

## Working Group B – Bridging models of Alpine Deformation and Sedimentary Systems

Coordinator: Todd Ehlers

The goals of this working group are quantification of: (1) temporal and spatial (along strike) changes in the **tectonic controls** on Alpine hinterland exhumation and foreland basin sedimentation; (2) **Cenozoic climate controls** and their spatial and temporal contributions to Alpine erosion and basin sedimentation; and (3) **integration** of the above results to quantify when and where tectonic and/or climate processes resulted in exhumation, paleoelevation, and sedimentation changes. We address these goals through a set of geographically coordinated studies for the Alps, with some detailed comparisons between the central and eastern Alps, and northern foreland basin system. Our interdisciplinary approach allows quantification of the surface response to external forcings (lithospheric dynamics, seismically observed deep structures, climate) and environmental signal propagation from the source (Alps) to the sink (sedimentary basins). We have assembled a team of investigators to assure the Phase 2 SPP themes of lithospheric reorganization during mountain building (Theme 1) and the temporal surface and crustal response of changes in mountain structure (Theme 2) are coherently addressed.

### Proposals:

1. Andrić-Tomašević, Nevena, Ehlers, Todd: Integrated records of tectonic and climate interactions in the Northern Alpine Foreland Basin sedimentary architecture
2. Eizenhöfer, Paul, Ehlers, Todd: Quantifying the Effects of Mantle Processes and Climate Variability on Hinterland Denudation in the Central to Eastern Alps since the Oligocene
3. Meijers M, Mulch A, Mutz S, Ehlers T: Reconstructing Eastward Propagation of Surface Uplift in the Alps: Integrating Stable Isotope Palaeoaltimetry and Paleoclimate Modeling (REAL)
4. Scheck-Wenderoth, Magdalena, Bott, Judith, Cacace, Mauro, Götze, Hans-Jürgen, Kaus, Boris: Deformation patterns in relation to the deep configuration of the lithosphere of the Alps and their forelands – DEFORM
5. Scherler, Dirk, Winkelmann, Ricarda: Glacial and erosional contributions to Late Quaternary uplift of the European Alps
6. Stutenbecker, Laura, Glotzbach, Christoph, Ehlers, Todd: Constraining the geodynamic evolution of the Alps with sedimentary provenance and detrital thermochronometer data
7. Thielmann, Marcel: QDIS: Quantifying Detachment Induced Surface Uplift in the Alps

# Target areas WG-B

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Target Areas

**Tectonic and Climate Drivers:**

- Regional geodynamics linked to seismic and geophysical observations**
- Paleoclimate & Paleoelevation**

**Source to Sink:**

- Surface processes, glaciation, hinterland kinematics & erosion/sedimentation**
- Basin fill & geodynamics, sediment provenance linked to seismic lithospheric structure**

