



## Monitoring the sediment dynamics of Maltese beaches. The SIPOBED project and its future challenges.

**Luciano Galone**<sup>1</sup>, Emanuele Colica<sup>1,2</sup>, Peter Iregbeyen<sup>1</sup>, Luca Piroddi<sup>1</sup>, Deidun Alan<sup>1</sup>, Gianluca Valentino<sup>1</sup>, Adam Gauci<sup>1</sup>, and Sebastiano D'Amico<sup>1</sup>

<sup>1</sup>Department of Geosciences, University of Malta. Msida, Malta

<sup>2</sup>Research & Planning Unit, Ministry for public works and Planning, Malta. Floriana, Malta

Pocket beaches are small beaches bounded by natural promontories, free from direct sedimentary inputs other than those coming from the erosion of their cliffs.

Malta's pocket beaches are one of the most significant geomorphological features of the archipelago. They play an important role for a variety of ecological and economic reasons. Sediment dynamics (mainly sand) is one of the most relevant factors to be considered in those beach system. As the pocket beach system behaves as an integrated unit, periodic bathymetric monitoring is essential - and challenging - from an environmental management perspective.

The SIPOBED project (Satellite Investigation to study POcket BEach Dynamics) develops an integrated tool capable of monitoring sediment dynamics using SAR and digital photogrammetry to monitor beach topographic variations and multispectral UAV and satellite images to derive bathymetry.

Obtaining updated in situ bathymetric measurements is essential to calibrate and re-calibrate the model over time and conduct more actualized and accurate multispectral-derived bathymetry.

In this context, the collection of data by citizens, for instance, bathymetric data collected by private boats abundant in the archipelago, in conjunction with the processing power of modern computing, represents the new challenge of Maltese pocket beach monitoring.

The SIPOBED project is financed by the Malta Council for Science and Technology (MCST, <https://mcst.gov.mt/>) through the Space Research Fund (Building capacity in the downstream Earth Observation Sector), a programme supported by the European Space Agency.