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JASON-1 radar altimeter data in the Eastern Mediterranean : Main sea surface topography features and comparison with airborne laser altimetry and GPS buoy measurements

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Satellite radar altimeter missions are the basic means to monitor the sea surface topography on a global scale and to provide measurements of sea level variations over the deep sea with a dense and homogeneous coverage in space and time. Due to the increasing needs in accuracy and long-term integrity, it has become mandatory to validate and calibrate the satellite systems.

In order to contribute to the improvement of sea level monitoring, enhanced ground-based methods for validation and calibration of satellite radar altimeters have been developed. They consist in offshore ground-truth measurements of the sea surface height using airborne laser altimetry, shipborne GPS measurements and GPS equipped buoys. GPS buoys have been deployed under JASON-1 ground-tracks in the Eastern Mediterranean (Ionian and Northern Aegean Seas). These dedicated offshore GPS measurements provide precise in situ information on the instantaneous sea surface height underneath a JASON-1 track simultaneously with the overflight of the satellite. This will ultimately allow to contribute to the validation and calibration of the radar altimeter data.

First results for the sea surface height (SSH) solutions obtained from airborne laser altimetry and offshore GPS measurements will be presented and critically assessed in terms of accuracy and repeatability. Furthermore comparisons with JASON-1 radar altimeter data are being made, and main features of the sea surface topography will be discussed. Pronounced gradients of the SSH have been discovered which can be

associated with distinct gravity anomalies in the vicinity of the Hellenic Trench and North Aegean Trough. The final goal of the project is to determine the quasi-stationary sea surface topography which forms the basis for oceanographic applications.