



4th Ocean Radar Conference for Asia-Pacific

Cross-Continental, Cross-Institutional Partnership

The 4th Ocean Radar Conference for Asia-Pacific (ORCA) drew participants from more than ten countries to collaborate in Okinawa, Japan. Hosted by the University of the Ryukyus in June 2018, the conference included two days of presentations, a lush banquet featuring local cuisine and traditional entertainment, and an excursion to local sites.

The non-contact, wide observation capability of HF radar has illuminated oceanographic regions in the Asia-Pacific that had otherwise been difficult to sample due to political, physical, or logistical obstacles. Reflecting increased use of HF radar in this challenging area, conference participants shared observations and insights on topics including large-scale ocean currents, data quality, antenna pattern measurements, interference, tsunami detection, and waves.



Dr. Ebuchi

Dr. Naoto Ebuchi of Hokkaido University, Japan analyzed data from tide gauges, ADCPs, and three SeaSondes along Soya Strait to examine the vertical structure of the Soya Warm Current, which connects the Sea of Japan and the Sea of Okhotsk. Previously thought to be driven solely by differences in water level, this study revealed that winter conditions are driven by density gradients. This important finding was made despite coastal access challenges, harsh weather conditions, and presence of sea ice.



Banquet dancer

Dr. Sang-Ho Lee of Kunsan National University, Korea analyzed river runoff, wind, and SeaSonde current data to better understand variation in the nearshore region of the West Korea Coastal Current. The 2017 heavy rain season was reflected in a prominent river plume that impacted the coastal current trajectory. This unique application of radial velocities quantified the freshwater impacts on a large-scale ocean current.

The Gulf of Tonkin is a low energy sector of the South China Sea region influenced by nighttime noise/interference and seasonally reversing monsoons. Historically an understudied region, a recent collaboration was formed between the Vietnamese Center for Oceanography, Vietnam Administration for Seas and Islands, Scripps Institution of Oceanography (SIO), Oregon State University, and Rutgers University. Dr. Peter Rogowski of SIO described the use of radial and combined vectors from two SeaSondes to overcome an intermittently low energy environment. These data were used as part of a model validation effort that represents an important step in this ongoing study.

Challenges with Palau's isolated location and lack of infrastructure have long inhibited study of the local circulation and influence of large scale ocean currents that characterize this part of Micronesia. Overcoming these obstacles, Dr. Tom Cook of SIO, and his team deployed an HF radar network outfitted with off-grid solar power and satellite Internet connections and with it has gathered an impressive data set. Preliminary results of SeaSonde currents near the island show impacts of tidal forcing and topography in mesoscale surface features as well as interactions with the North Equatorial Current and the North Equatorial Counter Current.

Three CODAR staff presentations covered multiple methods of antenna pattern measurement, SeaSonde wave output, and physics fundamentals of tsunami detection and recently detected meteotsunami.

Cross-continental, cross-institutional partnership was tangible in the content and the spirit of the 4th ORCA. Overcoming challenges through innovation and collaboration furthers the reach of HF radar technology and strengthens this science-based community.

Complete conference program and extended abstracts have been compiled and made available for download at http://orca2018.official.jp/wp-content/uploads/2018/05/ExtendedAbstract_ALL.pdf

