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# A new seismotectonic atlas of Switzerland: fault data

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The compilation of the Seismotectonic Atlas of Switzerland was launched as a co-operation of the Swiss Geophysical Commission with the Swiss Seismological Service, the Swiss Geological Service and the University of Bern. It aims to illustrate the spatial distribution of historical and instrumentally recorded earthquakes, stress data deduced from earthquakes, in-situ measurements and borehole breakouts, vertical and horizontal movements, geotechnical data of the bedrock, and recent and active faults in Switzerland.

The map showing recent faults is based on the new digital Tectonic Map 1:500'000 of Switzerland. In a companion poster, a compilation of recent earthquake data is on display in this session of the EGU 2008 Meeting (Deichmann et al.).

The map showing faults is based on two PhD projects (Persaud, 2002; Ustaszewski 2007) in which lineament studies aimed at detecting recent and active faults in the Swiss part of the Alps. The information on recent faults in the area not covered by the two projects was compiled from the Tectonic Map 1:500'000 of Switzerland and other sources. On this fault map we show a simplified tectonic map containing major nappe systems in the Alps, important Neogene faults, fold axes of major anticlines in the Jura Mountains and the Molasse Basin, as well as minor (mainly strike-slip) faults.

Within the study area, the results of the lineaments studies in the eastern, central and western part of the Swiss Alps indicate that there are three types of faults that cause the observed lineaments:

1. Gravitational faults, including deep seated gravitational slope deformations

(DSGSD)

2. Composite faults, including uphill facing scarps caused by reactivation of pre-existing steeply dipping anisotropies (foliations etc.) in the wake of glaciations

3. Tectonic faults, usually linear features cross-cutting ridges and valleys

The distinction between these fault types is difficult in some instances. Tectonic faults are laterally continuous features that also cross-cut anisotropies in the bedrock. For a few tectonic faults a post-glacial activity can be proven. Some of these tectonic faults are parallel to the nodal planes of earthquakes in the area.

References:

Persaud, M., 2002. Neotectonics in Eastern Swiss Alps. PhD thesis, University of Bern, 179 pp.

Ustaszewski, M., 2007. Neotectonics in the central and western Swiss Alps. PhD thesis, University of Bern, 140 pp.