

14th Observation Coordination Group (OCG-14)

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Global High Frequency Radar (HFR) Network

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1. Network key challenges
 - a. Aging infrastructure
 - b. Interference spurious radio signals and from offshore wind turbines
 - c. Obtaining site permissions to operate radars for a prolonged duration
2. Asks from OCG
 - a. Increased spectral bandwidth. Can OCG endorse a request for more spectral bandwidth at an upcoming World Radiocommunication Conference.
 - b. As HFR operators move onto dedicated bands for oceanographic radars, can OCG play a role in helping synchronize systems across countries to avoid radio interference.
 - c. Facilitate discussions with the ocean modelling community on the value of HFR surface current and wave data for assimilation into operational forecast models.
 - d. When radial measurements cross country borders, can OCG help foster the generation of total vector products.

Network Updates

Region 1 (Europe, Africa and Middle East)

Europe

Ongoing development of the web portal for the European HFR Node (hfrnode.eu to be launched before end of 2023) with access to all the collaborative tools and information about the European Network. Improvement of the operational monitoring of the European network: Operational map of metadata for European systems (soon available in hfrnode.eu/map). The hardware infrastructure, the IT architecture and the processing tools for the operational NRT workflow of the European HFR Node were redesigned and reimplemented in order to improve the performances of the services and the FAIRness of the products. Implementation of the HFR Online Outage Reporting Tool (HOORT) of the European network developed in collaboration with MARACOOS colleagues: it is a web-based application to aid High-Frequency Radar (HFR) operations and maintenance and keep operators more aware of common problems, helping them to report them. New significant systems planned for installation (Ireland, Spain, Italy). Updated list of publications of the European HFR community is available in a [ZOTERO Community Library](#).

Region 2 (North and South America)

Canada

Ocean Networks Canada (ONC) continues to manage one WERA radar and ten CODARs (two of them belonging to the federal Department of Fisheries and Oceans) on the west coast of British Columbia. ONC is also archiving data from two CODAR stations, SCOV and MEDH, which are co-owned by Dalhousie University and Defence Research and Development Canada (DRDC) and operated by Dalhousie University. Dalhousie is hoping to have a new CODAR at Clam Harbour, Nova Scotia, operational sometime this June and ONC will be archiving its data, too. ONC, for its part, is working towards expanding its operations into the Arctic, with a new low-power CODAR system it has acquired; no definite location or installation date has been chosen yet. The long-anticipated move of the VION CODAR station 4 km seawards to the end of the Iona Jetty may finally occur this year--government approval is expected within the month. Current challenges we are facing are of two types: equipment and land-use. Two of ONC's stations in northern BC, BONI and SAND, are currently offline because of unknown technical issues that are preventing them from transmitting. Troubleshooting is ongoing. ONC's WERA radar on the grounds of Tofino airport, meanwhile, is also down. This is because the airport is currently in the process of installing a wildlife fence around its runways. The planned fence physically intersects with the WERA cabling, so the entire radar was uninstalled to allow the work to proceed. The new fence employs closely spaced metal fenceposts that will run very close to the WERA receive array, and it is not at all clear that the radar will function properly with the resulting electromagnetic distortion they will undoubtedly cause. ONC's oldest HF radar station, VCOL, is almost certainly going to have to be decommissioned or moved soon. A new container port has been approved for the site, and the new facility will obstruct virtually all of VCOL's seaward view. The project has only just been approved--it isn't clear exactly when construction will begin, forcing the move.

United States

New HF radar installations have taken place in the Great Lakes, east coast of Florida, Humboldt Bay California, Westport State Park Washington, Key West Florida, north coast of Puerto Rico, La Selva Beach California and Salisbury Beach Massachusetts. The radar in Key West Florida is the first in the world single antenna for transmit and receive operating at the 5 MHz frequency. The 12th meeting of the Radiowave Operators Working Group took place November 2-3, 2022 hosted by East Carolina University Coastal Studies Institute. There were presentations on HFR data assimilation into the NOAA West Coast Operational Forecast System, use of HFR data by NOAA Office of Response and Restoration for oil spill response and United States Coast Guard for search and rescue.

Region 3 (Asia and Oceania)

Japan

The annual meeting of HFR user communities was held in November 29-30, 2022 in Fukuoka. The theme for the meeting was "Development and Application of Sea State Monitoring System using Ocean Radars". There were 12 presentations. At present, approximately 40 HF ocean radars are in operation in Japan.

Taiwan

The initiative of Taiwan's oceanographic radar observation network in the oceanographic community and the efforts of the Taiwan Ocean Research Institute of the National Applied Research Laboratories for many years. A CODAR-based network with more than 19 stations around Taiwan was completed in 2016. Between 2019 and 2024, more than 42 oceanographic radar stations (20 high-frequency radars and 23 marine microwave radars) in various government departments will be built and put into operation successively, including 12 of the Central Weather Bureau (CWB) of the Ministry of Communications (6 high-frequency radars and 6 microwave radars), and 3 of the Institute of Harbor and Marine Technology (IHMT) of the Ministry of Communications (2 high-frequency radars, 1 microwave radar), and 27 of the National Academy of Marine Research (NAMR) of the Ocean Affairs Council (12 high-frequency radars and 15 microwave radars). In addition, the Water Resources Agency

(WRA) of the Ministry of Economic Affairs also has a marine microwave radar in Qigu, Tainan. It is believed that these telemetry remote sensing systems will give full play to the benefits of long-term observation in met-ocean observation, navigation safety, marine energy assessment, marine recreation risks, marine disaster rescue, and pollution prevention and response. To promote the exchange of maintenance experience, technology development strategies, application of data products, and development of scientific research and education among various units, at least one workshop will be held in Taiwan every year to promote the integration and application of ocean radar systems in various government departments through the publication of project results.