

MRD group

- **MRD** is a joint research group of two CSIC labs, the Institute of Marine Sciences (ICM) and the Marine Technology Unit (UTM), with 10 staff researchers, 7 post-docs, 9 engineers, and a number of PhD students.
- **MRD** represents the largest group of Spanish physical oceanographers and marine engineers, working on fundamental problems of physical oceanography and its interaction with biology, climate, and the environment.
- **MRD** focuses on an integrated view of marine physical environment, including observation, instrumentation, data processing and analysis, numerical simulation, and data assimilation.

MRD presentation on “Technologies for a Sustainable Development”

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MRD activities

Observation

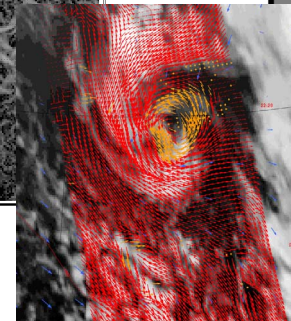
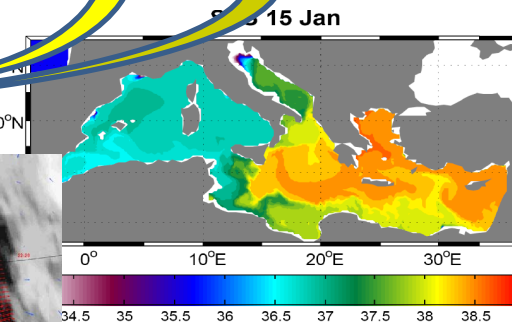
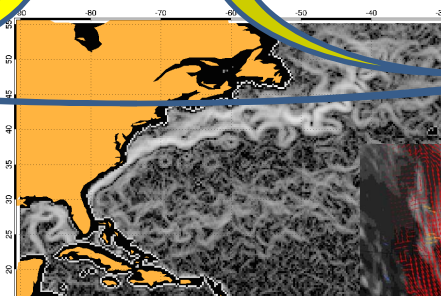
- Buoy and drifter design
- Sensor design and prototyping
- Data acquisition:
 - In situ, AUVs, underwater observatory, GPS
 - Spaceborne instruments

Processing

- Geophysical retrievals
- Polar marine geodesy
- Multifractal techniques
- Automatic classification
- Neural Networks
- SMOS BEC (salinity)

Modeling

- State-of-art ocean models (OPA, ROMS)
- Advanced data assimilation methods
- Lagrangian analysis (Liapunov exponents)



MRD outcome

(since 2005)

- Participated in 40 nationally funded projects, 35 internationally funded (ESA, EU, EUMETSAT, NASA, NSF) projects (e.g., MERSEA, MyOcean, TOSCA, COST SMOS-MODE). Total budget > 10M€
- Involved in infrastructures research projects (EMSO, ICOS), developed oceanographic instrumentation and observatories (ANERIS, OBSEA). Total budget > 1M€
- Published > 180 papers in SCI-indexed journals, numerous technical reports and congress communications, and one patent.
- Awarded 7 PhD theses, hosted 10 post-docs (1 Marie Curie IEF) and 3 sabbatical senior scientists.
- Collaborated with Spanish institutions (IMEDEA, IFISC, IIM, IEO, IC3, etc), European (IFREMER, LEGOS, CLS, SOC, ECMWF, KNMI, DMI, SAMS, etc), American (Scripps, WHOI, OSU, Univ. of Maryland, FSU, NOAA, etc), and others (e.g. ISRO).

Marine Research and Development Group



UTM



SMOS-MODE

SMOS Mission Oceanographic Data Exploitation



Coordinate pan-European teams to define common protocols to produce high-level salinity maps and related products, and broaden expertise in their use for operational applications.

Benefits

- Unify disperse knowledge and efforts
- Define standardized data processing protocols
- Address problems with high societal/industrial impacts

Dr. George Zodiatis, CYP 	Dr. Juhani Kalnalaisten, FIN 	Dr. Nicolas Reul, FRA 	Dr. Sotirios Korres, GRE
Dr. Brian Ward, IRE 	Dr. Pierre-Marie Poullain, ITA 	Prof. Aldo Drago, MAL 	Prof. Johnny Johansson, NOR
Prof. Ana Martins, POR 	Dr. Alexander Ostrovskii, RUS 	Dr. Roberto Salsin, SPA 	Dr. Christine Gommenginger, SWE



The European Seas Observatory NETWORK aims to promote the implementation and the management of a network of long-term multidisciplinary ocean observatories in deep waters around Europe.

OBSEA (Expandable Seafloor Observatory)

- Test site for ESONET-EMSO projects
- Define standardized data acquisition and processing protocols



MRD goals

Short term:

Participate in an “Ocean of Tomorrow” call. Interests include:

- **OCEAN.2011-1:** Multi-use offshore platforms
- **OCEAN.2011-3:** Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance
- **OCEAN.2011-4:** Knowledge-base and tools for regional networks of MPAs, integrated management of activities together with assessment of wind energy potential in the Mediterranean and the Black Sea

Medium term:

Seek support for a new topic on “Multiscale analysis of the global water cycle” in the next FP7 Work Programme (WP2012).