The Erasmus+ BridgET project: A European partnership to renew teaching in marine geosciences

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Recent advances in underwater and airborne robotic systems and ocean technologies have opened new perspectives in marine geology and its applications in the context of coastal and marine economic activities, whose sustainable development is increasingly acknowledged as a pillar for the new blue economy. 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) is an EU ERASMUS+ project designed to develop innovative and inclusive teaching methods to address a growing demand for strategic skills and scientific expertise in the field of 3D geological mapping of coastal environments. Seamless integration of the wide variety of multisource and multiscale onshore, nearshore and offshore geospatial data is indeed one of the main areas for improvement in the implementation of efficient management practices in coastal regions, where climate change, rising sea level, and geohazards are considerable environmental issues.

BridgET involves a partnership consisting of six European universities with outstanding expertise in the study of geological hazards, and climate impacts in marine and coastal areas (i.e., University of Milano-Bicocca, Italy, Arctic University of Tromsø/CAGE - Norway, National and Kapodistrian University of Athens - Greece, Kiel University, Germany, University of Liege – Belgium, and the University of Malta), two Italian research institutes (INGV and INAF) and a German company (Orthodrone GmvH) specialized in UAS-based LiDAR and photogrammetry data acquisition services and analyses. Project implementation relies on delivering learning and teaching activities through dedicated summer schools for MSc students by efficiently combining the partner's expertise. Schools focus on giving students a hands-on experience with the variety of methods and procedures adopted in geospatial data acquisition and processing, including the use of drones (Uncrewed Aerial System – UAS), acoustic remote sensing techniques and underwater robotic systems, together with   the progress made by computer visions and digital image analysis by using Artificial Intelligence (AI). Students are also introduced to the opportunity to easily examine multiple viewing angles of the seabed and coastal 3D surfaces by using immersive and non-immersive Virtual Reality (VR), to bring them closer to a more straightforward observation of geomorphological data and geological phenomena.

The first Summer School was held in Santorini between the 3rd and 14th of October, 2022. It was attended by 26 students coming from 13 different countries. Teaching and learning activities included several classrooms, fieldwork, laboratory sessions, and seven seminars and cultural visits dealing with transversal topics, allowing students to approach an integrated understanding of human interaction with physical processes from social and economic perspectives. In this presentation, we give examples of course content used to allow students to develop a deeper understanding of theoretical and practical knowledge of climate-induced coastal and marine geohazards. Participants' opinions on the quality of the offered learning/training activities of the Erasmus+ BridgET Santorini Summer School (collected through a dedicated questionnaire) will also be presented.

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