SESSION: OCEAN 1-SEA ICE

MARS Themes:

Earth systems observations

Title:

Antarctic sea-ice thickness from IceSat-2 and CryoSat-2 satellites

Author(s): add rows below if more authors

Magata J Mangatane[1,2]

Marcello Vichi[1,2]

Affiliation: add rows below for more affiliations

1. University of Cape Town
2. Marine and Antarctic Research Centre for Innovation and Sustainability (MARIS)

Abstract:

Sea-ice thickness (SIT) and sea-ice concentration (SIC) from satellites, are essential climate variables used to characterize the features of the ice-covered ocean and to compare with numerical models. Systematic Antarctic in situ SIT observations are limited and satellite remote sensing is the most promising option to obtain circum-Antarctic SIT distributions. However, these retrievals are less developed in the Antarctic because of a lack of validation data. Here we evaluate three recent methods to determine SIT from laser and radar altimetry (improved one-layer method, improved buoyancy equation, and freeboard differencing method), we propose a reprocessing procedure to estimate uncertainties, and compare the results with field observations. We find that the methods estimate a similar SIT seasonality, but the improved one-layer method and buoyancy equation make a better estimation of the field observations. We show that characterising Antarctic Sea ice with a single mean value misrepresents its variable nature.

Format:

Poster

Keywords: (add ; between keywords)

Sea-ice thickness, Earth systems observations, Antarctica