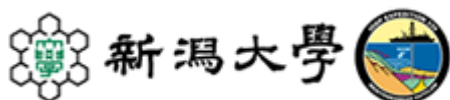

Press Releases



June 13, 2014
JAMSTEC
Niigata University

Mediterranean Outflow and Its Global Significance **~ History of Mediterranean Outflow Water and Climate Changes ~**

1. Overview

Integrated Ocean Drilling Program (IODP) Expedition 339, Mediterranean Outflow, was executed from November 2011 to January 2012 on board the research vessel *JOIDES Resolution* ([figure 1](#)). The expedition was led by Dr. F. Javier Hernández-Molina from the Royal Holloway University of London and Dr. Dorrik A.V. Stow from Heriot-Watt University, carrying an international team of 35 scientists from 14 countries, including Japan members (JAMSTEC, Institute of Geology and Geoinformation, Geological Survey of Japan (AIST), Niigata University and Hokkaido University), and recovered five kilometers of core samples from an area never before drilled along the Gulf of Cadiz and west off Portugal ([figure 2](#)).

These core samples collected showed sediments called “*contourites* (*1),” which is produced by a powerful cascade of “Mediterranean Outflow Water” spills out through the Strait of Gibraltar into the Atlantic Ocean. A detailed study revealed a history of the timing of Mediterranean outflow water activity spanning over five million years and how it is inextricably linked to climate changes and deep ocean circulation in the Atlantic Ocean.

These research results have been published in the online scientific journal *Science*, on June 13, 2014 (Japan time).

Title : Onset of Mediterranean Outflow into the North Atlantic

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*1. Contourites

A contourite is a sandy and muddy sedimentary deposit produced by thermohaline-induced deepwater bottom currents, following contours of ocean basin. The southwestern Iberian margin and the Gulf of Cadiz are under influence of strong current, the Mediterranean Outflow, along 500-1000m contours. Unlike clastic materials such as sand and mud that travel down the slope from top to bottom driven by gravity current (a flow that is driven by a density in fluids), contourites are influenced by bottom current. It is an interesting mechanism of transport different from gravity-driven current.

For more information about IODP Expedition 339, Mediterranean Outflow, visit http://iodp.tamu.edu/scienceops/expeditions/mediterranean_outflow.html



Figure 1: Research vessel JOIDES Resolution arriving Lisbon after the IODP Expedition 339
(by Prof. F. Barriga, Portugal)

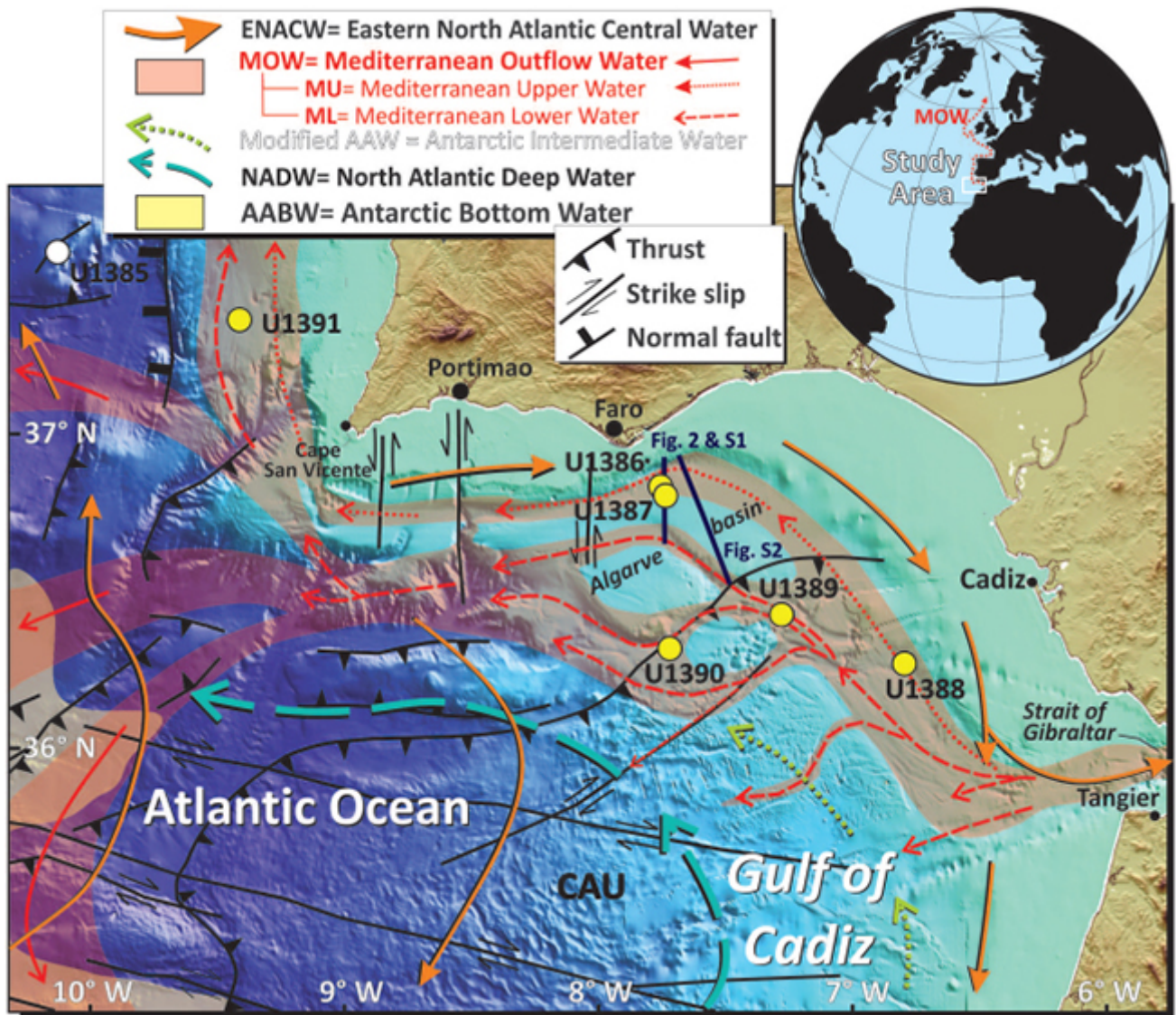


Figure 2: Regional water masses, major tectonic features, and Gulf of Cadiz CDS site locations sampled during IODP Expedition 339

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