

## Addendum to the newsletter sent this morning: A very successful sea campaign – Welcome, ARCA-51!

(Sent this afternoon by Damien Dornic)

A very successful sea campaign has been conducted at the KM3NeT ARCA site in the past two weeks. During the operation 18 new detection units and a new acoustic long baseline positioning system were installed. ARCA has thus been enlarged to include **51 deployed detection units**, which are connected to shore through a network comprising two long-distance electro-optical cables and 5 submarine junction boxes.

The **new acoustic positioning system** is a state-of-the-art solution for high-accuracy positioning measurements in the deep sea. Three acoustic beacons mounted on autonomous structures were installed during the campaign and set up into operation together with the previously installed beacon. Their position was then measured with sub-meter precision. The new system will be used in connection with the triangulation system already in operation in order to improve the absolute position and orientation of the telescope and thus its pointing accuracy.

The operation was conducted in two *hitches*, sailing from Malta. The *Optimus Prime* vessel, equipped with a work-class submarine vehicle (the ROV – Remotely Operated vehicle), was used. The ROV has a crucial role in all deep-sea operations, including: assistance with the deployment of the detection units on the sea floor at the target position and with the correct orientation; connection of the units to the submarine junction boxes; inspection and measurement of the positions of the deployed structures; operation of the release mechanism which allows the



detection unit to unfurl from the launcher vehicle. The operation was carried out by *Fugro-Derinsu*, in collaboration with *Observe* for operation of the ROV and with the support of *EXAIL* for installation of the new acoustic system.

*The stern deck of the Optimus Prime, while leaving Malta for the second hitch of the operation, with a set of three acoustic beacons and 8 detection units onboard, ready for installation.*



*Deployment of one detection unit.*



*The onshore crew at the end of the first hitch of the operation.*



*The onshore crew at the end of the operation (remark: due to the duration of the operation, in total more than 30 people were involved in the shore station activities)*