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# Circulation on the slope of South Shetland Islands (Antartica)

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The Bransfield Strait circulation, to the south of South Shetland Islands, has been characterized from interdisciplinary measures realized for several years. These measures have allowed to study the characteristics of the water masses, to identify mesoscalar structures and to describe the planktonic distribution in this region. The most relevant dynamic structure in Bransfield Strait is the Bransfield Current, which propagates supported on the slope to the south of the South Shetland Islands. This current transports waters less dense than the surrounding ones but also more productive.

There are different hypotheses about the origin and spread mechanism of Bransfield Current. Our hypothesis is that Bransfield Current propagates as a gravity current over the slope of the South Shetland Islands. If this theory is true, this water mass had to continue moving supported on the slope to the north of these Islands surrounding them. During January 2010 was realized the cruise COUPLING to the north of the South Shetland Island in order to characterize the dynamic around these islands and to check this hypothesis.

The major effort made to date in this region has focused on Circumpolar Current. With the project COUPLING has been covered completely the north of South Shetland Islands, the passages to the east and west to the Islands and a central section in Bransfield Strait with interdisciplinary stations each 10 km approximately. There were obtained physical information of CTD, XBT, XCP, ACDP, Turbomap and buoys lagrangianas (5 buoys) and several biological data. The spatial resolution of 10 km was necessary since the Rossby radius of deformation is around this value in these latitudes. With a smaller spatial resolution the mesoscalar structures could not be observed.

The preliminary results show that the characteristics of the water to the north of the South Shetland Islands are the same that the water of Bransfield Current, which propagates supported on the slope of the south side of the slands. The path of the buoys indicates the recirculation of Bransfield Current towards the north of the Strait, between South Shetland Islands and Elephant Island. The extensive shelf to the north of the South Shetland Islands continues with a steep slope with Circumpolar Deep Waters. Winter Water and Antarctic Superficial Water, characterized by the presence of a strong halocline, were founded close to the surface. Different frontal zones appear in this region where the mixing processes could be studied with the Turbomap (microstructure profiler) and XCP data.