



Major refit of R/V MARION DUFRESNE and giant sediment corer improvements

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The french Research Vessel MARION DUFRESNE is equipped with a unique sediment coring facility, called CALYPSO, developed initially by Yvon BALUT at the French Polar Institute, Paul-Emile Victor (IPEV) that operates the vessel 217 days per year in all oceans. The CALYPSO sediment corer retrieves routinely 50 m long undisturbed sediment cores in any water depths, and presently holds the worldwide record of the longest core ever retrieved, that is 64.5 m.

This vessel is then a fantastic opportunity for the paleoceanographic community to carry out expeditions at sea. Over the last 20 years, many international IMAGES coring expeditions were organized in all the ocean basins around the world on board the R/V MARION DUFRESNE. More than 1500 cores were retrieved, leading to major advances in the paleoceanography and paleoclimatology of the Late Quaternary.

The vessel will celebrate her 20th anniversary in 2015 and will undergo a major refit on hull & machineries, public spaces, as well as scientific equipment.

The coring capacity is currently being developed to further improve

- The length of the retrievable core, with an objective of 75 m long core in routine
- The quality of the sediment un-disturbance with a specially designed coring cable with controlled minimum elasticity
- The safety of the operations at sea
- The quality control of the operations with a suite of sensors and software allowing a detailed monitoring of the coring operation
- The time requested for each operation
- The environment data collection, in the same time as the coring operations

The detailed description of the upgrades will be presented. They consist in a new suite of acoustic sensors that will be integrated on board the vessel during the 4 months ship yard stay from April to July 2015, amongst which a KONSBERG EM122 multibeam echo-sounder and a SBP 120-3 sub-bottom profiler, both mounted on a gondola fitted under the hull of the vessel. This equipment will allow the highest quality images of the seabed and upper sediment, allowing accurate survey of the coring targets.

Scientific deck equipment, such as coring winch and associated A frame, hydrological winch and deployment system, will be upgraded, the coring operating equipment being brought up to 45 t SWL. The ship side will be modified to allow the deployment of 75 m long corer.

Finally, the laboratories will be renovated and the main PC room will be redistributed in order to offer more space to the scientific party and secure a new IT dedicated room.

The vessel will undergo a series of tests at sea before being available to the scientific community again from January 2016. As before her midlife refit, IPEV wishes to carry on training programs such as “University at Sea” and EGU supported “Teachers at sea” program in association with future paleoceanographic activities.