Motivation

Active faults can relax the crustal stress by a sudden slip, generating earthquakes which may cause damage at fragile building structures. In the Czech Republic strong earthquakes happen rarely but it is inferred mainly from what we observe in some geologically similar parts of the world that they may happen indeed - once after a very long time of quiescence. Learning about whether and where such earthquakes occurred in geological history, how often and how strong they were, are the main reasons we study faults and related geological features in detail. The information learned is then used together with the known earthquakes of the last decades (instrumentally recorded) and centuries (inferred mostly from historical record) for better quantitative assessment of seismic hazard.

Possibly Asked Questions:

What is new in our approach?

This is the first attempt to give comprehensive database of faults in the Czech Republic and around, with systematic summary on their evolution and late activity. The database is connected to the interactive map together with rich explanation texts and detailed descriptions of supporting evidence to make the evaluation of fault activity more transparent. Some novel approaches are featured here, such as adding indications defining local geometry of each fault line or including the observations bringing counterevidence on fault slip in addition to positive evidence.

What faults are included?

We preferentially include those faults which meet at least one of the following criteria:

- faults which cross-cut the Cenozoic sediments or are located at or near the margins of Cenozoic sedimentary basins
- faults which display distinct surface morphology
- faults which are located near a cluster of earthquake epicentres or near important single earthquake epicentres
- faults which were included in previous SHA reports or were regarded as active in any relevant previous study
- major faults in proximity to nuclear power plants, especially those with optimal orientation for slip in the regional stress field.

Longer faults are included preferrentially. But in general there are no limits and any fault can be added in future. **Read more** about the reasoning for priorities of fault selection.

Why do some faults have different geometry than in my geological map?

Faults are commonly drawn in different ways in overlapping or neighbouring geological maps. In some cases the differences in the very conception of the fault structure used by different geologists are quite fundamental. Editors of our fault map are asked to compile fault geometries from all earlier map sources, get over the map inconsistencies and re-interpret the fault lines based on available data where they are able to. After doing so, they add simplified information on local indications and overall accuracy of a fault line geometry. Although the fault geometry will with no doubt remain largely influenced by subjective views, recording the main local indicators should facilitate critical reassessment in future. This was not easy to do so far with the available sources and we believe it will later prove to be a significant added value.

Why are some faults named differently than in older texts?

Faults are often interconnected and definition of their exact extent is not straightforward. Owing to this, different geologists often use same names for different fault structures. In such cases we either pick and adopt one of the existing names or find a new one. New names were also given to many faults which have been nameless so far. However, fault names are used here as a secondary descriptor only to ease linking the fault sections with commonly known terms.

Why the fault section is taken as more important than the fault itself?

Fault sections are the shortest parts of the fault defined by common attributes in the parameter table. They are composed of arbitrary number of subsections with similar orientation. In this sense, fault sections are the basic elements of the database. The importance of the term *fault* is somewhat supressed here as its unique definition is not straightforward and different geologists often link different fault sections into different structures.

How can I take part?

From:
https://faults.ipe.muni.cz/ - **Faults of the Bohemian Massif**

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