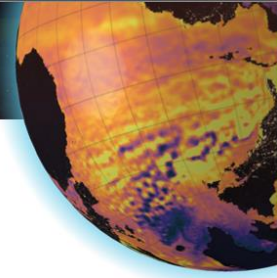




## FOCCUS project: new insight into high-resolution coastal observations

Coastal zones are the most heavily used and impacted areas of the global ocean due to the large concentration of human populations, numerous human activities, and various anthropogenic pressures. Additionally, in light of escalating climate change impacts in the coastal zone and the European Union's emphasis on a sustainable blue economy, the need for comprehensive and high-resolution coastal observations has never been more critical. This work outlines the creation of novel observation-based data products aimed at enhancing ocean monitoring and forecasting in coastal areas, which will be developed as part of the FOCCUS project. FOCCUS stands for “Forecasting and Observing the Open-to-Coastal Ocean for Copernicus Users” and it aims to improve and advance the coastal dimension the Copernicus Marine Environment Monitoring Service (CMEMS) and demonstrate a convincing leverage and coupling of CMEMS and Member States Coastal Systems for advancing knowledge about the coastal environment and associated applications. The complexity of coastal environments require state-of-the-art technology and a combination of satellite-derived and in-situ ocean observations to better understand their marine components. This necessitates the derivation of in-situ and remote-sensing coastal observation data products to fill the existing observational gaps in coastal zones. During the project, novel remote-sensing data products will be designed and validated to characterize essential climate variables (such as sea level, sea surface temperature, sea ice change), enhance weather and marine services (e.g. surface ocean currents), monitor ocean health and ecosystem (biogeochemical anomalies and trends, seagrass and macroalgae) and coastal changes (shoreline positions). Data-fusion techniques will be employed to merge remote-sensing and in-situ data, providing improved estimates of coastal ocean circulation, harmful algal blooms (HABs), and inland-marine water connectivity. Additionally, new functionalities, algorithms and AI techniques will be developed and tested to improve the quality of coastal observations (e.g., beach morphodynamics) and the traceability of coastal in-situ and river data. The new insights into coastal ocean dynamics and ecosystems, obtained from high-resolution observations, will also support the hydrological and coastal model assessment, the calibration and validation of satellites and the development of coastal applications (such as monitoring HABs and marine heat waves) in the context of FOCCUS. FOCCUS is funded by the European Union (Grant Agreement No. 101133911). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or



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