



## EUR-OCEANS Web-based press conference, 30 September 2005

### ➤ **British Antarctic Survey, Cambridge, United Kingdom:**

**Dr Eugene Murphy, British Antarctic Survey ([e.murphy@bas.ac.uk](mailto:e.murphy@bas.ac.uk)), tel (+44) 1223 221614**

### *Southern Ocean*

The Southern Ocean is a long way away so why are European scientists involved in studying this remote region?

The Southern Ocean is the only ocean that encircles the globe, connecting all three of the world's main ocean basins.

The annual freeze and thaw of the Antarctic sea, the turbulent surface waters driven by powerful winds, and the strong flow of the Antarctic Circumpolar Current allows exchange of water between these ocean basins. These exchanges affect the physics, chemistry and biology of the global ocean and have an important role in determining the Earth's climate.

This system encompasses some 15% of the world's ocean ecosystems. During the short summer dense phytoplankton blooms develop, taking up large amounts of carbon dioxide which affects the global carbon budget and hence climate. This production supports unique biological diversity as demonstrated by the vast numbers of seals and penguins which breed in these regions. These ecological systems also support substantial European and international fisheries.

Some of the strongest regional expressions of recent climate change have come from Antarctica and the Southern Ocean. For example, substantial increases in air and sea temperatures, and precipitation accompanied by melting ice shelves and decreasing sea ice extent has been observed. These regional changes are already having an impact on the ecosystem. We must also remember that exploitation over more than 2 centuries has generated massive changes in the food web.

Understanding the impacts of climate and anthropogenic driven changes on Southern Ocean processes is therefore integral to stewardship of this ocean and to monitoring and forecasting the response of the Earth System to global change.

To generate this understanding requires a coordinated international effort. To address this, EUR-OCEANS is uniting the substantial but fragmented polar research capabilities of the European Research Area in conjunction with the Southern Ocean research of non-European Union nations.

EUR-OCEANS Southern Ocean studies are developing integrated, circumpolar analyses to understand how climate and human impacts may affect Southern Ocean ecosystems. We will examine aspects of climate variability, resource management and ocean biogeochemistry.

The Southern Ocean is then a key region in the global system and a unique ecological system in its own right. It is a barometer of the health of the planet and we are already seeing major changes. Developing integrated, circumpolar ecosystem analyses is crucial and EUR-OCEANS Southern Ocean scientists are helping to lead the way.