



IV ROSS SEA CONFERENCE 2023

Università degli Studi di Napoli "Parthenope"

Via Amm. F. Acton, 38 - 80133 Napoli, ITALY

3-7 July 2023, Via Acton 38, Naples-Italy

PHYSICAL OCEANOGRAPHY

Antonino Ian Ferola

ABSTRACT Subject :

The role of the Pacific-Antarctic Ridge in establishing the northward extent of Antarctic sea-ice

Abstract 01/02/2023 09:33:47

Monitoring the Antarctic sea-ice is essential for improving our knowledge of the Southern Ocean. We used satellite sea-ice concentration data for the 2002-2020 period to retrieve the sea-ice extent (SIE) and analyze its variability in the Pacific sector of the Southern Ocean. Results provide observational evidence of the recurring formation of a sea-ice protrusion that extends to 60° S at 150° W during the winter season. These activities are carried on in the framework of the ACCESS and SWIMMING projects of the PNRA. Our findings show that the northward deflection of the southern Antarctic Circumpolar Current front is driven by the Pacific Antarctic Ridge (PAR) and is associated with the enhanced sea-ice advance. The PAR also constrains anticyclonic and cyclonic eddy trajectories, limiting their interaction with the sea-ice edge. These factors, within the 160° W - 135° W sector, determine an average SIE increase of 61,000 km² and 46,293 km² per year more than the upstream and downstream areas, respectively.

