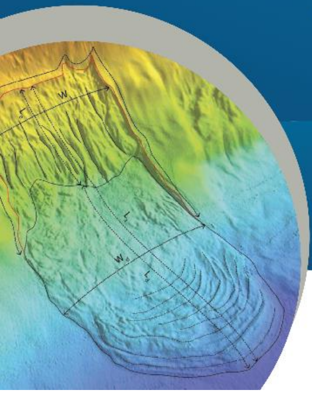

SLATE **webinar series**

Abstract for SLATE webinar #3, Wednesday 9 December 2020

Speaker Shray Badhani, IFREMER Brest, France

Title Seafloor instabilities in the Gulf of Lions (NW Mediterranean): morphology, chronology and potential trigger mechanisms

The Gulf of Lions (GoL) is a passive margin of about 200 km length and 70 km width that extends in W-E direction from the Southern French coast to the Balearic abyssal plain (BAP) in the deep western Mediterranean. The slope of the GoL is dissected by fifteen submarine canyons, the largest one being the Petit Rhone Canyon that funnels sediment supplied by the Rhone River through the Rhone delta. Seafloor instability in the GoL occurs in canyon heads and flanks, but also in the interfluve slope areas and in the levees of the main submarine valleys. This study aims at understanding the emplacement processes of the three largest mass transport deposits in the GoL: the Rhone Western and Eastern Mass Transport Deposits, and the BAP megaturbidite located in the abyssal plain. We present a newly available multidisciplinary dataset including geophysical, sedimentological, in-situ and laboratory geotechnical data. The study area is characterized by multiple headwall scarps. The overall morphology of the slope failures is controlled by the presence of multiple listric faults rooted in the Messinian strata. The higher resolution of newly available geophysical data, especially deep-towed seismic lines, show the internal structure of the mass-wasting deposits in unprecedented detail. Radiocarbon dating on top of the studied mass transport deposits yields an age of about 20 kyrs, suggesting a potential role of sea-level lowering during the last glacial maximum. The main preconditioning factor that affects slope stability in the GoL is the presence of clay-rich sediments within the basal surfaces of the failures that show strain-softening behaviour. The combination of processes such as local and regional slope steepening due to halokinesis and excess pore pressure generation due to rapid sediment accumulation likely affect the slope stability by triggering the slope failures.