

OCEANOGRAPHY

SOUTH AUSTRALIAN RESEARCH & DEVELOPMENT INSTITUTE
PIRSA

Goal

The Oceanography Sub-program conducts research to provide scientific and technical advice to other researchers, government and industry. Jointly, the areas of physical and biological oceanography characterise the marine environment through outcomes that describe the transport and dispersal of sediments, heat, pathogens, pollutants, nutrients and marine biota. At the most fundamental level, these factors influence viruses, bacteria, phytoplankton and zooplankton that support and underpin the function of marine ecosystems and ultimately the sustainability of fish stocks and fisheries.

Hydrodynamic/Biogeochemical Facility

Following world's best practise, the Oceanography Sub-program has developed a Hydrodynamic/Biogeochemical Facility for Australia's southern shelves and gulfs that allows us to quantify the link between ocean circulation and the space-time dynamics of shelf and gulf planktonic ecosystems. In addition, the facility allows for the prediction of the transport of sediments and the dispersal of, prawn and lobster larval, viruses and pollutants. These models are supplemented by models for surface waves (SWAN) and models for Nitrogen Phytoplankton, Zooplankton and Detritus (NPZD). The model results are used by government and industry to assist in the sustainable development of finfish aquaculture within Spencer Gulf. In addition, the sub-program is undertaking fundamental research in oceanography of the region as part of the Great Australian Bight Research Program.

Southern Australian Integrated Marine Observing System (SAIMOS)

Shelf data streams for the Hydrodynamic/Biogeochemical Facility are being collected by the Oceanography Sub-program through implementation of the Southern Australian Integrated Marine Observing System. This observing system is made up of shelf moorings, ship-based surveys, ocean gliders, and HF Ocean RADAR. The observing equipment is

deployed in the region of Kangaroo Island and Eyre Peninsula where significant upwelling of nutrients occurs. These nutrients provide food for the planktonic communities that underpin the fisheries and marine ecosystems of the gulfs and adjacent seas.

Physical Oceanography

The Physical Oceanography team undertakes research into the dynamics and nature of ocean circulation off South Australia using analytic, numerical methods and data analyses. As the physical environment influences the biological environment a proper understanding of it is a necessary first step in appreciating how the plankton responds to the summertime upwelling that characterises the region.

Biological Oceanography

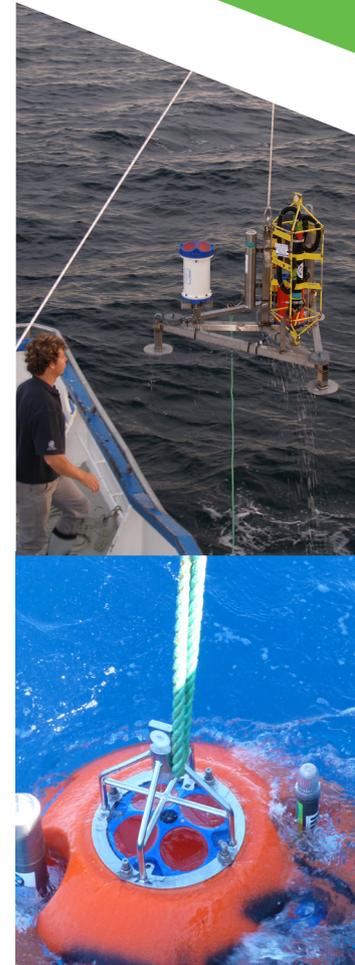
The Biological Oceanography team conducts research into the dynamics and ecology of plankton and planktonic ecosystems across scales from nanometres to kilometres. Particular focus is given to the ecological processes of nutrient cycling under natural and anthropogenic conditions, which underpin the form and functioning of marine systems. In collaboration with the Wild Fisheries program, the group also conducts research into species such as sardines, prawns, blue crabs and lobster.

Marine Field Services

The Oceanography Sub-program has a nationally recognised capability in the deployment and maintenance of costly ocean moorings and Slocum gliders, as well as in the measurement of nutrients, plankton abundance and species and primary productivity.

Staff

The Oceanography Sub-program is led by A/Prof. John Middleton and its staff include: Drs Mark Doubell, Paul van Ruth, Ana Redondo, Nicole Patten, John Luick, Charles James, Mr Paul Malthouse; Visiting Fellows Prof. Noel James, A/Prof. John Bye; and PhD students Laura Richardson (graduated) Hugo Bastos d'Oliviera and Henry Ellis.



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