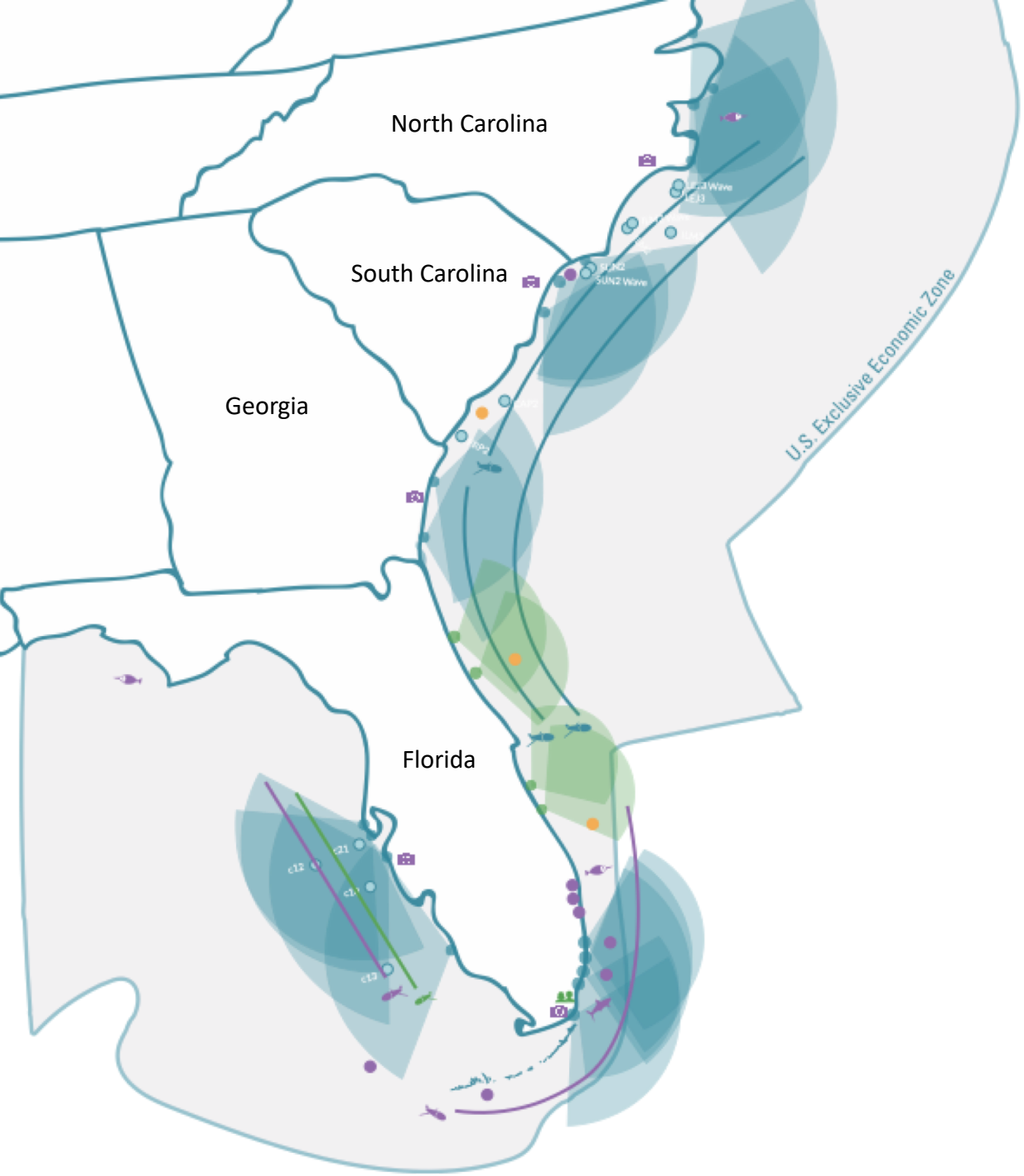

SECOORA
Southeast Coastal Ocean Observing Regional Association

2022 Annual Meeting PI Lighting Talks

Status - HFR BOP Plan and FCC Compliance

Clifford R. Merz, PhD
University of South Florida

CODAR OCEAN SENSORS

In-Situ

IOOS Integrated Ocean Observing System

Accomplishments – HFR BOP/FCC Re-tuning Effort

- The **HFR Build Out Plan (BOP)/Gap Filling Effort:** consisted of updating the existing 14-years old BOP to reflect current status and in-fill growth of the SECOORA HFR Network:

✓ It was felt that SECOORA's highest priority is to maintain and operate the existing HFRs that provide detailed surface current measurements (i.e., current speed and direction) throughout the region. This includes adequate system sparing so that systems can be easily repaired when damaged along with a replacement option for aging systems.

✓ Followed by investing in currently non-IOOS supported HFRs that fill priority gap locations (Fig. 2) as well as HFR systems that support the needs of Ports across the SECOORA region.

- The **International Telecommunications Union (ITU) Frequency and Re-tuning Effort**:

✓ Began in 2012 at the World Radio Communication Conference (WRCC) and resulted in an international agreement on 8 radio frequency (RF) ranges for oceanographic HFR use.

✓ After 3/29/2022, all U.S. HFRs must be operationally licensed by the Federal Communication Commission (FCC) to broadcast only within the FCC-approved ITU bands.

✓ Efforts have occurred by the HFR manufacturers to certify their systems and by the HFR operators along with the HFR manufactures and IOOS Program Office to determine what, if any, modifications are required for broadcasting within the selected ITU frequency band.

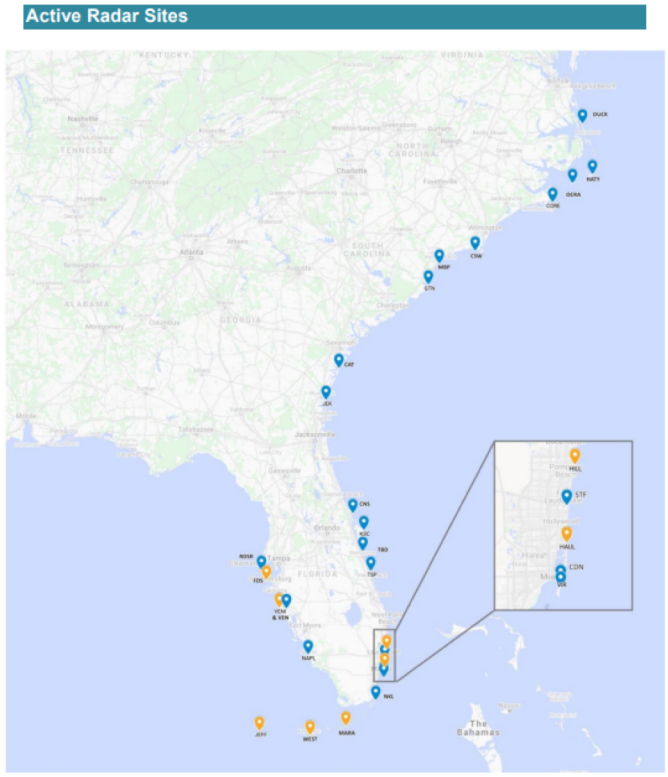

Figure 2. HFR locations in the SECOORA region. Blue symbols represent SECOORA supported HFR. Orange symbols represent HFR deployed and operated in the region that do not receive SECOORA funding. These stations are operated by the USF (FDS, VEN, JEFF, WEST, and MARA) and FAU (HAUL, HILL). Large gaps in HFR coverage exist in central coastal NC, SC, N FL, and the FL panhandle.

Accomplishments – FCC ITU Band Licenses and BOP In-fill Progress

All 8 SECOORA HFR groups have approved licenses with 8 sites (**BOLD)** transmitting on ITU frequency with call sign.

- **SkIO** - License WRKZ412 – Date 3/09/2021 – Covers: **JEK, *CNS***, and *KSC* (WERA XMIT Center Freq. 13.500 MHz), **CAT** (WERA XMIT Center Freq. 5.2625 MHz).
- **UM** - License WRML510 – Date 4/28/2021 – Covers: NKL, CDN, VIR, and STF (WERA XMIT Center Freq. 13.500 MHz).
- **USC** - License WRML509 – Date 4/28/2021 – Covers: ***CSW*** and **GTN** (WERA XMIT Center Freq. 5.2625 MHz), ***MBP*** (WERA XMIT Center Freq. 13.500 MHz).
- **USF** - License WRPC458 – Date 1/18/2022 – Covers: **VEN** and **FDS** (WERA XMIT Center Freq. 13.500 MHz).
  - License Pending – Date 12/10/2021 – Covers: RDSR, VENI, NAPL, *MARA*, *WEST*, and *JEFF* (CODAR XMIT Center Freq. 5.2625 MHz).
- **ECU** - License WRPE581 – Date 1/25/2022- Covers: DUCK, *OCRA*, and HATY (All CODAR XMIT Center Freq. 4.463 MHz).
- **UNC** - License WRPE578 – Date 1/25/2022 – Covers: *CORE* (CODAR XMIT Center Freq. 4.463 MHz).
- **FIT** - License WRPV790 – Date 3/23/2022 - Covers: *TSP* and *HTP [not on license]* (WERA XMIT Center Freq. 13.500 MHz).
- **FAU** - License WRPV746 – Date 3/23/2022 – Covers: HAUL, HILL (CODAR XMIT Center Freq. 13.500 MHz).

Sites in Black (20) operating, Red (7) coming on-line in 2022, *Italic (11) satisfy gap locations,* Underline (7) non-IOOS funded.

Challenges and Looking Ahead

- ITU license related changes require changes in the operational frequency from prior experimental license frequencies to new required HFR ITU FCC frequency bands under the ULS.
- FCC construction permits for new installations stipulate that they must be operational within one year. Given the lengthy delays often encountered in siting approvals and the land use agreement process, extensions are sometimes required which can take upwards of 6 months to obtain – so be prepared.
- Depending upon the age of existing HFR systems, some of the hardware components have had or will have required updates and retuning. Some of these will require sending the hardware back to the manufacture for repair; resulting in both impacts to schedule, performance and unanticipated costs.
- Other operational challenges include maintaining real-time uptime with the ongoing issues of severe weather related damage, troubleshooting, and the repairing of aging HFR systems.
- Balancing the financial burden (time, hardware/repair costs, and rising fuel, rent, travel, and personnel costs) of operating aging equipment with a limited budget is a significant programmatic challenge and has only been possible through significant leveraging with other programs.
- Continued extended periods of level funding, in conjunction with aging equipment, and limited O&M investment for non-IOOS supported HFRs risk losing much of the forward progress already achieved.