The “Sub-regional Mediterranean Sea indicators” visualization tool: from event detection to climate change estimations

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In line with international initiatives (e.g. UN Decade of Ocean Science for Sustainable Development, UN Sustainable Development Goal 14, OceanObs’19), one of the main objectives of the Balearic Islands Coastal Observing and Forecasting System (SOCIB) is to respond to science and society needs providing oceanographic data and added-value ocean products. In particular, SOCIB is developing a comprehensive set of multivariate sub-regional indicators in the Mediterranean Sea from past (last four decades) to present (today), with a specific interest on the Balearic Islands region and its adjacent basins (North-western Mediterranean Sea, Alboran Sea and Algerian sub-basin).

Two categories of oceanic variables are currently processed: (1) surface ocean data (sea surface temperature, chlorophyll-a concentration, currents, sea level and wind) from satellite products distributed by CMEMS, and (2) vertically integrated data (ocean heat and salt content, mixed layer depth properties, and water mass transports in key sections) from in situ platforms (gliders from SOCIB, profiling floats from Met-Office). These sub-regional indicators are an integral part of an operational product that provides continuous information about the ocean state and variability at sub-regional scale from daily (events) to interannual/decadal (climate) scales. These indicators allow to detect specific events in real time (e.g. marine heat wave, atmospheric storm, extreme river discharge, mesoscale eddy, deep convection). Long-term variations of the physical and biogeochemical components of the ocean, in response to climate change, are also addressed as well as sub-regional differences.

An interactive and user-friendly interface has been implemented to monitor, visualize and communicate ocean information that is relevant for a wide range of sectors, applications and end-users (e.g. scientific community, educators in marine science, decision-makers and environmental agencies). The “Sub-regional Mediterranean Sea indicators” visualization tool is positioned as a complementary product to the CMEMS Ocean Monitoring Indicators at regional level addressing sub-regional variability at various time scales and contributes to respond to the societal and environmental challenges.