

## Orogenic Growth and Tectonic Geomorphology in the Atlas Mountains of SW Morocco

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This project aims at quantifying the orogenic growth of the Atlas Mountains in SW Morocco. The target area is the WSWENE oriented Atlas range between 32 and 30°N of longitude. It is a key natural laboratory: this region is characterized by spatially and temporally uniform large scale plate tectonic forces – pushed by the convergence between Europe and Africa. Phases of shortening, uplift and exhumation are poorly constrained, and there is little quantitative data available at present. The presence of high surface elevations in both the High Atlas chain (>4000m) and Paleozoic Anti-Atlas belt (>2500m) to the south of the High-Atlas is subject to debate. Little is known about phases of uplift and places where the associated erosion products are accumulated.

We dedicated our effort to a North-South transect across both Atlas chains by the combined use of in situ cosmogenic dating, low temperature thermochronology (Fission-Track & (UTh)/ He dating) but also a new thermometer. The choice of the study area is such that tectonism is regionally the single most significant varying parameter as climatic conditions do not vary across the chain. Cosmogenic nuclides in present-day fluvial sediments constrain (sub-) recent erosion rates whereas (UTh)/ He and Fission-Track thermochronometry quantify the denudation of the uppermost 1-8 km, i.e. rates of medium to long-term processes. Comparing these results to existing geological records enable us to identify and quantify the relevant tectonic process that shape the landscape of this mountain range in the frame of the Africa-Europe convergence.

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