DEEPSETS – Deep-sea and extreme environments, patterns of species and ecosystem time series.

Andrew J. Gooday[1], David S. M. Billett[1], John Copley[1], Daphne Cuvelier[1,3,9] Ana Colaço[2], Daniel Desbruyères[3], Nicole Boury-Esnault[4], Joelle Galeron[3], Michael Klages[5], Vassiliki Kalogeropoulou[6], Nikos Lampadaiou[7], Pedro Martinez Arbizu[6], Gordon Paterson[8], Thierry Perez[4], Ricardo Serrão Santos[9], Jozée Sarrazin[3], Sven Tatje[1], Paul Tyler[1], Ann Vanreusel[10]

[1]Ocean Biogeochemistry and Ecosystems, National Oceanography Centre, Southampton, United Kingdom
[2]Institute of Marine Research, Department of Zoology, University of Coimbra, 3004-517 Coimbra, Portugal
[3]IFREMER, DEEP/LEP Technopole de Brest-Iroise, BP 70, F-29280 Plouzané, France
[4]Centre National de la Recherche Scientifique; Centre d'Océanologie de Marseille, Rue de la Batterie des Lions, F-13007 Marseille, France
[5]Alfred Wegener Institute, Am Handelshafen 12, D-27570 Bremerhaven, Germany
[6]Naturmuseum und Forschungsinstitut Senckenberg, Südstrand 44, 26382 Wilhelmshaven, Germany
[7]Hellenic Centre for Marine Research, P.O. Box 2214, GR-710 03 Heraklion, Crete, Greece
[8]Natural History Museum, Cromwell Road, London, SW7 5BD,United Kingdom
[9]Departamento de Oceanografia e Pescas, Campus of Horta, Cais de Santa Cruz, PT-9901-862 Horta, Açores, Portugal
[10]Marine Biology Section, Krijgslaan 281, S8 - Sterre Campus, B-9000 Ghent, Belgium

DEEPSETS aims to integrate work on time series observations at contrasting deep-sea sites, namely the Porcupine Abyssal Plain (PAP), the abyssal Eastern Mediterranean, the Lucky Strike hydrothermal field, the Haakon Mosby Mud Volcano (HMMV), and the La Ciotat 3PP Cave. The work at PAP, E. Mediterranean and Lucky Strike is being undertaken by PhD students, two of them funded by the DEEPSETS consortium.

A dramatic increase in the abundance of megafauna occurred in 1995 at the European Sustained Ocean Observatory on the PAP. This regime shift, which is known as the '*Amperima* Event' after the dominant post-1995 holothurian, is believed to be linked to a change in the quantity and quality of the organic matter deposited on the seafloor. Sediment trap data reveal that a massive flux peak occurred in 2001 and this coincided with a renewed upsurge in the abundance of *Amperima*. Preliminary results for the metazoan meiofaunal suggest that there was an increase in the abundance of harpacticoid copepods between 1994 and 1997, as well as a shift in the dominant families. During the same period, the abundance of polychaetes increased by a factor of 3 and the number of families increased over a short period from 17 in the early 1990s to 36 in 1996, decreasing slowly over the following 2 years. Meiofaunal foraminifera also exhibited temporal trends, apparently related to the *Amperima* Event. Total foraminiferal abundance and the abundance of some species (notably *Trochammina* sp. and *Alabaminella weddellensis*) increased significantly after 1996 while diversity decreased. At Lucky Strike, the overall objective is to assess the temporal dynamics of hydrothermal vent ecosystems. Recent work has concentrated on the composition and distribution of faunal assemblages on the Eiffel Tower hydrothermal structure. These have been analysed based on photographic/video imagery obtained during the Momareto cruise held in 2006. The data will be compared to observations made in previous years (1994-2005). A variety of studies were conducted during 2006 on natural caves on the NW Mediterranean coast as well as 'artificial' caves at CNRS-Marseille. Temperature profiles suggest that the artificial caves accurately replicate conditions in the natural caves. The colonisation of the caves by new fauna has been studied by means of regular photographic surveys. Other cave investigations have focussed on sponge life cycles and phylogeny. Progress at the other two DEEPSETS sites, the HMMV and the E. Mediterranean, has mainly involved the collection of new samples and environmental observations during recent cruises.