Nat. Hazards Earth Syst. Sci. Discuss., 1, C1090–C1093, 2013
www.nat-hazards-earth-syst-sci-discuss.net/1/C1090/2013/

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Airborne geophysical mapping as an innovative methodology for landslide investigation: evaluation of results from the Gschliefgraben landslide, Austria" *by* R. Supper et al.

Anonymous Referee #4

Received and published: 6 September 2013

The discussion paper "Airborne Geophysical Mapping as an Innovative Methodology for Landslide Investigation: Evaluation of Results from the Gschliefgraben Landslide, Austria" presents a new promising application of geophysical reconnaissance (airborne here) to landslide investigation. The airborne approach may be the only one able to cover medium to wide areas with an almost complete coverage.

However, everybody recognizes the difficulties of this application. On one hand, the cost and availability of the equipment, and the flight at low altitudes over very abrupt

topographies. On the other hand, the use of the acquisition sensors and the postprocesing of the field data are quite involved. The authors themself highlight the advantages and the drawbacks of the A.G.M. Probably, the quoted difficulties will go better in the future.

Some specific comments merged with a few corrections follow.

* Although later it has no practical role, it is worth to mention the Uranium in the Abstract?

* P.2284, L.10: Consider to substitute 'subsurface' by 'terrain'.

* P.2284, L.11: It is reasonable to consider rock matrix as non-conductive?

* P.2285, L.21: "With 2.33 weight %..." Consider deleting the word 'weight' for clarity reason; the argumentation remains valid, but with better readability.

* P.2285, L.22-24: felsic/mafic/ultramafic are strange words for plain readers, isn't? Fortunately you give examples between brackets.

* P.2286, L.19-: In the measurement principle section, please remark that the Gamma Ray S. is a passive technique.

* P.2287, L.23: better to say "(1400 to 1427 MHz in our case)" or (... for the sensor in use at Gschliefgraben).

* P.2287, L.25: consider to substitute "The penetration depth" with "The investigation depth".

* P.2287, Section 2.3: I wonder if other microwave reflections coming from active EO satellites working in the L-band (Radar, SMOS mission, Global Positioning sats...) may affect your passive microwave measurements? I suppose that this is not the case, but have you experienced any interference with these active microwave sources?

* P.2288, L.18 and rest of the paper: hard to catch the full meaning of the abbreviations,

probably because they are the initials of Latin or German terms and sites. Can you help the reader to follow your rich explanations by simplifying the notation? Even with a small loss of geological rigor. For instance, you can substitute the abbreviation with the soil or rock most representative of this lithology.

* P.2288, L.25: perhaps better to write "(BMS, index 50 in Fig.3)"

* P.2290, L.14: You say "After applying the usual processing steps..." Can you explain which are the usual processing steps?

* P.2293, L.3: What is the resolution of the AEM?

* P.2296, L.6: "...investigate, if..." Comma not needed.

* P.2296, L.12-13: Explain why higher resistivities implies higher strength of the materials.

* P.2297, L.20: "...method, which..." Comma not needded.

* P.2298, L.27: Better to write "airborne electromagnetic method" instead AEM (abbreviation defined 14 pages before). In this way you avoid the hypothetical confusion with a lithology!

The figures, in general, contain a lot of information, sometimes difficult to read.

* Fig.3, caption: I cannot locate the dot-and-dashed lines.

* Fig.6: You can specify that this map derives from the electromagnetic Survey.

* Fig.8: Put the parenthesis at the end: "HEM cross-sections obtained from the 1-D multilayer inversions; their positions are marked in Fig. 9 (black lines). Also you might mention the comparison with the geological cross-sections in the right part.

* Fig.10: you might mention the comparison with the geological cross-sections in the right part.

* Fig.12: "compared compared"

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 2281, 2013.