

# **Abyssal Operation in the Inner Space for Geophysical Observatories and Biotechnology – MODUS for the European Research Projects GEOSTAR, BIODEEP and others**

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## **ABSTRACT**

This paper presents the operating capabilities of MODUS (MOBILE DOCKER FOR UNDERWATER SCIENCES), which have been demonstrated during several missions in the Mediterranean sea at abyssal depths. MODUS is comparable with a ROV and can operate down to 4000 m water depth with a significant customization for deployment and recovery of heavy scientific benthic stations. In addition to this, it can conduct deep water surveying, and sampling. Its development started with the GEOSTAR project (GEOPHYSICAL AND OCEANOGRAPHIC STATION FOR ABYSSAL RESEARCH, funded by the EU), with the aim of flexible operation of multidisciplinary long-term benthic stations.

For the use of the prototype of MODUS several steps of simulations, tests have been conducted, such as a design optimization with hydrodynamic and hydroelastic analyses. Feed back from the several operations related to the system performance during sea-trials performed in the Mediterranean Sea are discussed. Future perspectives for the use of MODUS inside ongoing projects and their aims will be presented.