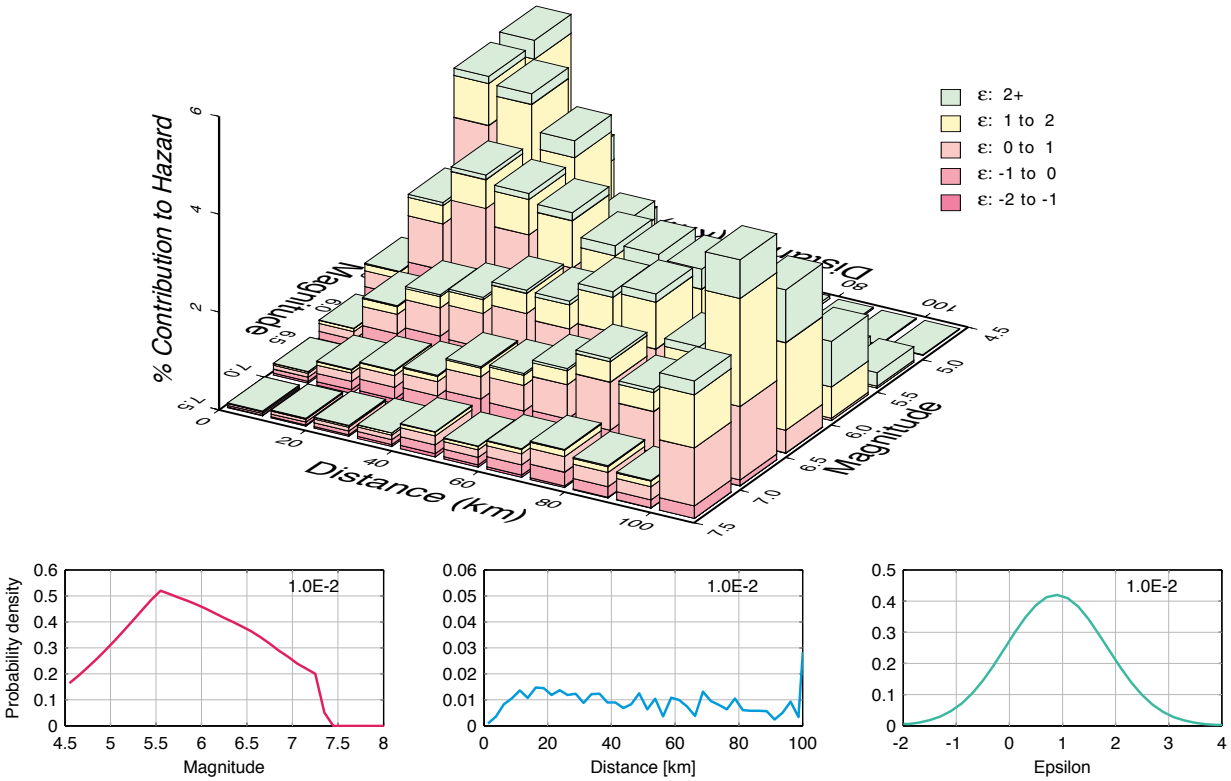

Fig. 5-5.2: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-02, 10 Hz.

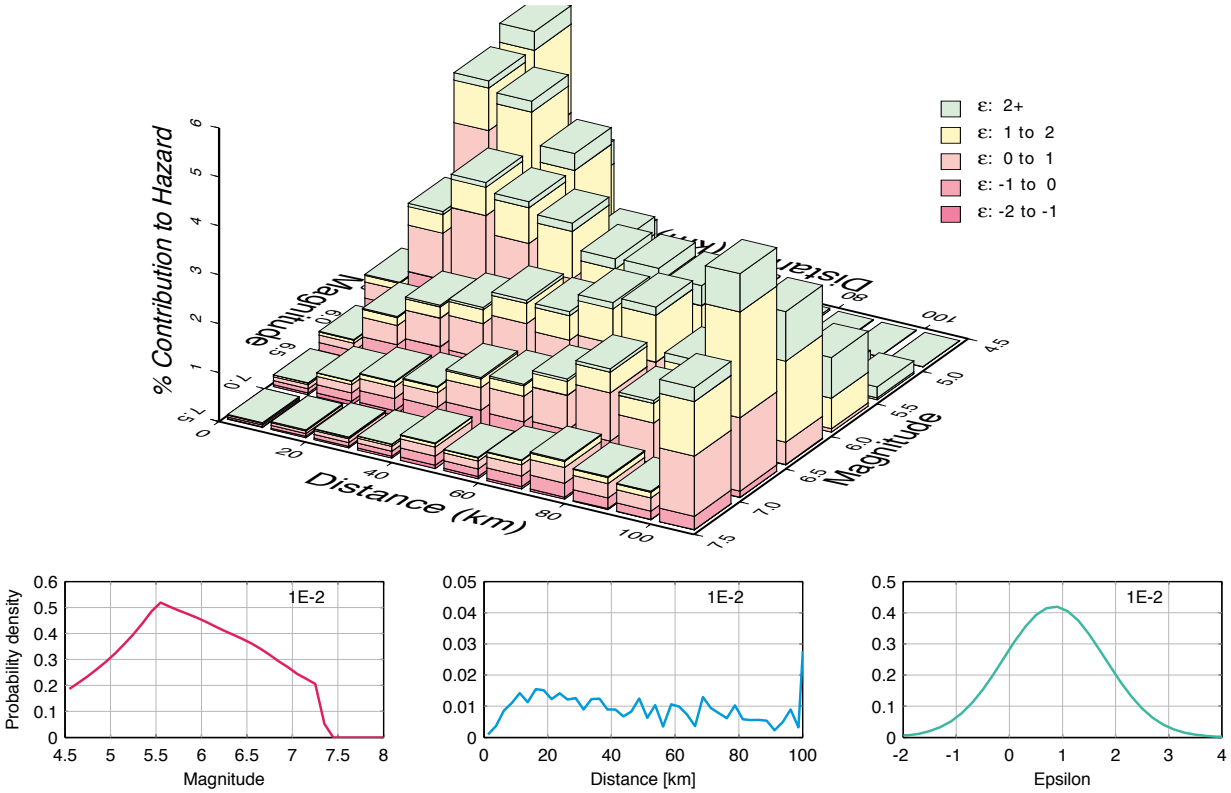

Fig. 5-5.3: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-02, 100 Hz.

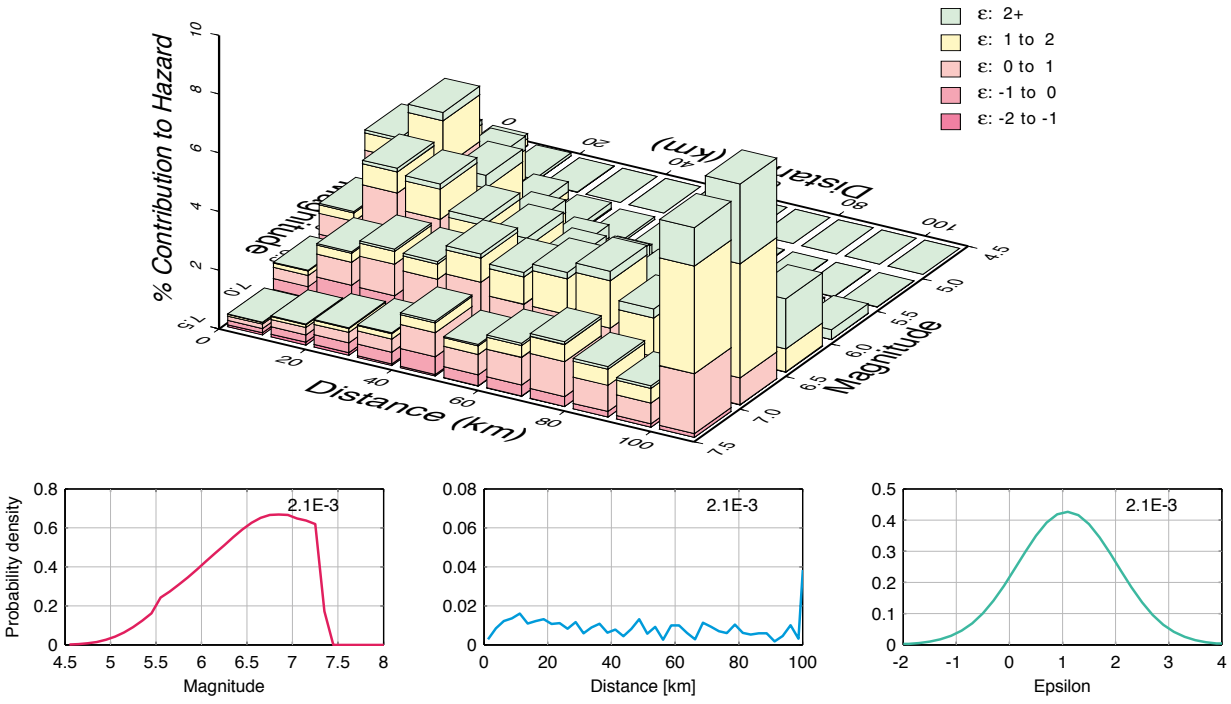

Fig. 5-5.4: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 1 Hz.

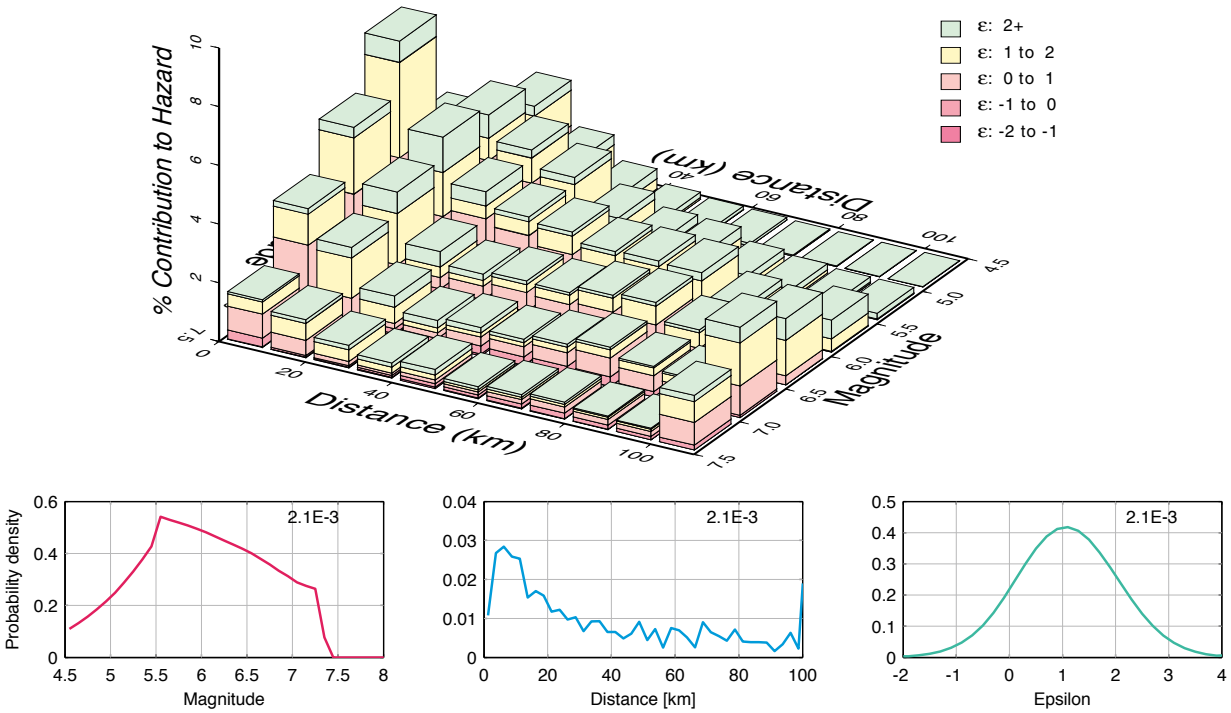

Fig. 5-5.5: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 5 Hz.

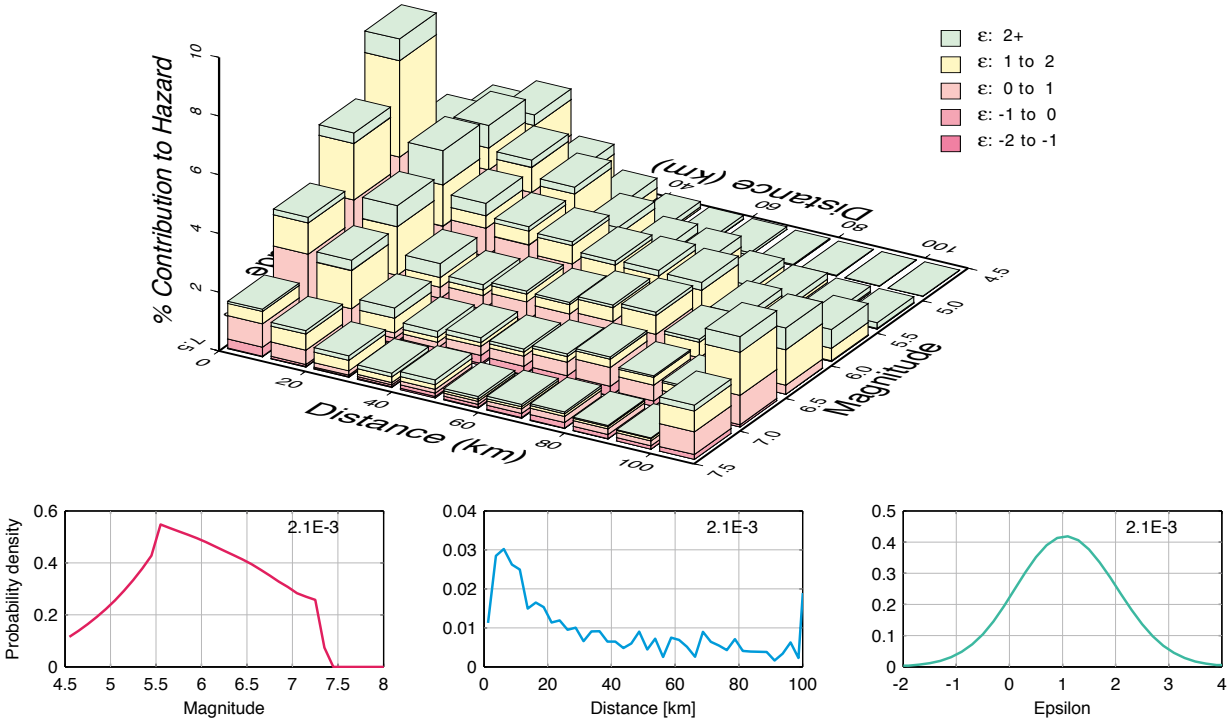

Fig. 5-5.6: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 10 Hz.

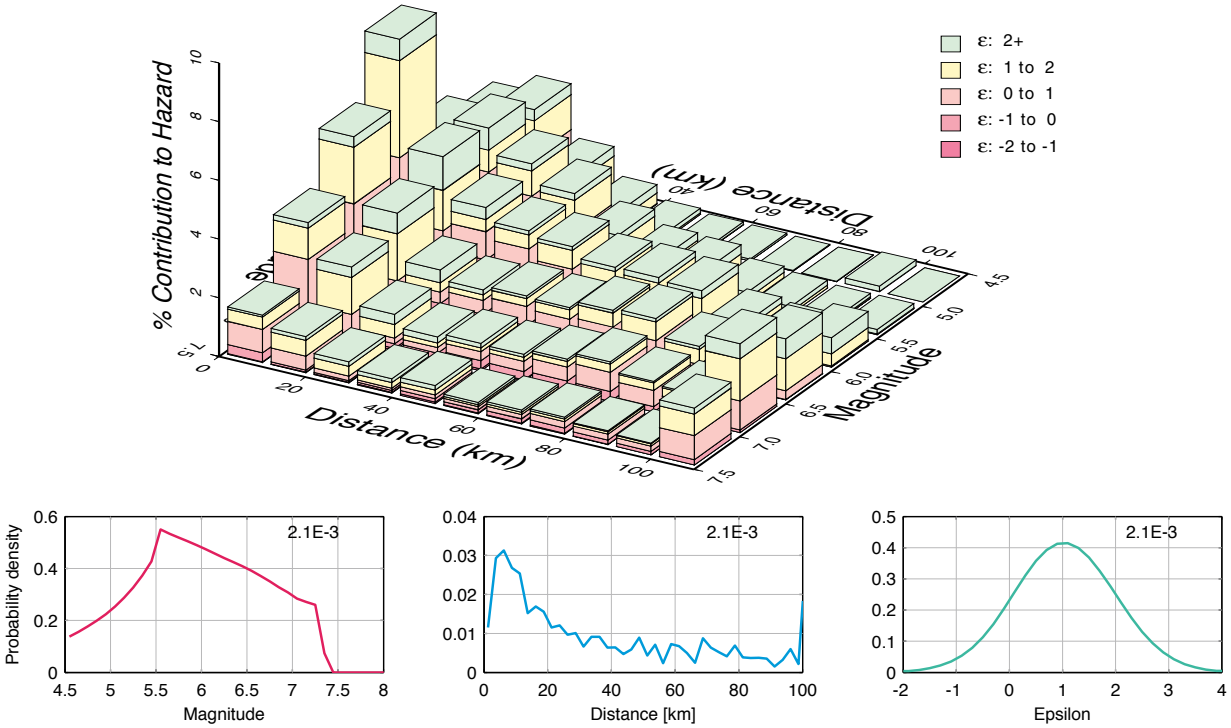

Fig. 5-5.7: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 2.1E-03, 100 Hz.

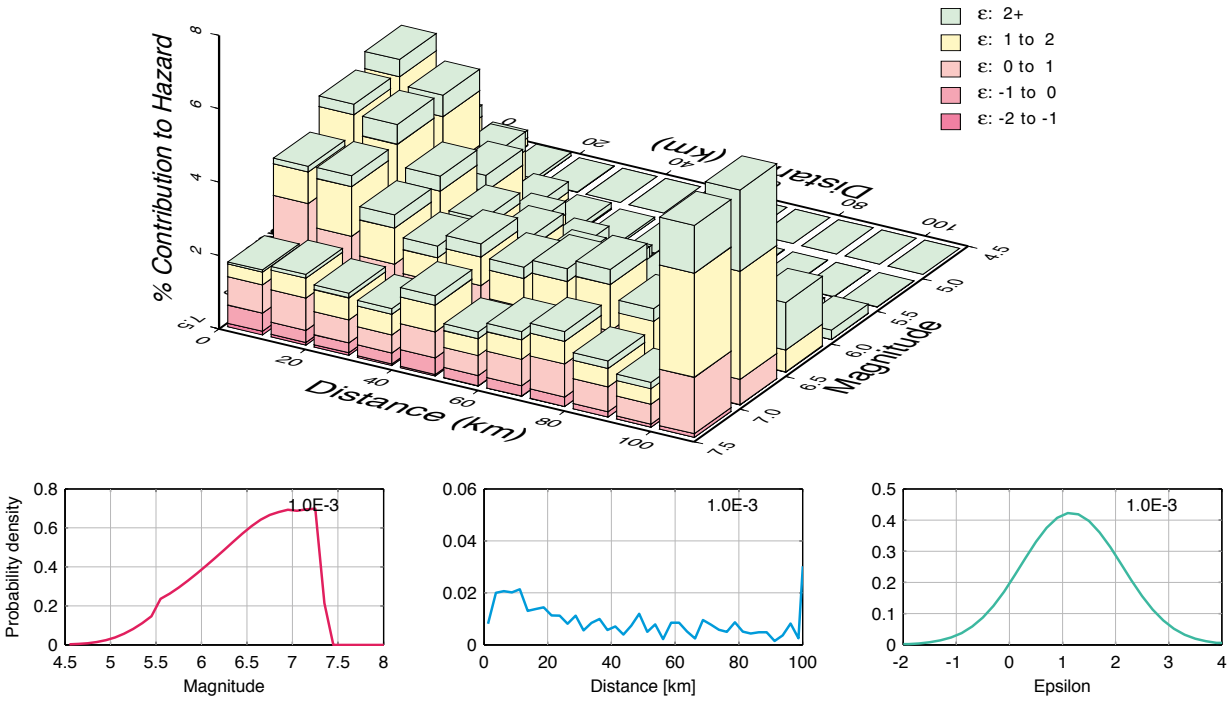

Fig. 5-5.8: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 1 Hz.

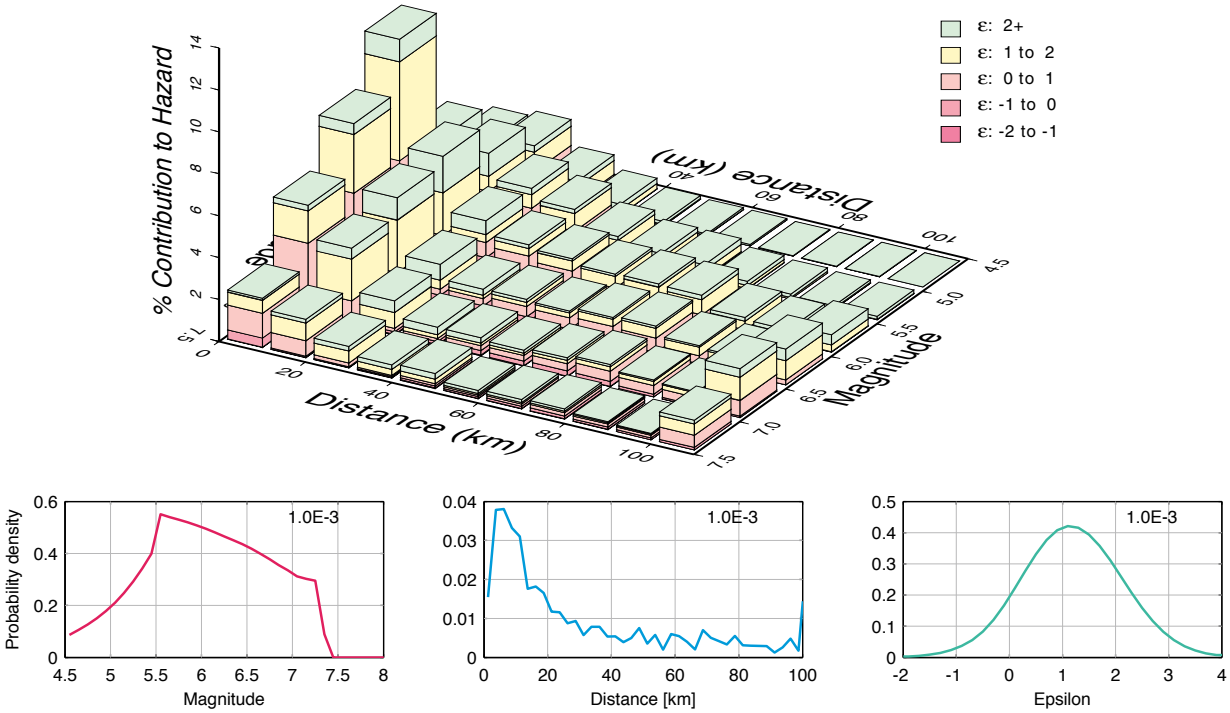

Fig. 5-5.9: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 5 Hz.

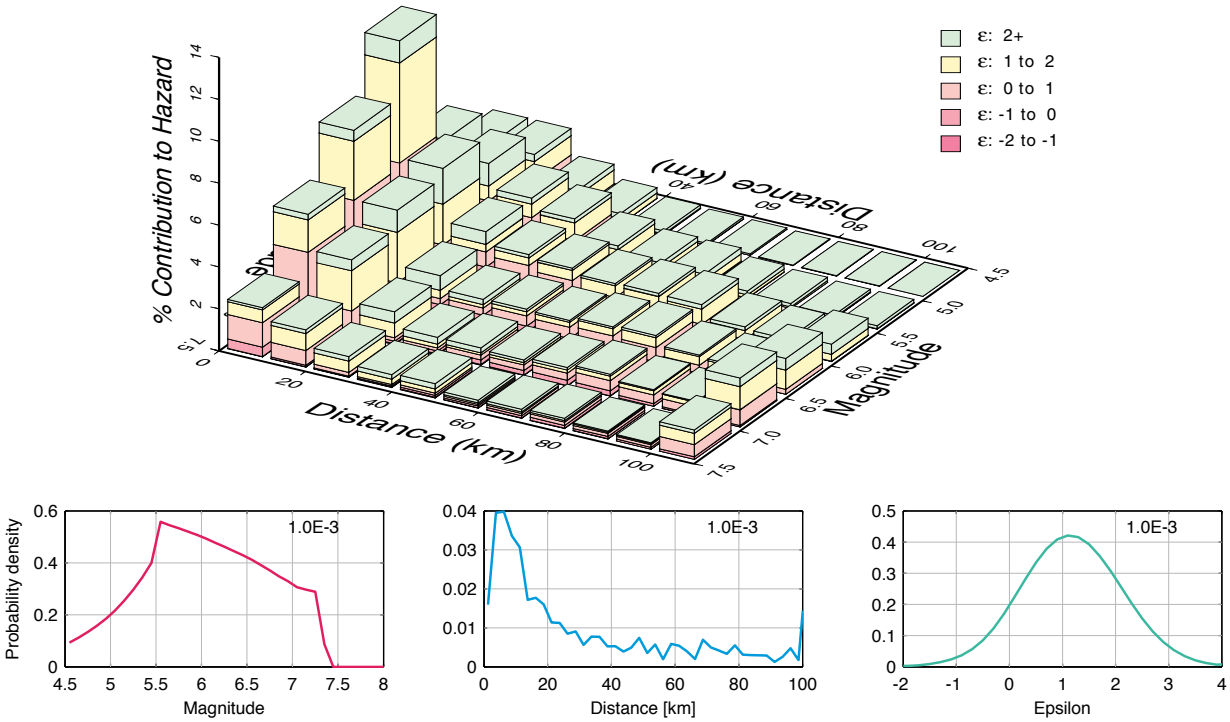

Fig. 5-5.10: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 10 Hz.

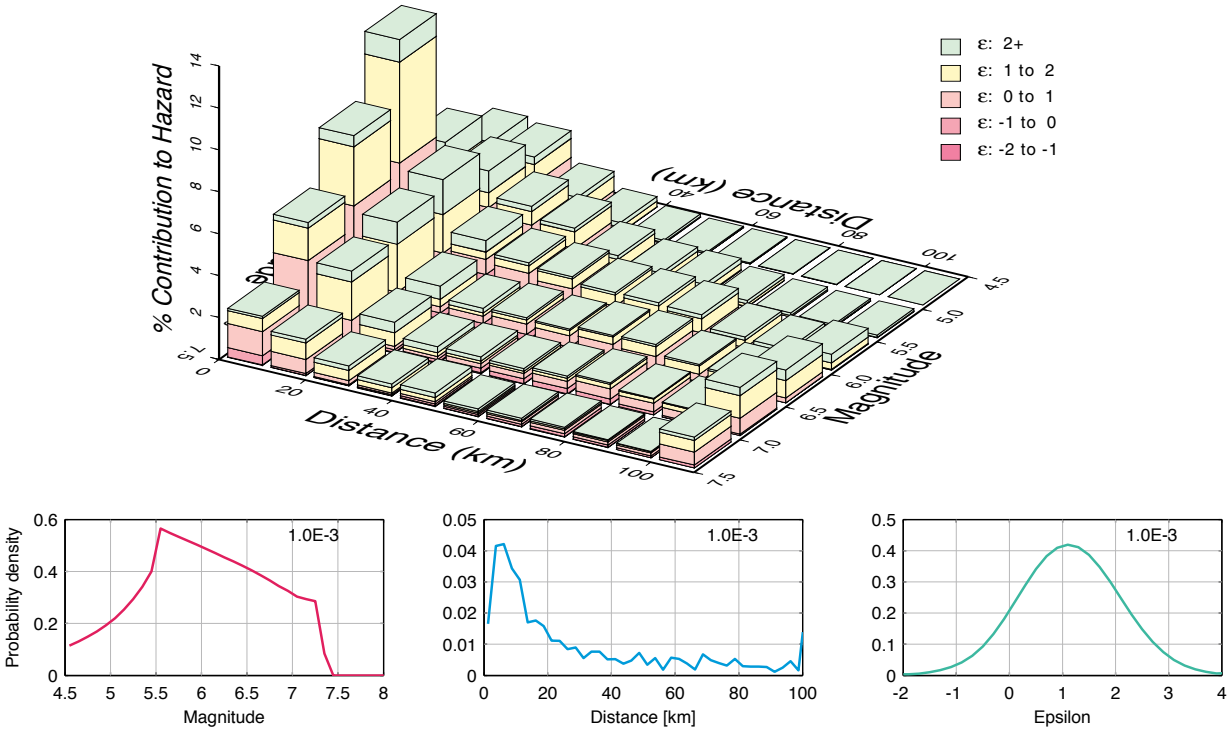

Fig. 5-5.11: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-03, 100 Hz.

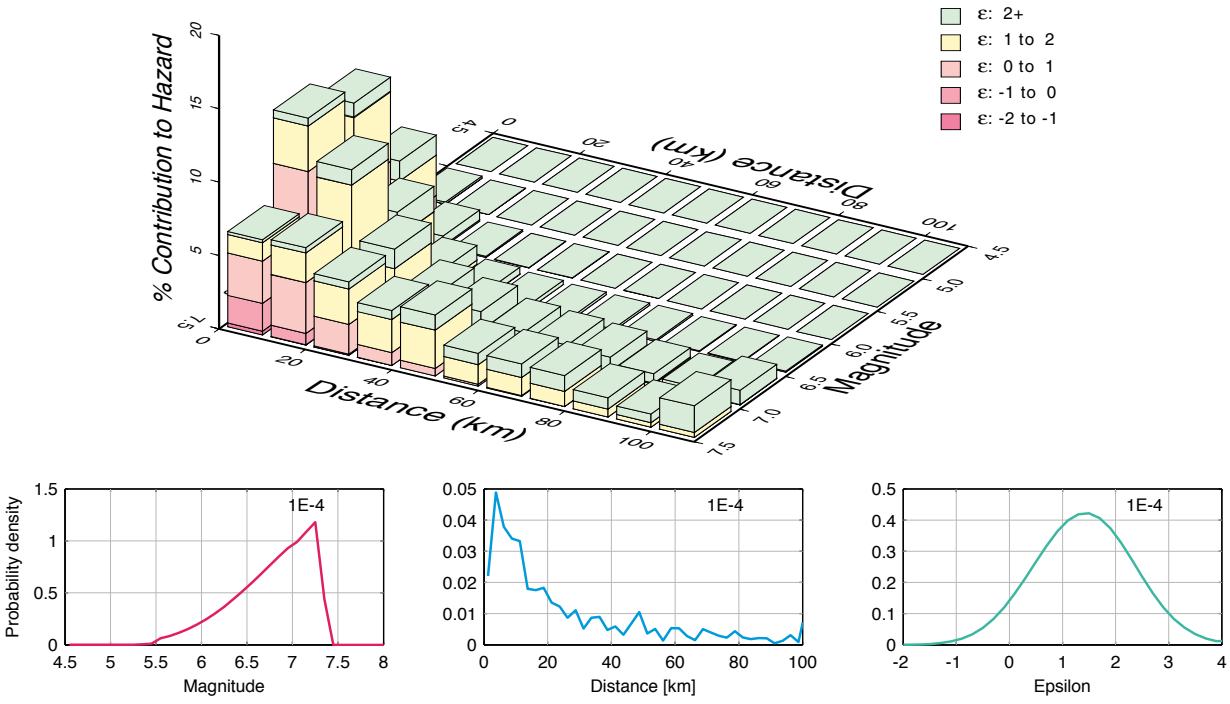

Fig. 5-5.12: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 0.5 Hz.

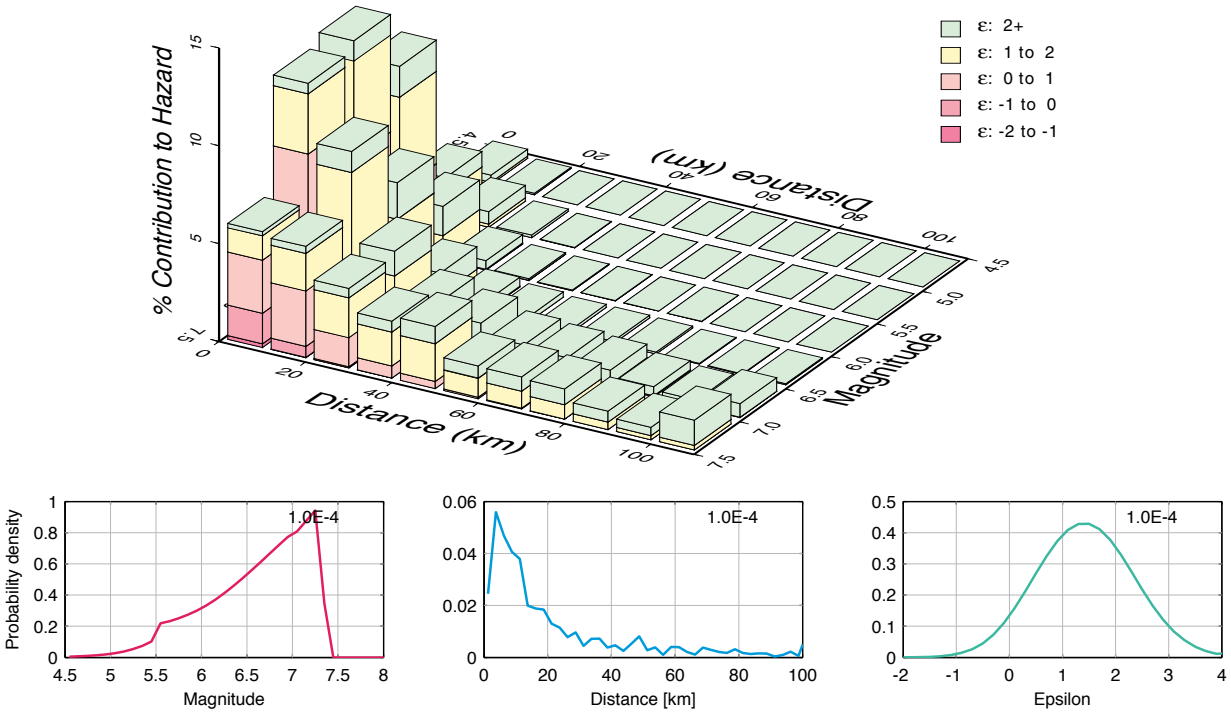

Fig. 5-5.13: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 1 Hz.

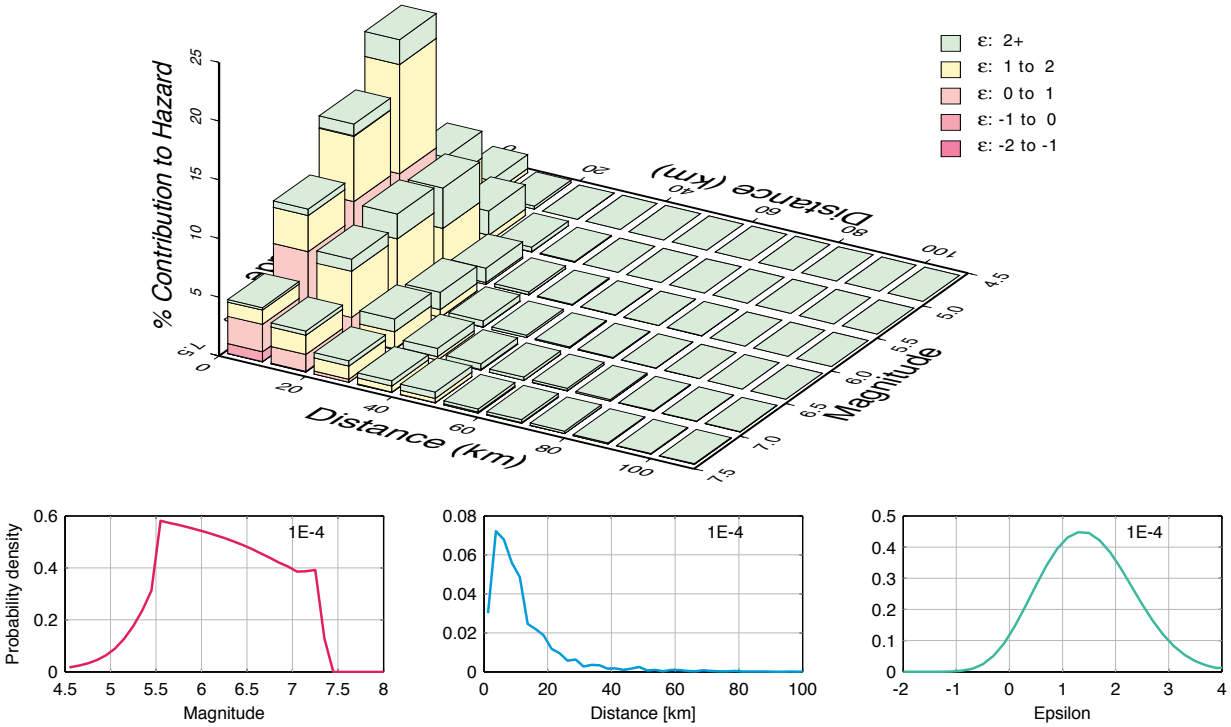

Fig. 5-5.14: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 5 Hz.

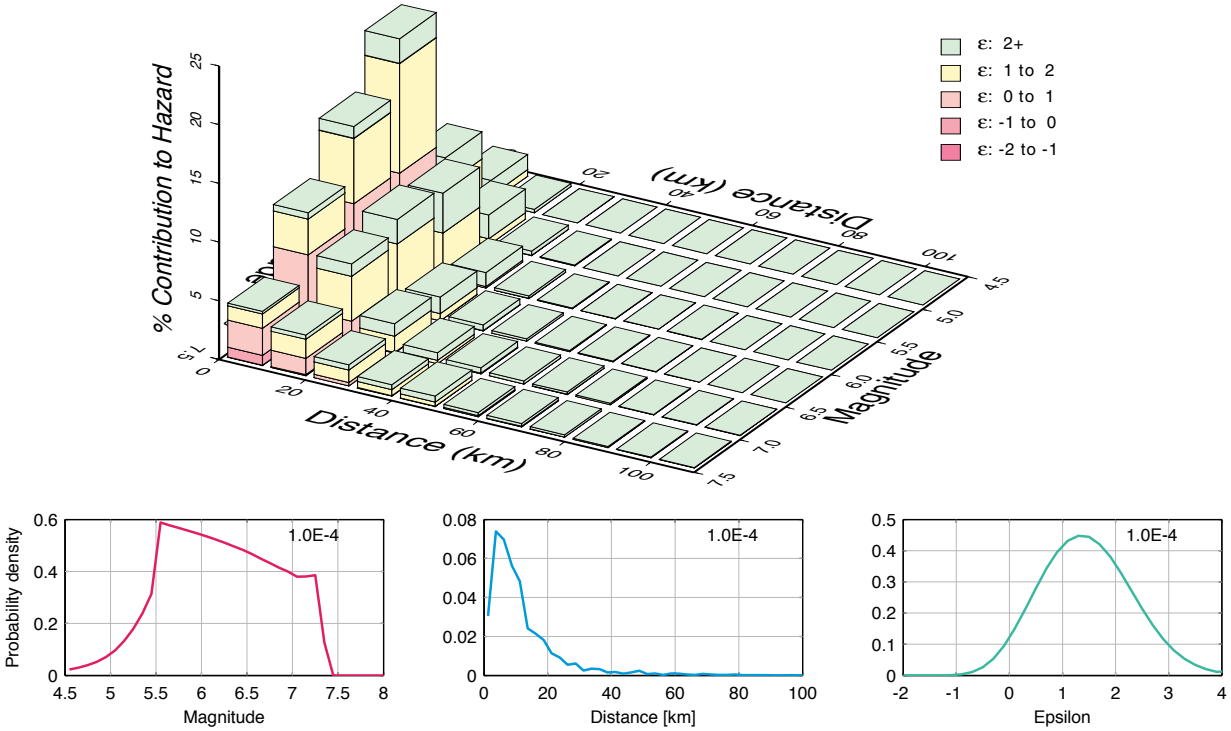

Fig. 5-5.15: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-04, 10 Hz.

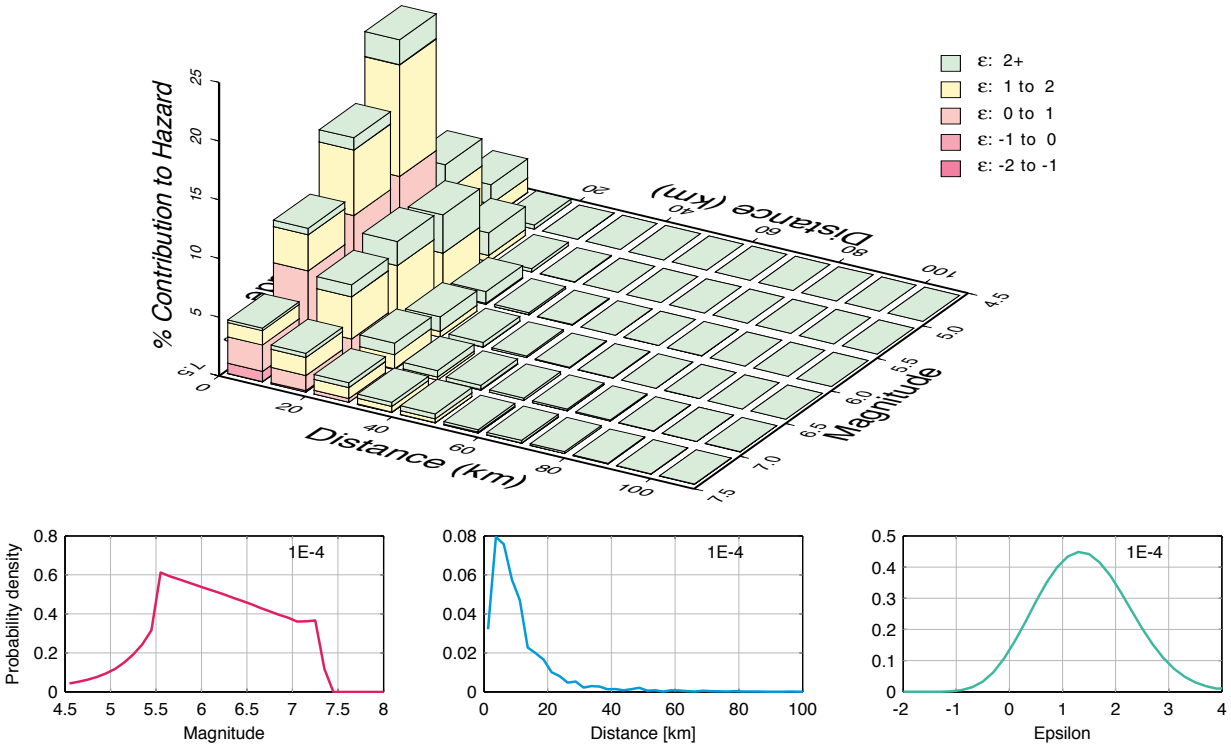

Fig. 5-5.16: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-04, 100 Hz.

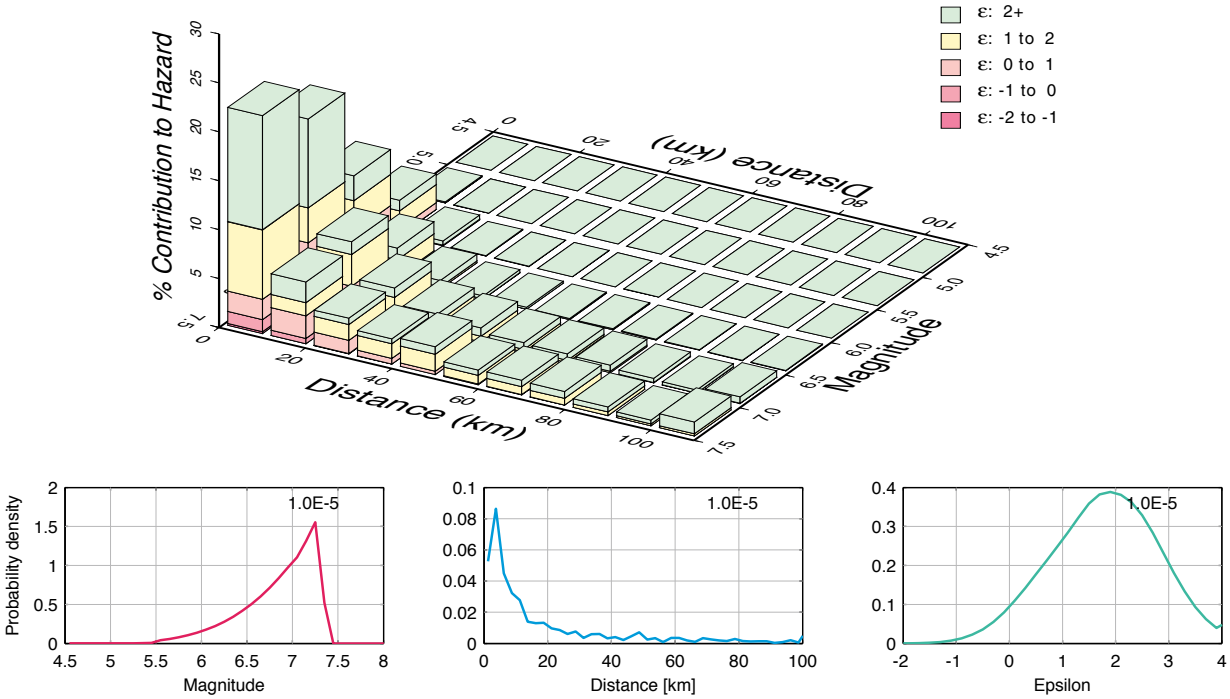

Fig. 5-5.17: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 0.5 Hz.

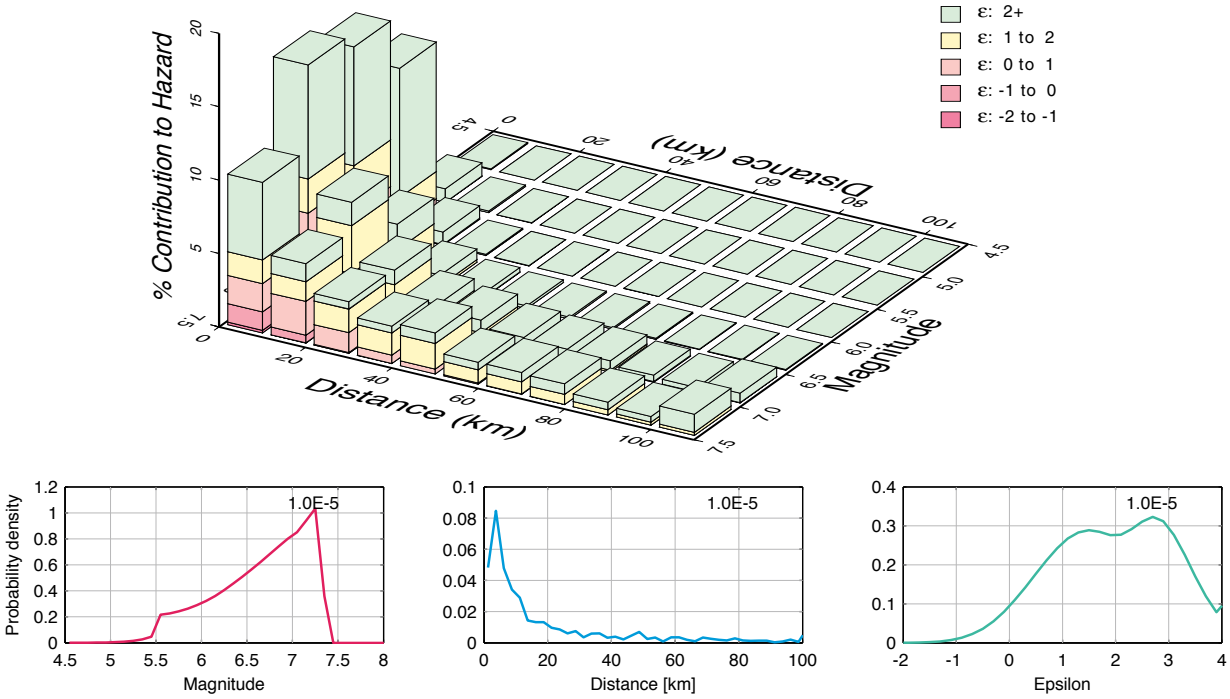

Fig. 5-5.18: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 1 Hz.

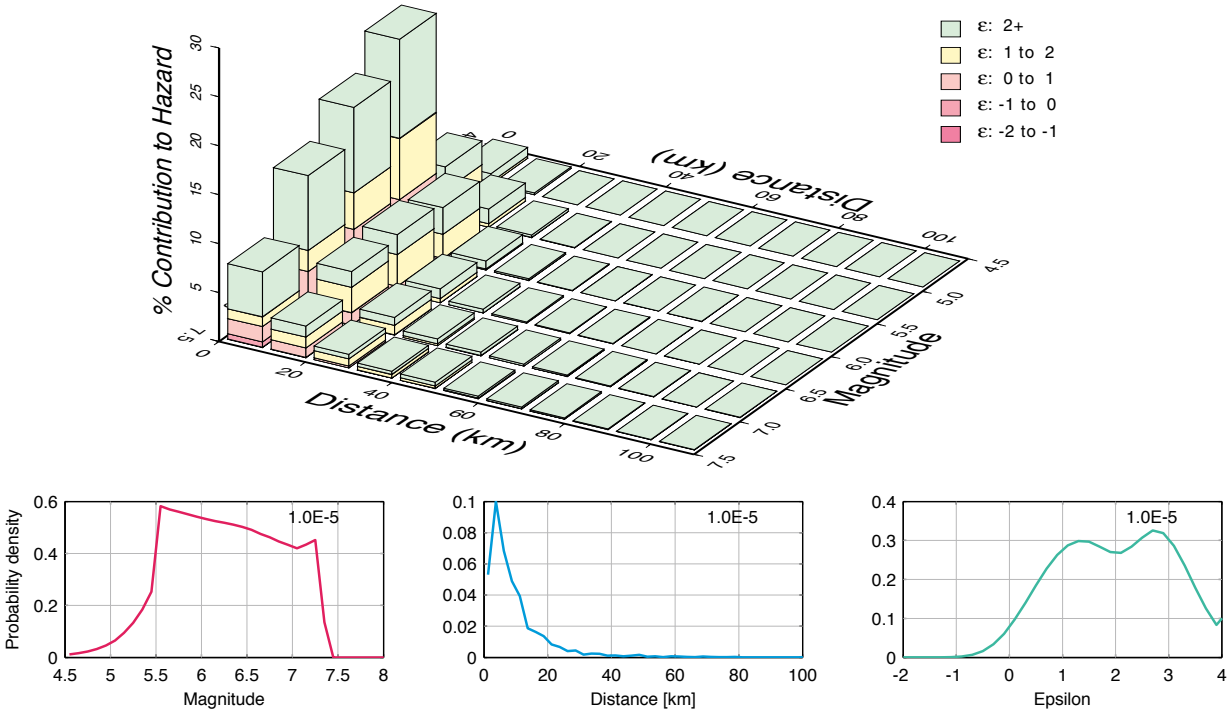

Fig. 5-5.19: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 5 Hz.

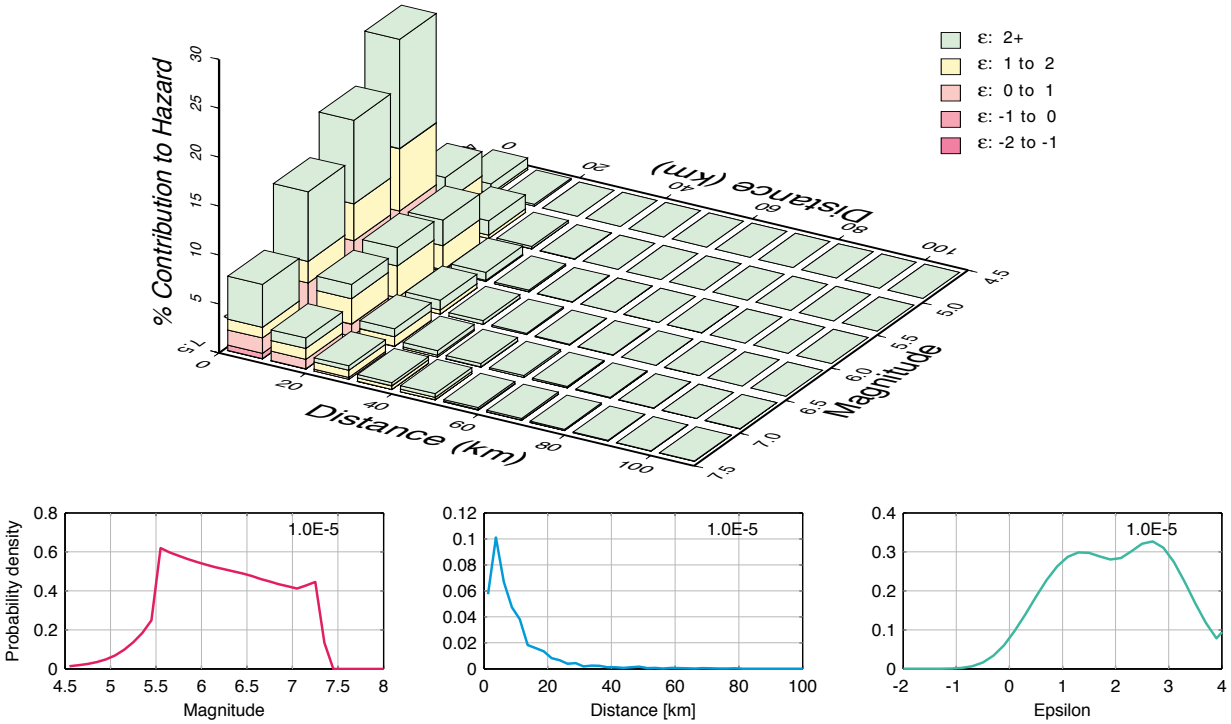

Fig. 5-5.20: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 10 Hz.

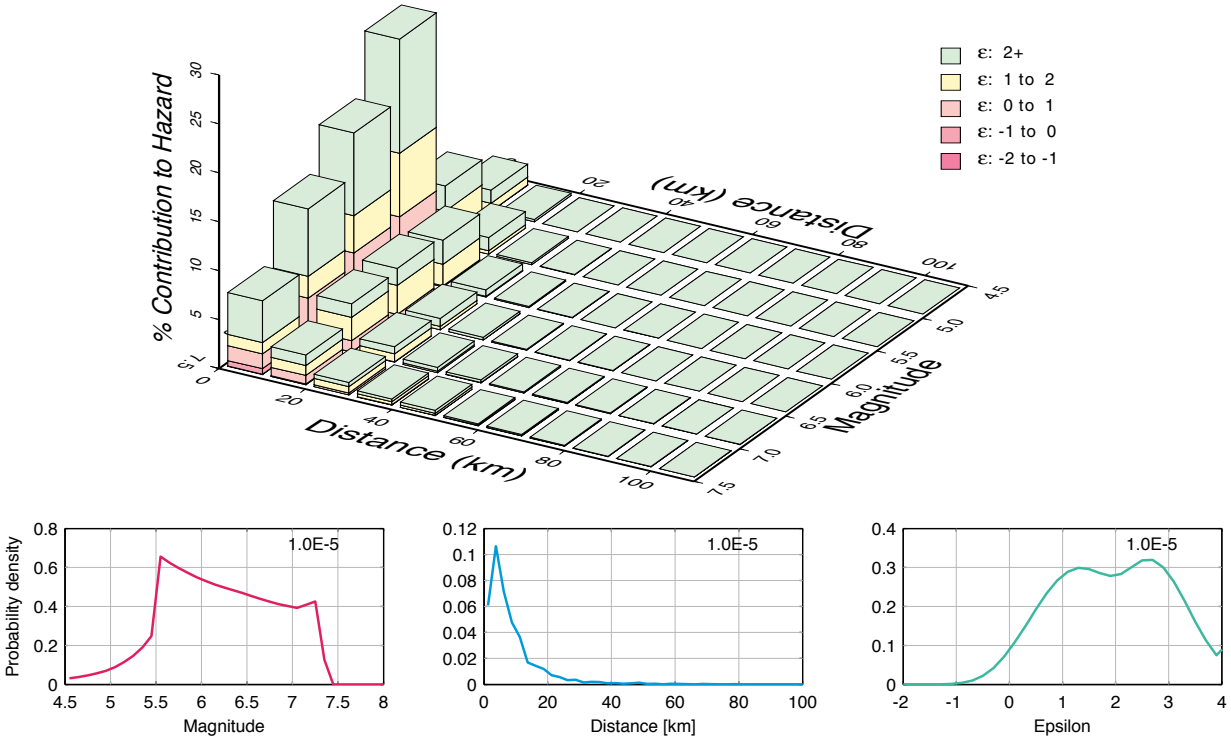

Fig. 5-5.21: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-05, 100 Hz.

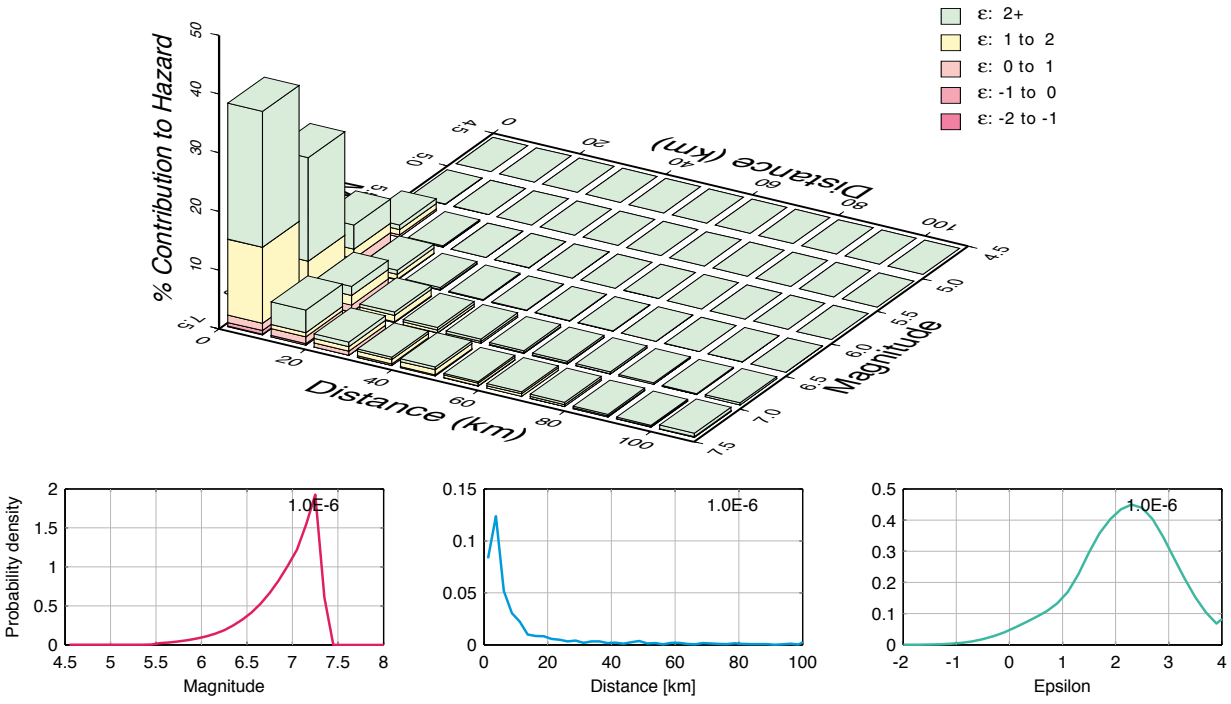

Fig. 5-5.22: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 0.5 Hz.

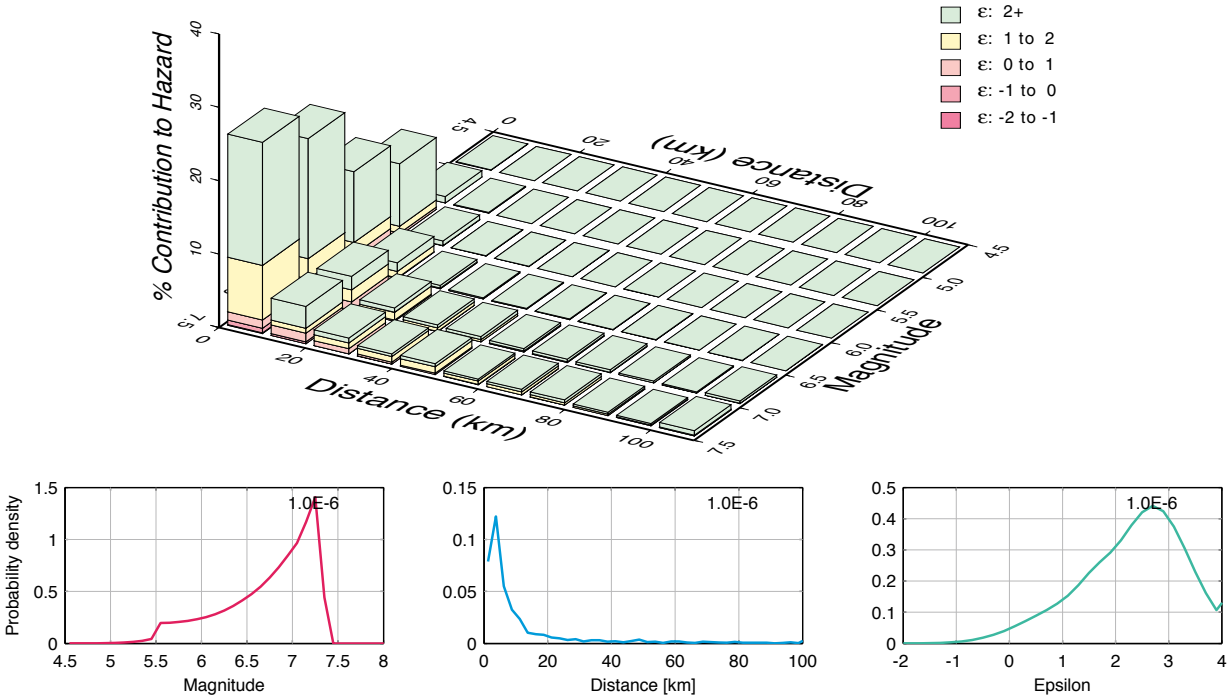

Fig. 5-5.23: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 1 Hz.

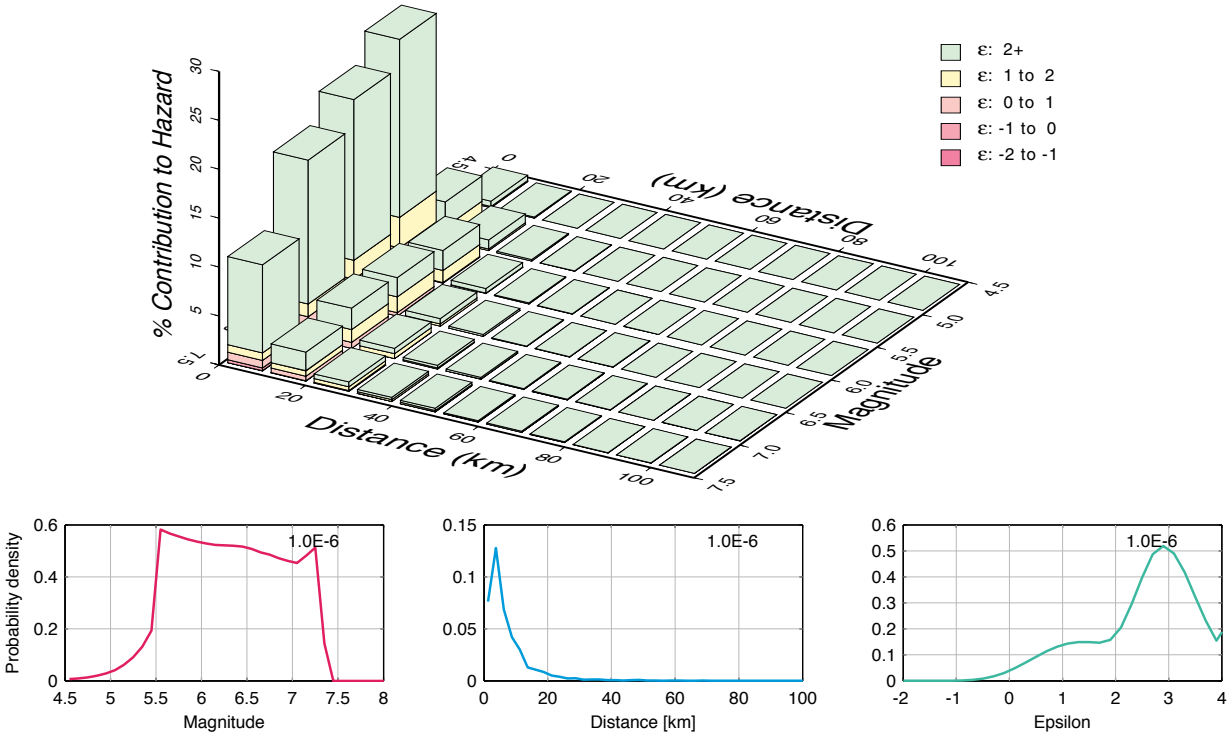

Fig. 5-5.24: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 5 Hz.

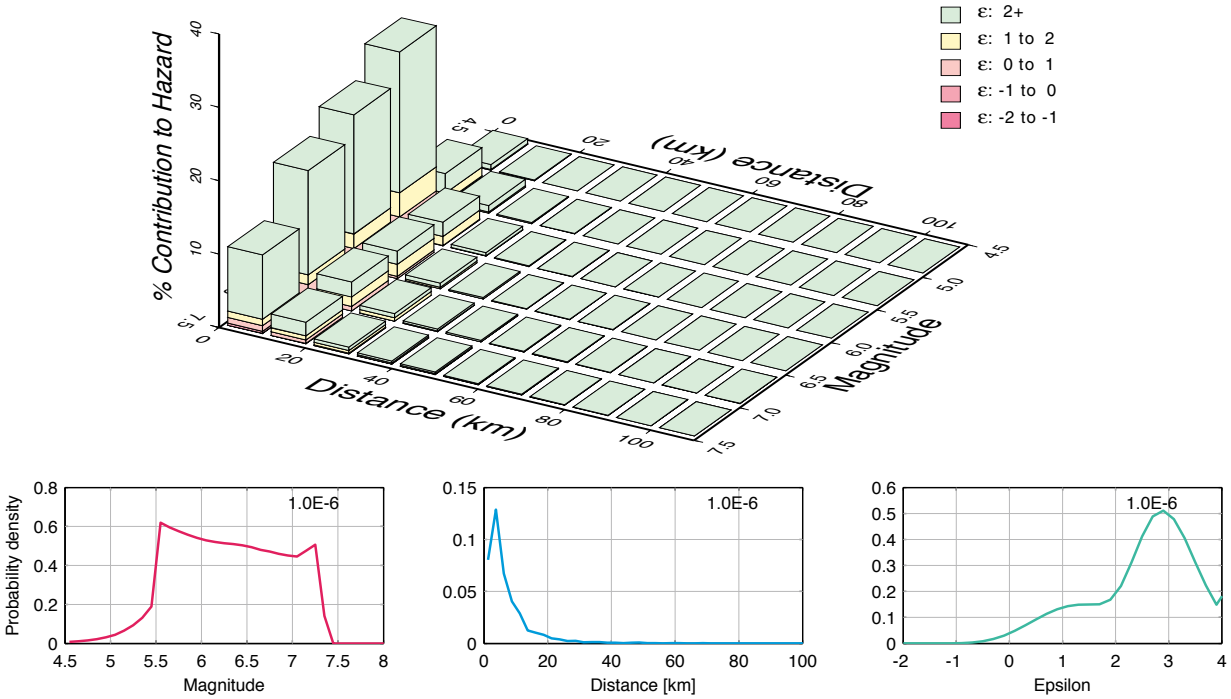

Fig. 5-5.25: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 10 Hz.

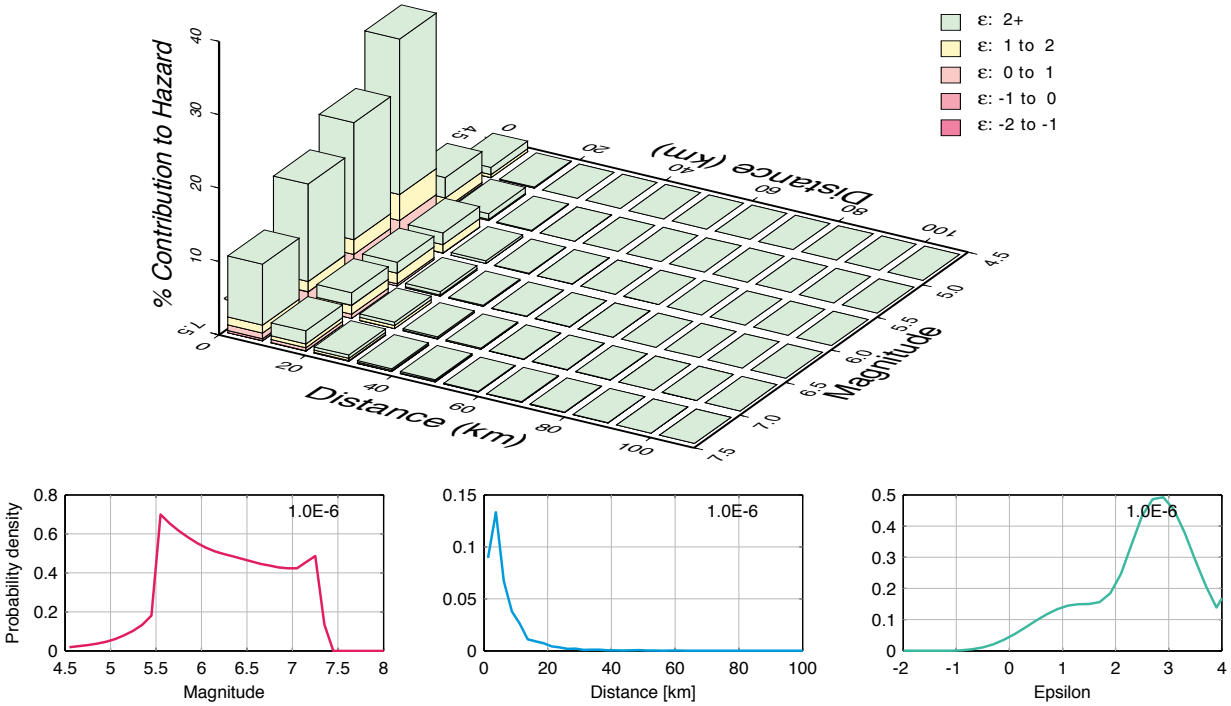

Fig. 5-5.26: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-06, 100 Hz.

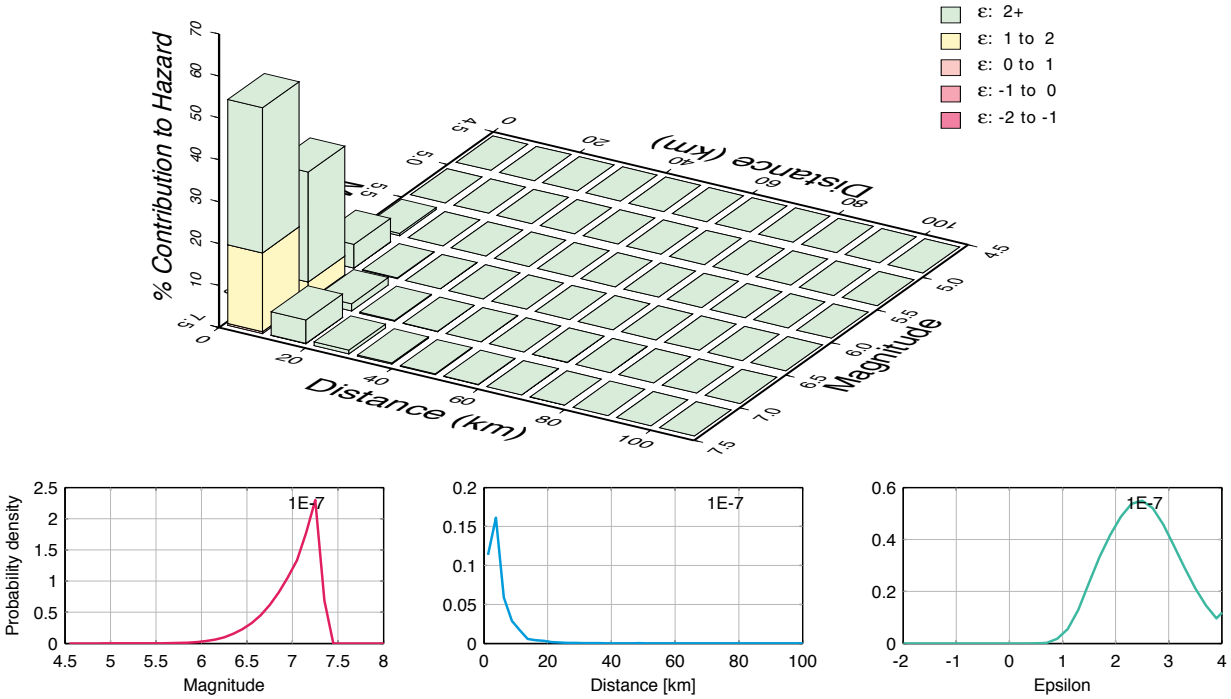

Fig. 5-5.27: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 0.5 Hz.

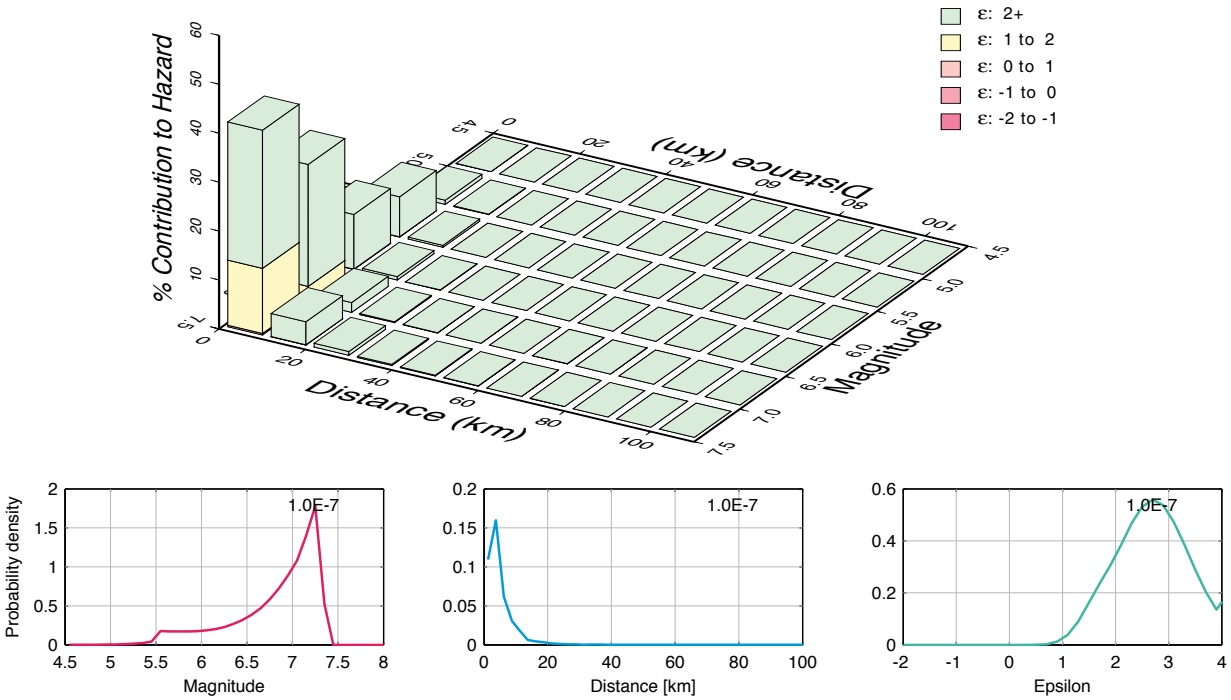

Fig. 5-5.28: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 1 Hz.

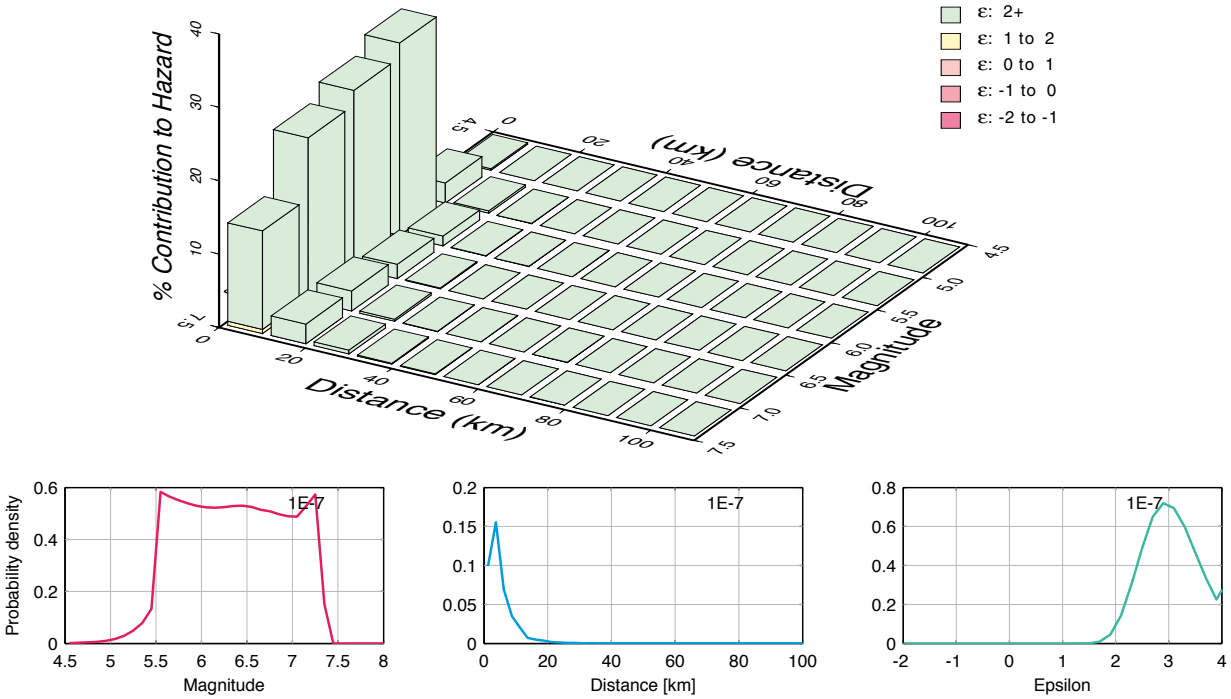

Fig. 5-5.29: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 5 Hz.

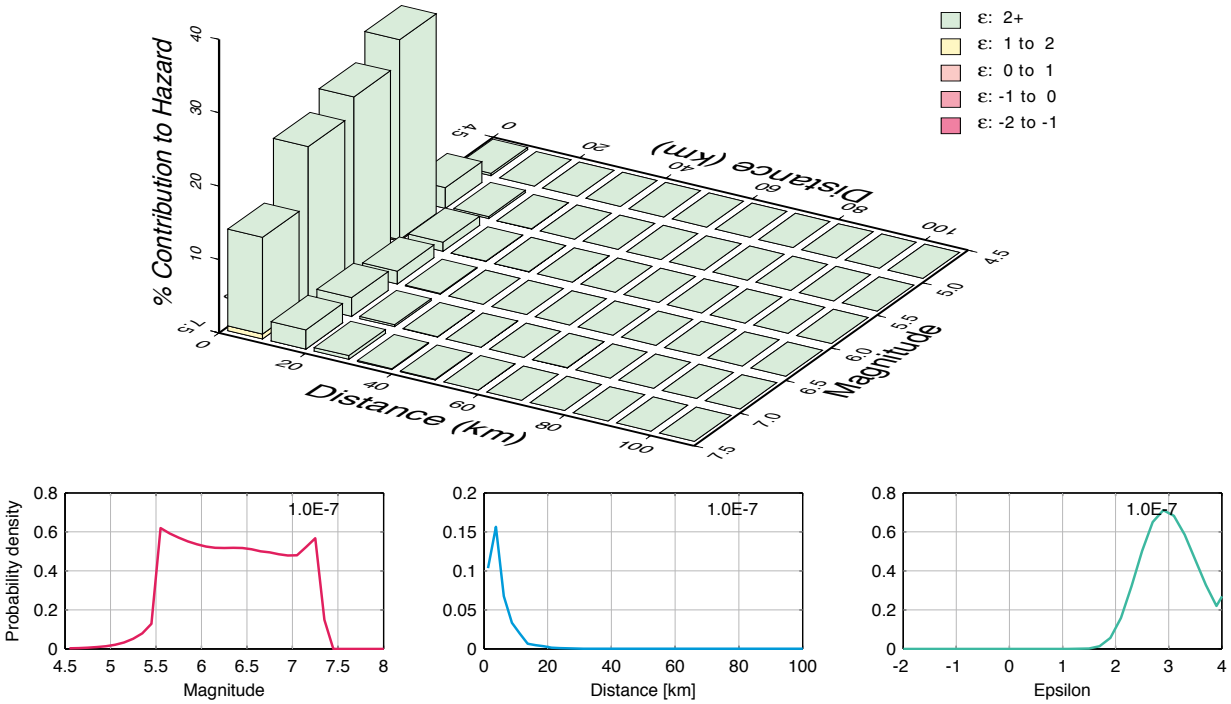

Fig. 5-5.30: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1.0E-07, 10 Hz.

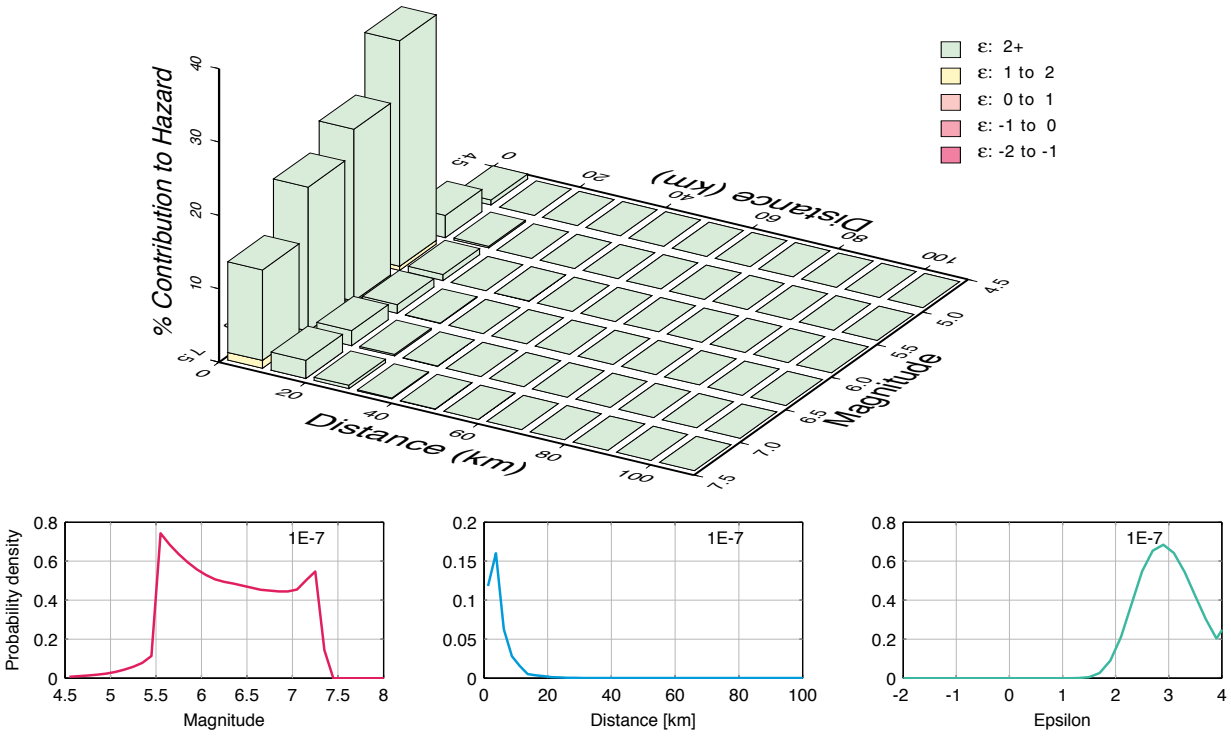

Fig. 5-5.31: Mühleberg, horizontal component, rock, hazard deaggregation by magnitude, distance and epsilon for annual hazard level 1E-07, 100 Hz.

5.6 Müehleberg, Horizontal Component, Mean $M - R - \varepsilon$

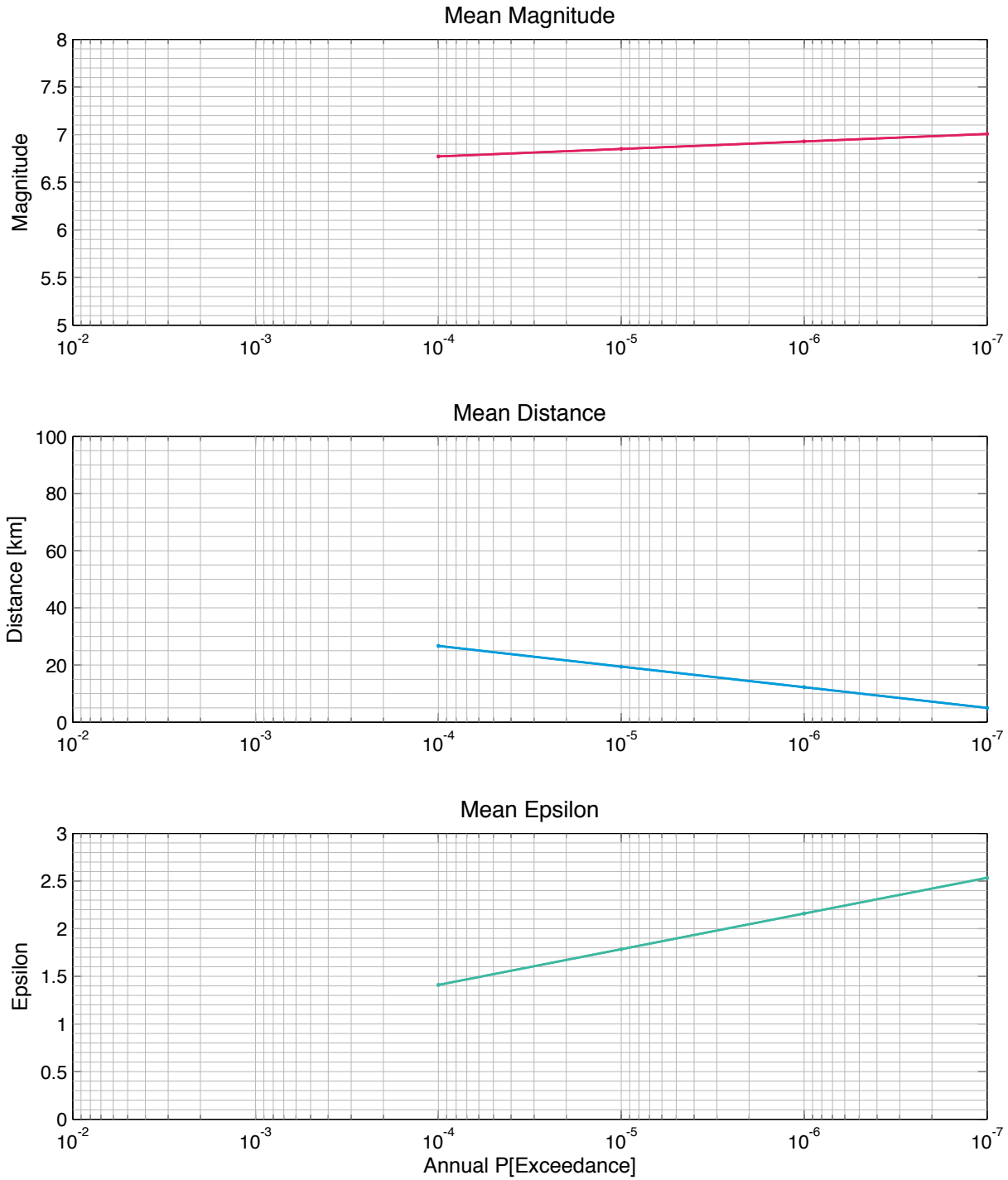

Fig. 5-10.1: Muehleberg, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 0.5 Hz.

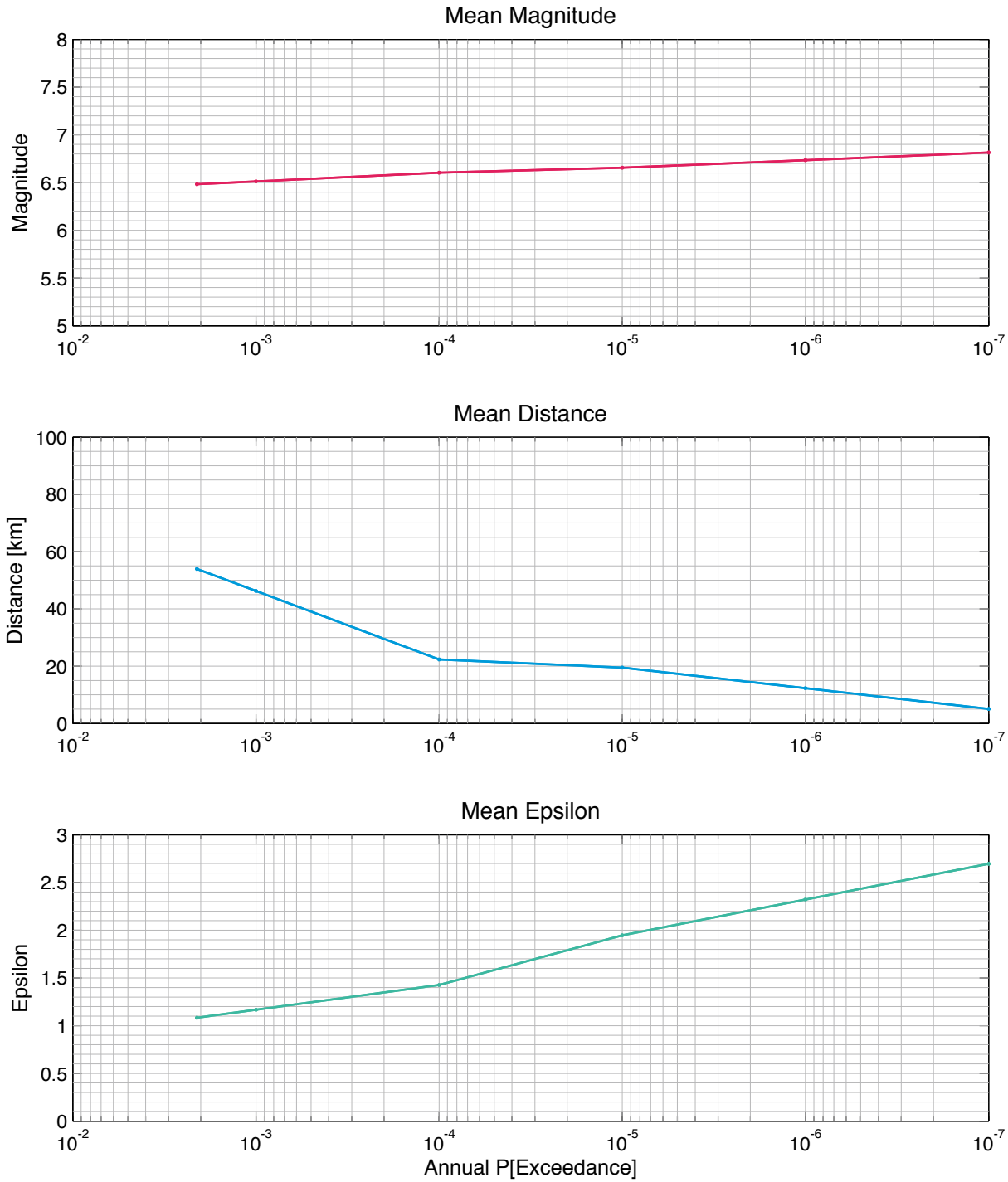

Fig. 5-10.2: Muehleberg, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 1 Hz.

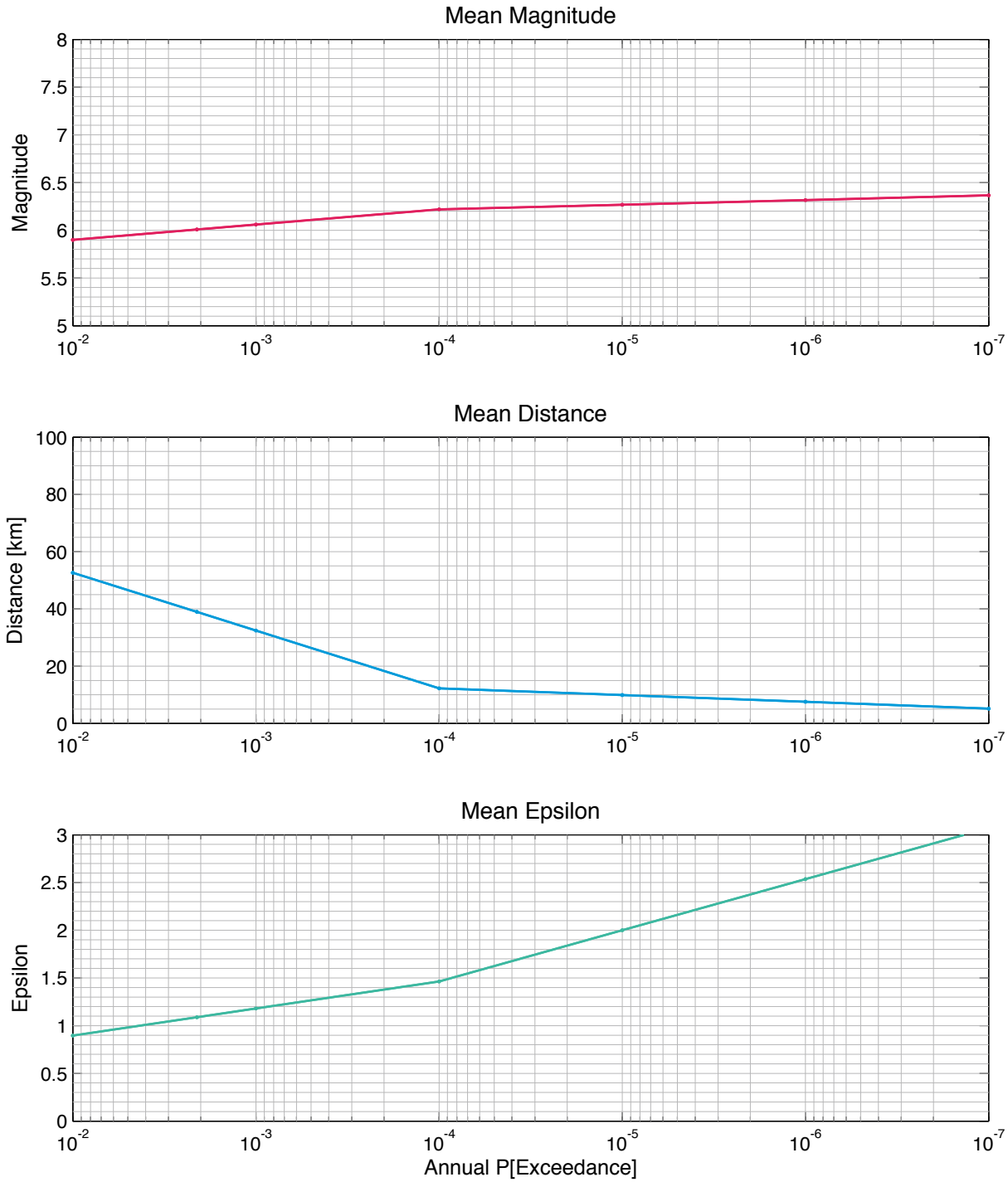

Fig. 5-10.3: Muehleberg, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 5 Hz.

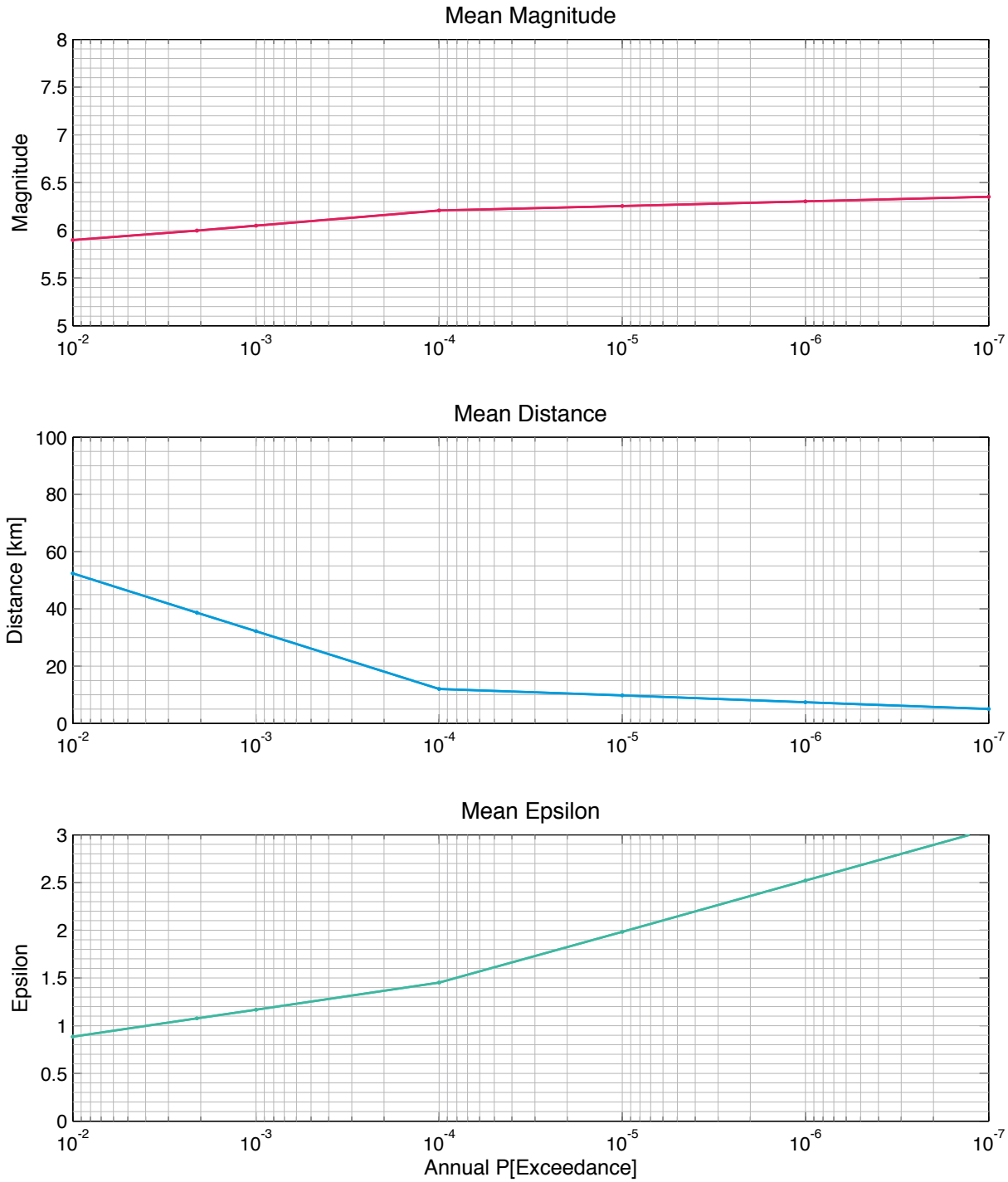

Fig. 5-10.4: Muehleberg, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 10 Hz.

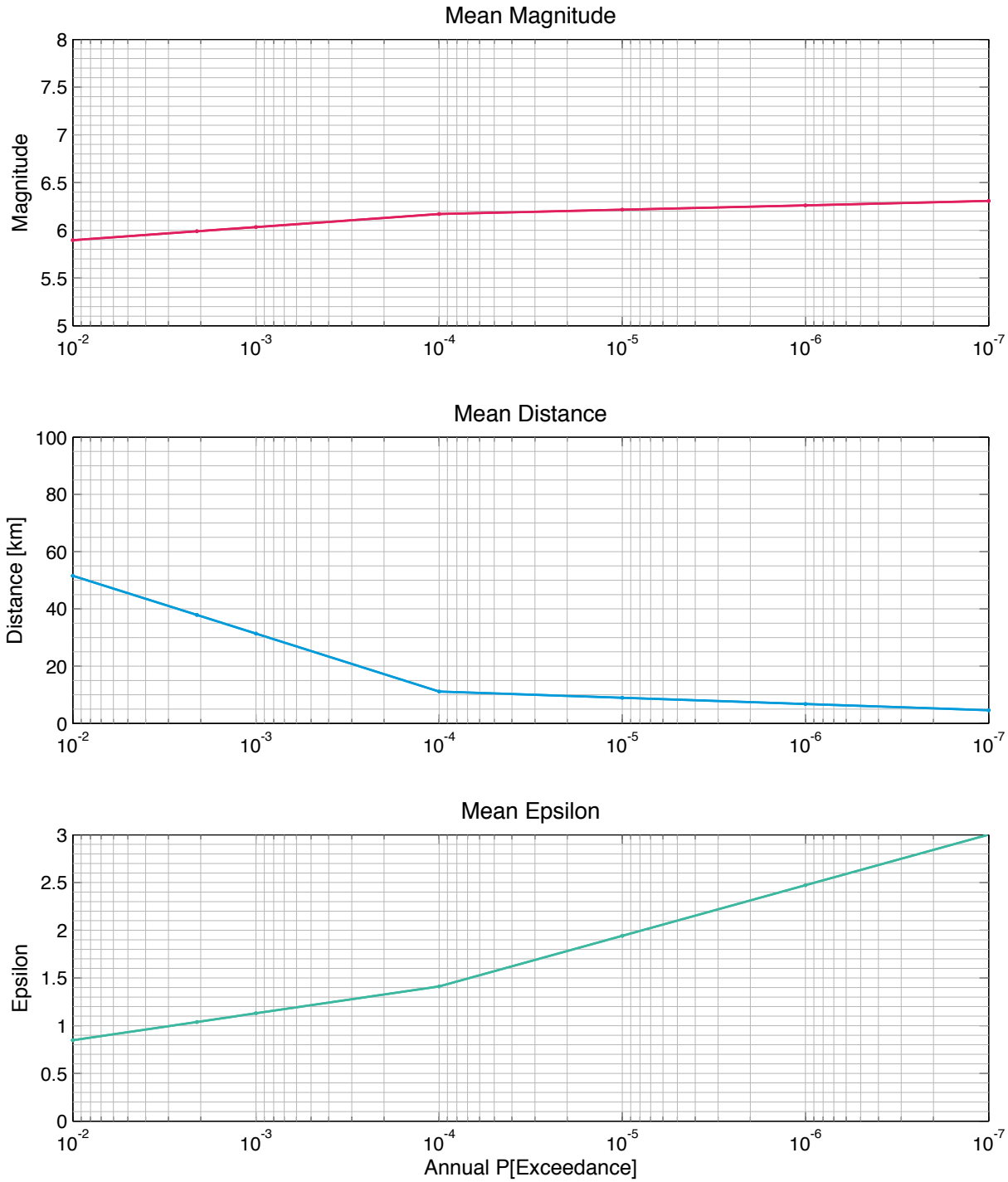

Fig. 5-10.5: Muehleberg, horizontal component, rock, mean magnitude, distance and epsilon as obtained from the deaggregation, 100 Hz.

5.11 Mühleberg, Rock Hazard, Vertical Component, Surface

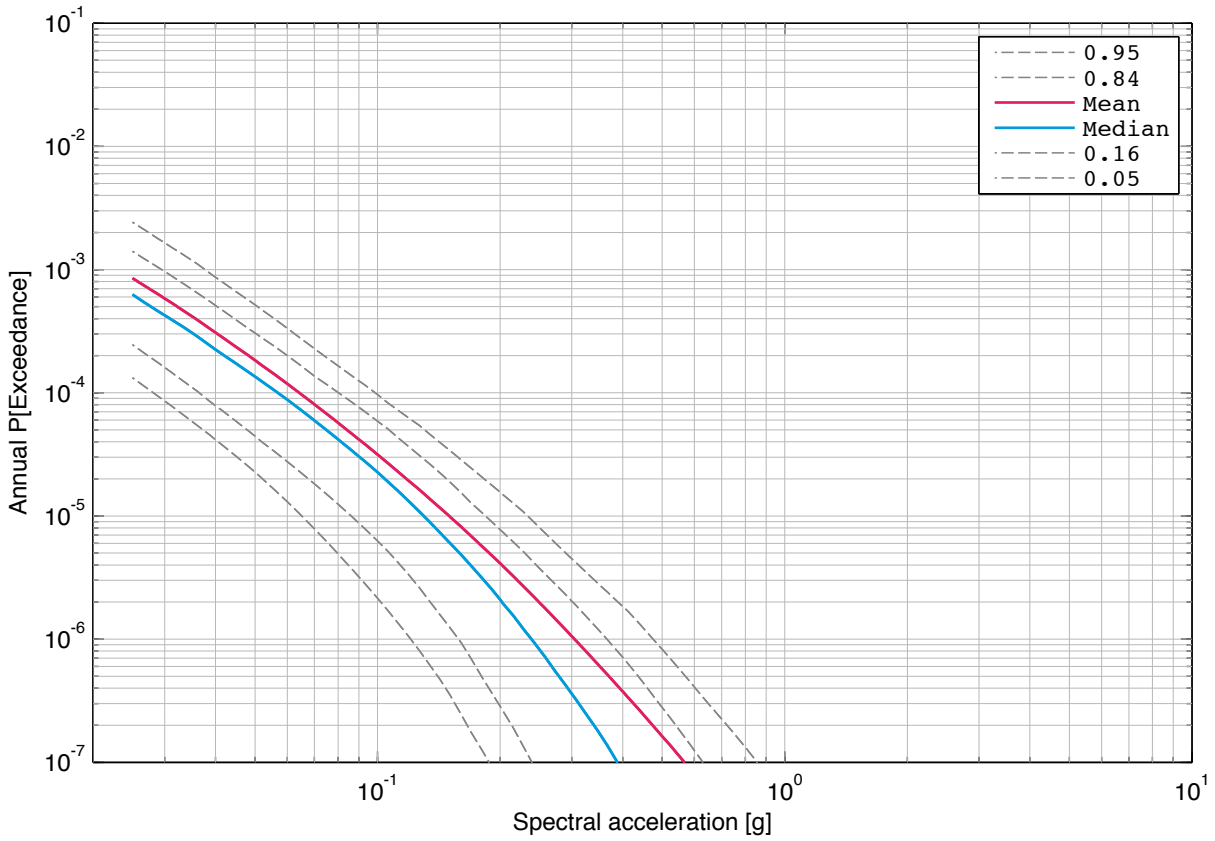

Fig. 5-11.1: Mühleberg, vertical component, rock, mean hazard and fractiles, 0.5 Hz.

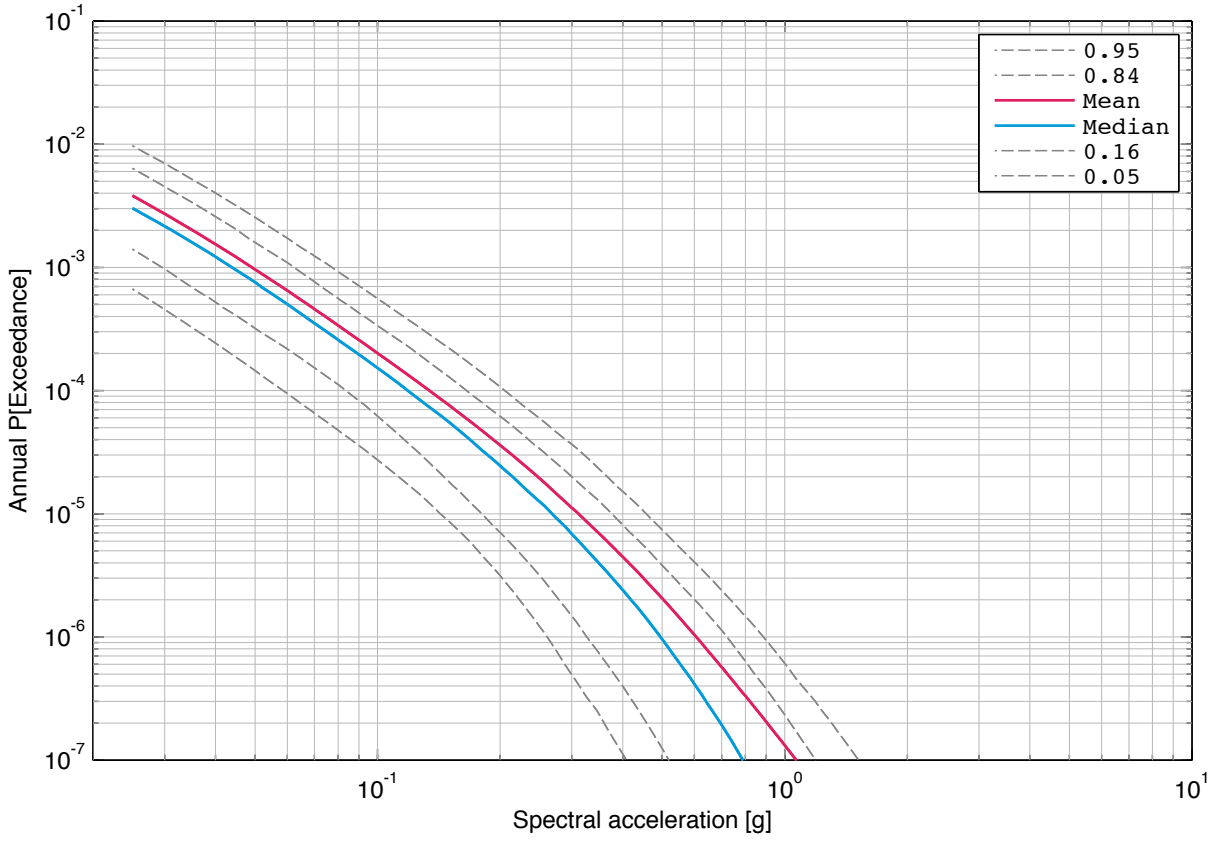

Fig. 5-11.2: Mühleberg, vertical component, rock, mean hazard and fractiles, 1 Hz.

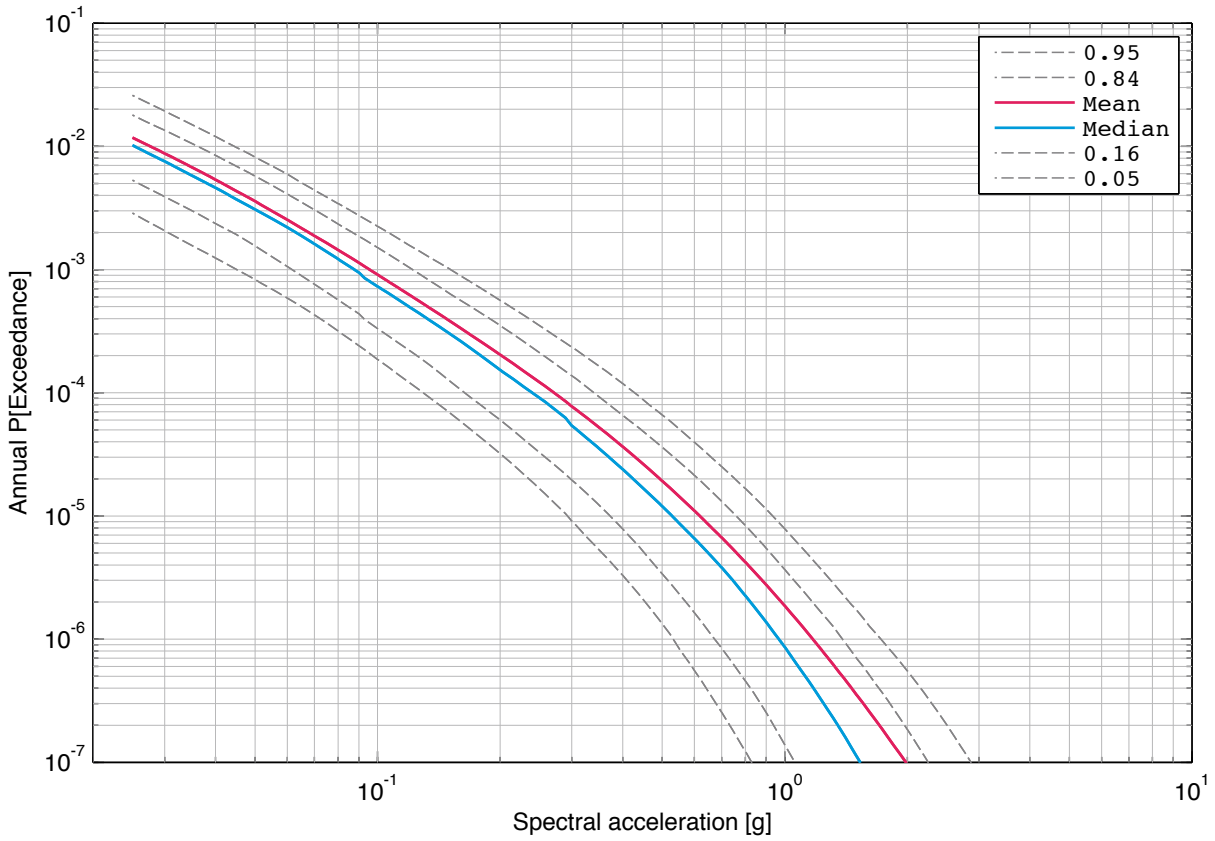

Fig. 5-11.3: Mühleberg, vertical component, rock, mean hazard and fractiles, 2.5 Hz.

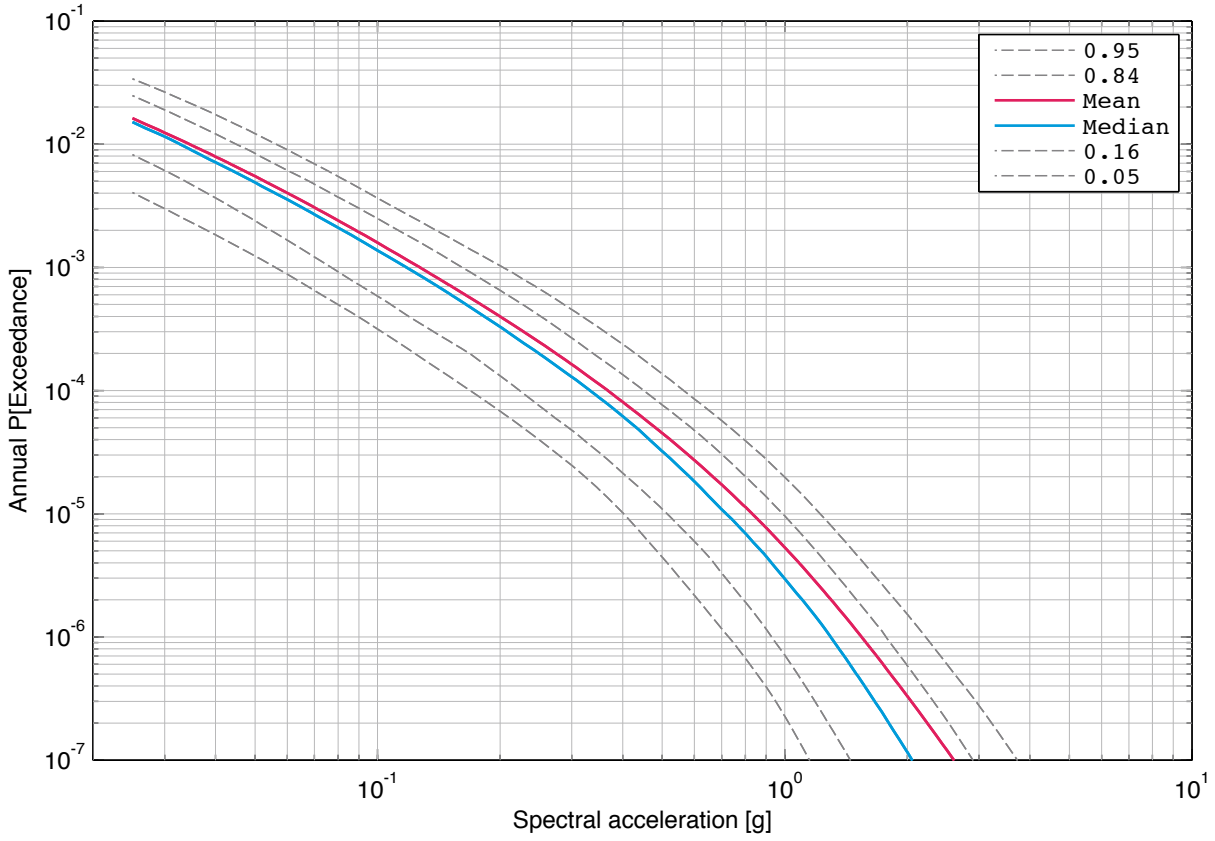

Fig. 5-11.4: Mühleberg, vertical component, rock, mean hazard and fractiles, 5 Hz.

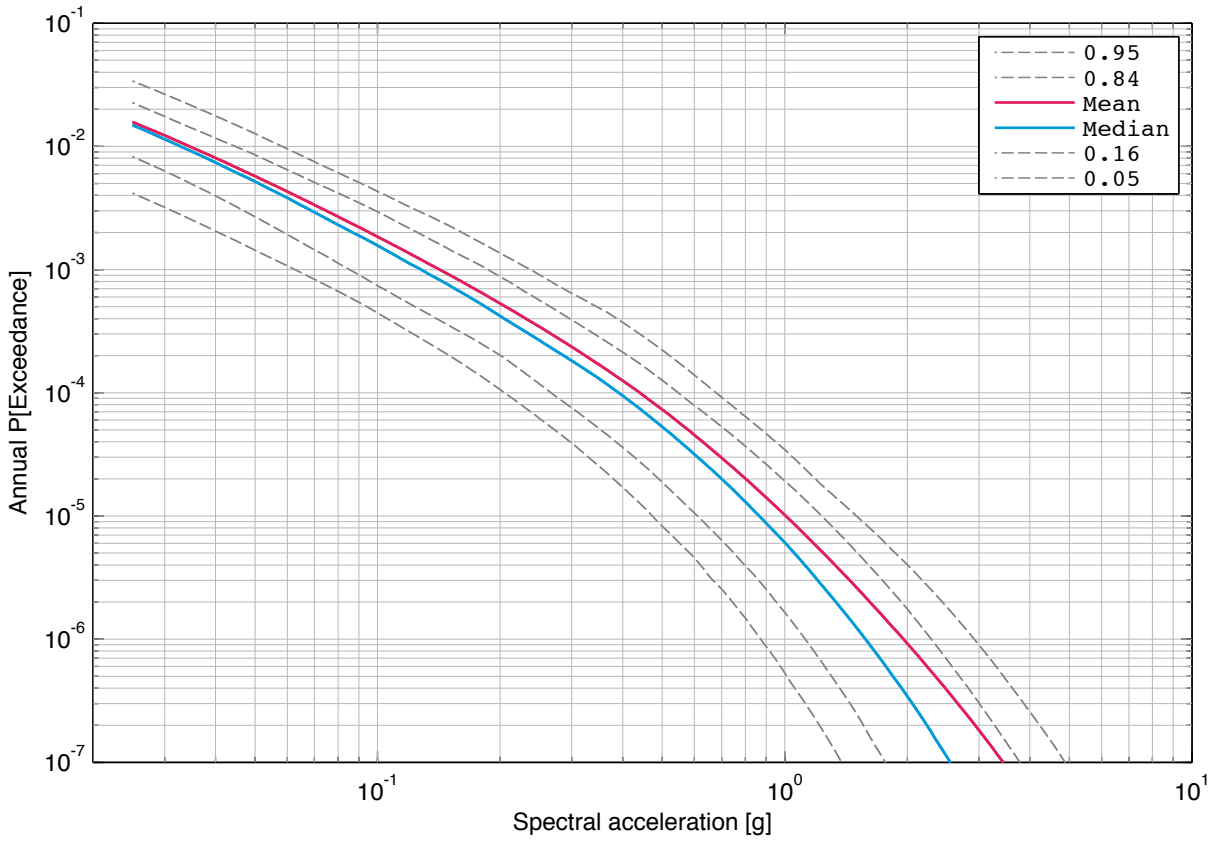

Fig. 5-11.5: Mühleberg, vertical component, rock, mean hazard and fractiles, 10 Hz.

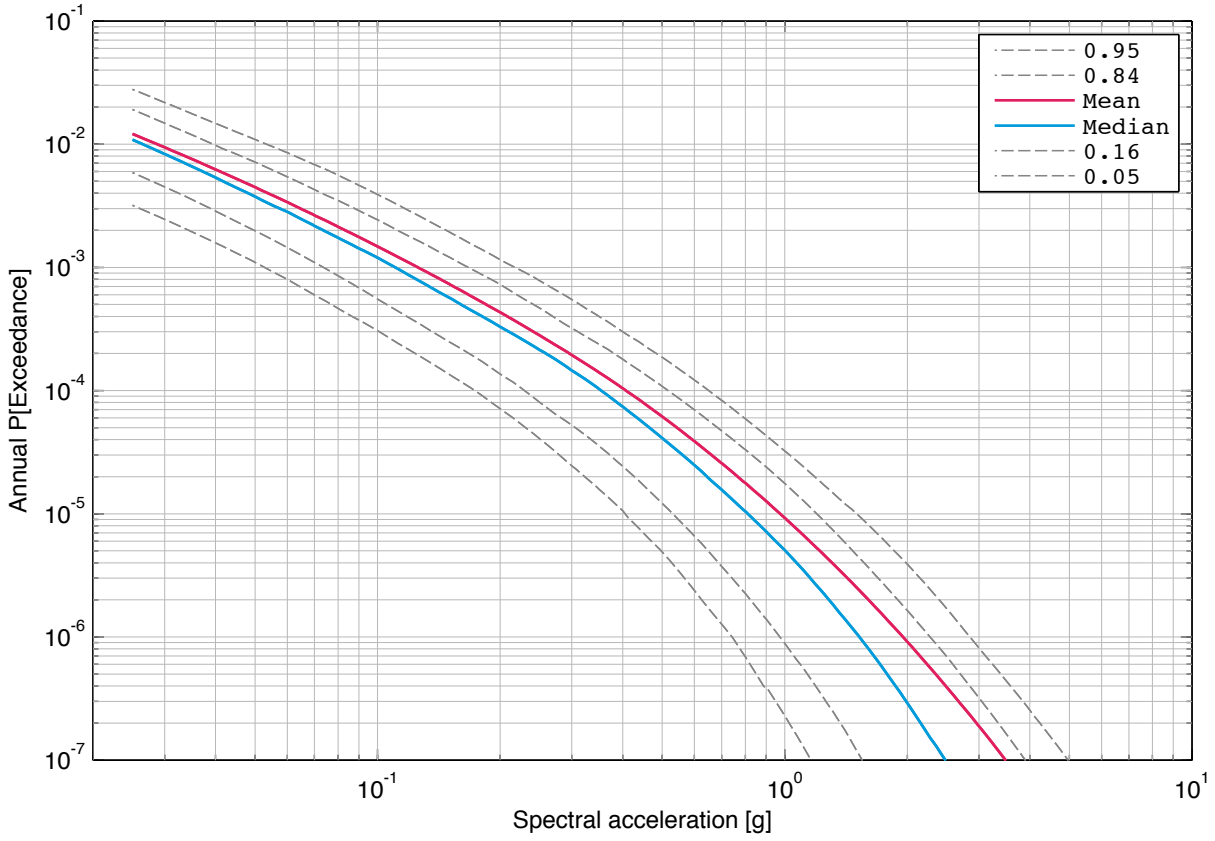

Fig. 5-11.6: Mühleberg, vertical component, rock, mean hazard and fractiles, 20 Hz.

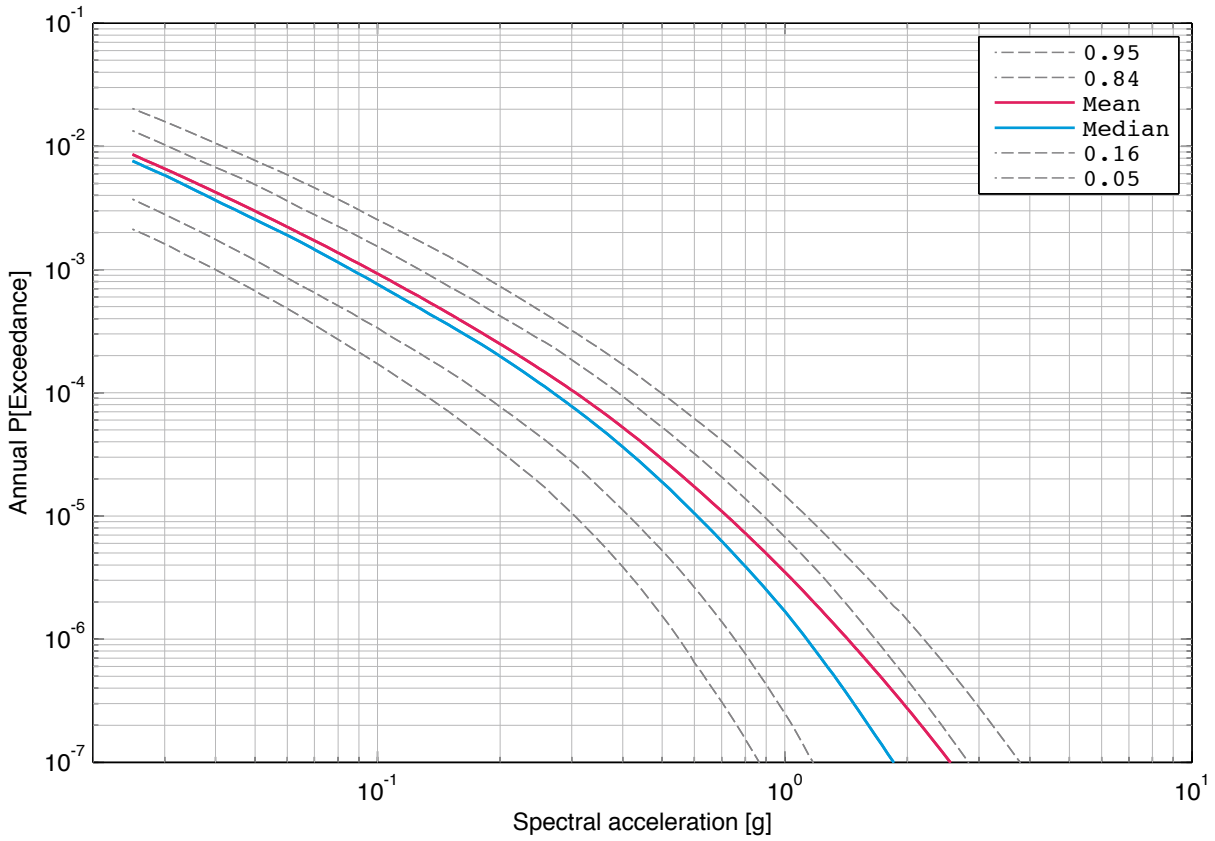

Fig. 5-11.7: Mühleberg, vertical component, rock, mean hazard and fractiles, 33 Hz.

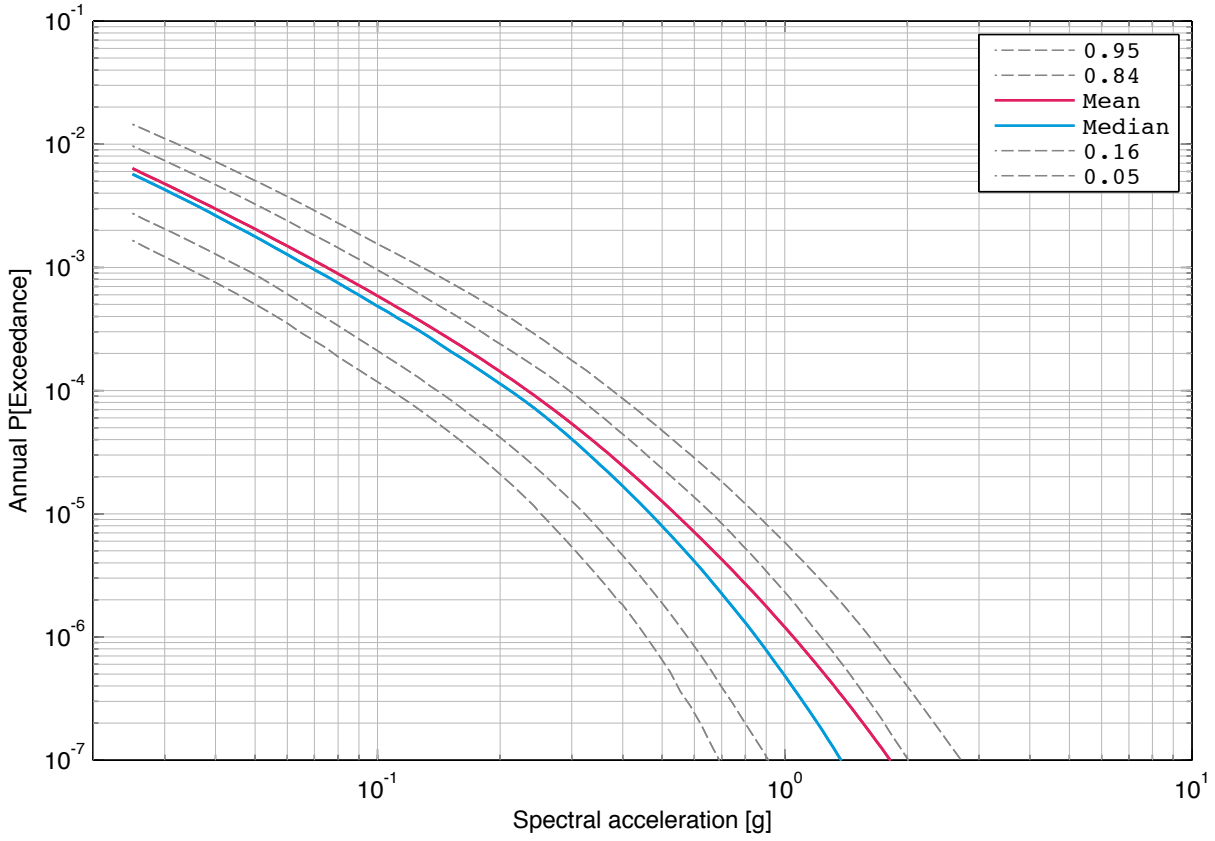

Fig. 5-11.8: Mühleberg, vertical component, rock, mean hazard and fractiles, 50 Hz.

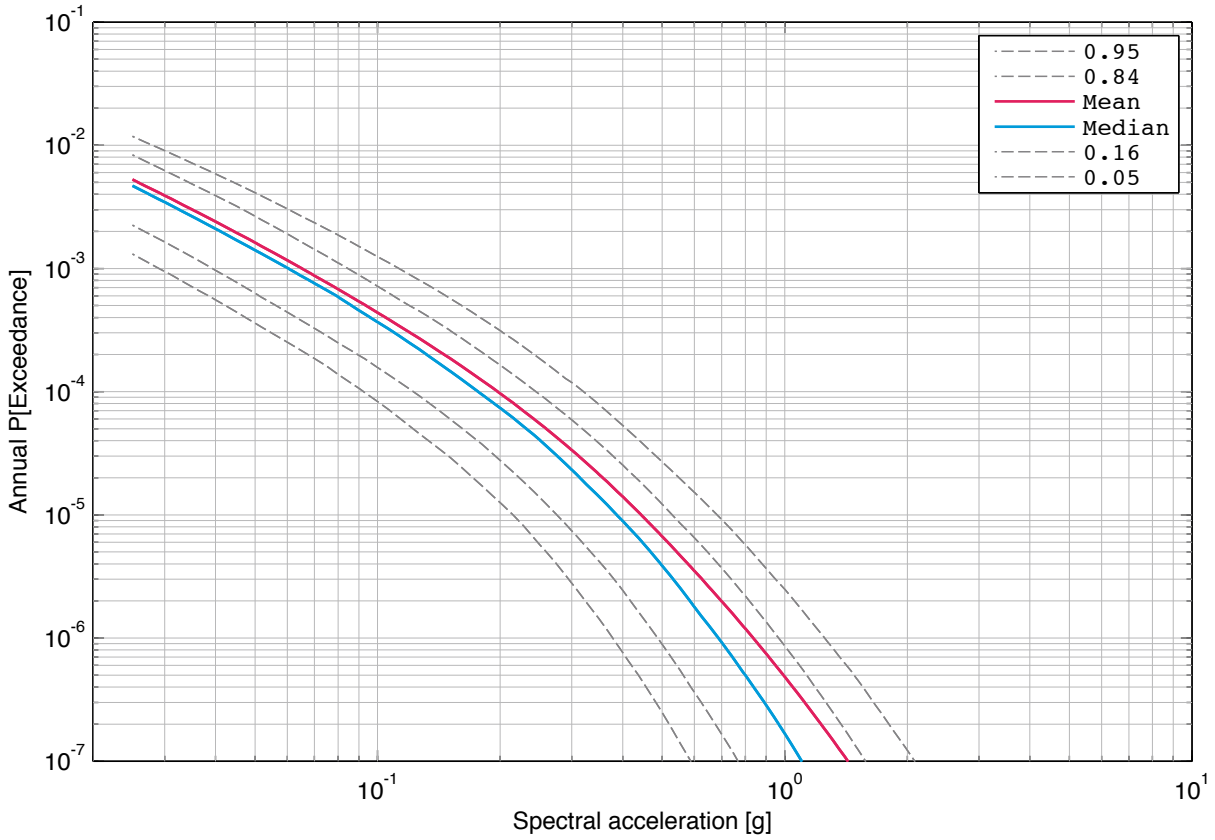

Fig. 5-11.9: Mühleberg, vertical component, rock, mean hazard and fractiles, 100 Hz.

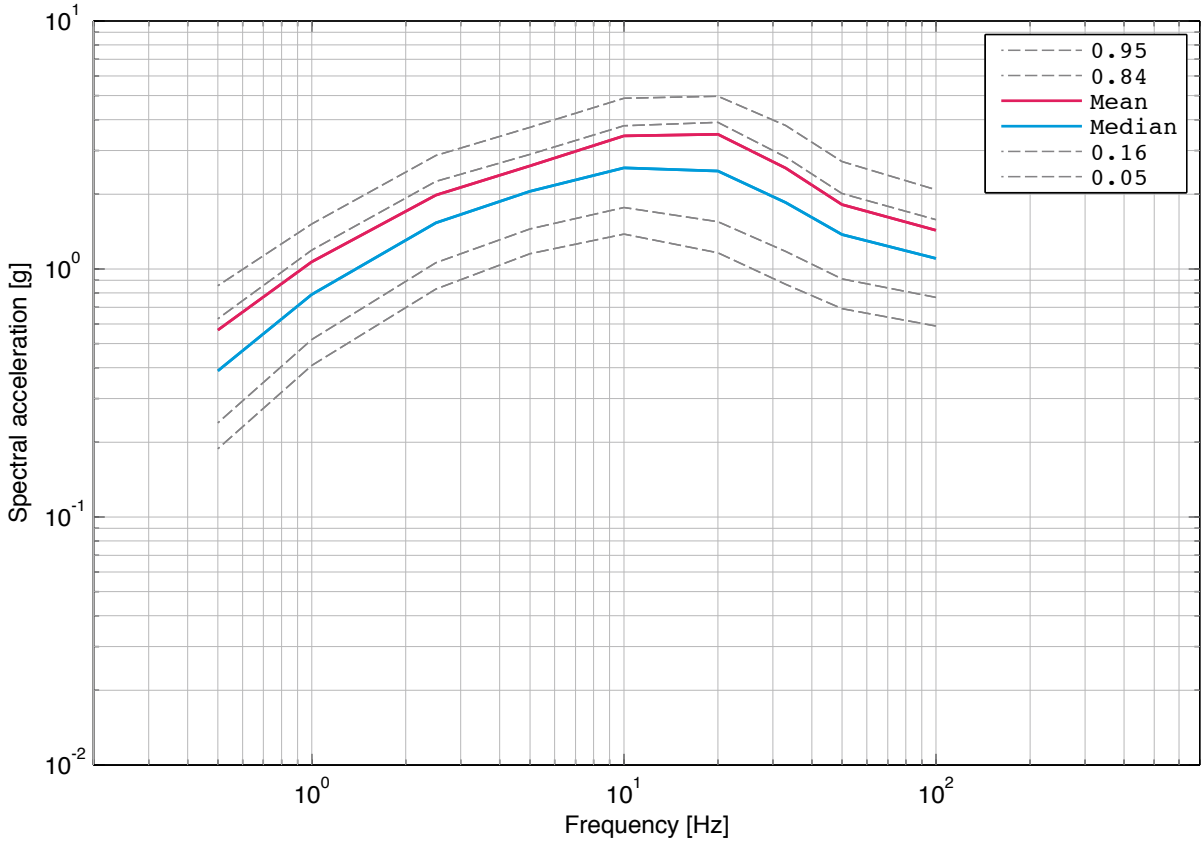

Fig. 5-11.10: Mühleberg, vertical component, rock, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

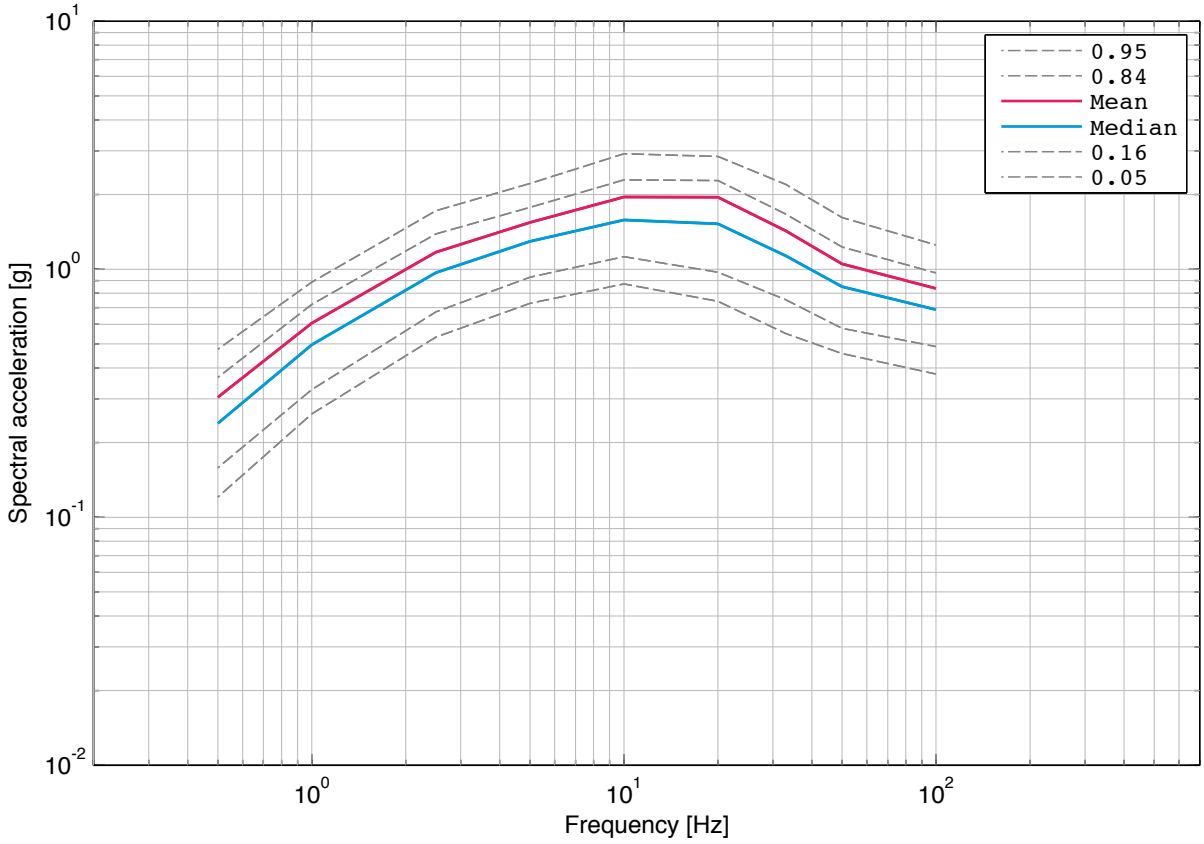

Fig. 5-11.11: Mühleberg, vertical component, rock, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

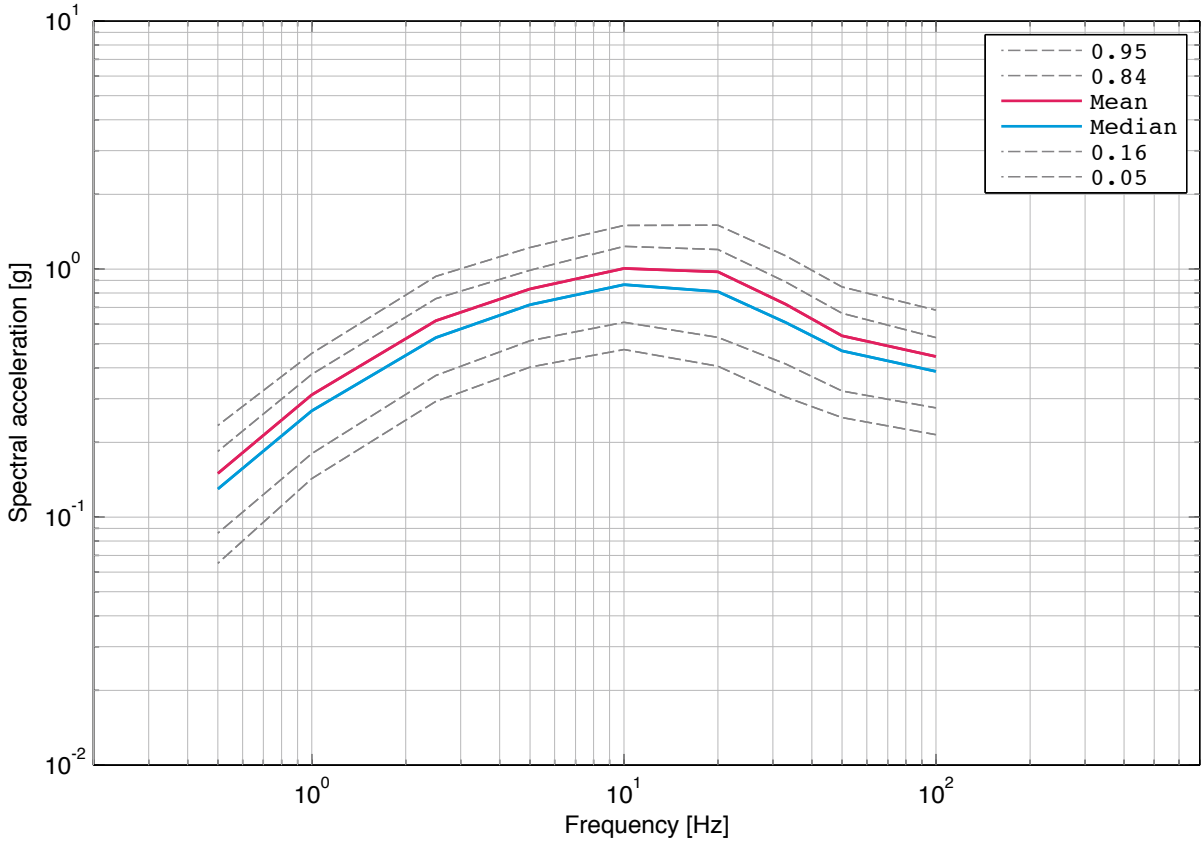

Fig. 5-11.12: Mühleberg, vertical component, rock, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

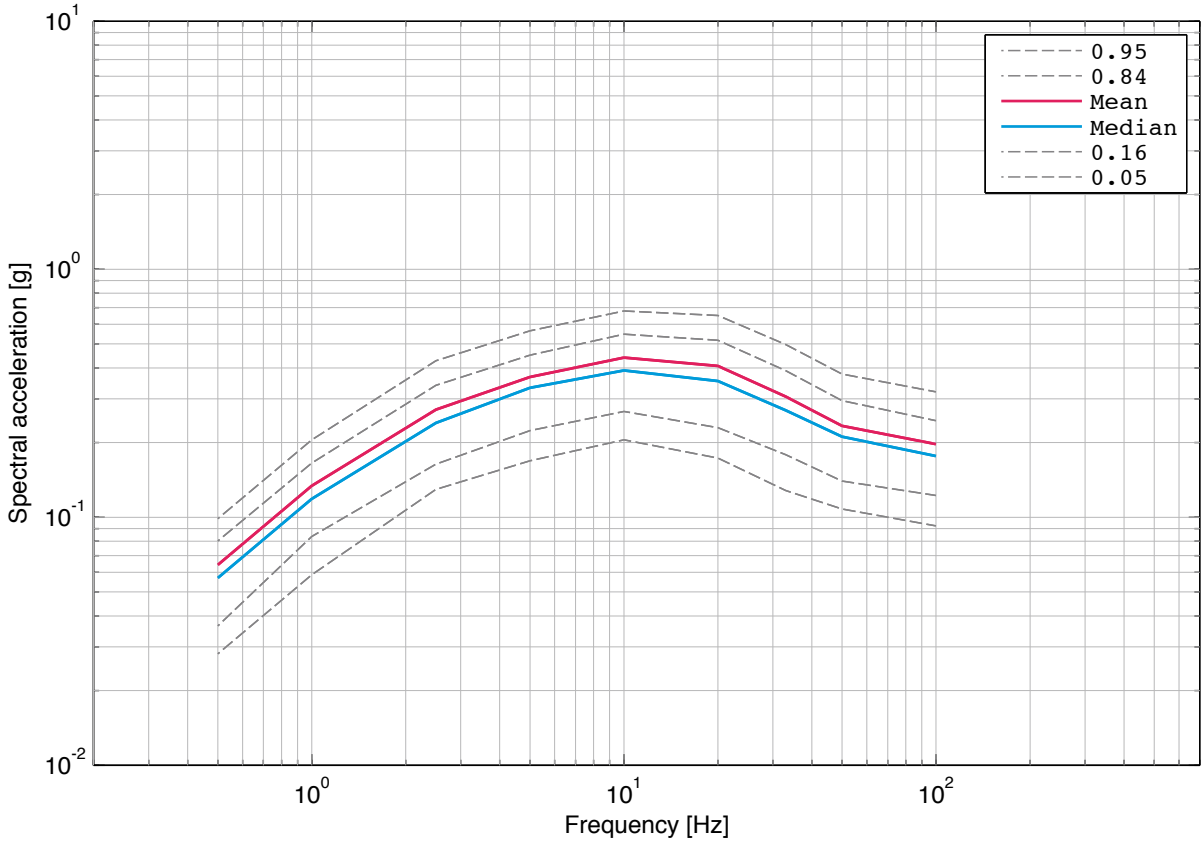

Fig. 5-11.13: Mühleberg, vertical component, rock, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

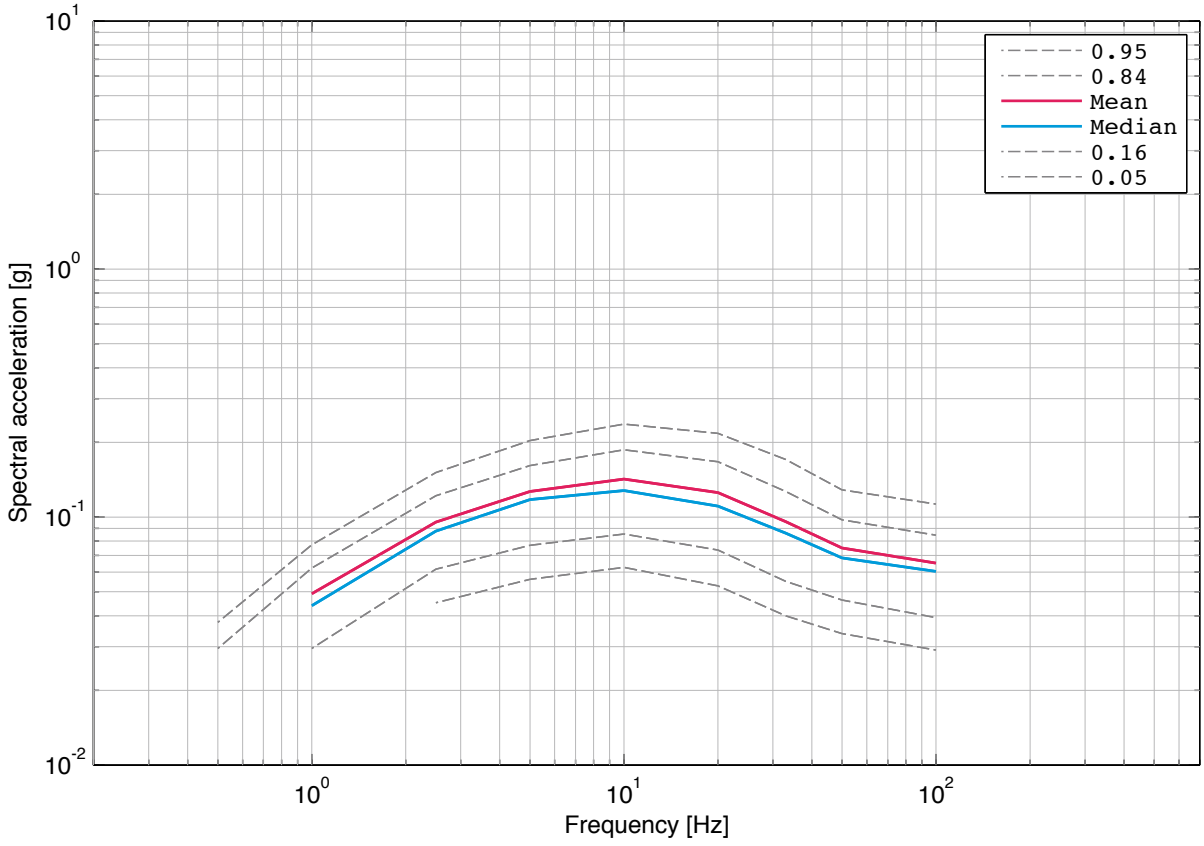

Fig. 5-11.14: Mühleberg, vertical component, rock, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

5.12 Mühleberg, Soil Hazard, Vertical Component, Surface

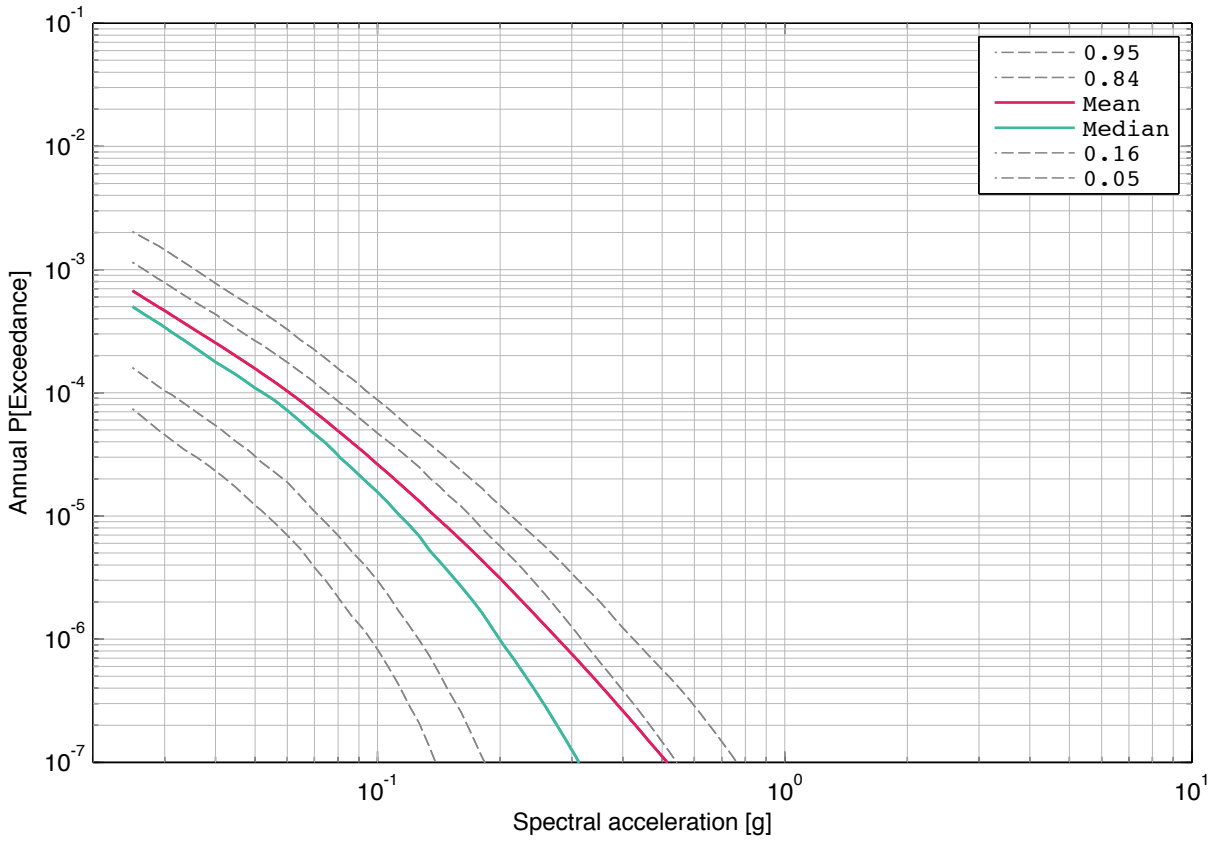

Fig. 5-12.1: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 0.5 Hz.

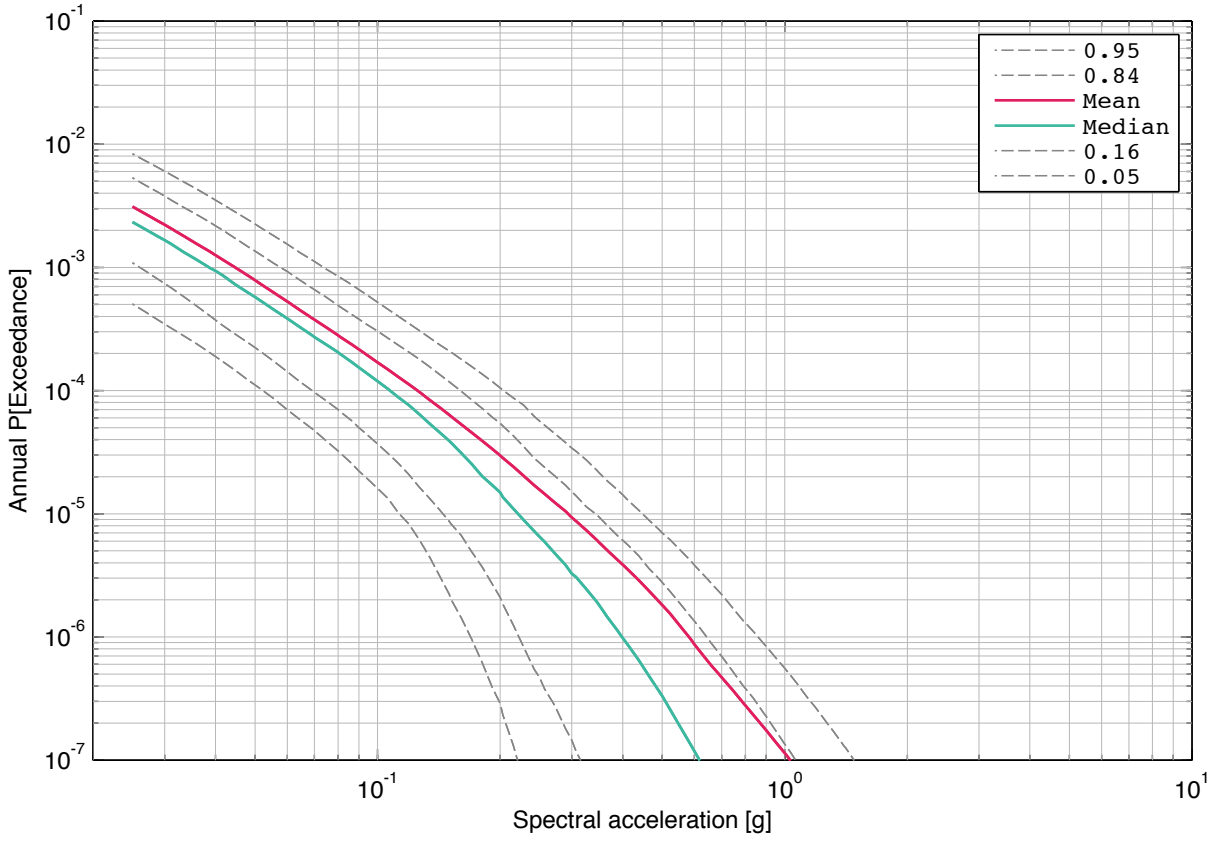

Fig. 5-12.2: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 1 Hz.

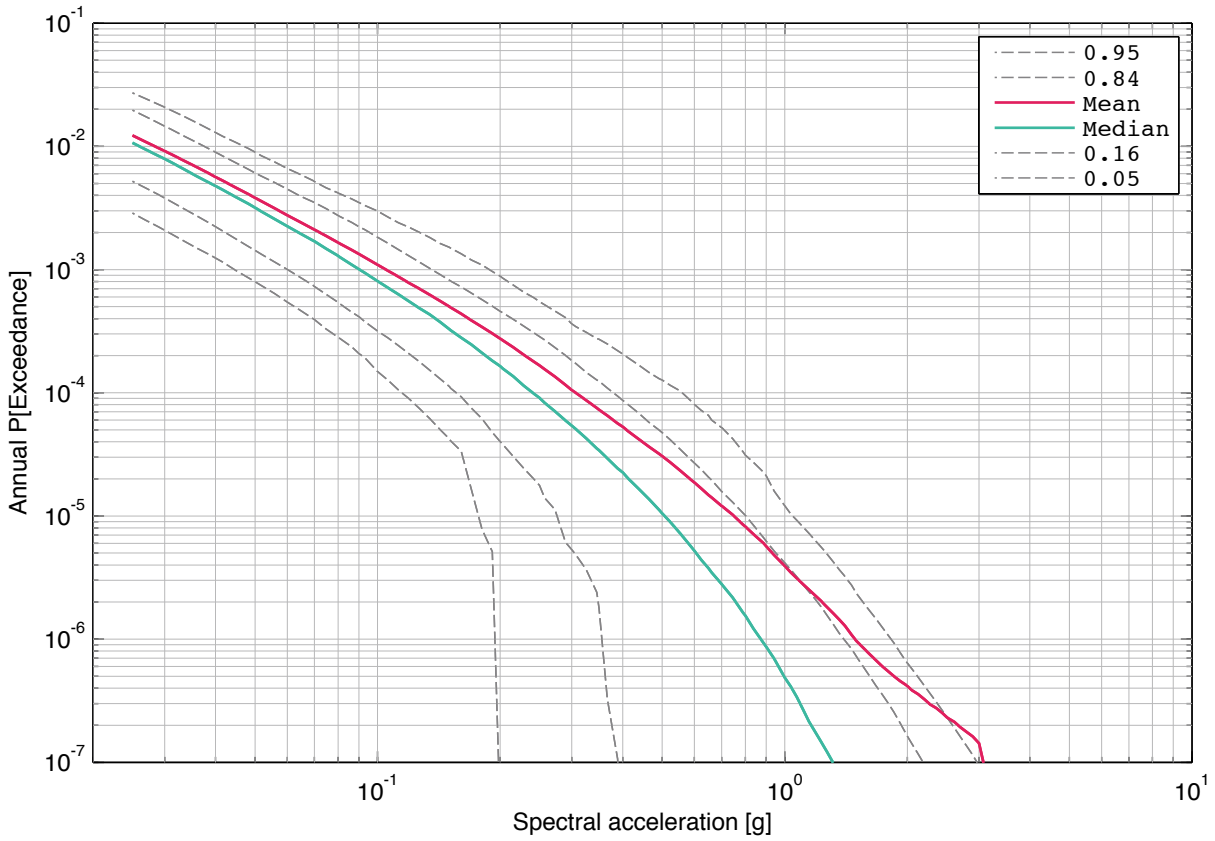

Fig. 5-12.3: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 2.5 Hz.

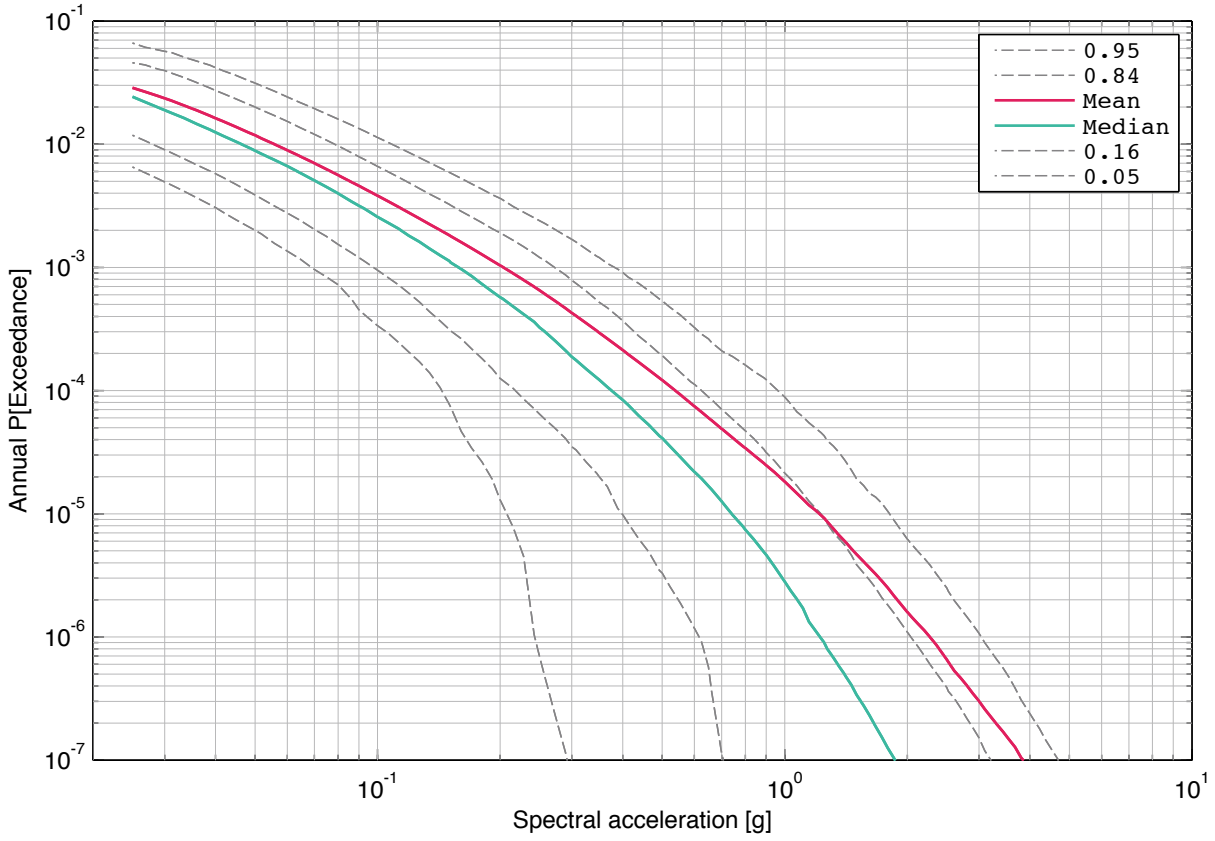

Fig. 5-12.4: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 5 Hz.

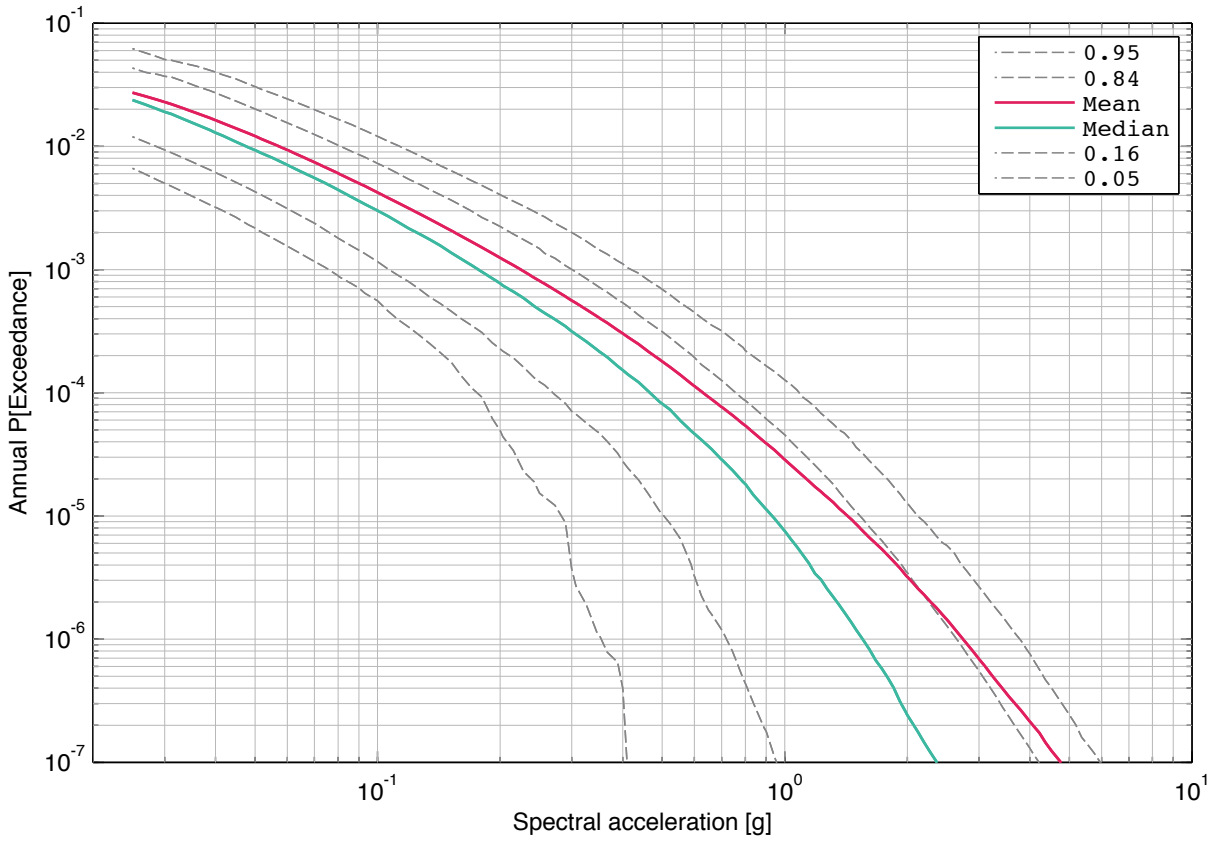

Fig. 5-12.5: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 10 Hz.

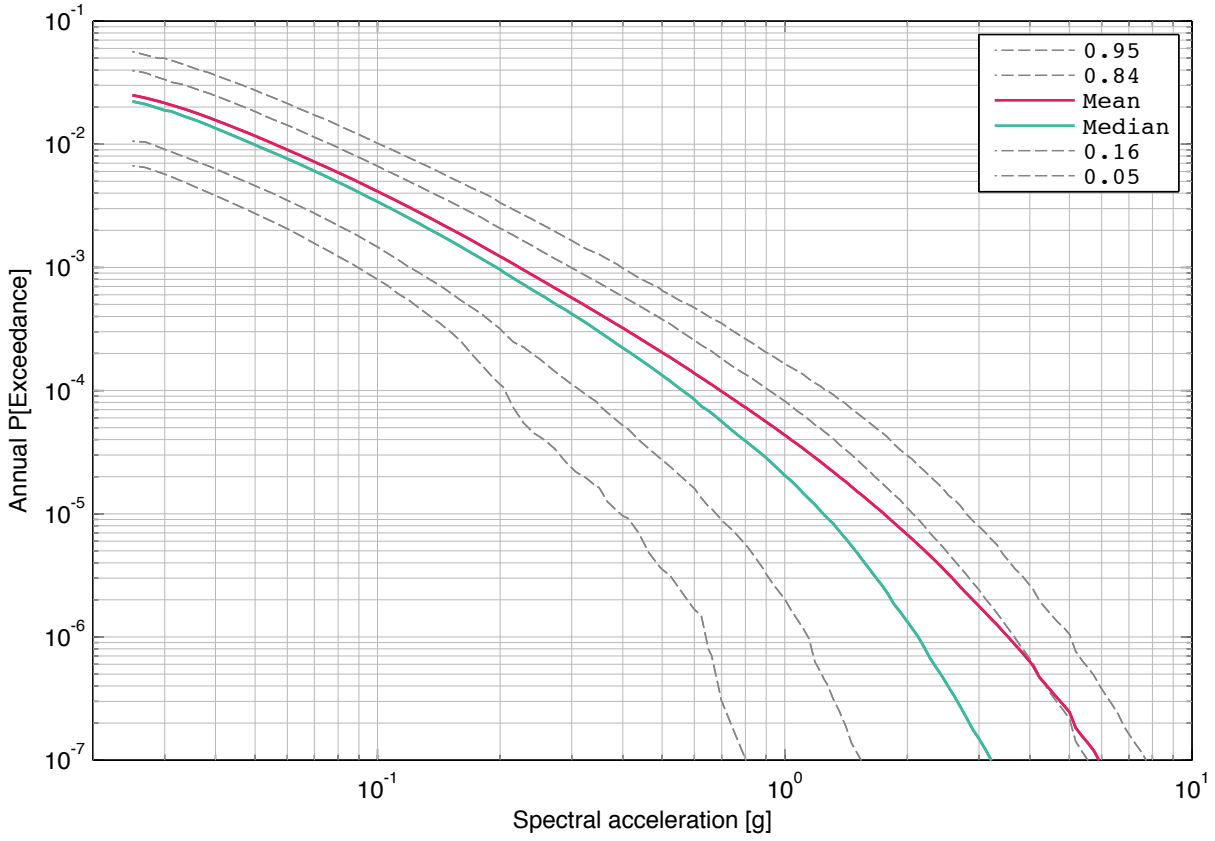

Fig. 5-12.6: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 20 Hz.

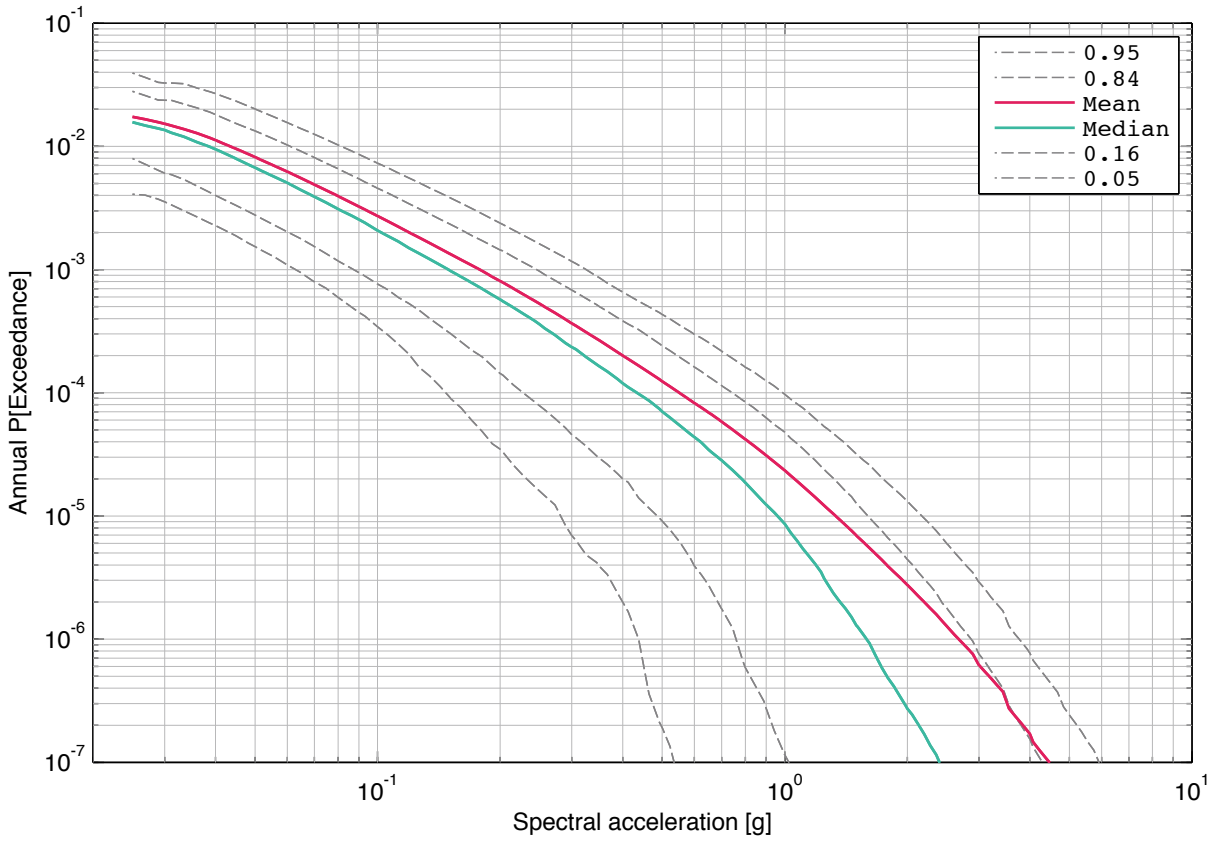

Fig. 5-12.7: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 33 Hz.

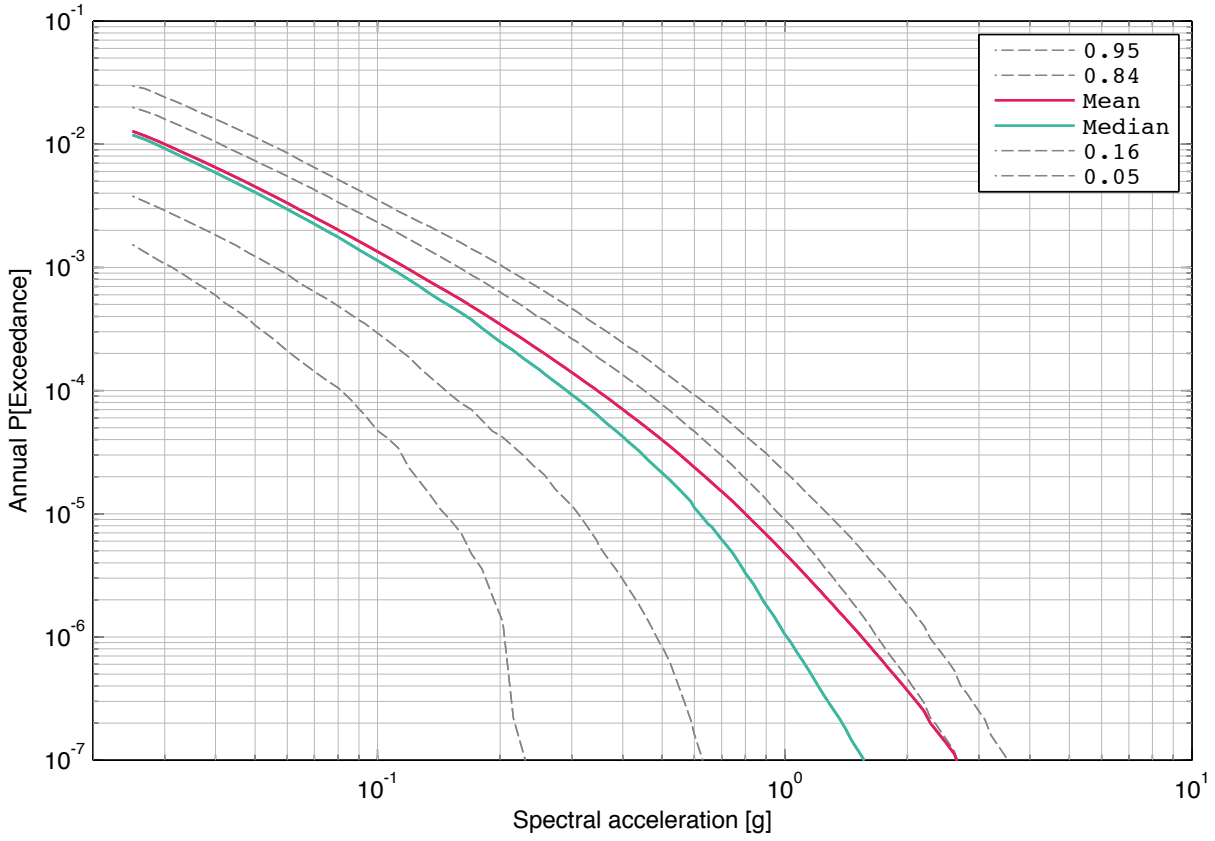

Fig. 5-12.8: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 50 Hz.

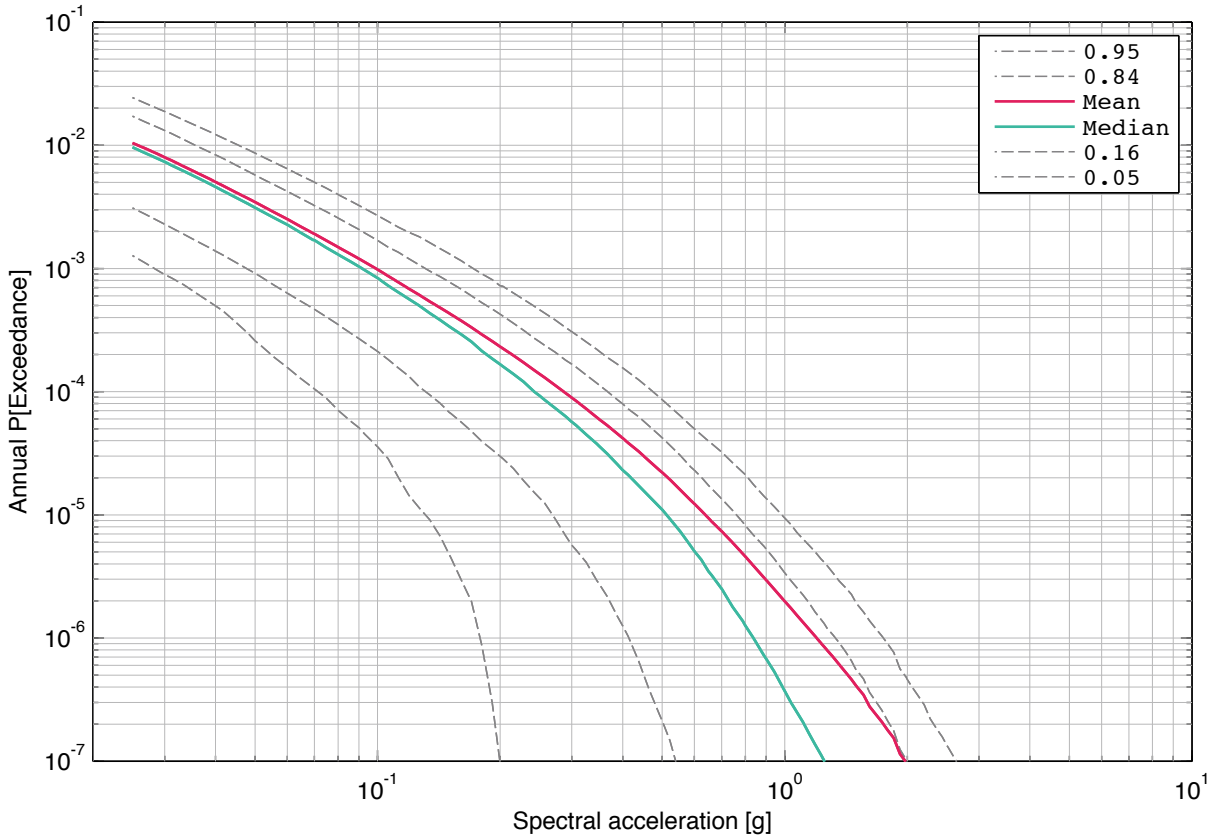

Fig. 5-12.9: Mühleberg, vertical component, soil, surface, mean hazard and fractiles, 100 Hz.

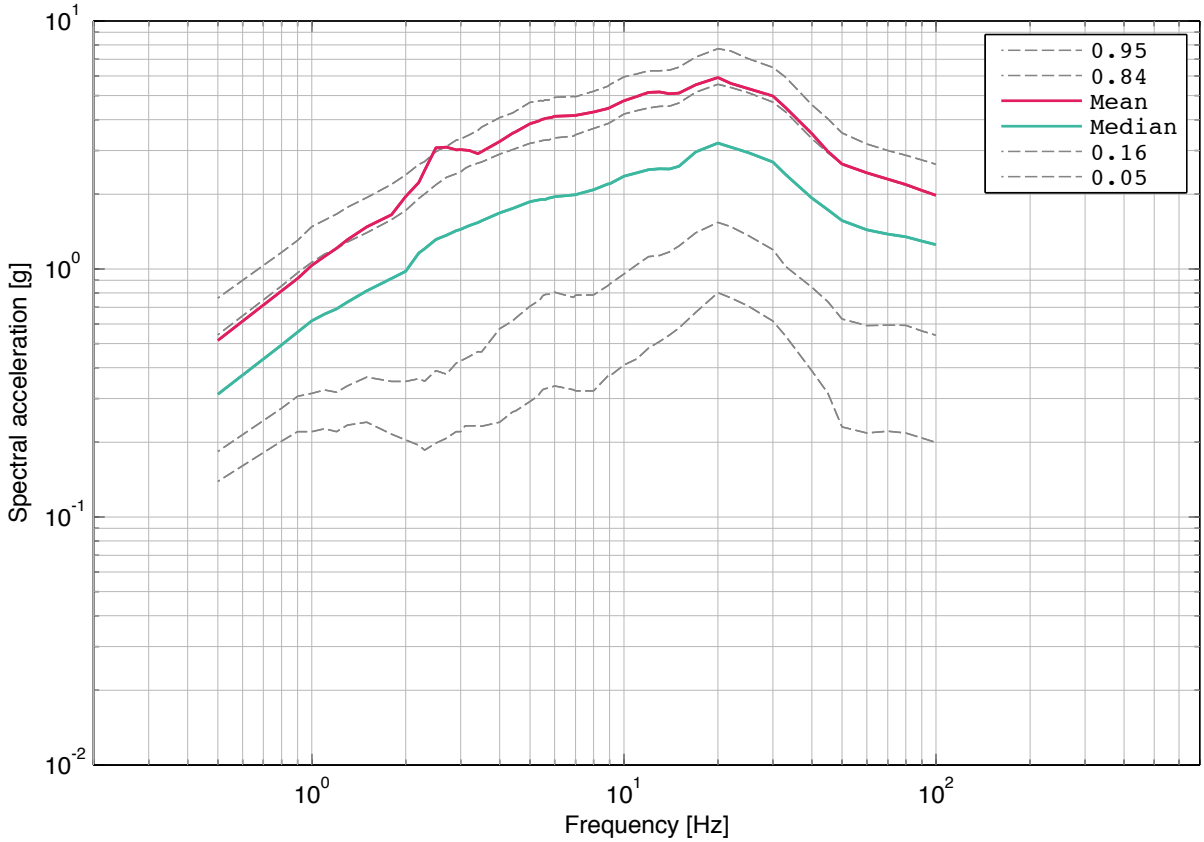

Fig. 5-12.10: Mühleberg, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-07 and 5% damping.

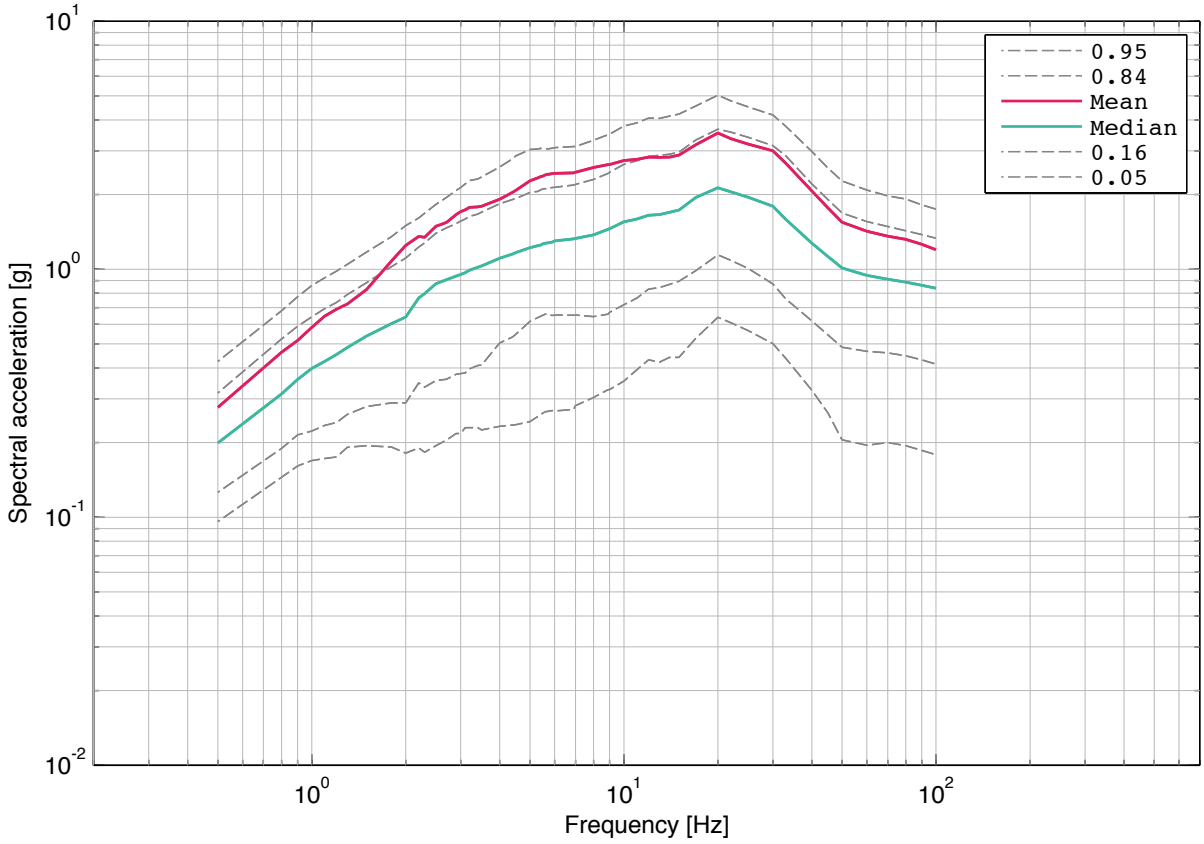

Fig. 5-12.11: Mühleberg, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-06 and 5% damping.

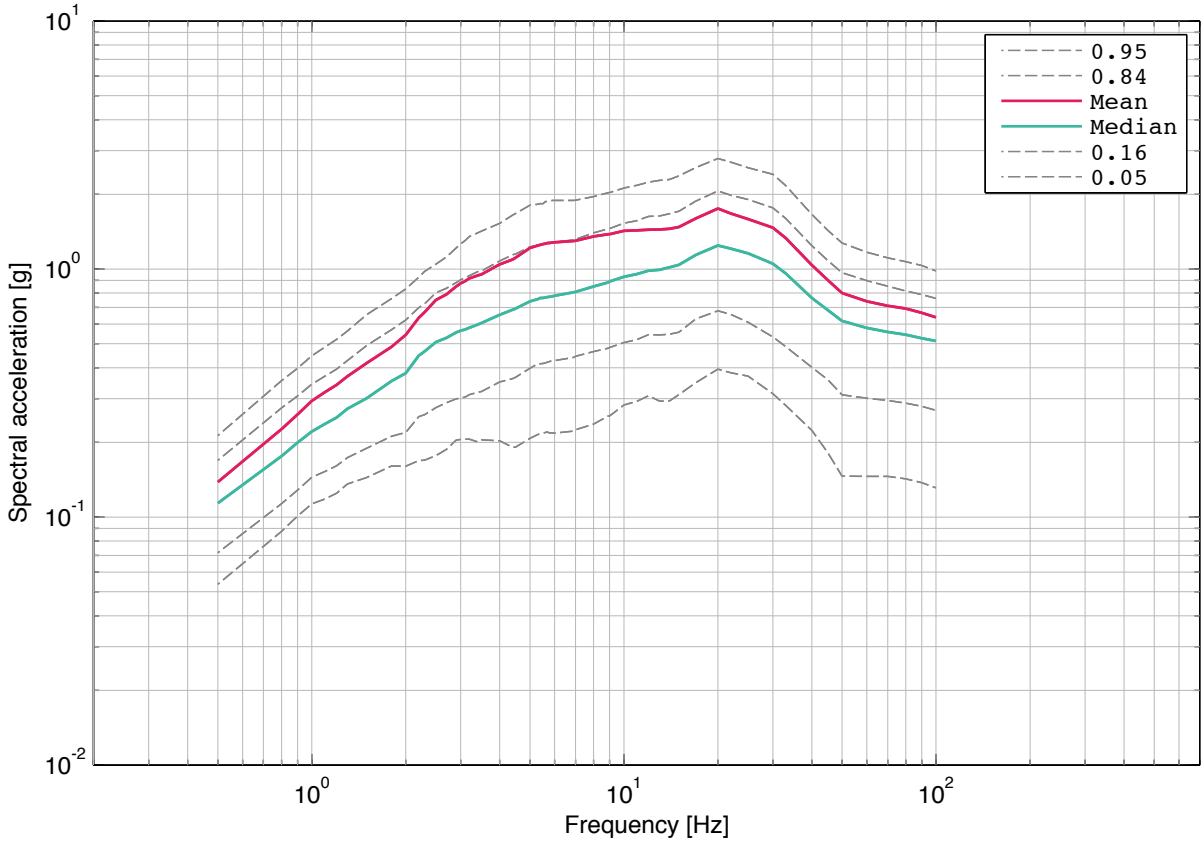

Fig. 5-12.12: Mühleberg, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-05 and 5% damping.

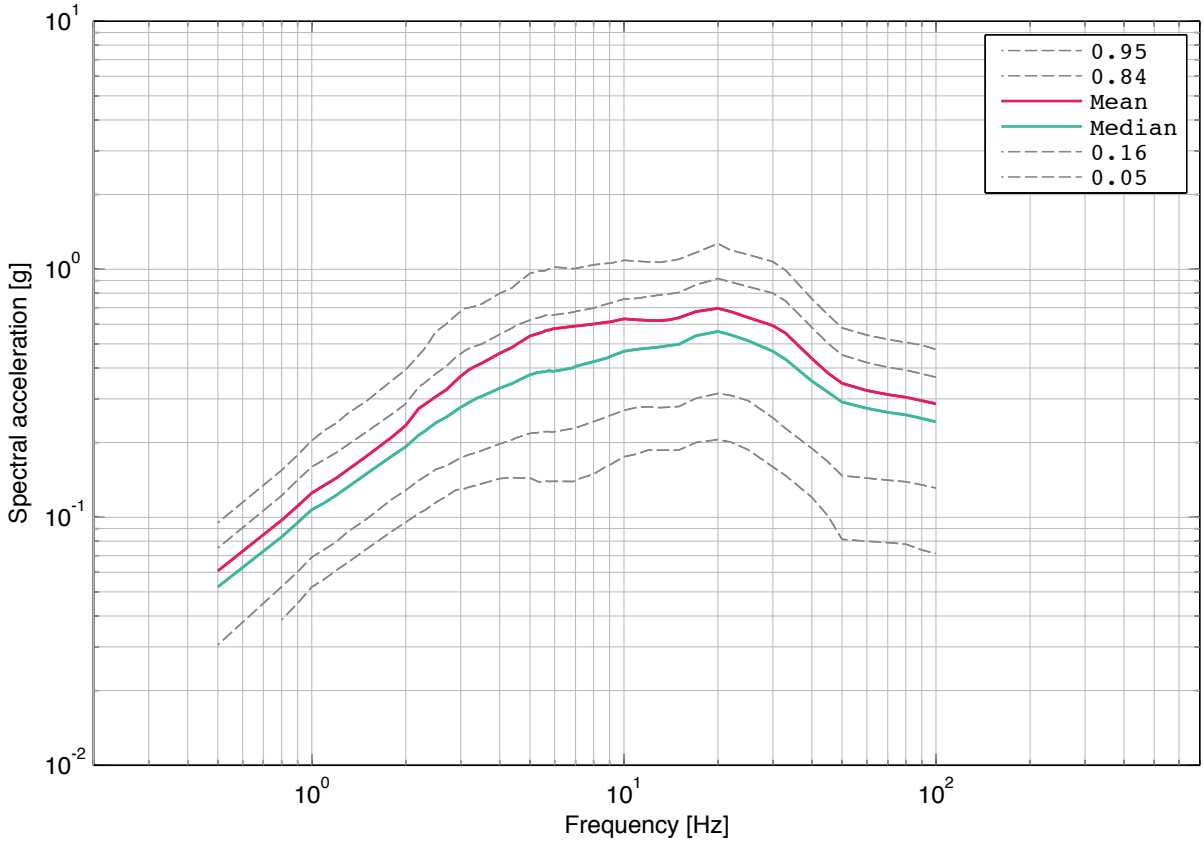

Fig. 5-12.13: Mühleberg, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-04 and 5% damping.

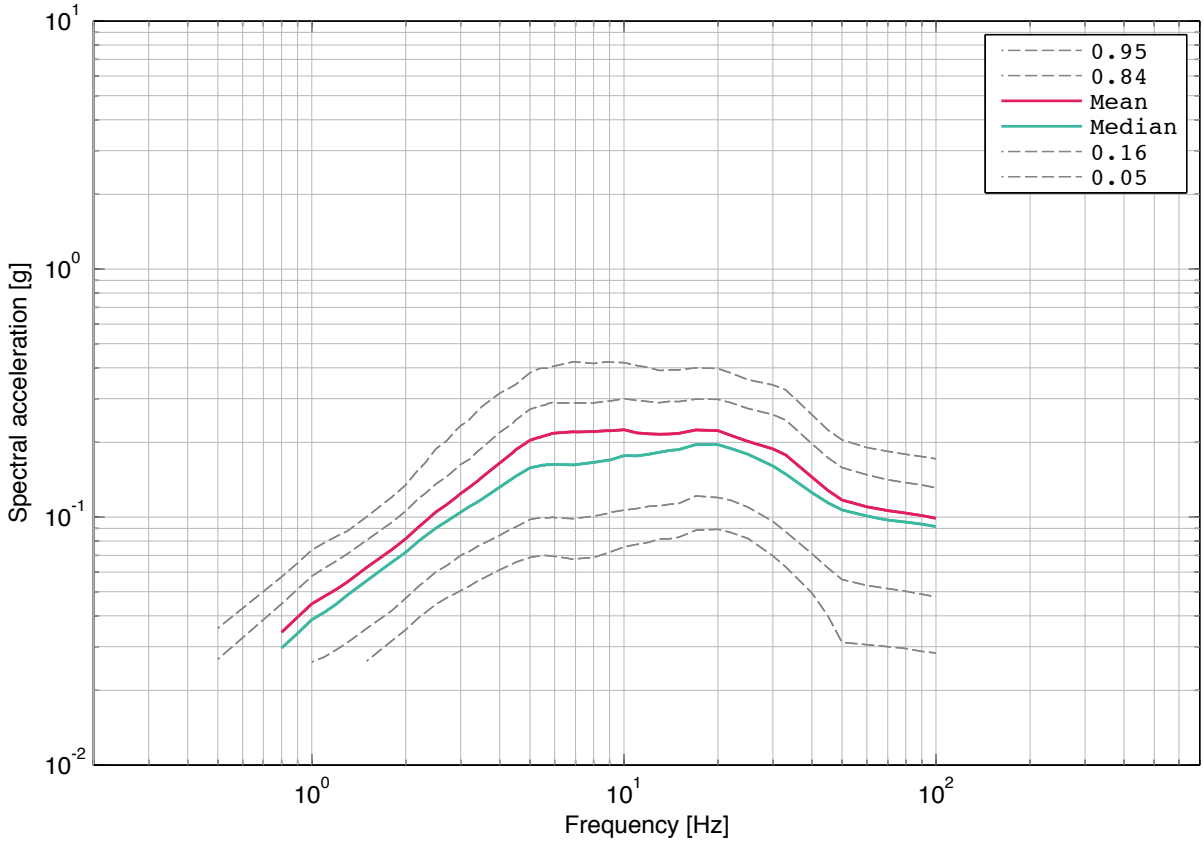

Fig. 5-12.14: Mühleberg, vertical component, soil, surface UHS for an annual probability of exceedance of 1E-03 and 5% damping.

5.13 Mühleberg, Soil Hazard, Vertical Component, -7 m

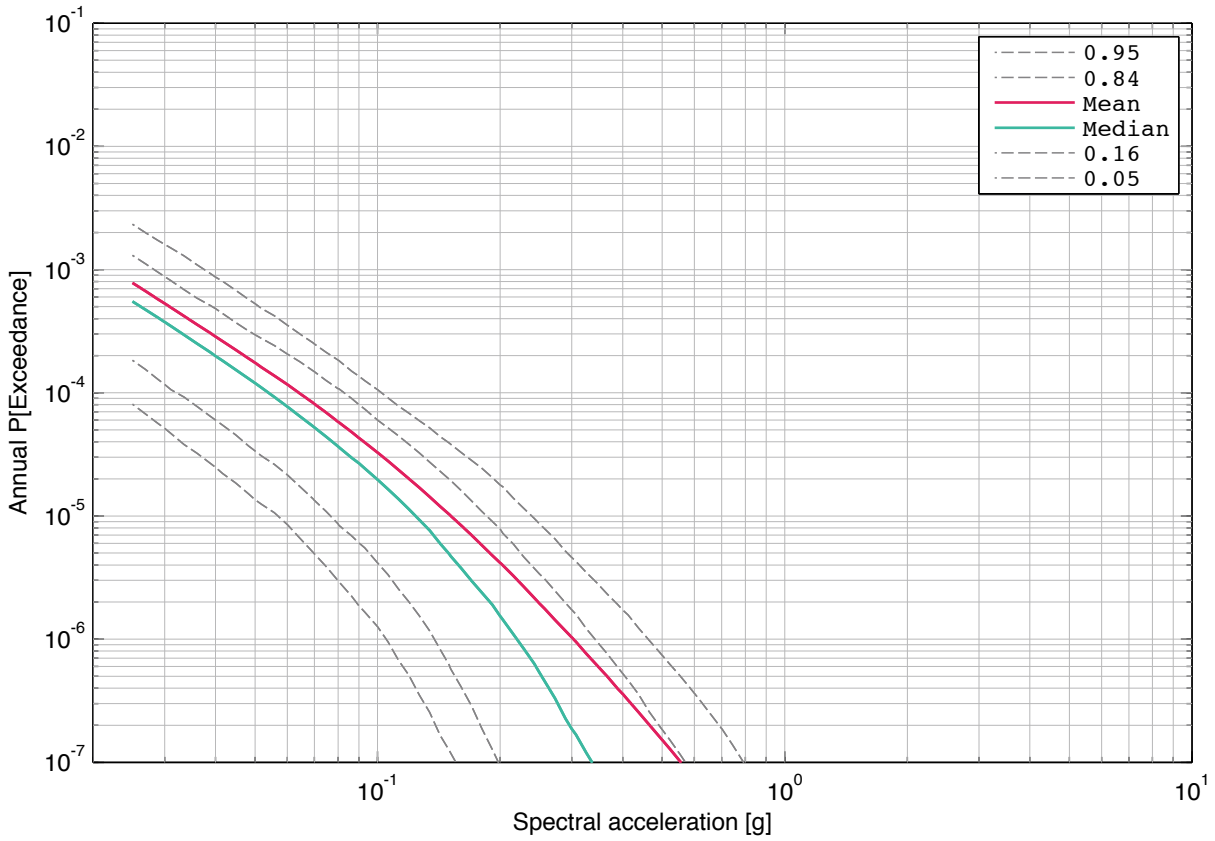

Fig. 5-13.1: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 0.5 Hz.

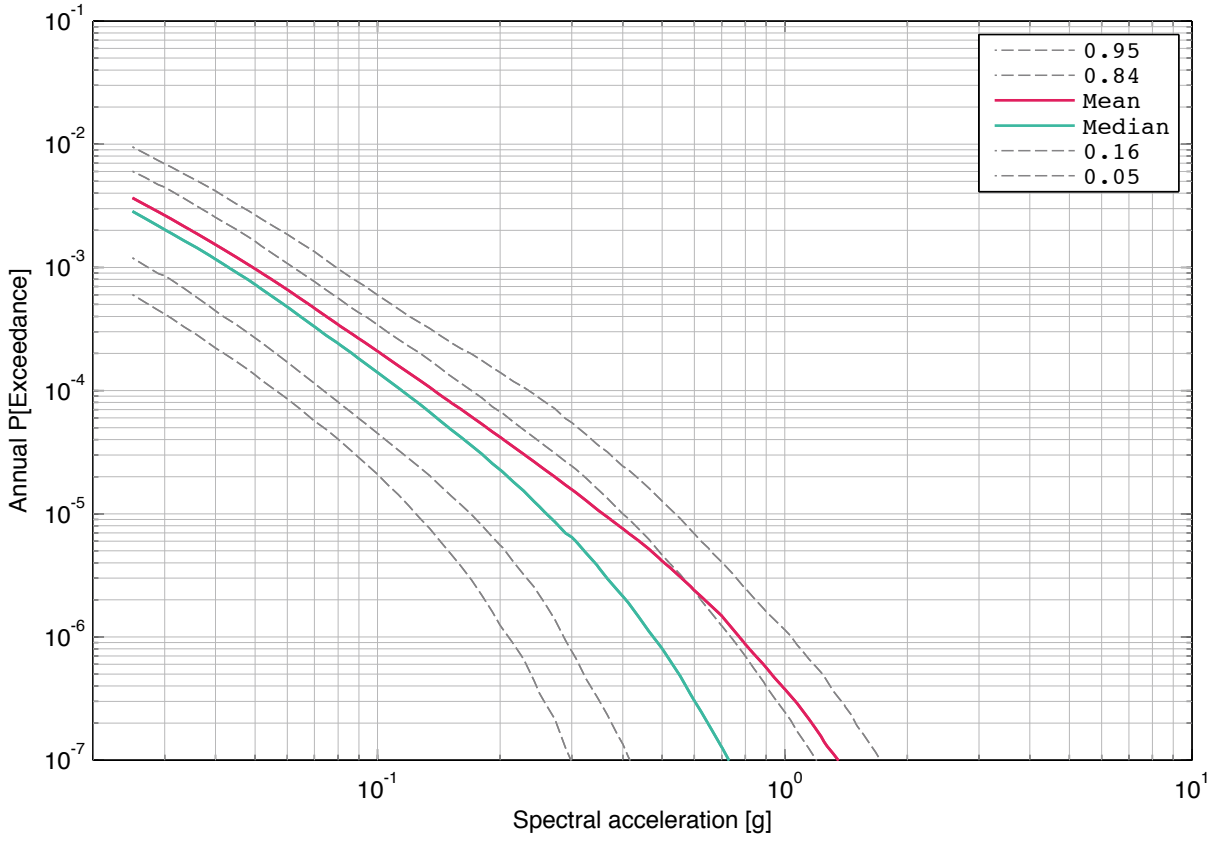

Fig. 5-13.2: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 1 Hz.

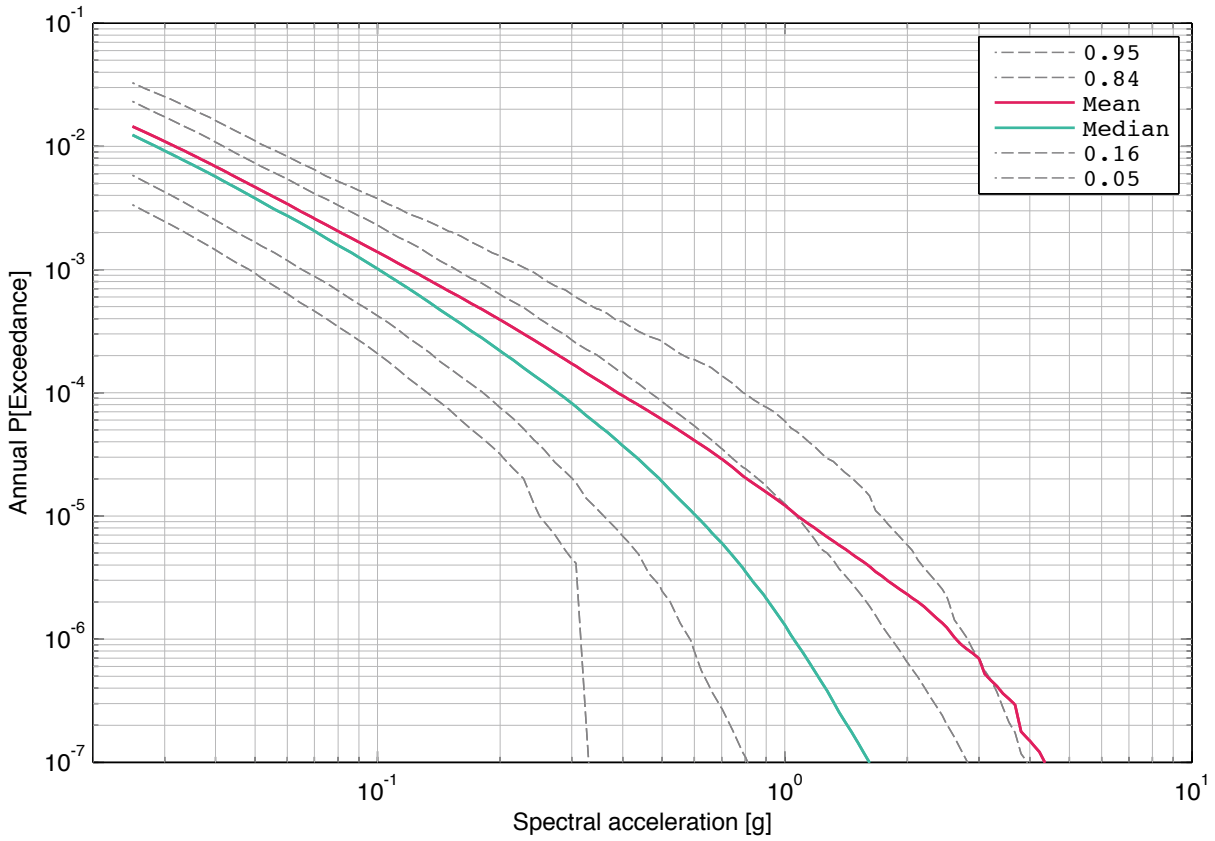

Fig. 5-13.3: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 2.5 Hz.

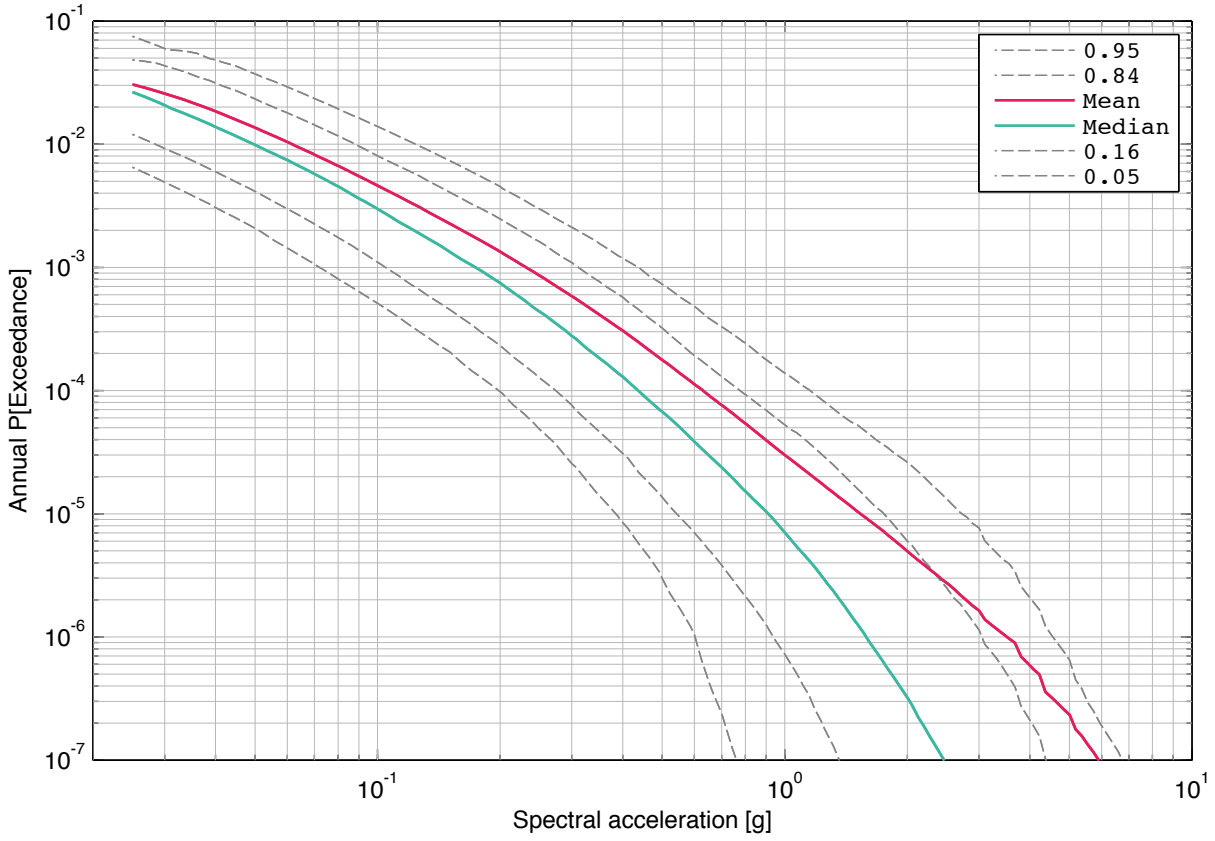

Fig. 5-13.4: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 5 Hz.

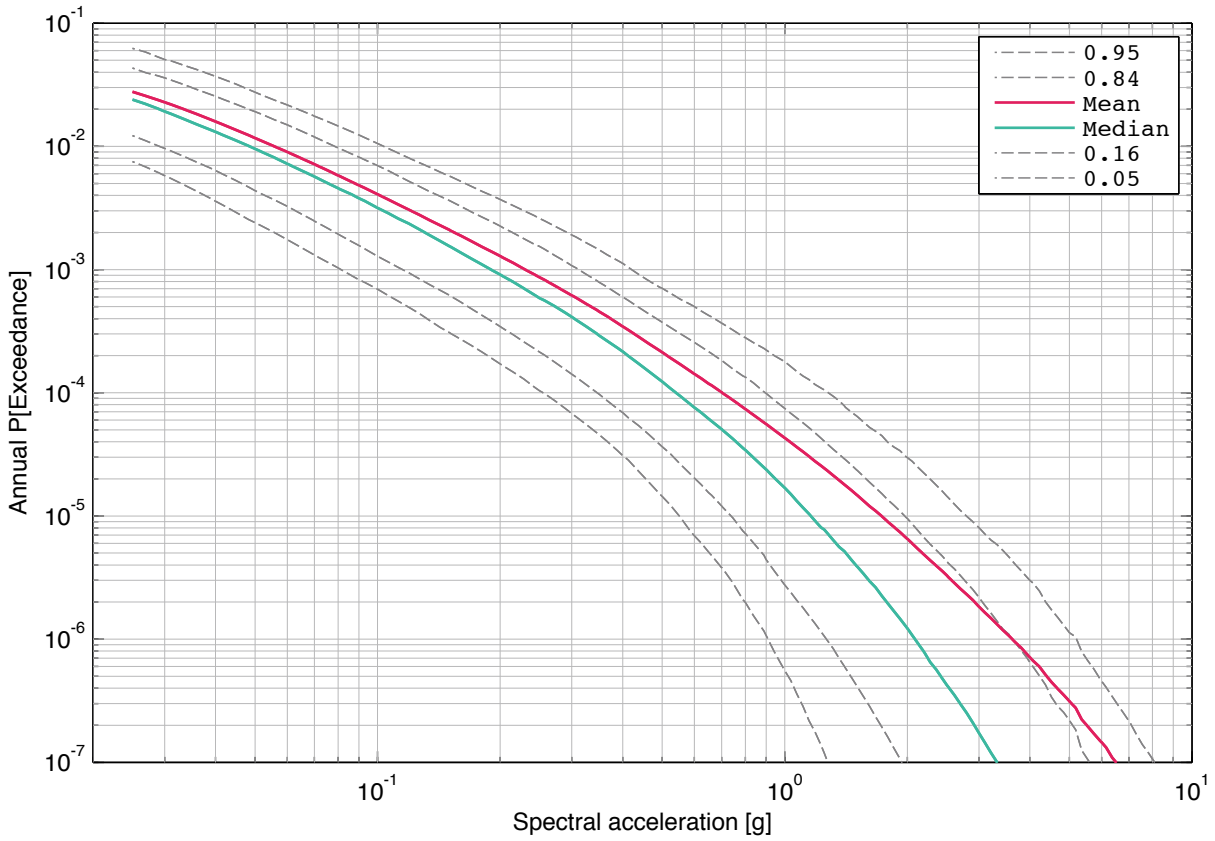

Fig. 5-13.5: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 10 Hz.

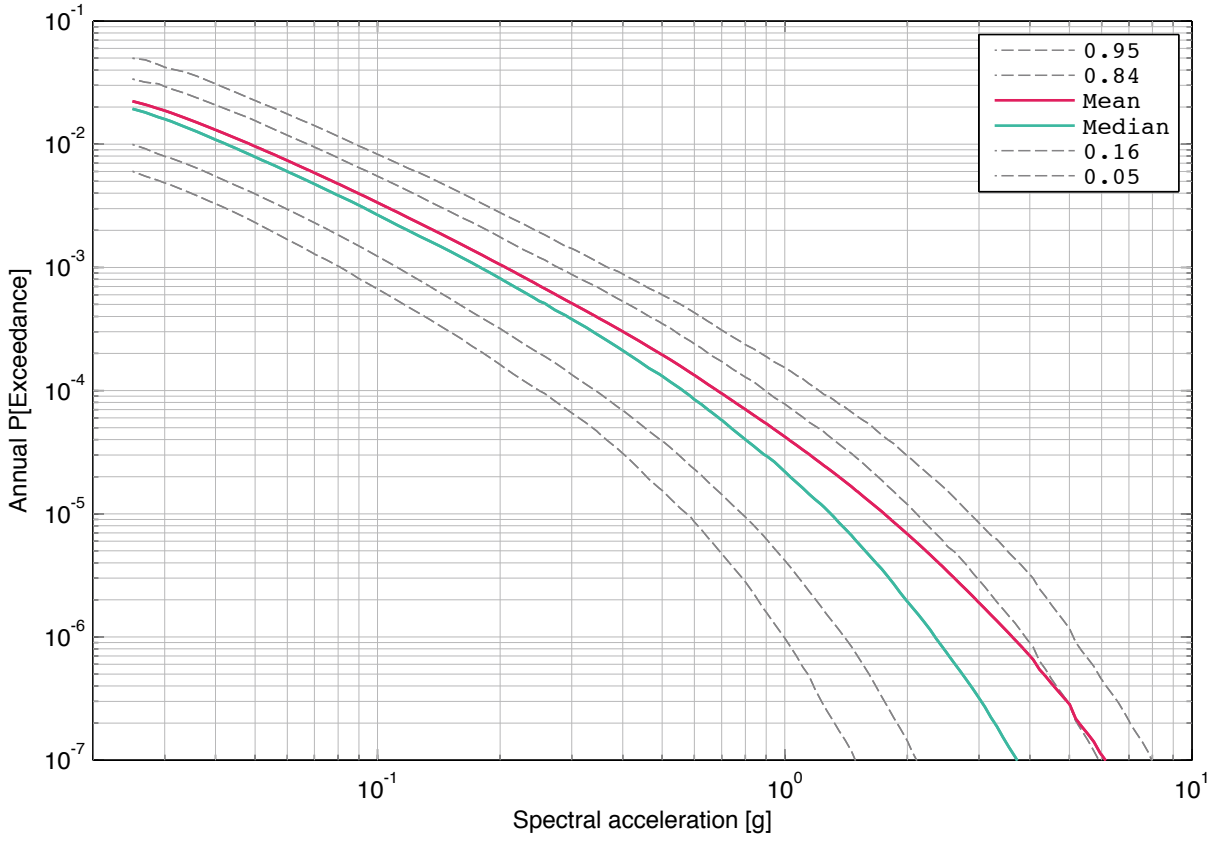

Fig. 5-13.6: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 20 Hz.

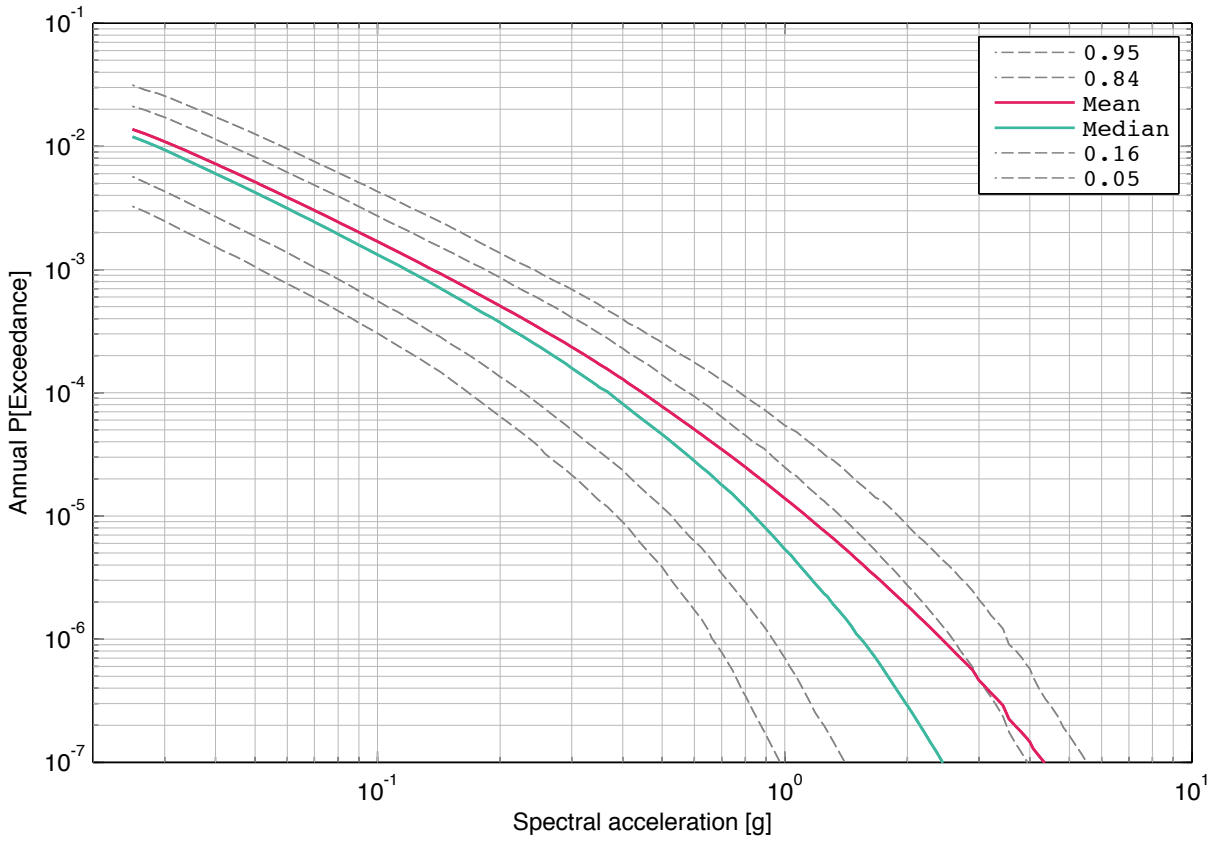

Fig. 5-13.7: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 33 Hz.

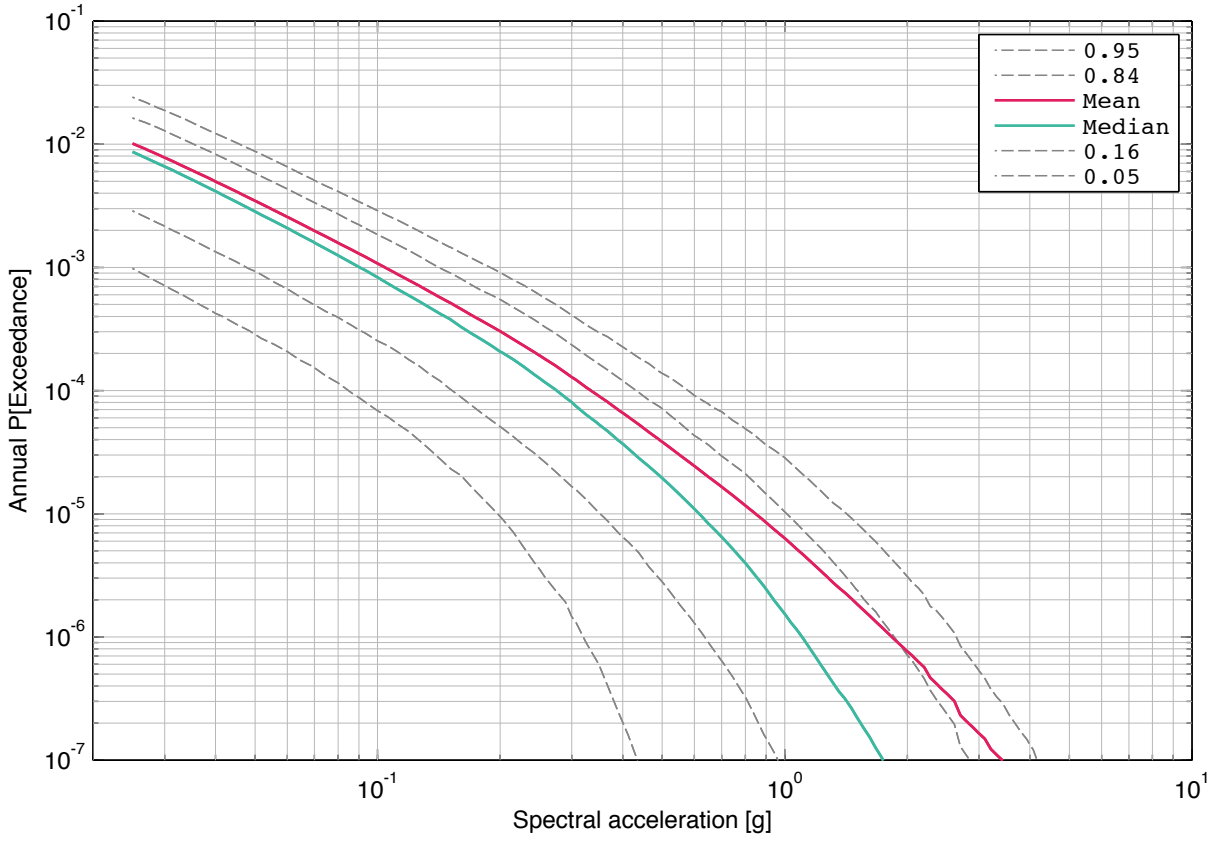

Fig. 5-13.8: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 50 Hz.

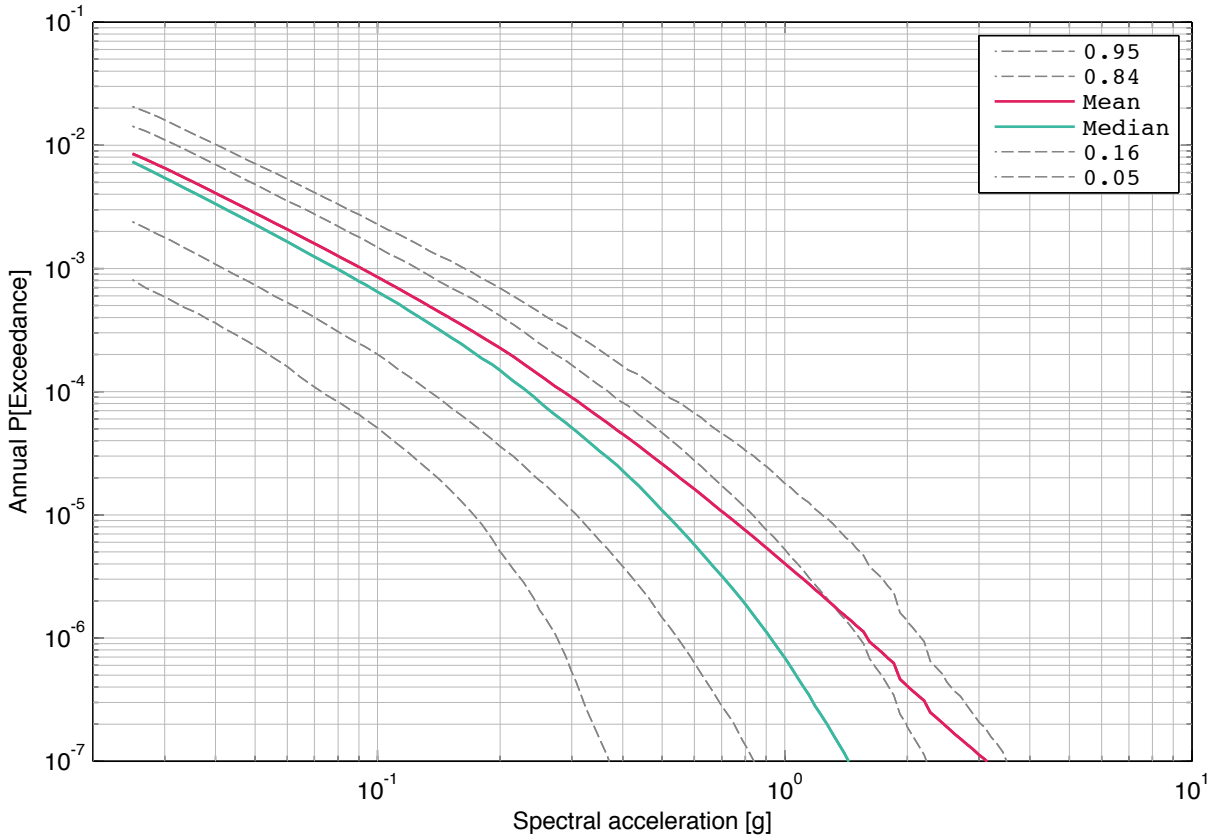

Fig. 5-13.9: Mühleberg, vertical component, soil, -7 m, mean hazard and fractiles, 100 Hz.

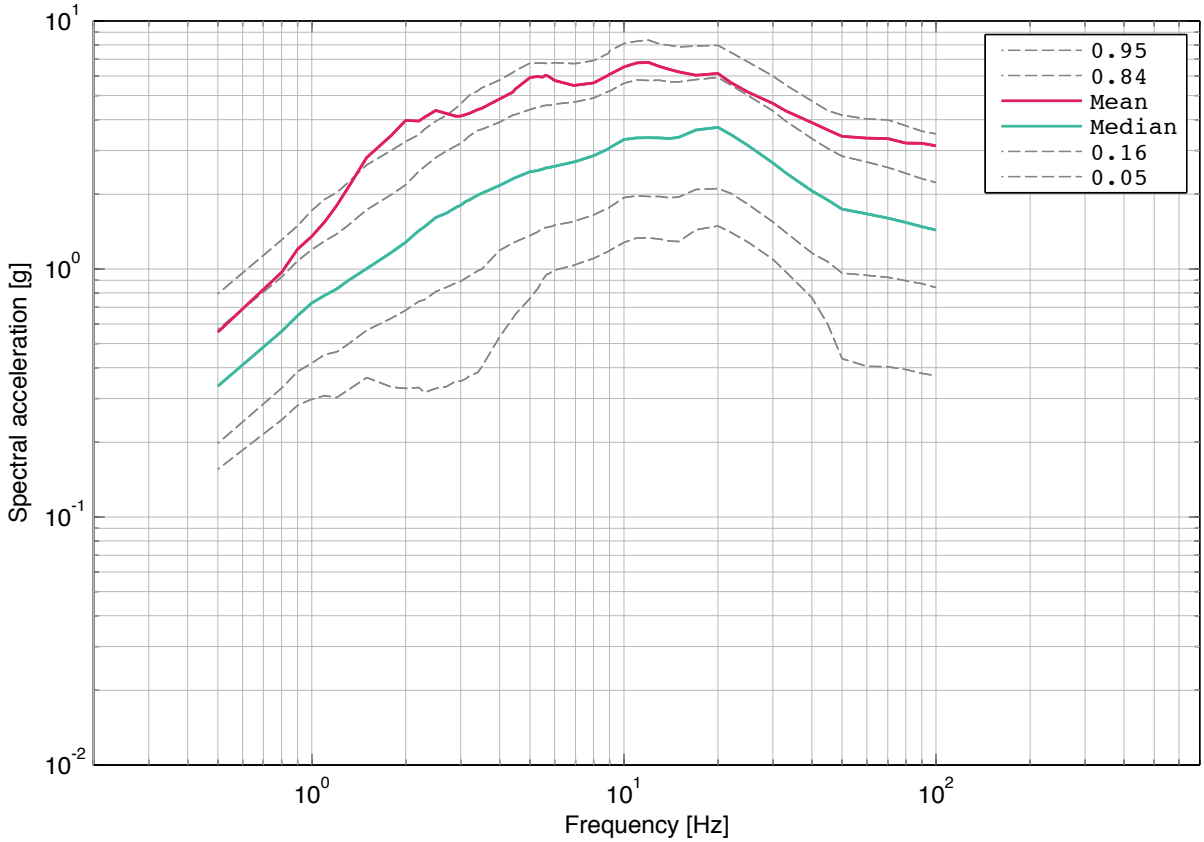

Fig. 5-13.10: Mühleberg, vertical component, soil, -7 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

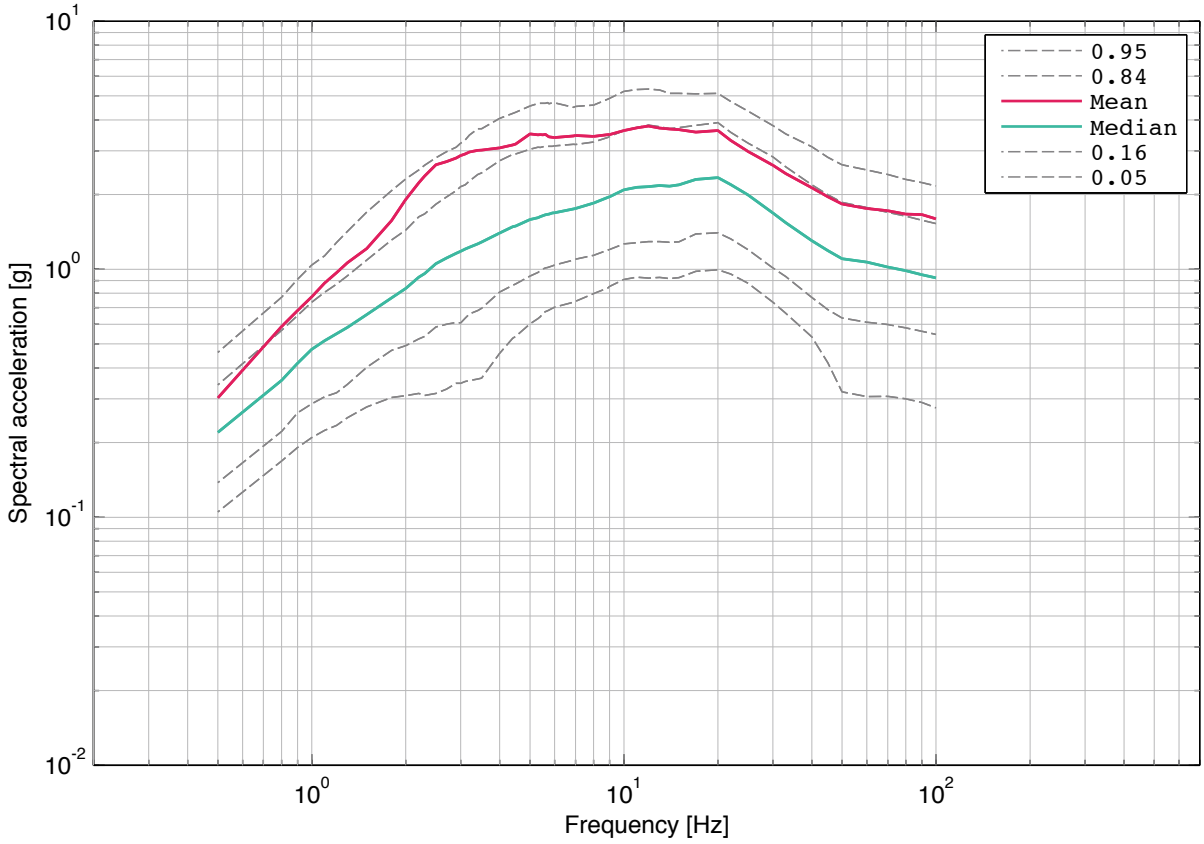

Fig. 5-13.11: Mühleberg, vertical component, soil, -7 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

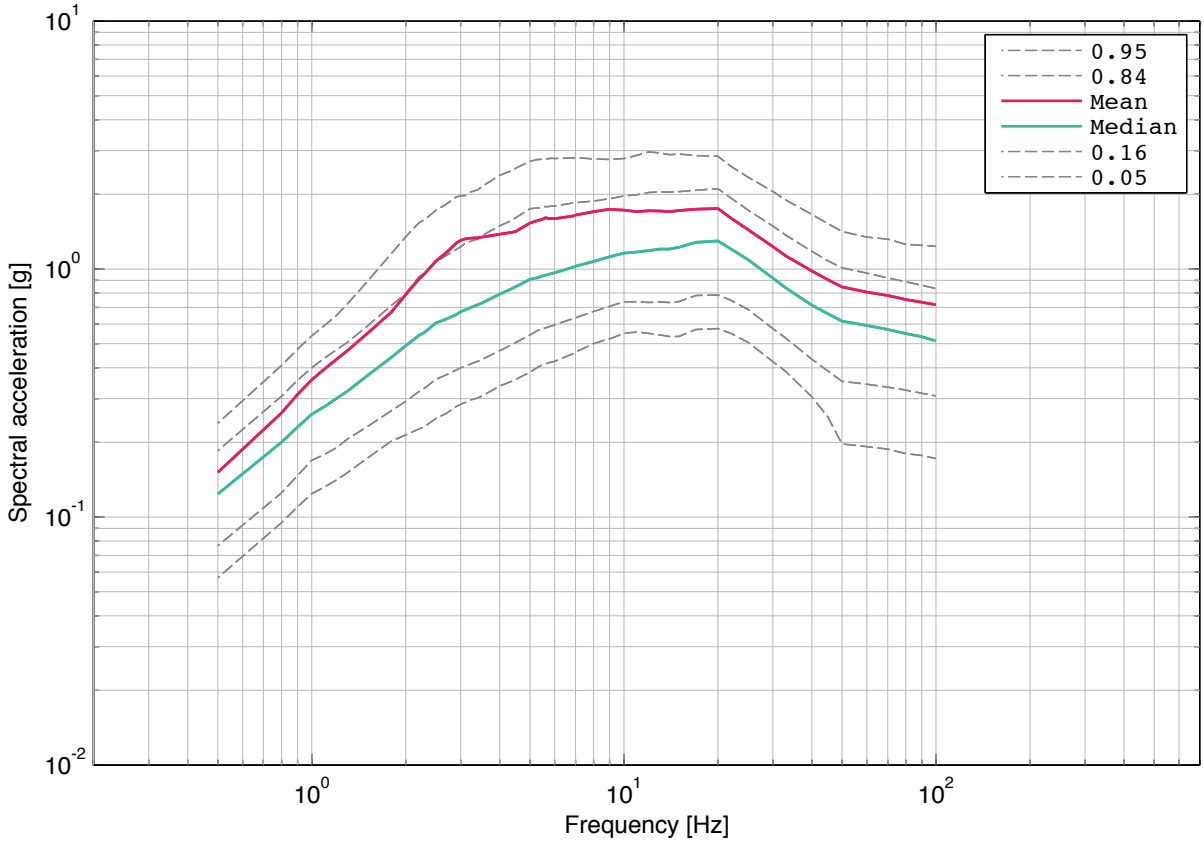

Fig. 5-13.12: Mühleberg, vertical component, soil, -7 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

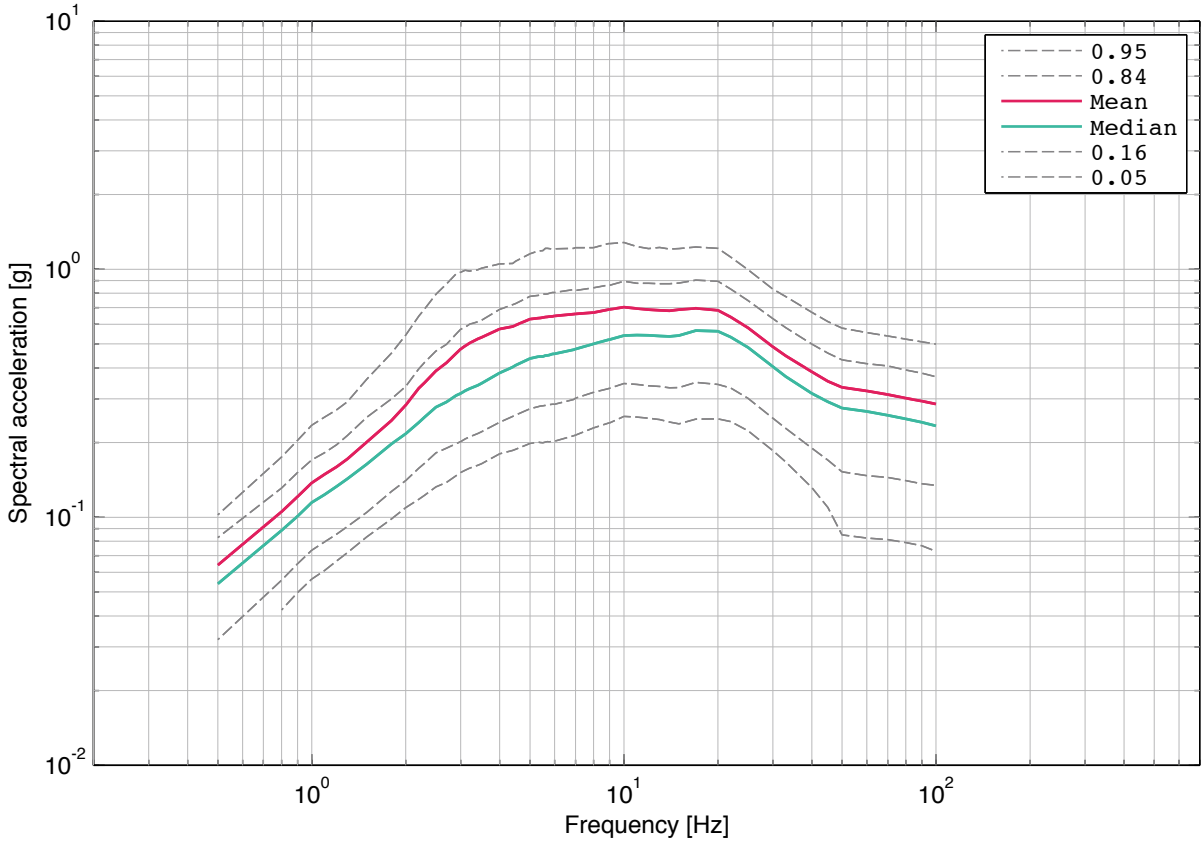

Fig. 5-13.13: Mühleberg, vertical component, soil, -7 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

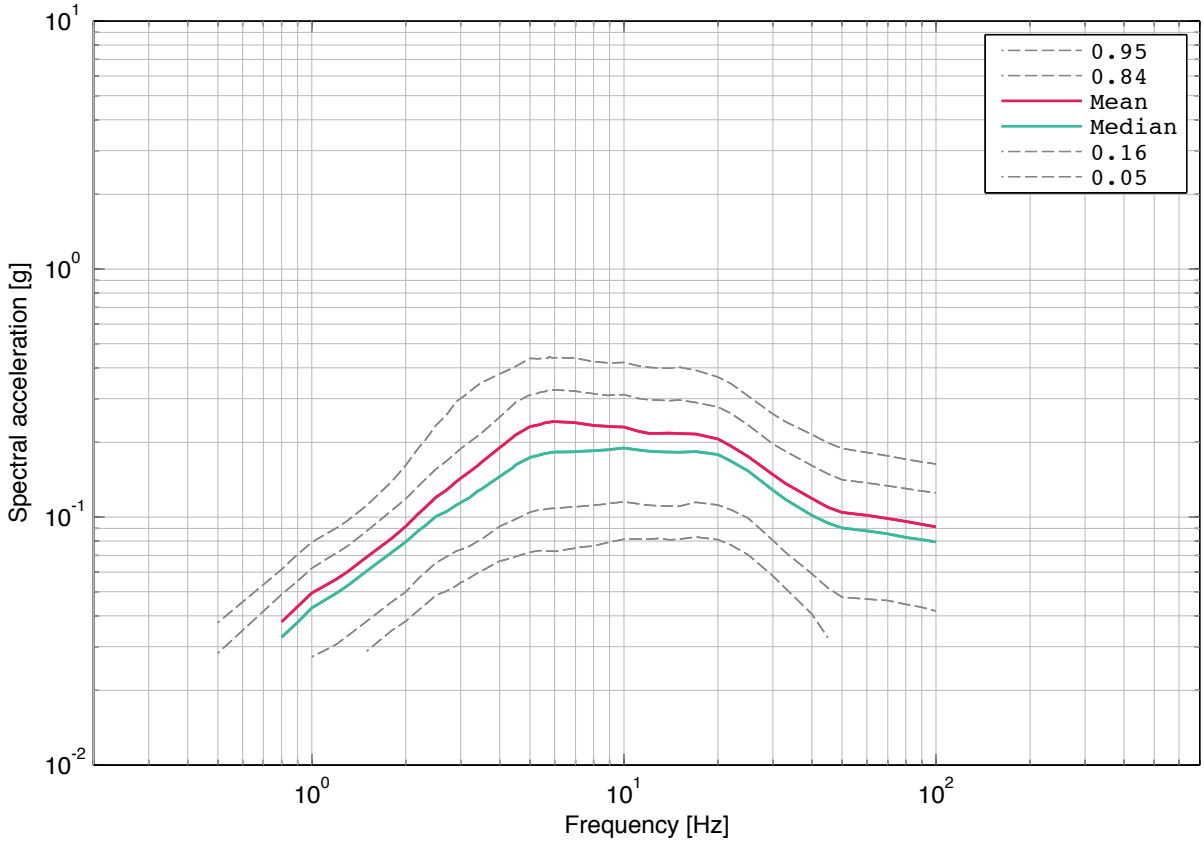

Fig. 5-13.14: Mühleberg, vertical component, soil, -7 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.

5.14 Mühleberg, Soil Hazard, Vertical Component, -14 m

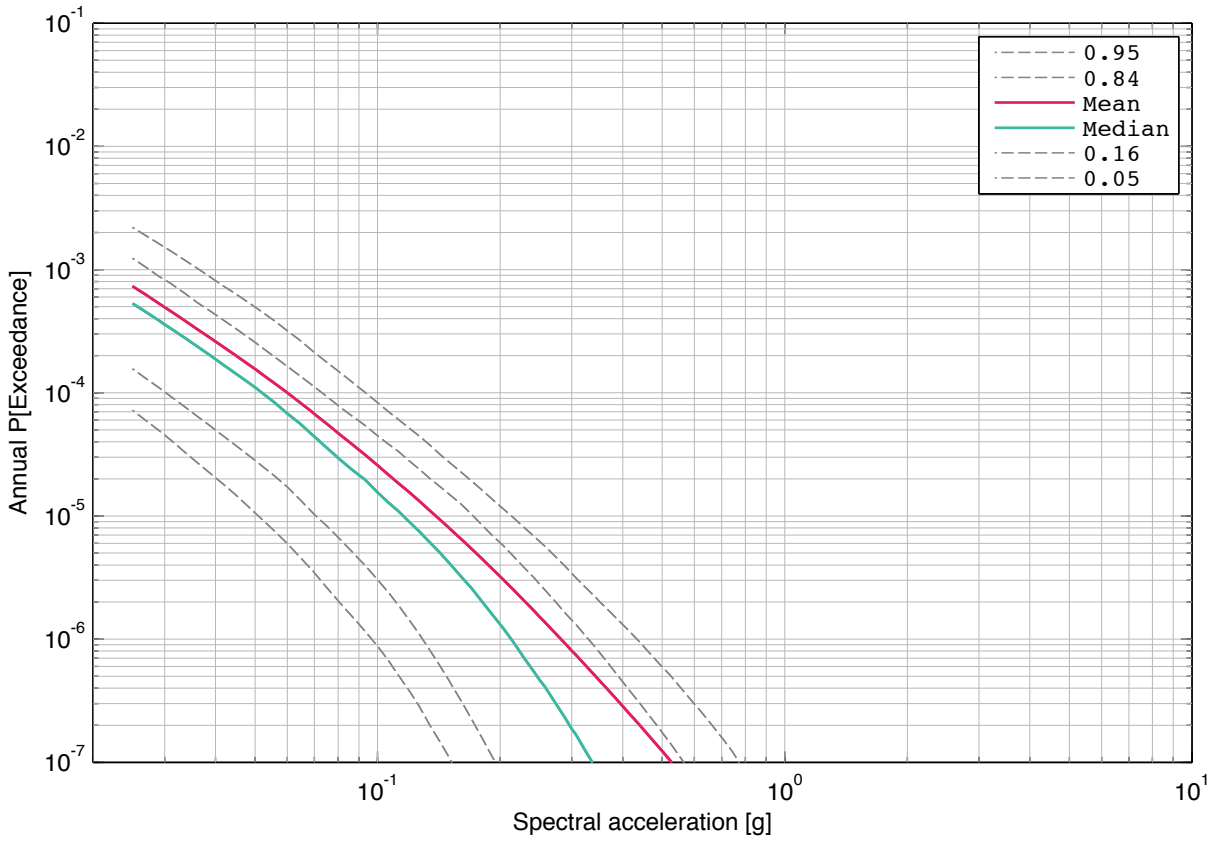

Fig. 5-14.1: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 0.5 Hz.

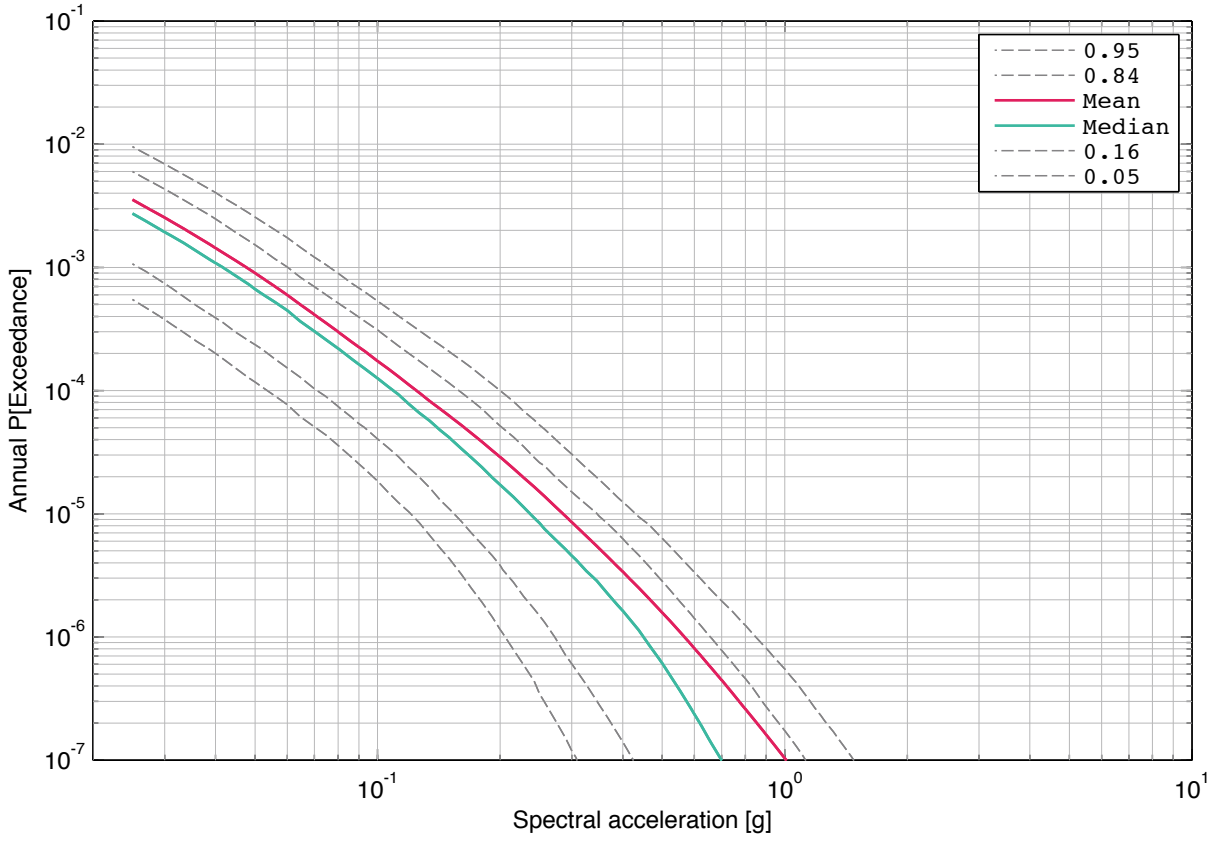

Fig. 5-14.2: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 1 Hz.

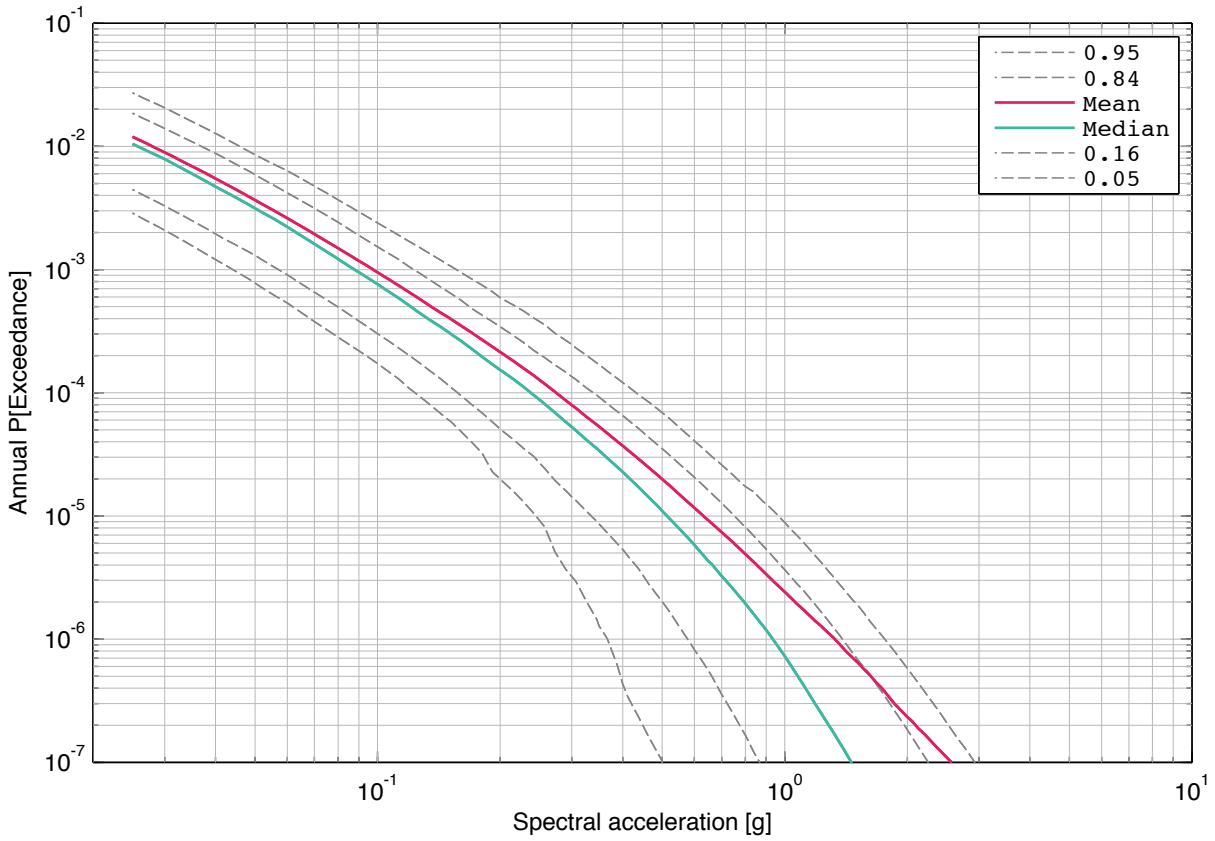

Fig. 5-14.3: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 2.5 Hz.

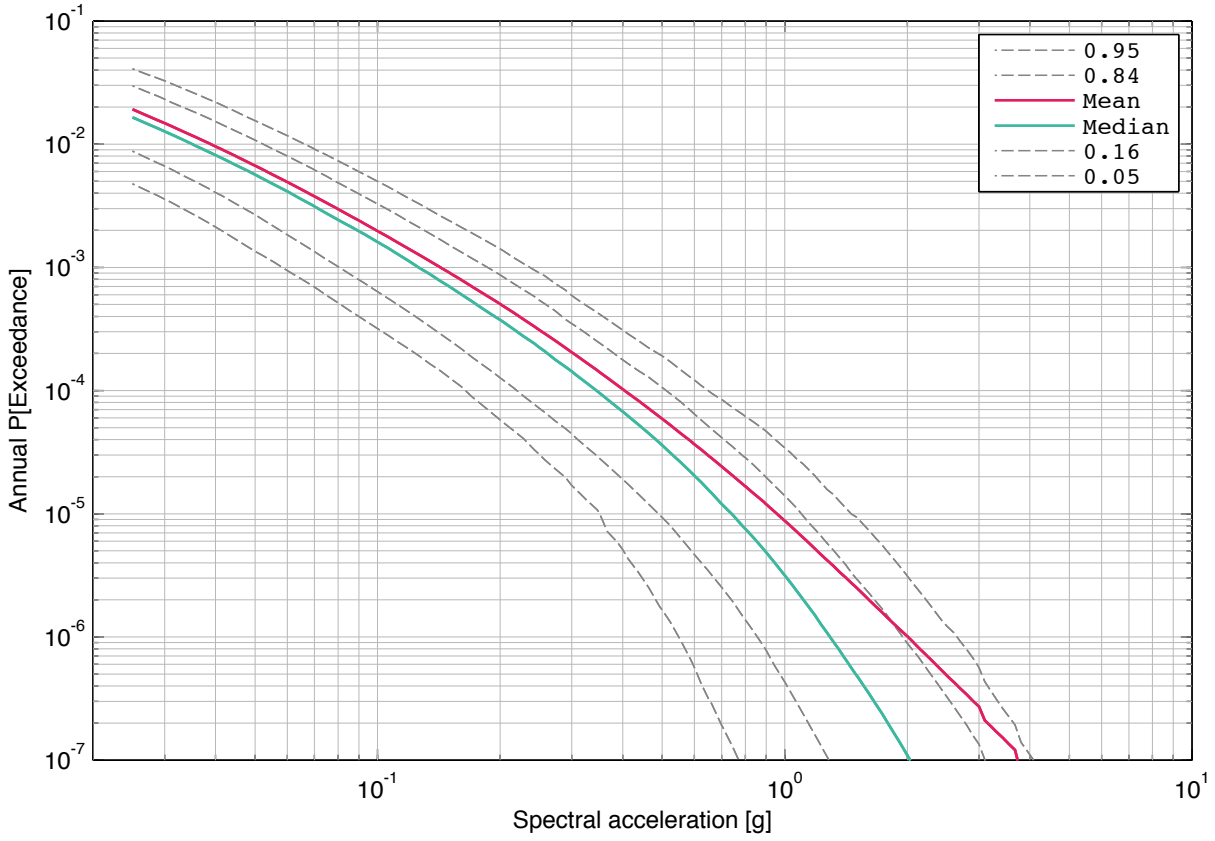

Fig. 5-14.4: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 5 Hz.

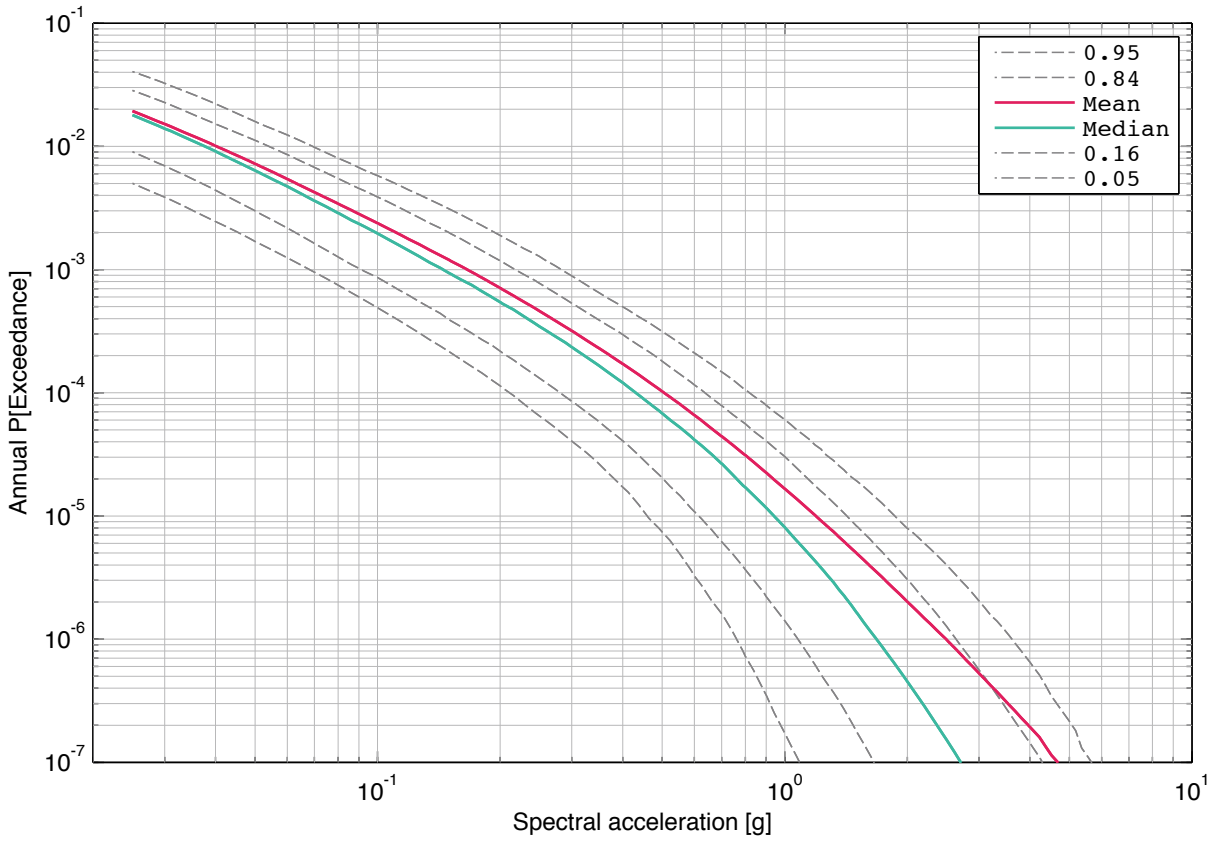

Fig. 5-14.5: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 10 Hz.

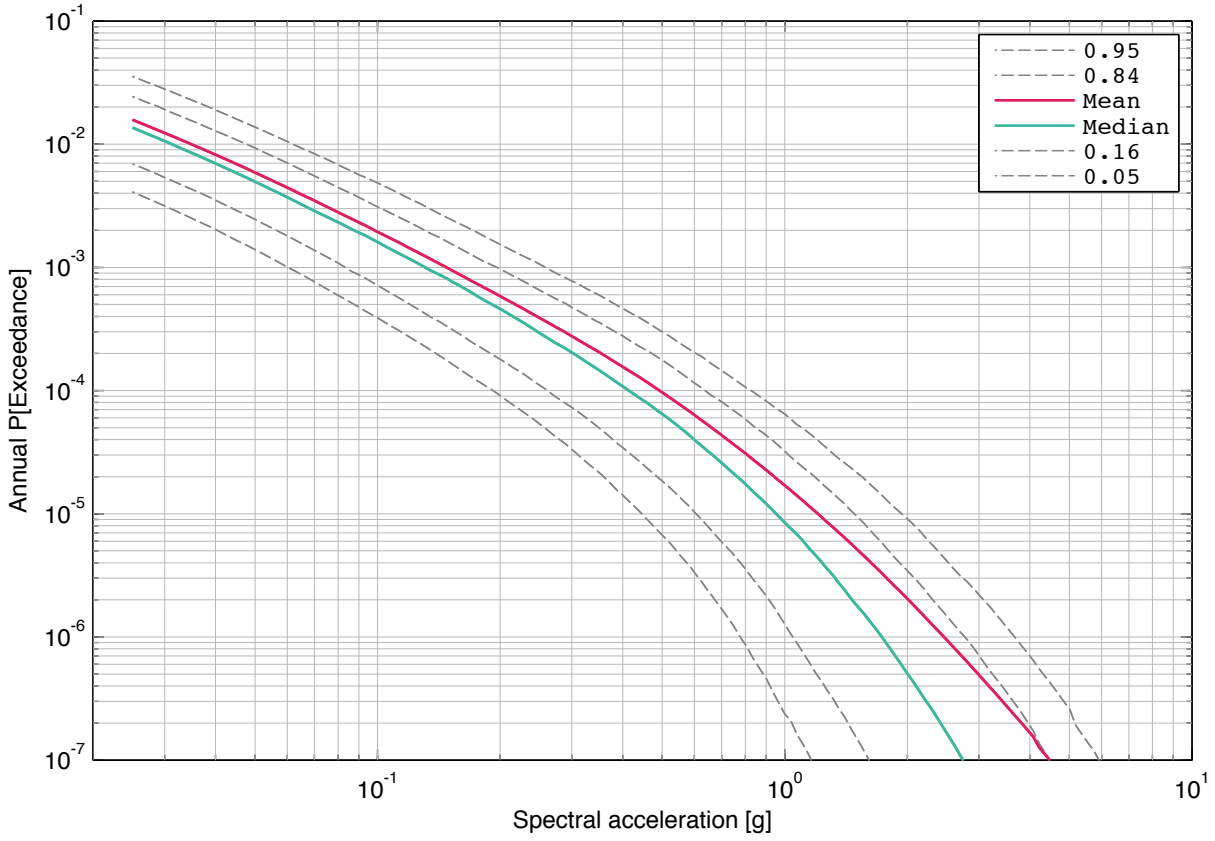

Fig. 5-14.6: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 20 Hz.

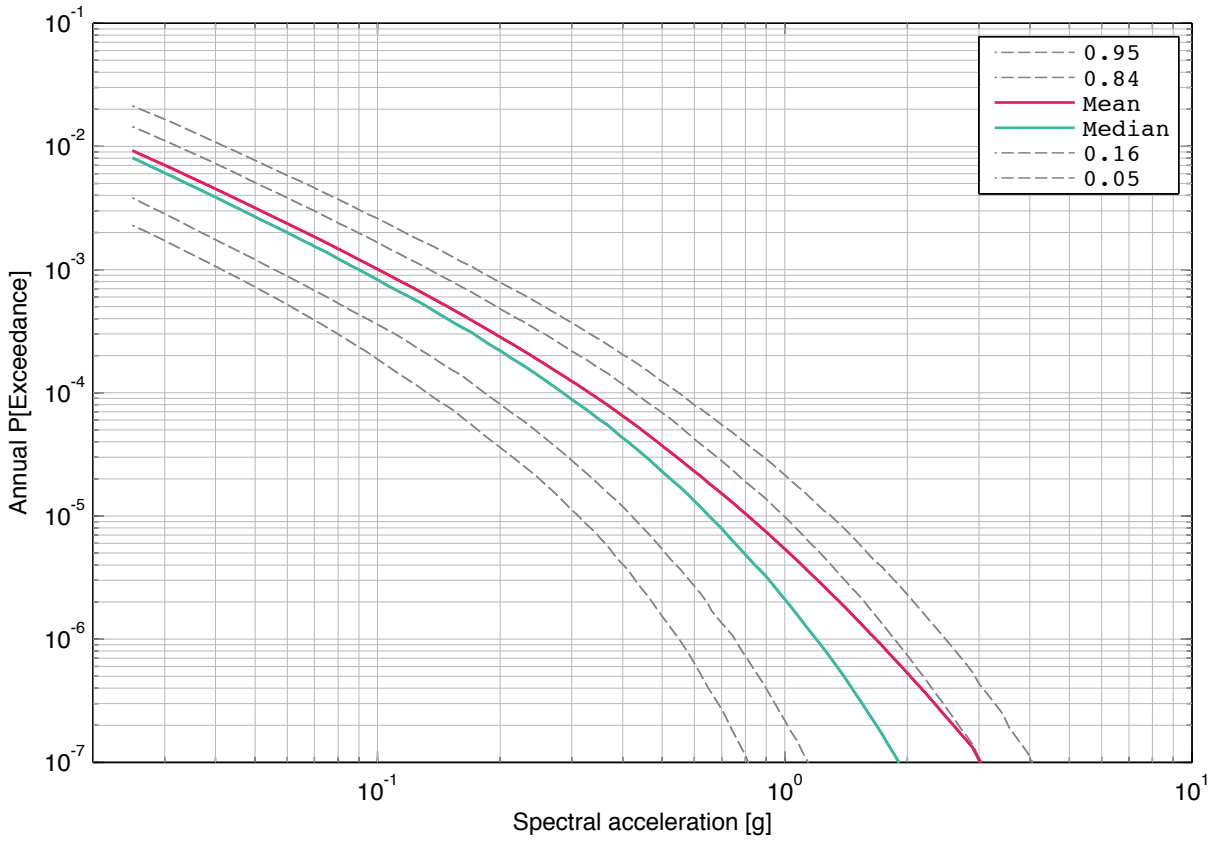

Fig. 5-14.7: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 33 Hz.

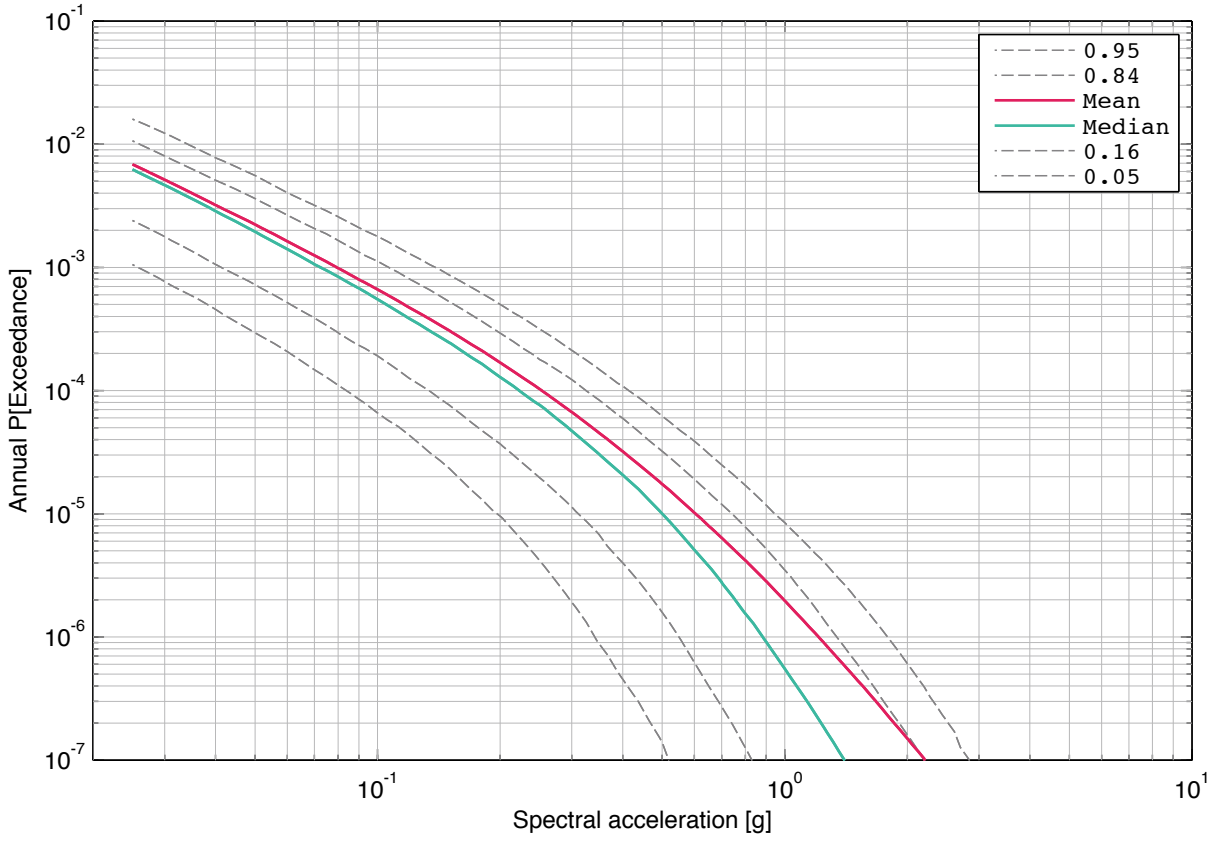

Fig. 5-14.8: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 50 Hz.

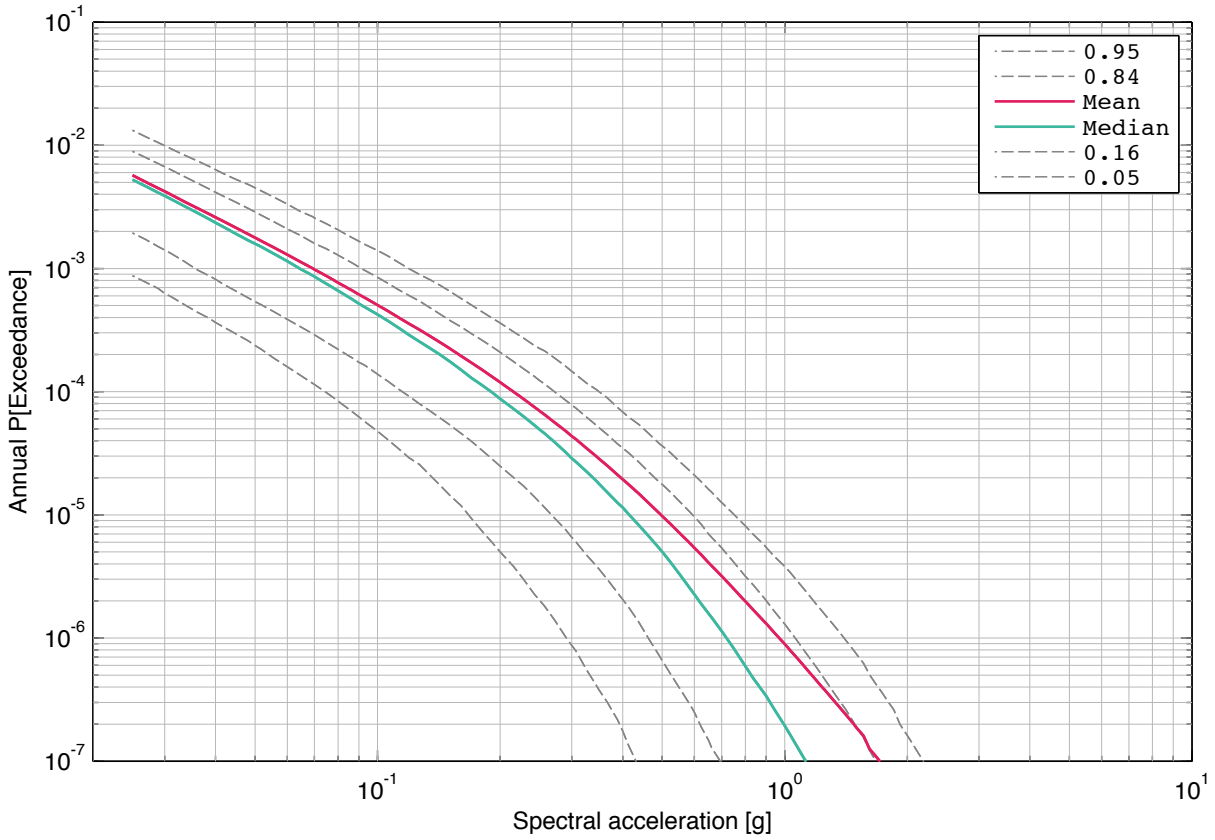

Fig. 5-14.9: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 100 Hz.

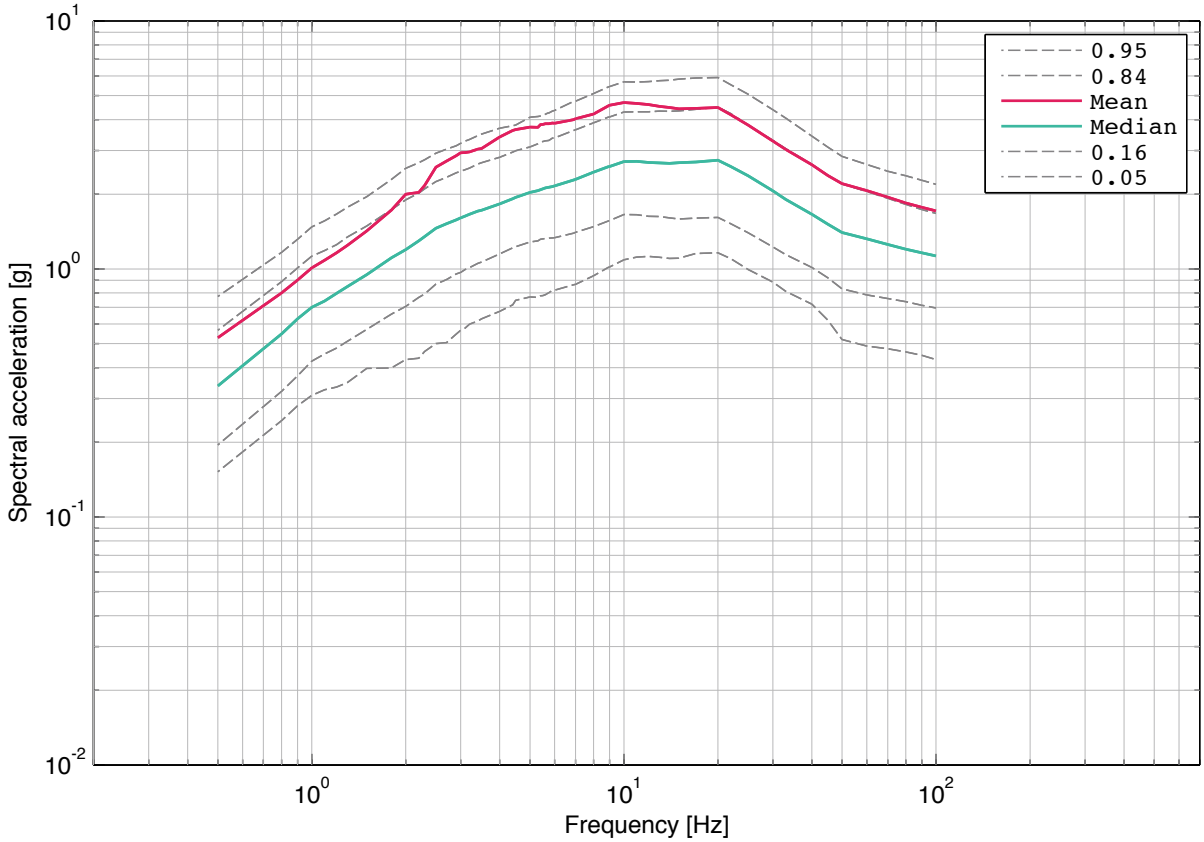

Fig. 5-14.10: Mühleberg, vertical component, soil, -14 m, UHS for an annual probability of exceedance of 1E-07 and 5% damping.

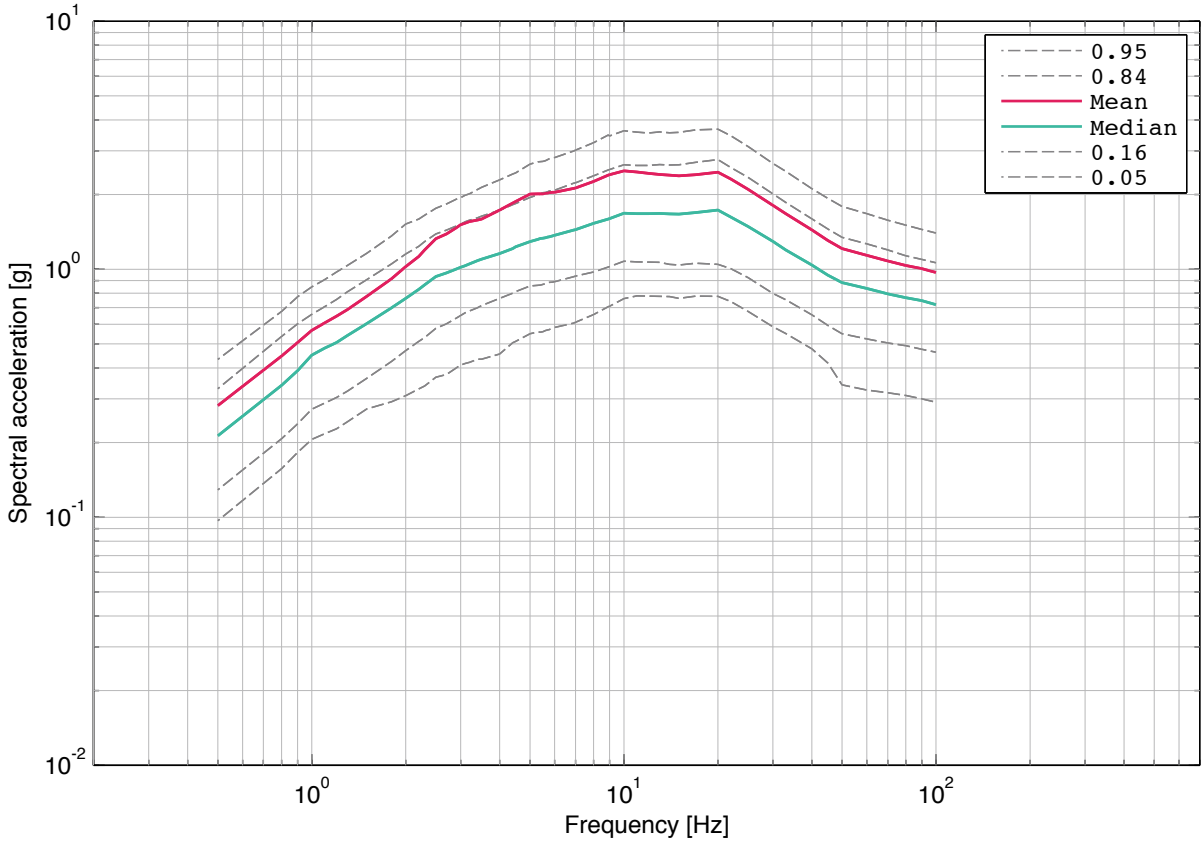

Fig. 5-14.11: Mühleberg, vertical component, soil, -14 m, UHS for an annual probability of exceedance of 1E-06 and 5% damping.

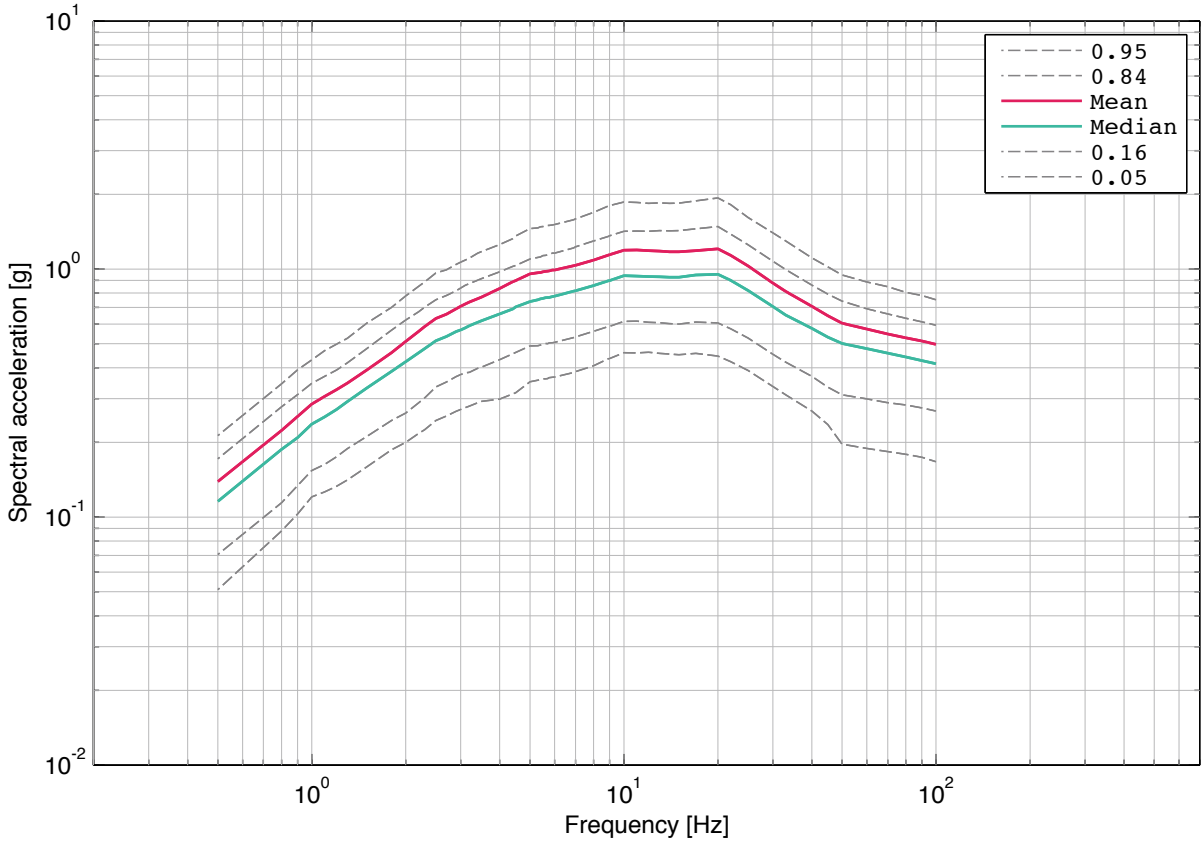

Fig. 5-14.12: Mühleberg, vertical component, soil, -14 m, UHS for an annual probability of exceedance of 1E-05 and 5% damping.

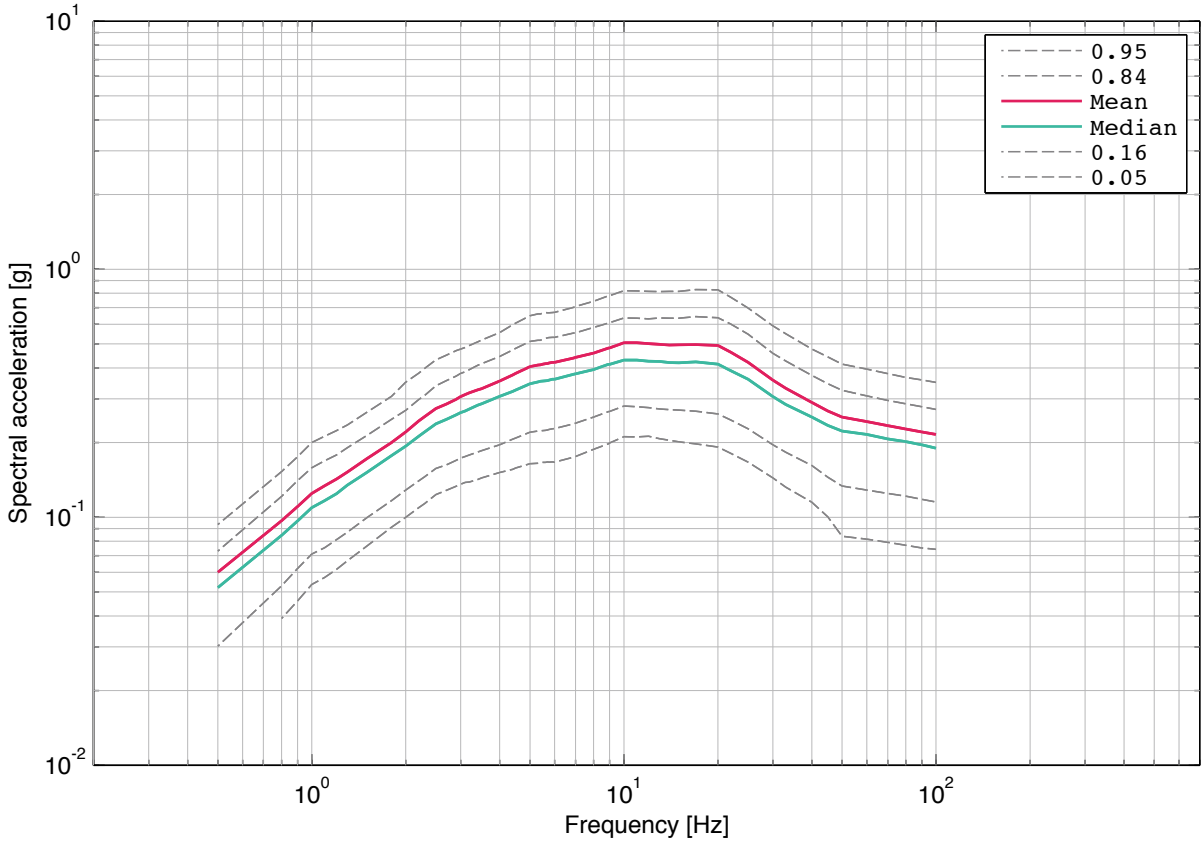

Fig. 5-14.13: Mühleberg, vertical component, soil, -14 m, UHS for an annual probability of exceedance of 1E-04 and 5% damping.

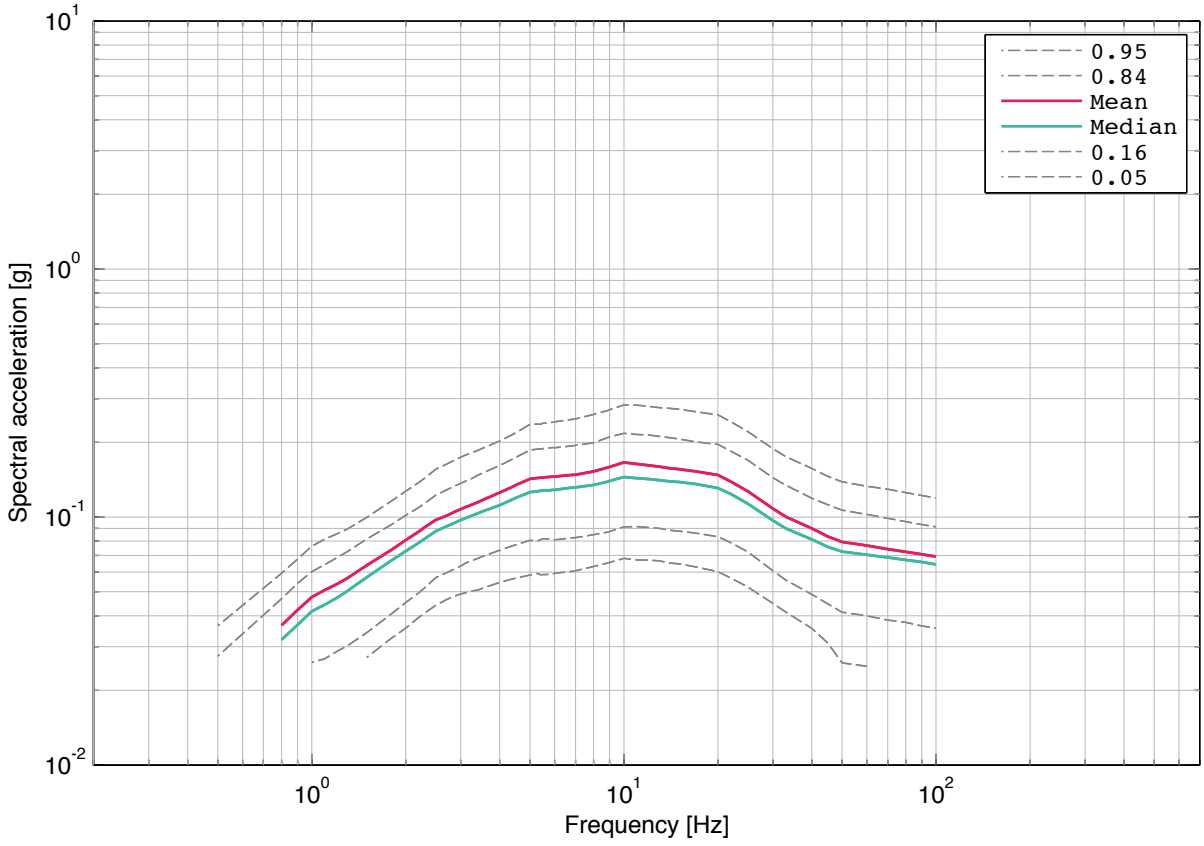

Fig. 5-14.14: Mühleberg, vertical component, soil, -14 m, UHS for an annual probability of exceedance of 1E-03 and 5% damping.