



Messinian paleovalleys and the Miocene to Present tectonics of the Ligurian Alps and Sea.

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Large outcrops of Pliocene conglomerates, sands and shales are found scattered in several localities along the Ligurian and Provençal coast (NW Italy and SE France) from Genova to Nice. These sediments are hosted in paleovalleys incised during the Messinian salinity crisis in a deformed substratum of variable nature. East of Albenga and W of the Italian-French border, paleovalleys and sedimentary infill did not experience major vertical displacements and, for instance, the floors of the paleo-valleys are still close to their original position, hundreds of meters below sea level. A substantially different situation is encountered in the region of Ventimiglia and Taggia where the valleys and their infill have been significantly uplifted as graphically shown by that fact that present day rivers incise the old valley floors and run most of the times in the substratum. This demonstrates the importance of post-orogenic vertical movements in the region and how their magnitude changes along the strike of the present day coast. In addition, the paleovalleys of Ventimiglia and Taggia are wider and gentler than those observed, for instance, in Albenga and near Nice, indicating that also the morphology of the area during the Messinian was different, more subdued than at present. Low temperature geochronology measurements performed along the entire coast confirm this picture and provide quantitative estimates for the timing and magnitude of such movements.

The Miocene to present displacements reconstructed for the Ligurian coast are contemporaneous and related to vertical movements (both upward and downward) documented to the N as far as the W Po Plain, and to the SE towards Corsica.