



Alpine giant landslide and the Messinian salinity crisis (MSC)

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The research work we have been doing in the laboratory has allowed us for more than a decade to map and study tens of large landslides in the southern part of the Alps. During this cartographic research, we identified a new zone which revealed the presence of a landslide of incomparable size and which uses a triggering process linked to the processes of eustatic variations and fluvial over-erosion. In the southern branch of the Castellane arc in the S-E of France the large-scale landslides are numerous. This conditions are due to the particular tectonic and geological conditions but none of them has an impact as visible in the landscape than that of the Sinne small valley's DSGSD located in the lower valley of the Var. It is characterized in the current time by (1) a deep and large double crested ridge which is typical of DSGSD (2), the presence of 3 DSLs on the slope and (3) the Var (river) deviation in the bottom of the slopes. These observations have been revealed by field campaigns, geological maps analysis and the use of different GIS tools (DEM, slope and roughness maps and topographic profiles). We related the triggering of this DSGSD and the annexed gravitational phenomenon (DSLs) to the Messinian Salinity Crisis (MSC 5.96-5.33 My) area due to the marine regression (canyon creation) and transgression (impoundment of valleys) it engendered in the Mediterranean rivers. Indeed, the first elements related to gravitational objects in the zone are the Carros breccia formation, a consolidated slopes formation. The Carros breccia are synorogenic of the Castellane arc setting up during the Miocene and its upper level contain a Pliocene ages microfauna, so their deposits are contemporaneous to the Messinian crisis (MSC). From this knowledge we propose in this abstract paper to trace the implementation of the Sinne small valley's DSGSD from the MSC to present days, focusing on the main stages and their implications in the lower Var valley.

Keywords: deep seated gravitational slope deformation, morpho-structures, gravitational slope evolution, Messinian Salinity Crisis, Subalpine chains.