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The EuroSITES open ocean observatory network: Results and future vision

Richard Lampitt (1), Kate Larkin (1), Sue Hartman (1), Athanasios Gkritzalis (1), Maureen Pagnani (1), Corinne Pebody (1), Henry Ruhl (1), David Billett (1), Veit Hühnerbach (1), Doug Masson (1), Sven Østerhus (2), Kostas Nittis (3), Vasilis Lykousis (3), George Petihakis (3), Vanessa Cardin (4), Manuel Bensi (4), Fabio Brunetti (4), Roberto Bozzano (5), Sara Pensieri (5), Doug Wallace (6), Johannes Karstensen (6), Christian Berndt (6), Imants Priede (7), Anne Holford (7), Tomasz Niedzielski (7), Lee Hastie (7), Alan Jamieson (7), Laurent Coppola (8), Christian Tamburini (8), Dominique Lefèvre (8), Anne Robert (8), Sylvie Pouliquen (9), Thierry Carval (9), Sylvain Ghiron (10), Octavio Llinás-González (11), Andrés Cianca (11), Oscar Melicio (12), Carlos Santos (12), Anibal Medina (12), Pericles Silva (12), Ivanice Monteiro (12), Melchor González-Dávila (13), and Magdalena Santana-Casiano (13)

(1) National Oceanography Centre, European Way, Southampton, SO14 3ZH, UK (kel1@noc.soton.ac.uk, +44 02380 596247), (2) UNI Bjerknes, Bjerknes Centre for Climate Research and Geophysical Institute, University of Bergen, Allegaten 70, N-5007 Bergen, Norway, (3) Hellenic Centre for Marine Research, P.O. Box 712, 19013 Anavissos, Attika, Greece, (4) Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Oceanography Department, Borgo Grotta Gigante 42/c, Sgonico (TS) 34010, Italy, (5) Consiglio Nazionale delle Ricerche (CNR), Istituto di Studi sui Sistemi Intelligenti per l'Automazione (ISSIA), Via de Marini 6, 16149, Genova, Italy, (6) Leibniz-Institut für Meereswissenschaften, IFM-GEOMAR, Düsternbrooker Weg 20, 24105 Kiel, Germany, (7) Oceanlab, Institute of Biological Environmental Sciences, University of Aberdeen, Main Street Newburgh, Ellon, AB41 6AA, UK, (8) Centre National de la Recherche Scientifique, Campus Gérard-Mégie 3 rue Michel-Ange - F-75794 Paris cedex 16, France, (9) IFREMER, 155, rue Jean-Jacques Rousseau Cedex Issy-les-Moulineaux 92138, France, (10) SOPAB-Océanopolis, Port de Plaisance du Moulin Blanc 1, Brest 29200, France, (11) Instituto Canario de Ciencias Marinas, Carretera de Taliarte, Telde, Gran Canaria 35200, Spain, (12) Instituto Nacional de Desenvolvimento das Pescas, Mindelo, Cape Verde, (13) Facultad Ciencias del Mar, Departamento de Química, Universidad de Las Palmas Gran Canaria 35017, Spain

The EuroSITES project is a network of open ocean reference stations around Europe (www.eurosites.info). Using moorings and other infrastructure the EuroSITES observatories currently deliver a unique set of climate sensitive atmospheric and oceanographic datasets in near real-time from key open ocean sites. Starting with nine core observatories in 2008, the network has expanded to 10 key sites within the Norwegian and Mediterranean Seas and the North Atlantic Ocean. The significant investment by both National and EU agencies has greatly developed Europe's capability for in situ ocean biogeochemistry so that O₂, pCO₂, chlorophyll, and nitrate are measured at several observatories with data transmitted in near real-time from the upper 1000 m. EuroSITES has also supported the development of technologies for autonomous long-term measurement of oxygen consumption in the mesopelagic, pH and mesozooplankton abundance, and seafloor missions including tsunami detection and pore water pressure (fluid flow) in the Eastern Mediterranean.

The current EU funding for the EuroSITES network (3.5 Million Euros; 2008-2011) has been crucial for developing the integration of the observatories with a common management and coordinated open access to data and metadata. As a result, the EuroSITES network is at a mature stage of development and is moving towards an integrated operational European infrastructure. As the European contribution to the international OceanSITES network (www.oceansites.org) the standardised datasets (OceanSITES NetCDF) are uploaded daily to the OceanSITES ftp site, the GMES MyOcean project and the Global Telecommunication System (GTS) for wider utilisation by the modelling communities and other users. Examples of ongoing activity include ocean modelling reanalysis studies with the expectation of use in the future by operational forecasting services. These developments have led to EuroSITES becoming considered as a key ocean data provider for the joint EC and ESA initiative Global Monitoring for Environment and Security (GMES).

Outreach and knowledge transfer of EuroSITES activities and results are also a key component to the project with a dedicated outreach website. Educational tools produced include a Fact Sheet, cruise diaries reporting science missions as they happen and two educational films about the network and links with other relevant projects including ESONET and HERMIONE.

Despite the progress and the clear need for in situ open ocean datasets, there is currently no future EU funding committed to maintaining the EuroSITES observatory network beyond April 2011. However, significant interaction with relevant projects including ESONET, EMSO, HERMIONE, GISC, EMODNET and OOI has been very productive and is ongoing. As a result, it is intended that the EuroSITES observatories will be a key component of a future integrated in situ ocean observing system around Europe linking with other in situ and remote infrastructures including gliders, floats, ships and satellites.

Since 2008, EuroSITES has been a registered contributor to the ocean component of the Group on Earth Observations (GEO), particularly through task AR-09-03c 'Global Ocean Observing Systems', data management and related societal benefit areas including climate and biodiversity. Following presentations at science and technology meetings, GEO workshops and the 2010 GEO Ministerial Summit in Beijing, it is anticipated that EuroSITES will continue to develop its contribution to the future 2012-2015 GEO Workplan, the implementation of the Data Sharing Action Plan and the development of a European Strategy for GEO. In situ atmospheric and ocean time-series from fixed-point observatories will continue to be critical to monitor and detect longer-term trends as distinct from natural variability, validate ocean and climate models and reduce uncertainty in future predictions. The EuroSITES network is a key component of the in-situ infrastructure needed to achieve this.