

Expedition Operator

Mission-specific platform operations are conducted for IODP by the European Consortium for Ocean Research Drilling (ECORD), which represents the ocean-drilling efforts of most of Western Europe as well as Canada. Operations are undertaken by the ECORD Science Operator comprising the British Geological Survey (BGS), the University of Bremen and the European Petrophysical Consortium (EPC).

During the NJSS Expedition regular updates will be posted on the expedition logbook, which can be found on the ECORD Science Operator's web pages at:

www.eso.ecord.org

ECORD
European Consortium for Ocean Research Drilling

Supporting Program

The International Continental Scientific Drilling Program (ICDP) was established to maintain autonomous drilling projects of any type, independently organized and managed in the form of a Joint Research Venture with national, bilateral or multinational partners, connected through an ICDP funding contribution and committed to certain principles in scientific cooperation and exchange.

http://www.icdp-online.de

icdp

Integrated Ocean Drilling Program

The Integrated Ocean Drilling Program (IODP) is an international marine research program dedicated to advancing scientific understanding of the Earth by monitoring and sampling sub-seafloor environments. Through multiple platforms – a feature unique to IODP – the world's preeminent scientists explore the deep biosphere, environmental change and solid earth cycles.

www.iodp.org

24 countries support IODP. Primary funding is provided by the United States National Science Foundation (NSF) and Japan's Ministry of Culture, Education, Sports, Science and Technology (MEXT). Additional funding is provided through the ECORD contributing members, the People's Republic of China Ministry of Science and Technology (MOST), the Korea Institute of Geoscience and Mineral Resources, the Australian-New Zealand IODP Consortium and India's Ministry of Earth Sciences.

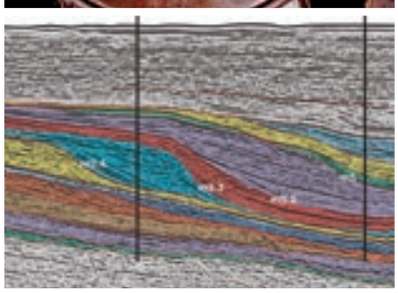
This brochure was produced and distributed by the ECORD Science Operator.

IODP
INTEGRATED OCEAN DRILLING PROGRAM

The New Jersey Shallow Shelf Expedition







Sea-level fluctuation in response to climate change

IODP Expedition 313

ECORD
Science Operator



Present-day sea levels are predicted to rise as a result of global warming, therefore sea-level change is one of the crucial issues affecting our planet and its inhabitants. Past sea-level rises and falls can be deciphered in sedimentary layers deposited during Earth's history; the IODP New Jersey Shallow Shelf Expedition (NJSS) aims to collect cores from sediments deposited some 14 to 24 million years ago, a time of considerable sea-level fluctuation due to climatic variations. Scientists will analyse these cores to accurately reconstruct global sea-level changes during that period and to assess the imprint of those changes on the development of the sedimentary sequences off New Jersey.

The NJSS Expedition is the third mission-specific platform operation to be carried out by the European Consortium for Ocean Research Drilling (ECORD) Science Operator for the Integrated Ocean Drilling Program. Two previous expeditions have been to the Arctic Ocean to discover its climate history over the last 50 million years, and to the coral reefs off the tropical island of Tahiti to understand the effect of sea-level rise over the last 20,000 years in response to the retreat of major ice sheets. The NJSS Expedition is supported by the International Continental Scientific Drilling Program (ICDP)

"Sediments off New Jersey were deposited rapidly in an area that was tectonically stable, allowing fossils suitable for age control to be preserved throughout the time of geologic history we're interested in. Futhermore, there already exists a large set of seismic, well log and borehole data with which to frame the geologic setting from the coastal plain across the shelf to the continental shelf and rise."
Professor Greg Mountain

The NJSS Expedition team, including scientists from 10 countries, plans to drill three 750-m deep holes between 45 and 60 kilometres offshore in water about 35 metres deep. These will form a key part of the New Jersey/Mid-Atlantic transect; a suite of boreholes drilled over the last fifteen years in an effort to document global sea-level history over the past 42 million years. This transect has included drilling both onshore and farther offshore in deeper water, but the critical zone for deciphering the sea-level history lies in the region most sensitive to sea-level change: the shallow-water shelf.

The technology aboard the mission-specific platform is well suited for recovering cores from the sand-rich shelf sediments in shallow waters. The expedition will sample sediments deposited during times of both high and low sea levels.

The cores collected during the NJSS Expedition represent a chance to precisely tie the architecture of passive margin sediments to past sea-level changes. These ties, compared to others passive margins settings and ^{18}O proxy, are really a great opportunity to quantify the amplitudes, rates and origin of global sea-level change through a testable model based on a publicly available dataset."
Dr Jean-Noël Proust

Expedition Co-Chief Scientists



Gregory Mountain is a Professor at Rutgers, the State University of New Jersey, USA. He is an expert on the acquisition, processing and interpretation of seismic reflection data.

He graduated from Brown University, Rhode Island in 1972 and went on to Columbia University, New York City to carry out his Masters and Doctoral work on marine geology. His research interests include the origin, maintenance, and burial of submarine canyons on continental slopes. He has worked on establishing core-seismic correlations to map surfaces and evaluate the role of eustasy, sediment supply, continental glaciation, mass wasting and other processes that have built the stratigraphic record in continental margin sediments off the coast of New Jersey. Greg's interests also include the evolution of abyssal sediment drifts in the North Atlantic; the understanding of processes controlling sedimentation from shelves to abyssal plains across the Mediterranean margin south of France; and the tectonic development of transtensional basins in the Gulf of California using high-resolution seismic profiles to map sediment distribution and fault history.

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Jean-Noël Proust is Research Director in Sedimentology at the Centre National de la Recherche Scientifique (CNRS). He is currently head of the Sedimentary Basin Research Group of the Geosciences Department of the University of Rennes 1 (France).

He graduated from the University of Poitiers (France) in 1987 and completed a PhD at the University of Strasbourg (France). His first CNRS position was at the University of Lille (France). Jean-Noël has twenty years experience working on sequence stratigraphy of siliciclastic and carbonate rocks from outcrop, cores, logs and seismic data interpretation. His expertise concentrates on the influence of sea-level changes on continental to shallow-marine sediment partitioning in the rock record. He has worked in the field in Russia, Africa, SW Pacific, Europe and North America investigating Late Proterozoic rocks to Holocene sediments. He ran numerous shallow-marine seismic surveys and coring campaigns along the French Atlantic passive margin coasts. In 2006, he was expedition co-chief on the *Marion Dufresne* coring campaign in the Tasman Sea and SW Pacific active margins. His most recent research focuses on untangling tectonic and climate controls on sediment distribution along active and passive margins and the overall calibration of sediment fluxes to the ocean.

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