



Session 10

Control on seismic and aseismic fault slip: Physical mechanisms at play, their interplay, and spatiotemporal evolution

Conveners:

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Seismogenic faults accommodate strain at a range, perhaps a continuum, of slip velocities ranging from cm/yr to m/s, commonly generating aseismic and seismic signals, respectively. The spatial distribution of distinct fault patches that host seismic and aseismic slip is non-uniform for a given fault or fault system. How seismic and aseismic slip patches interact in space and time and whether individual patches can host slip at a range of velocities, as well as how geometrical complexities and lithology govern slip behavior, remain open questions. Aseismic and slow seismic events generally produce low amplitude signals relative to regular earthquakes, making them hard to observe and robustly link to geological features or to quantify their interactions. However, recent observations using new types of data or integrated datasets combined with novel processing techniques are starting to uncover a range of fault slip behavior that correlates with geological and lithological properties. This session welcomes contributions that aim to advance our understanding of the mechanisms promoting seismic and aseismic fault deformation on seismogenic faults and their interaction. We especially welcome multidisciplinary contributions with any combination of geophysical and geological observations, laboratory experiments, and numerical modeling, including those which incorporate new types of data (such as distributed Fiber Optic Sensing, e.g. DAS, DSS, DTS) and analysis techniques, including AI approaches.

