



The Eivissa slides in the western Mediterranean sea: morphology, internal structure and their relation with fluid escape features

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Four small slides are located in the Balearic continental slope of the Eivissa Channel, between the Iberian Peninsula and the Balearic Islands, western Mediterranean Sea, roughly aligned along the 0°48'E meridian, at water depths ranging between 600 and 900 m. Their areas range from 6.0 to 16.0 km² and their volumes from 0.14 to 0.40 km³. They occur in segments of the continental slope where the slope gradient varies from 1.6 to 3°. Their headwall scars are as high as 50 m and display irregular, horseshoe-shaped morphologies. Depositional lobes are characterized by areas of positive and rougher relief with respect to the surrounding sea-floor, although this relief is much less than the thickness of the disturbed sediment, thus demonstrating that sediment was not evacuated from the source area. Seismic facies observed in very high resolution acoustic profiles vary both between the slides and also depending on the section surveyed within individual slides, probably due to variations of the degree of disintegration of the original stratification of the sediment. The slip planes of the four slides exploit the same characteristic high-amplitude reflector within the seismically well-stratified slope deposits outside the slides. Dozens of pockmarks, some of them up to 100 m in diameter, have been observed very close to the slide headwalls and in nearby areas.

These four Eivissa slides were revisited in August 2004 in order to obtain side-scan sonar data using the MAK-1M deep-towed acoustic system available onboard *R/V Professor Logachev*. New data, higher in resolution than swath bathymetry, show two

main features previously undetected within these submarine landslides: (1) a series of step-forming inclined and detached slabs oriented perpendicularly to the slide movement and located in the uppermost part of the slides, and (2) arcuate regular positive relieves oriented also normal to the slide movement and located in the depositional lobes of some of the slides. The first have been have been interpreted as extensional ridges suggesting a retrogressive post-failure evolution of the slides, while the second are compression ridges related to plastic deformation of the sediment during movement. Moreover, new data show that fluid escape features are even more widespread in the Eivissa Channel than previously though, where many less than 20 m in diameter pockmarks have been identified.