Past and future dispersal of Antarctica species: a Lagrangian modeling tool

DULIÈRE V.[1], CHRISTIANSEN H.[2], HEINDLER F.M.[2], PAPETTI C.[3], PASOTTI F.[4], SCHIAVON L.[3] AND SCHÖN I.[1]

[1] *Royal Belgian Institute of Natural Sciences (RBINS), Belgium*

[2] *University of Leuven, Belgium*

[3] *University of Padova*

[4] *Ghent University*

During environmental changes in Antarctic ecosystems, biota faces three possible outcomes: adaptation, migration or extinction. Successful migration depends on dispersal behaviour which allows individuals to move from natal to reproductive sites or between different reproductive sites. Dispersal can be an essential key in the ability of marine Antarctic biota to find refugia and therefore to survive environmental changes as the ongoing ones. The scientific knowledge over dispersal abilities and therefore also on past and current survival strategies is crucial to predict biota responses to climate changes.

To this end, the Lagrangian particle module of the regional hydrodynamic model COHERENS has been implemented over the Southern Ocean with an horizontal resolution of ~8 km. Adaptation were made to study the dispersion of several Antarctica species such as the fish *Trematomus eulepidotus* and the *Chionodraco rastrospinosus* and the bivalve *Lanternula elliptica* during their larval pelagic stages. This modelling tool helps understand how dispersal of selected species is influenced by ocean circulation, biological traits and habitat preferences. The tool allows to assess the connectivity of populations in the considered geographic area and to estimate the influence of dispersal on species survival during changing environmental conditions (i.e. warming of the ocean, earlier spawning).

Poster Preference