

ICE-MOD – MOSAIC Project

Programación conjunta internacional

The aim of this project is to improve the quality of the emissivity models and the dielectric constant model (permittivity) of the sea ice at 1.4 GHz (L-band). They will be used in the inversion algorithms for retrieving key sea ice parameters, as for example, sea ice thickness, sea ice concentration and snow depth from the space borne L-band microwave radiometers.



Ariel radiometer with Polarstern behind

According the the work plan, a small L-band radiometer called ARIEL (manufactured by BALAMIS S.L.) has been deployed on the Arctic in the course of MOSAiC expedition. ARIEL is a very light instrument (about 6 kg; counting the sledge and the battery the total setting is 20 kg), and this allows to take measurements along long transects, and hence sea ice brightness temperature data can be acquired under very diverse sea ice conditions. Owing to this maneuverability, ARIEL has been be part of MOSAiC measurement transect lines with other portable instruments like MagnaProbe devices (which measures the sea ice thickness). The measurements acquired with these instruments will also allow us to improve the emissivity models as well as to study the sea ice spatial variability and assess its impact into the signal as recorded at a typical satellite footprint.



ARIEL on the sled during a transect

The improvement of the geophysical models may have an impact on the quality of the retrieved sea ice thickness and snow

thickness, from the L-band radiometers missions, SMOS and SMAP.



ARIEL measuring melt pond emission