

Integrated records of tectonic and climate interactions in the Northern Alpine Foreland Basin sedimentary architecture

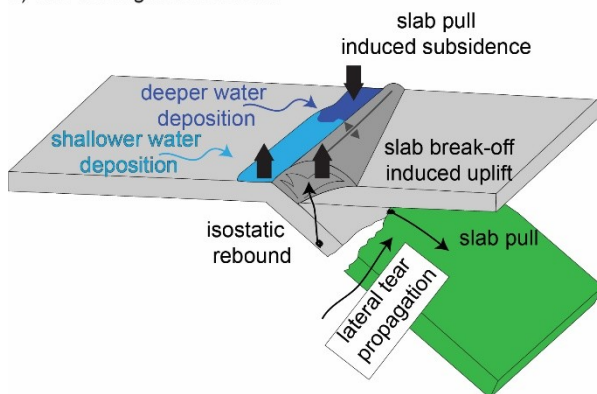
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This project addresses Theme 2 „Surface response to changes in deep structure on different time scales“ by focusing on the effect of slab dynamic on the Northern Alpine Foreland Basin (NAFB) architecture. In this study, we will test the hypothesis that slab tearing and break-off influence the along strike heterogeneous architecture of the NAFB. The hypothesis will be tested by (1) 3D simulation of depositional dynamics of the foreland basin above slab break-off and tearing using an integrated geodynamic and 3D stratigraphic (depositional) model, and by (2) evaluating end-member model scenarios through detailed comparison to the present day NAFB architecture. This state-of-the-art modelling approach combined with observational geological and geophysical data will enable us to separate and quantify the effect of the slab break-off and tearing on the NAFB architecture. It will also allow us to assess to which extent slab tearing and break-off can be overprinted by other tectonic processes, climate change, and sea level variations. Our research outputs will serve as a ground for testing different hypothesis derived from field geological and geophysical studies, geodynamic, landscape and climate evolution models within 4DMB Programme.

Testable End-Member Basin Dynamics Considered

a) slab tearing and break-off



b) simultaneous along-strike slab break-off

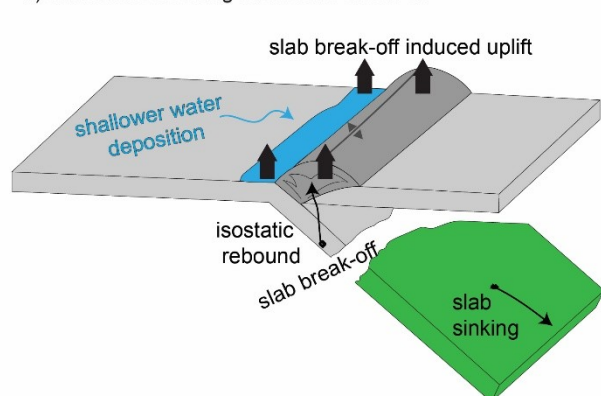


Figure 1. Proposed two End-Member scenario to be tested in this research. The effect of a) slab tearing and break-off, and b) simultaneous slab break-off on the foreland basin architecture and hinterland.