ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

OCEANOGRAPHIC OBSERVATIONAL AND MODELLING SYSTEMS

Observing and modelling the open ocean and coastal dynamics as well as enhancing modelling tools for a sustainable blue growth.

Research at the University of Bologna covers a wide range of issues:

- Improving existing observational systems (from in-situ to satellite-based systems) and their analysis, with focus on quality control algorithms
- Providing useful innovative tools and products to Authorities and operators involved in disaster prevention and sustainable development
- Improving modelling and prediction systems for research and applications
- Fusion of ocean observations and numerical simulations (data assimilation) to reconstruct past and present-day ocean state and dynamics and to predict future evolution
- Contribution to the implementation of the Copernicus Marine Environment Monitoring Service for the Mediterranean Sea (large scale observing and modelling system)
- Studies of deep sea (2500-3500 m) phenomena and measurement of environmental variables by means of large submarine neutrino telescopes
- Marine water monitoring with optimized and special designed automatic drones for data acquisition. Integration and coordination with underwater units for monitoring and emergencies management

HIGHLIGHTS

The University of Bologna research has been funded at European level through different funding programs: on research, networking and capacity infrastructures.
H2020 projects: [**EuroSea**](#) - *Improving and Integrating European Ocean Observing and Forecasting Systems for Sustainable use of the Oceans;* [**ATLANTOS**](#) *- Optimizing and Enhancing the Integrated Atlantic Ocean Observing System;* [**ODYSSEA**](#) *- Operating a network of integrated observatory systems in the Mediterranean sea.*
FP7 projects: [**Integ-Risk**](#) *- Early Recognition, Monitoring and Integrated Management of Emerging, New Technology Related Risks.* [**KM3NeT – PP**](#) *- Preparatory Phase for a Deep Sea Facility in the Mediterranean for Neutrino Astronomy and Associated Sciences.* [**ASTARTE**](#) *- Assessment, STrategy And Risk Reduction for Tsunamis in Europe.*

The University of Bologna is part of relevant networks and operates through high level laboratories and infrastructures.
KM3NeT an European Research Infrastructure, built on the experience manly of ANTARES and NEMO, consisting of underwater neutrino telescopes off the Provencal coasts (2.500 m depth) and off SE Sicily (3.500 m depth). This infrastructure, with the strong participation of the INFN and with the collaboration of UNIBO, is also devised to house instruments for oceanographic and marine biology observations along the sea water column as well as at the deep sea.
[**Numerical simulation infrastructure**](#) at Ravenna and Bologna to develop modeling and data analysis tools.
Network of meteo-marine stations in Eastern Sicily operated by the Physics and Astronomy Department (DIFA) Tsunami Research Team.