{rokbox title=|The time mean circulation from CMEMS reanalysis :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-challenges-sustained-observing-forecasting-systems-mediterranean-sea-tintore-et-al-2019-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-challenges-sustained-observing-forecasting-systems-mediterranean-sea-tintore-et-al-2019.jpg{/rokbox}

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Challenges for Sustained Observing and Forecasting Systems in the Mediterranean Sea.
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Abstract: The Mediterranean community represented in this paper is the result of more than 30 years of EU and nationally funded coordination, which has led to key contributions in science concepts and operational initiatives. Together with the establishment of operational services, the community has coordinated with universities, research centers, research infrastructures and private companies to implement advanced multi-platform and integrated observing and forecasting systems that facilitate the advancement of operational services, scientific

achievements and mission-oriented innovation. Thus, the community can respond to societal challenges and stakeholders needs, developing a variety of fit-for-purpose services such as the Copernicus Marine Service. The combination of state-of-the-art observations and forecasting provides new opportunities for downstream services in response to the needs of the heavily populated Mediterranean coastal areas and to climate change. The challenge over the next decade is to sustain ocean observations within the research community, to monitor the variability at small scales, e.g., the mesoscale/submesoscale, to resolve the sub-basin/seasonal and inter-annual variability in the circulation, and thus establish the decadal variability, understand and correct the model-associated biases and to enhance model-data integration and ensemble forecasting for uncertainty estimation. Better knowledge and understanding of the level ofMediterranean variability will enable a subsequent evaluation of the impacts and mitigation of the effect of human activities and climate change on the biodiversity and the ecosystem, which will support environmental assessments and decisions. Further challenges include extending the science-based added-value products into societal relevant downstream services and engaging with communities to build initiatives that will contribute to the 2030 Agenda and more specifically to SDG14 and the UN's Decade of Ocean Science for sustainable development, by this contributing to bridge the science-policy gap. The Mediterranean observing and forecasting capacity was built on the basis of community best practices in monitoring and modeling, and can serve as a basis for the development of an integrated global ocean observing system.

Keywords: observing and forecasting systems, sustained observations, ocean variability, FAIR data, climate, operational services, science with and for society, SDG's