Argo ocean observing array achieves initial target

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Seven years after its initiation, the international ocean observing array Argo has hit its initial target of operating 3,000 robotic floats in ice-free areas of the deep ocean around the world. The floats, spaced about 300 kilometres apart, systematically gather information about temperature and salinity to a depth of 2,000 metres, improving climate forecasts and providing new insights into ocean and atmosphere interact.

The vision at the beginning of the project, which brings together more than 30 countries - including several European countries, the US, Japan, China, India, Canada and Australia - was to revolutionise the collection of critical information from the upper, climatically important layers of the world's oceans. With 100,000 high-quality temperature and salinity profiles a year, as well as global data on ocean currents, the Argo floats have already increased the rate of collection of comparable ship-based measurements by a factor of 20. Moreover, there is no seasonal bias as the floats operate all the year round, whereas ship measurements are usually made in the summer season.

'The most obvious benefit from Argo has been a marked reduction in the uncertainty of ocean heat storage calculations,' the Argo Project Office (APO) states. 'These are a key factor in determining the rate of global climate warming and sea level rise, and in projecting their future progression.

'The steady stream of Argo data coupled with global scale satellite measurements

from radar altimeters has also made possible huge advances in the representation of the oceans in coupled ocean atmosphere models, leading to seasonal climate forecasts and the routine analysis and forecasting of the state of the subsurface ocean. These are advances that could only have been dreamed of a decade ago and have practical applications such as prediction on the fate of oil-spills in the open ocean and as an aid to fisheries.'

The data collected, which is transmitted in near real-time to data centres for processing, is openly available to anyone wishing to use it. It plays an important role in the observation of European oceans as part of the European Union's and the European Space Agency's joint initiative Global Monitoring for Environment and Security (GMES).

The total annual operating cost of Argo amounts to around €16.5 million, which is borne by all participants. Furthermore, participants have agreed to contribute to the maintenance of the array by deploying a specific number of new floats every year. The current generation of floats has a life-time of up to five years, so that a total of 800 floats - with about 250 coming from Europe - must be deployed each year.

Euro-Argo, the European part of the observation grid, has been labelled as one of 35 priority large-scale research infrastructures by the European Strategy Forum on Research Infrastructures (ESFRI).

The Argo array is the centrepiece of the in-situ ocean observing system promoted by the Joint Commission for Oceanography and Marine Meteorology (JCOMM), co-sponsored by the Intergovernmental Oceanographic Commission of UNESCO and the World Meteorological Organisation. Argo is a pilot project of the Global Ocean and Climate Observing Systems.

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