

Field observations and modelling of the waters of the southeastern Bay of Biscay



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Why, what, when, who, where and how

Coastal hydrodynamic modelling aims to understand and predict water circulation generated by wind, tides, differences in density of water masses and freshwater discharges. Accurate coastal modelling and field observations are essential to correctly assess and predict the risks of adverse events to human life, activities and infrastructure. With this in mind, the EUSCOMvu (EUSkadi Coastal Operational Model validation & user-engagement) project was launched in 2023 by AZTI and NOW Systems to provide reliable monitoring and forecasting in the southeastern Bay of Biscay. The EUSCOMvu project aims to: (1) generate a highly optimized oceanic and coastal operational forecast in the waters of the Basque Country (Euskadi) using CROCO (Coastal and Regional Ocean COMMunity model); (2) develop and implement an online and delayed mode validation capability to assess the performance of this forecast using available *in situ* and satellite observations, and including intercomparison with the Iberia-Biscay-Ireland physical ocean products provided by the Copernicus Marine Service; and finally (3) promote close cooperation with end users for the operational exchange of data and the definition of new hydrological indicators. These objectives will help lay the foundation for a seamless coastal hydrodynamic forecasting service in the southeastern Bay of Biscay and consolidate the use of Copernicus Marine Service products. EUSCOMvu is funded by the Copernicus Marine Service National Collaboration Programme 2022–2028 and is also supported by EBEGI, a research project funded by the Basque Government. EBEGI is a super observatory located in the southeastern Bay of Biscay, which allows integrated and multidisciplinary observation of the marine environment and its ecosystem. It also contemplates technological innovation and experimentation tasks to identify and test cutting-edge ocean observation methodologies, including autonomous vehicles. This will increase the key information for the development of policies and directives on the conservation and recovery of biodiversity and marine habitats, as well as the challenges associated with climate and global change. Two recently acquired gliders are among the instruments used in the EBEGI project. The data collected by these gliders will be essential in the immediate future to evaluate the performance of the coastal hydrodynamic forecasting service established in the waters of the Basque Country.

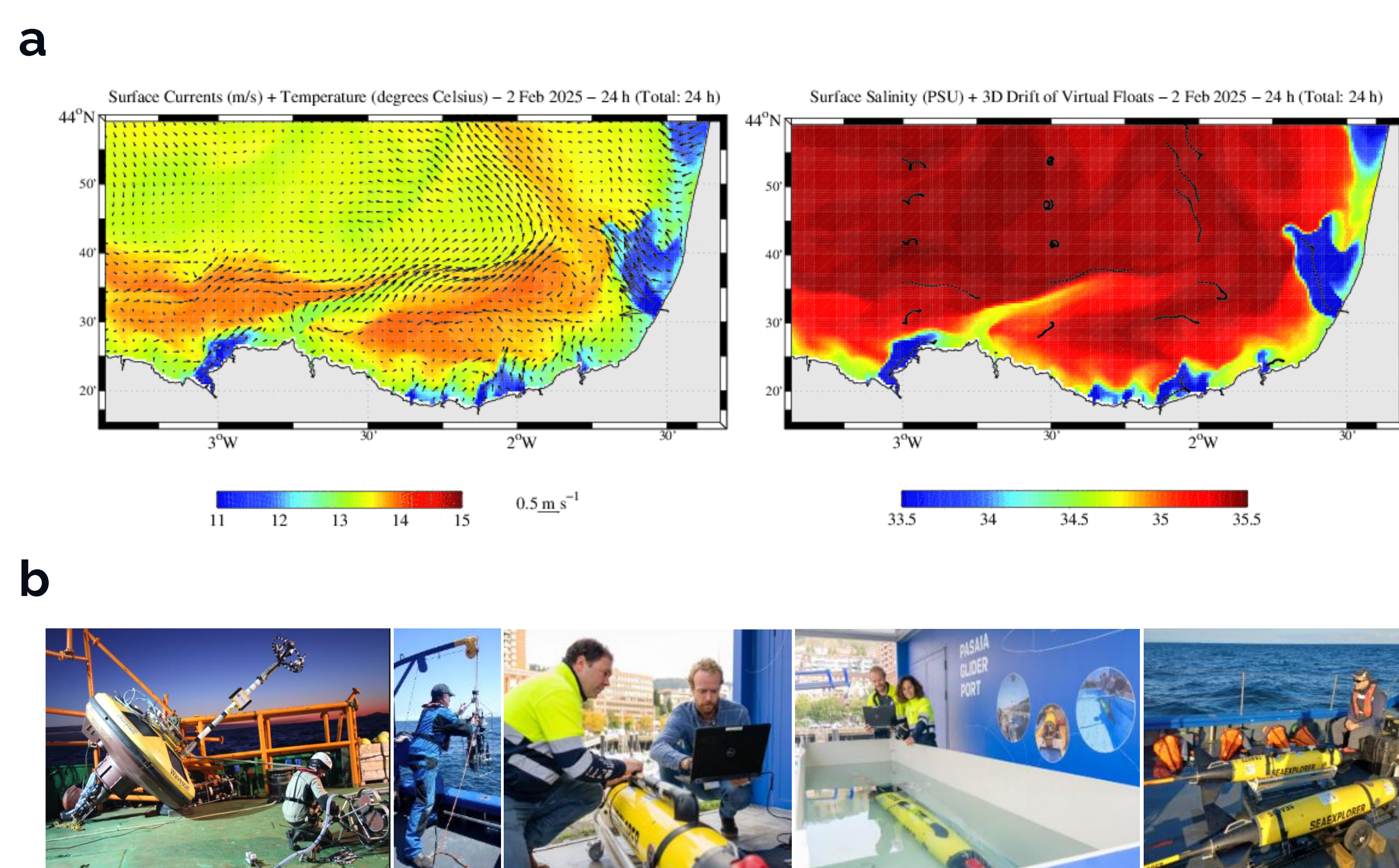


Figure 1 | Modelling and observations. **a**, Sea surface currents, temperature and salinity, and 3D drift of virtual floats obtained with CROCO in the southeastern Bay of Biscay for 2 February 2025. **b**, Instrumentation (ocean-meteorological buoys, CTDs, gliders) used in EUSCOMvu.

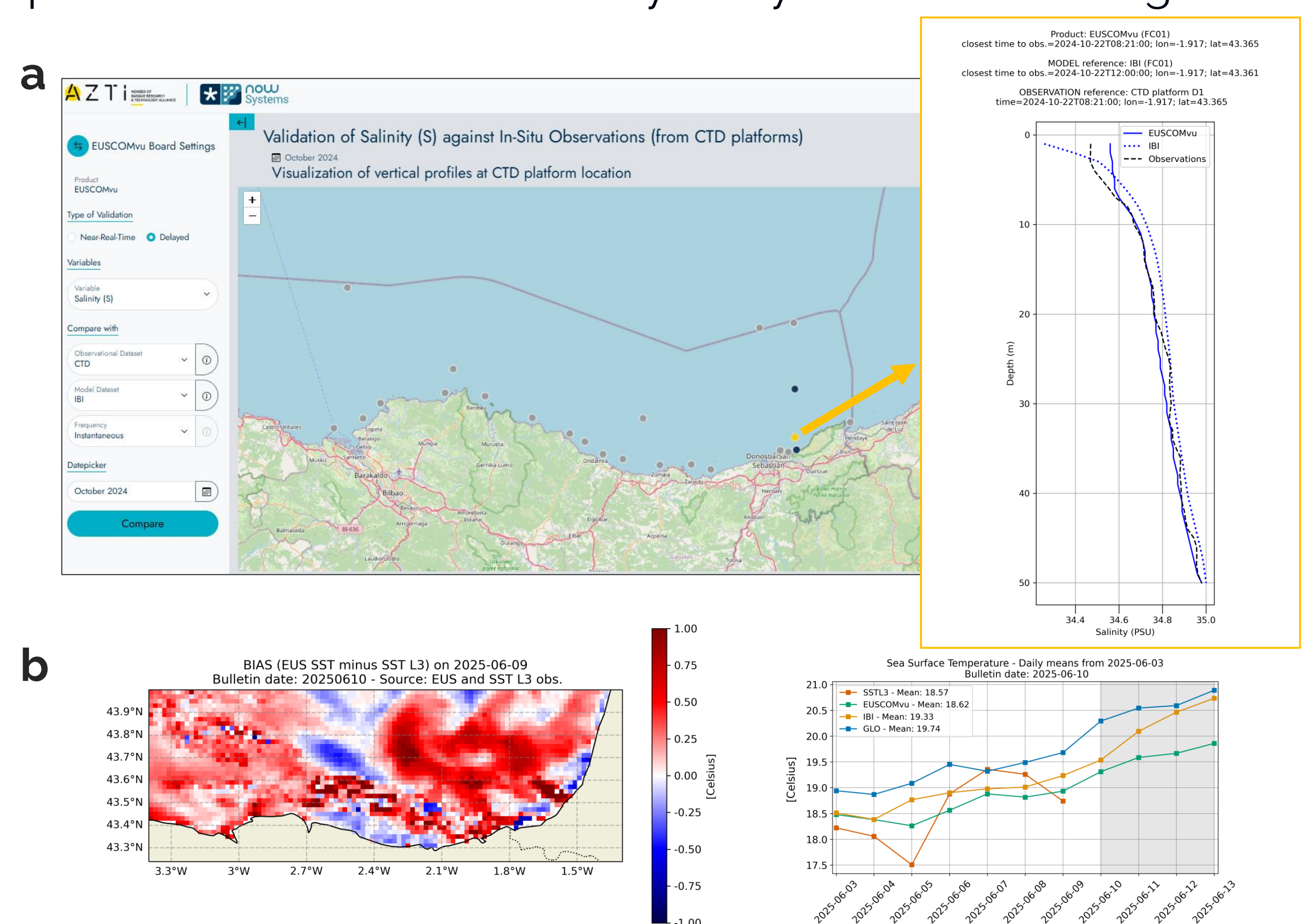


Figure 2 | Validation tool. **a**, Web application and visualization of salinity profiles at D1 station in October 2024. **b**, EUSCOMvu bias vs SST L3 satellite (left) and mean SST time series from the GLO, IBI and EUSCOMvu products (bulletin: 10 June 2025) (right). EUSCOMvu validation is available at <https://euscomvu.nowsystems.eu>

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