Geophysical Research Abstracts
Vol. 12, EGU2010-2903, 2010
EGU General Assembly 2010

The ESASSI-08 cruise in the South Scotia Ridge region: An inverse model property-transport analysis over the Ridge

Margarita Palmer (1), Damià Gomis (1), Maria del Mar Flexas (1), Gabriel Jordà (1), Alberto Naveira-Garabato (2), Loic Jullion (2), and Takamasa Tsubouchi (2)

(1) Universitat de les Illes Balears, IMEDEA (UIB-CSIC), Physical Oceanography, Esporles, Spain (marga.palmer@uib.es, 971 611 761), (2) National Oceanographic Centre, Southampton, UK

The ESASSI-08 oceanographic cruise carried out in January 2008 was the most significant milestone of the ESASSI project. ESASSI is the Spanish component of the Synoptic Antarctic Shelf-Slope Interactions (SASSI) study, one of the core projects of the International Polar Year. Hydrographical and biochemical (oxygen, CFCs, nutrients, chlorophyll content, alkalinity, pH, DOC) data were obtained along 11 sections in the South Scotia Ridge (SSR) region, between Elephant and South Orkney Islands. One of the aims of the ESASSI project is to determine the northward outflow of cold and ventilated waters from the Weddell Sea into the Scotia Sea. For that purpose, the accurate estimation of mass, heat, salt, and oxygen transport over the Ridge is requested.

An initial analysis of transports across the different sections was first obtained from CTD and ADCP data. The following step has been the application of an inverse method, in order to obtain a better estimation of the net flow for the different water masses present in the region. The set of property-conservation equations considered by the inverse model includes mass, heat and salinity fluxes. The “box” is delimited by the sections along the northern flank of the SSR, between Elephant Island and 50ºW, the southern flank of the Ridge, between 51.5ºW and 50ºW, the 50ºW meridian and a diagonal line between Elephant Island and 51.5ºW, 61.75ºS. Results show that the initial calculations of transports suffered of a significant volume imbalance, due to the inherent errors of ship-ADCP data, the complicated topography and the presence of strong tidal currents in some sections. We present the post-inversion property transports across the rim of the box (and their error bars) for the different water masses.