PALEO-RIVER AND χ-MAPS

Sascha WINTERBERG, Vincenzo PICOTTI

Sean WILLETT

Geological Institute, ETH Zürich

sascha.winterberg@erdw.ethz.ch

ETH zürich

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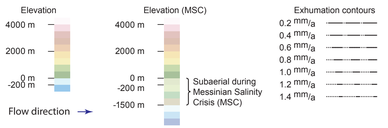
Projected coordinate system for paleo-maps:
WGS 1984 UTM Zone 32 N Transverse Mercartor.
Paleogeographic maps also have UTM 32 N.
Europe is kept fix in the maps, coordinates are with respect to stable Europe.
Modelled time period is indicated in the titles including the equivalent Tethyan epochs
and the Molasse stages. The Molasse stages are abbreviated as:
USM lower fresh water Molasse, OMM upper marine Molasse, OSM upper fresh water Molasse

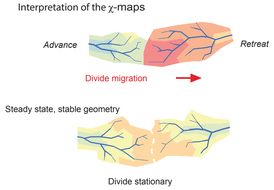
Original scale is 1:12'500'000.
Original map size is 105 x 59.4 cm.

Legend

Elevation distribution is designed as a smooth landscape envelope. This envelope represents a correct flow model but it does not represent mountain hillslopes, valley or peak morphology. The elevatioin distribution is not a surface model but represents a large scale river basin flow morphology.



Interpretation of the χ-maps



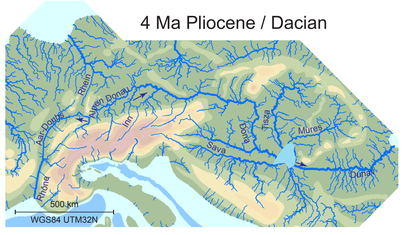
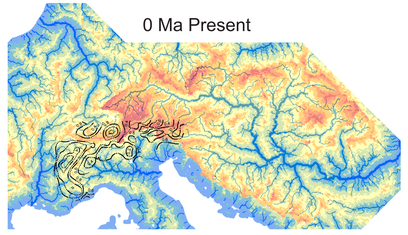
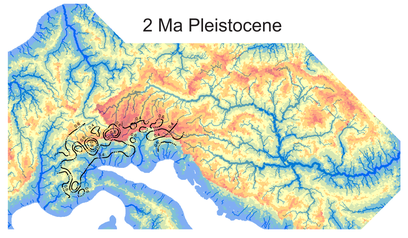
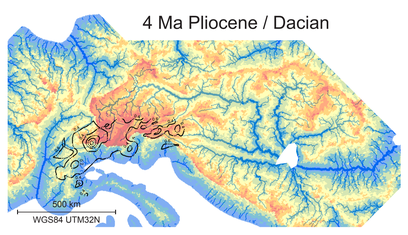
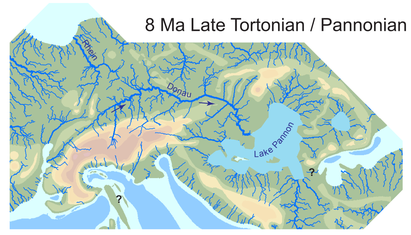
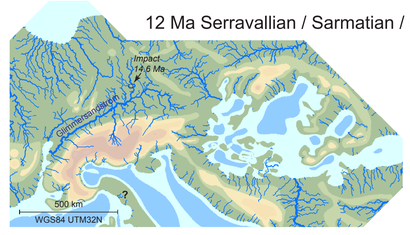
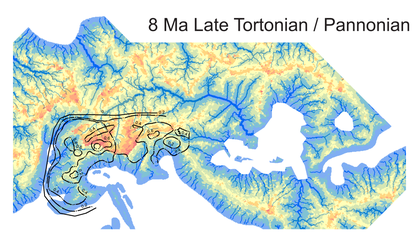
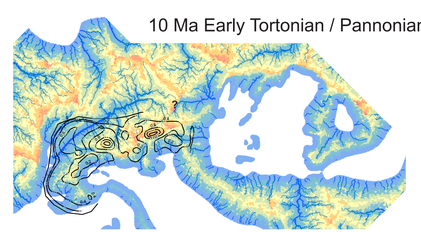
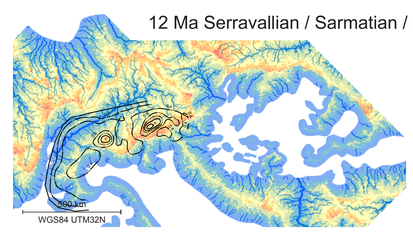
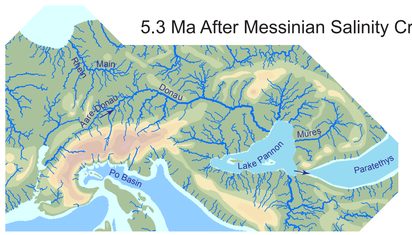
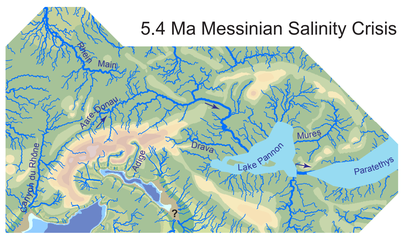
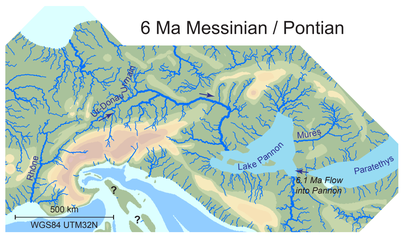
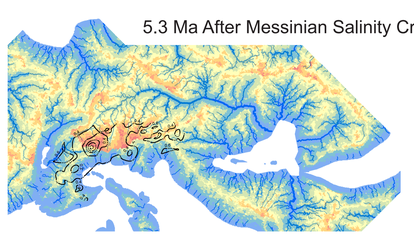
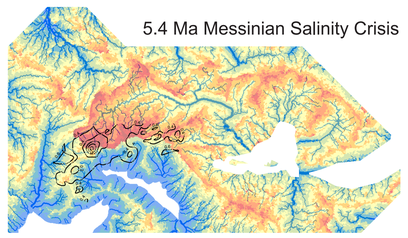
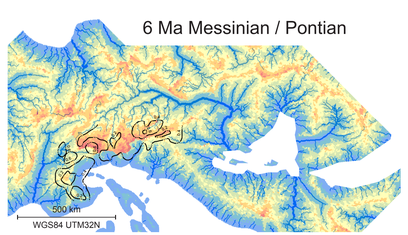
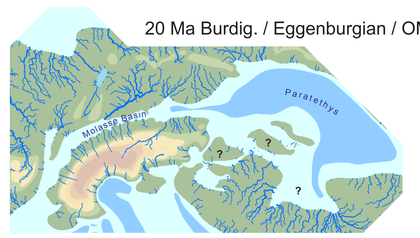
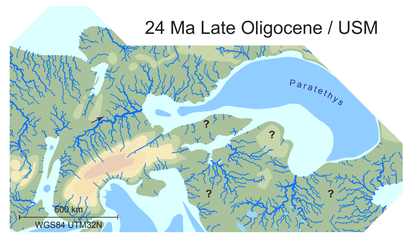
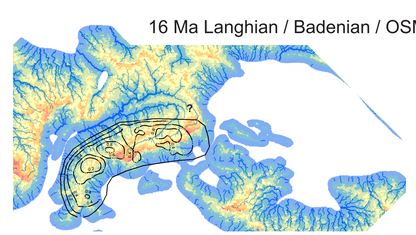
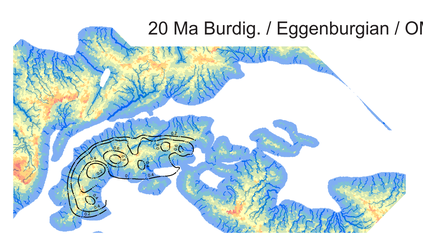
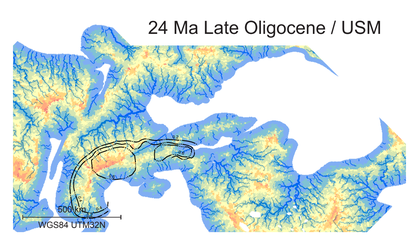
Calculation of χ-values

$$\chi(x) = \int_{x_b}^{x} \left(\frac{A_0}{A(x')}\right)^{\frac{m}{n}} dx' \; with \; \frac{m}{n} = 0.45$$

The χ-map validates the paleo-river network in that it verifies the divide motion direction. The χ-value calculation needs a modelled catchment area at each point of the drainage network but no elevation.
Exhumation is a proxy for erosion because the Alps have approximately a steady elevation since about 20 Ma where erosion is balanced by uplift.

References

See map Surface Inputs and References

Acknowledgements

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