



Bridging the Gap Between Land and Sea: Integrating Technological Innovation with Geomorphological Contexts for Seamless Coastal Models

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Cutting-edge developments in ocean mapping sensors, underwater robotic systems, and aerial platforms have transformed the integration of terrestrial and marine geospatial data, addressing the long-standing challenge in coastal geomorphology of creating seamless, high-resolution digital terrain models (DTMs).

The EU ERASMUS+ project BridgET (Bridging the gap between the land and the sea in a virtual Environment for innovative Teaching and community involvement in the science of climate change-induced marine and coastal geohazard) sought to tackle these challenges by testing a wide range of seafloor and coastal mapping technologies. These efforts culminated in three summer schools conducted in diverse geomorphological settings: Santorini (Greece), Mt. Etna and its offshore domain (Italy), and the Magoodhoo reef in the Republic of Maldives. The resulting datasets underscored the critical role of geomorphic processes in guiding the selection of appropriate technologies to achieve reliable and informative integration of multisource and multiscale geospatial data.

This integration is essential for the sustainable management of coastal regions, particularly in

addressing the impacts of climate change, sea-level rise, and geohazards. Moreover, the project highlighted the transformative potential of seamless DTMs, particularly when combined with immersive Virtual Reality (VR) tools, to enhance understanding and decision-making in coastal zone management. BridgET demonstrates the importance of technological innovation in marine and coastal geosciences to effectively address emerging environmental challenges.

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