

**Formation of mélangé in the tectonic accretion channel:
Geochemical relevance and implications**

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In collisional orogens a protracted history of tectonic mingling can be documented. Deformation leading to the formation of mélangé is focussed in a tectonic accretion channel (TAC), which evolves along the subductional plate boundary. Following extrusion or exhumation of these highly mobile belts – which can be several km thick and laterally extensive – they display evidence of major relevance to geochemistry and geodynamic modelling.

An exceptionally wide spectrum of rock types is represented in TAC mélanges, ranging from sediments to Mantle rocks. We assess their spectral abundance quantitatively, on the basis of detailed field studies in such mélangé zones (e.g. Central Alps, Siwtzre, Cyclades), and we show some of the consequences, with an emphasis on geochemistry: 1. Range of compositions found in the TAC “reservoirs”; 2. Scales of mixing and observed spatial heterogeneity; 3. Abundance of elements relevant to specific geochemical questions (REE, Sr, Pb) or geothermal models (K, U, Th).

Crucial observations in the case studies conducted so far include (a) a predominance of radiogenically enriched (supra-crustal) fragments in the TAC, (b) the role these channels play in extruding HP-fragments (from depths of >60 to >100 km), and (c) the apparent longevity of accretion processes in the TAC (>35 m.y. in the Central Alps).

Implications of these observations for geochemical transport along subduction / collision plate boundaries need to be pursued. The observed characteristics of TACs may challenge some of the widely held reservoir ideas in geochemistry and may also constrain models of geodynamic mixing along plate margins.