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Development of National research infrastructure as a Bulgarian component of the Euro ARGO network - Bul ARGO

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Bul ARGO is a project supported by Bulgarian National Science Fund, Ministry of education, youth and science. The purpose of the project is to develop a new national marine research infrastructure for in situ observation in Black Sea based on autonomous profiling floats as a Bulgarian component of the Euro Argo network. The Euro Argo objective is to provide a sustained European contribution to the Global Argo programme. The Argo network is a global array of drifting buoys measuring temperature and salinity over the upper 2000 m of the ocean. Argo is an indispensable component of the Global Ocean Observing System required to understand and monitor the role of the ocean in the Earth's climate system. Argo must be considered in its ensemble: not only the instruments, but also the logistics necessary for their preparation and deployments, field operations, the associated data streams and data centers. Specific European interests also require a somewhat increased sampling in regional seas. Black Sea is a region of particular interest, as it is rather sensitive to climate and anthropogenic influences. The Black Sea receives drainage from almost one-third of the continental Europe (five times its own surface) which includes significant portions of 17 countries, 13 capital cities and some 160 million people. The Black Sea is virtually isolated and hence a vulnerable water basin with 87% of its volume affected by anoxia. Of all the basins of the world ocean, the environmental degradation in the Black Sea is the most severe. Therefore, the monitoring of the Black Sea in its whole depth is essential. While the coastal meteorological and oceanographic data is usually presented, observation for the open Black sea is rather insufficient. These gaps can be filled in with floats observations. The floats will be able to measure the thermo-haline characteristics, as well as the dissolved oxygen concentration and water quality. This automatically obtained information could be then used for satellite data validation and calibration, initialization and assimilation in the ocean forecasting models, assessment of physical processes and circulation, thus the Argo floats regular measurements are unique tool on the way towards operational oceanography. According to the experts opinion at least 15 floats are necessary to obtain adequate picture of the Black Sea. At the moment there are 3 operating floats. The Bulgarian contribution to the establishment of the future Black Sea Argo system is estimated to 5 drifting buoys during the project implementation. This would require deployment of 3 floats in year 2011 and 2 floats next year. The main objective of the Bul Argo project will be to deploy and make operational an array of 5 floats during the 3 years of project execution. In addition, it will be necessary to work on several key issues taking into account Black Sea peculiarities: technical (float technology, data management and delivery system) and organizational (logistics for deployment) issues. Significant efforts will be dedicated to consolidate and broaden the user community and to demonstrate: via scientific exploitation of data the impact and utility of Argo floats in the Black Sea.