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Submarine landslides along the eastern Mediterranean Israeli continental slope

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Numerous shallow submarine slope failures (scars and deposits) are observed in recent high resolution bathymetric grids of the continental slope off the Israeli eastern Mediterranean coast. The nature of these slope failures is currently not comprehensively understood as well as the question of whether the eastern Mediterranean continental slope is continuously or episodically unstable.
We report here first steps towards understanding the present state of this submarine landslide system, which include mapping and analyzing the geology of the landslides and the hosting slopes. The continental slope extends from water depths of about 150 to more than 1000 meters with a slope of less than 5 degrees in general. Bathymetric grids with pixel resolution of 15 m till water depth of 700 m and 50 m till water depth of 1700 m were used.
Analyzing the bathymetry revealed three main submarine surface features: (a) numerous shallow landslides, within the upper sequence of the post-Messenian sediments. Landslide widths range between hundreds to thousand of meters at the scar, with scar heights up to hundred meters. The toes of the landslides are not always mapable and lay up to a few kilometers down slope from the scar. Slope angles within the scars are 5 to more than15 degrees. At least two types of landslides were detected: presumably young slides with sharp scars, and presumably old slides with secondary slides and secondary drainage systems developed within the scar area; (b) a few kilometers long, north striking step-like lineaments. Step heights are up to 100 meters and the slopes are up to 20 degrees. The offset between parallel steps is less than a kilometer to a few kilometers. The steps are interpreted as surface expressions of growth faults rooted at the Messinian evaporates up to 1.5 kilometers below surface; (c) a few north striking channels were also detected with steep walls of more than 15 degrees, up to two kilometers width and a few kilometers length. The nature of these channels is not clear yet.
Field relations show that the landslides, both young and old, either emerge from the over-steepened steps, or are displaced by them, and hence submarine landslides and steps are apparently contemporaneous. In addition this suggests that salt dynamics at depth is a main drive for at least some of these shallow slides. The above preliminary results testify to the complicated and highly dynamic nature of the studied continental slope, yet to be revealed.