

## Coastal Ocean Radars: Principles, Results and Applications

**Date / Time:** Thursday 6<sup>th</sup> February 2014 10:30am to 11:30am

**Venue:** DSTO Lecture Theatre  
Australian Technology Park, NICTA Building, 13 Garden Street, Eveleigh NSW 2015  
**Entry to DSTO Sydney is via Reception and Security at Ground Level of NICTA Building.**

**RSVP/More Info:** John Robinson [jl.robinson@ieee.org](mailto:jl.robinson@ieee.org)  
**Seating is limited to 100 persons.**

**Speaker:** Professor Mal Heron  
IEEE/OES Distinguished Lecturer  
Marine Geophysical Laboratory, James Cook University

**Professor Mal Heron** is Adjunct Researcher in the Marine Geophysical Laboratory at James Cook University in Townsville, Australia. His PhD work in Auckland, New Zealand, was on radio-wave probing of the ionosphere, and that is reflected in his early ionospheric papers. He changed research fields to the scattering of HF radio waves from the ocean surface during the 1980s. Through the 1990s his research has broadened into oceanographic phenomena which can be studied by remote sensing, including HF radar and salinity mapping from airborne microwave radiometers. Throughout, there have been one-off papers where he has been involved in solving a problem in a cognate area like medical physics, and paleobiogeography. Occasionally, he has diverted into side-tracks like a burst of papers on the effect of bushfires on radio communications. His present project following on from leading the establishment of the Australian Coastal Ocean Radar Network (ACORN) is about the development of new processing methods and applications of HF radar data to address oceanography problems. He is currently promoting the use of high resolution VHF ocean radars, based on the PortMap high resolution radar.

**Abstract** - A review is given of the principles of HF ocean radar and how it measures surface currents. A descriptive overview of the Australian Coastal Ocean Radar Network is given with some background about how sites are selected and configured. A suite of results and applications emanating from the ACORN network is presented, including Lagrangian Tracking; assistance to management in the Great Barrier Reef Marine Park; assistance in the salvage of a grounded ship; and the observation of cold fronts in the Southern Ocean. Looking into the future we can see applications in port management, search-and-rescue, and early observation of tsunamis.