



What is the lithological nature of subduction channels? Insights from fossil Caucasus subduction zones

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Subduction channels are key geological structures to decipher the behaviour of tectonic plates. They are a thin layer delimitating two plates, along the subduction zone. Hence their width, lithology and fluid/rock ratio are essential parameters to constrain the rheology of the interplate boundary. This geologic boundary may be prone to seismic or aseismic behaviour depending on the main mineralogical and fluid constituents. Geophysical imaging of subduction prisms has shown that the interplate domain has a distinct reflective signature (Sage et al., 2006). However, seismic data inversions do not allow estimating the width of such structures as their lithology and fluid/rock ratios are largely unconstrained. Modelling the behaviour of subduction accretionary prisms does not allow deciphering its intrinsic rheology as the subduction channel itself is such a small tectonic feature as compared to the whole prism. Therefore, it is necessary to analyse the lithological composition of natural exhumed subduction channels, exceptionnally preserved in the geological records of orogenic domains, to derive the main lithological constituents that may be used in further modelling and inversions. Here we describe a natural example of subduction channel representative of a shallow fossil intra-oceanic subduction zone, in the Karabakh mountains of the Lesser Caucasus. The data are compared to the active setting of the Andes, and their bearing for the interplate lithology and rheology are discussed.

Sage F., Collot J.-Y., Ranero C.R., 2006. Interplate patchiness and subduction-erosion mechanisms: Evidence from depth-migrated seismic images at the central Ecuador convergent margin. *Geology* 34, 997-1000.