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# Coastal & Global Scale Nodes (CGSN) Operational Status

December 7, 2021

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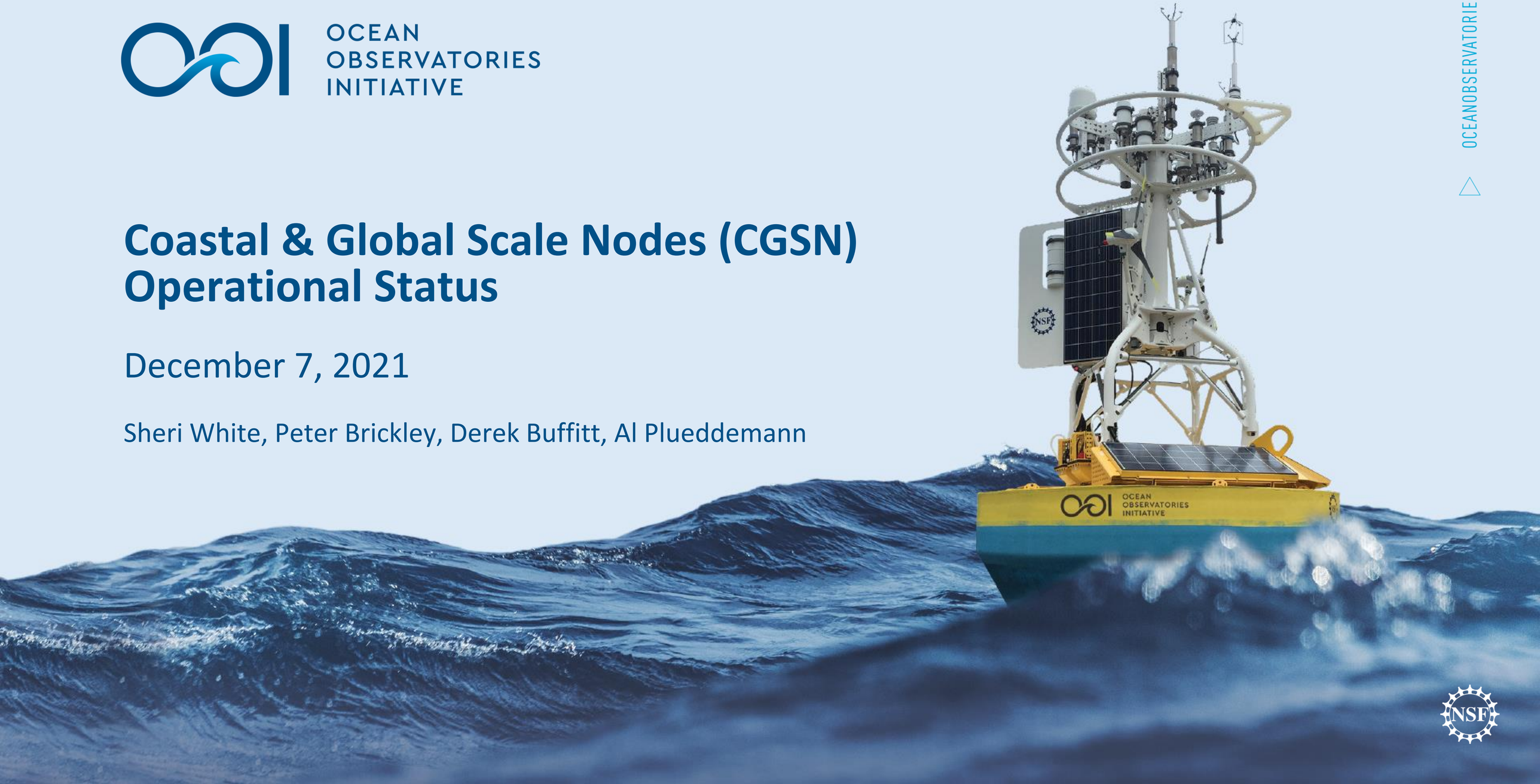


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# CGSN Status: Pioneer

## Operations

- Pioneer 17 in November was planned as a full turn of the array and was the first CGSN cruise with a full complement of personnel during COVID. All surface moorings turned, gliders turned, AUV surveys and ROV ops completed. Profiler moorings ops hindered by weather.

Current Status:

- CNSM: Instruments operating at 100%.
- ISSM: Instruments operating at 95% (1 x OPTAA failed)
- OSSM: Instruments operating at 84% (MFN DCL damaged on deployment, instruments on batteries will continue to collect but not telemeter)
- PMCI/PMCO/PMUI/PMUO/OSPM/CNPM fully operational
- PMCI/PMUI: Could not be turned due to weather but continue to operate. Batteries will most likely impact data collection in the coming weeks/months.

Up to date on ingestion of available telemetered & recovered data.

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## Mobile Assets

- 3 of 5 gliders in the field, glider turn planned for mid Dec, will include a G3 test glider

## Refurbishment

- Recovered moorings starting refurbishment
- Instruments shipped to vendors for refurbishment.

## Cruise

- Planning for full Pioneer 18 cruise 8-29 April 2022
- Pioneer 18 will be the last deployment at the NES site

| Platform | Infrastructure % | Instruments % | Delivered XMIT % | Data Collected % |
|---|---|---|---|---|
| CNSM | 100% | 100% | 100% | 100% |
| ISSM | 100% | 95% | 95% | 95% |
| OSSM | 95% | 84% | 74% | 87% |
| PMCI | 100% | 100% | 100% | 100% |
| PMCO | 100% | 100% | 100% | 100% |
| PMUI | 86% | 100% | 100% | 100% |
| PMUO | 100% | 100% | 100% | 100% |
| OSPM | 100% | 100% | 100% | 100% |
| ISPM | 100% | 100% | 100% | 100% |
| CNPM | 100% | 100% | 100% | 100% |

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# CGSN Status: Irminger Sea

## Operations

- Irminger Surface Mooring has decreased power generation after major storm event - turbine damage (35kt wind for >21 hrs, significant wave height of 43ft for ~24hrs).
- Power is being managed to maintain comms with the mooring and as many instruments as possible. Instruments operating at 49%, primarily those on internal batteries.
- HYPM, FLMA fully operational. FLMB experienced secondary controller failure, instruments with internal batteries will continue to collect but not telemeter (PHSEN, CTD).
- Up to date on ingestion of available telemetered and recovered data

## Mobile Assets

- 3 of 3 planned gliders deployed; 1 of 3 currently operating
- Glider 565 (profiling glider) healthy
- Glider 469, lost comms and presumed lost
- Glider 537, declared lost after 60 days with no contact

## Refurbishment

- Irminger refurbishment underway
- Instruments being delivered to vendors
- No major issues

## Cruise

- Planning for Irminger 9 cruise, 20 June – 12 July 2022
- Cruise is planned to include OSNAP
- Ports are WHOI – Reykjavik

| Platform | Infrastructure % | Instruments % | Delivered XMIT % | Data Collected % |
|---|---|---|---|---|
| GI01SUMO | 60% | 49% | 0% | 61% |

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# CGSN Status: Station Papa

## Operations

- Papa 8 cruise performed a full turn of all subsurface moorings
- No instrument issues on deployment
- Up to date on ingestion of available telemetered and recovered data
- Many of the recovered Papa 6 instruments had recoverable data after 2 years deployment (Papa 7 canceled due to COVID)

## Mobile Assets

- 0 of 3 planned gliders in the field
- Two gliders planned on turn cruise. One not deployed due to bladder puncture, one experienced steering issues and was recovered
- Planning intermediate cruise to deploy gliders for transit to Papa

## Refurbishment

- Papa HYPM scheduled for refurbishment, FLMA/FLMB currently not planned to be turned (budget provided to CI to support Axiom)
- FLM instrumentation shipped to vendors if budget should come available for mooring turn

## Cruise

- Planning for Papa 8 cruise, 12 – 31 May 2022
- Cruise will include first recovery/deployment support for UW Waverider mooring
- Ports are Seward - Seattle

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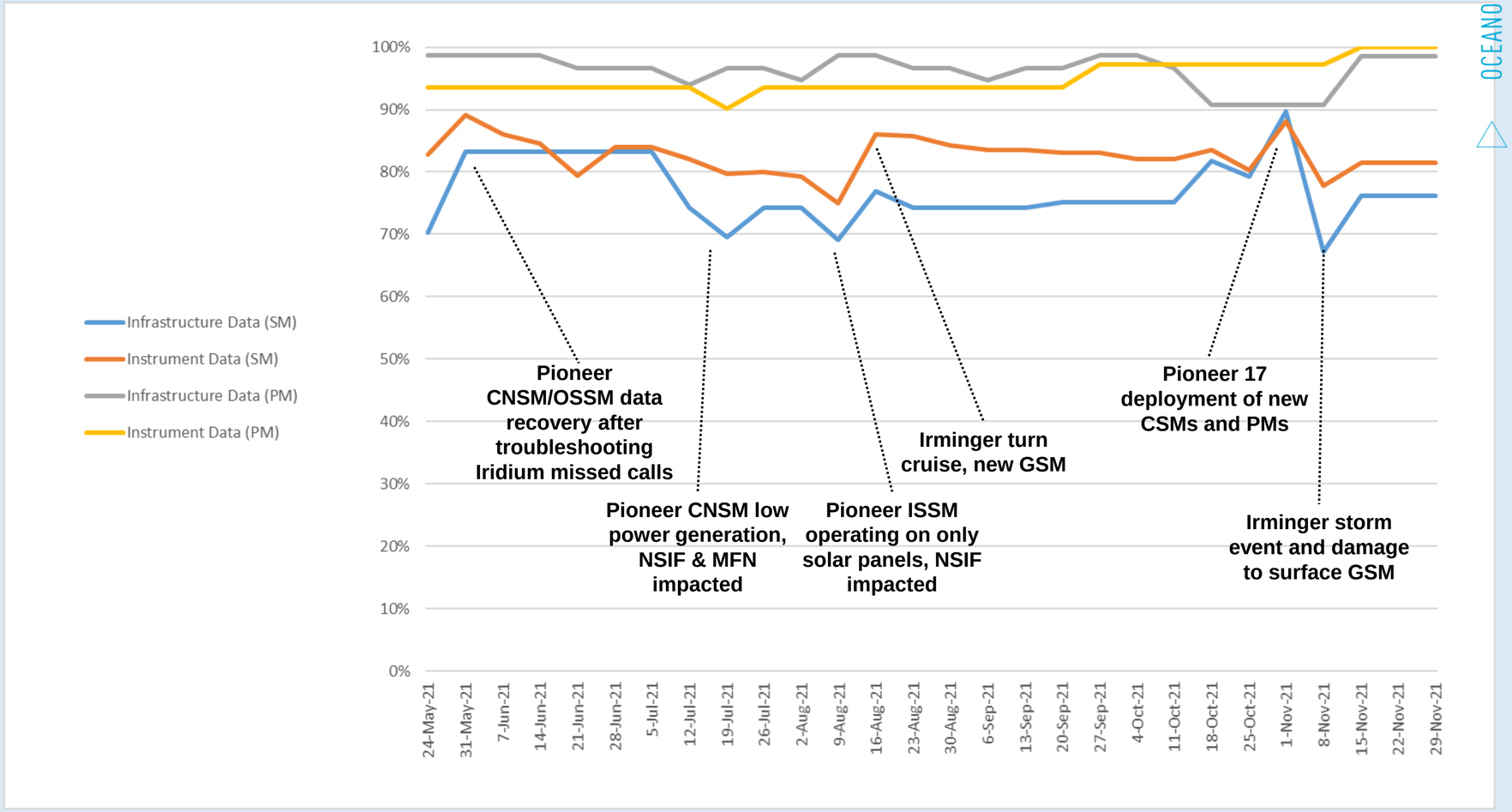
# Operational Statistics: Last 6 Months

- 6 month surface mooring (SM) & profiler mooring (PM) status
- Includes:
  - Instrument availability
  - Infrastructure health
  - Risks to infrastructure such as storm events
  - Actions and potential interventions



# Operational Highlights

- **Mechanical:**
  - New EM cable/stretch hose termination:
    - Pressure tested and deployed at Pioneer, currently all MFNs operational
  - New surface mooring well chassis design:
    - Simplifies down cruise and re-integration of buoy well components
- **Instruments & Infrastructure:**
  - Upgraded GPS receivers in moorings
  - Initiated upgrade of Iridium modems to current model
  - Initiated upgrade of ZPLS transducers
  - Tested new R3 anemometers for METBK
- **Mobile Assets:**
  - Commenced testing of G3 gliders (global and coastal), reviewing results with TWR
  - Tech Refresh process in place to evaluate TWR, potentially assess alternate vendors

# Operational Highlights

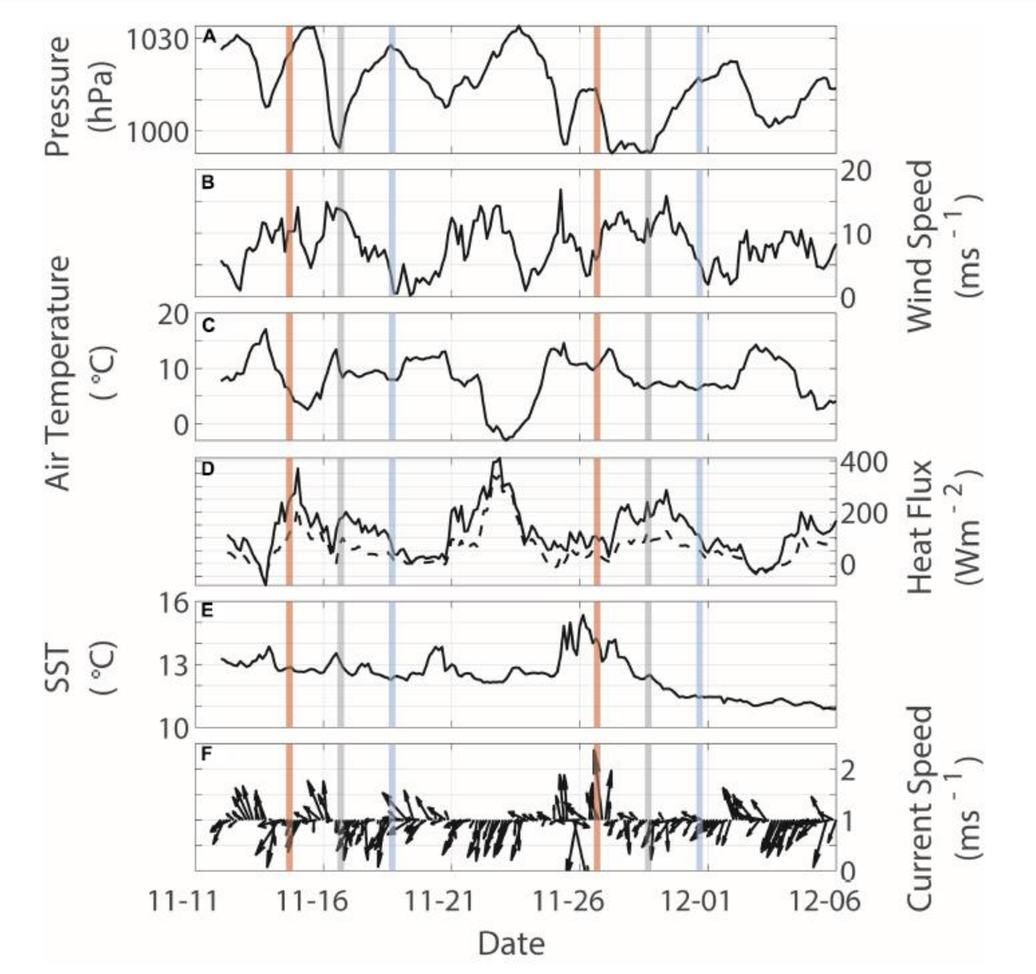
- **QARTOD Working Group (cross-MIO):**
  - Completed QARTOD process document and instrument prioritization
  - First tests to be implemented are Gross Range (GRT) and Climatology (CT)
  - MIOs prepared GRT and CT lookup tables for four instrument classes:
    - CTD, PHSEN, PCO2, PRESF
  - MIOs, in collaboration with CI, in process of testing code prior to production
  - Current QARTOD GRT and CT tests will account for:
    - ~15% of OOI data volume, ~25% of deployed instruments
  - Next steps:
    - GRT and CT “go live” for instrument classes above (next CI release, Jan 2022)
    - Begin creation of lookup tables for FLORT, PAR, DOSTA

# Community Engagement Highlights (Q3-Q4)

- **Proposal Related:** (11 activities)
  - Proposal for exploring sonification of OOI data funded, PI Amy Bower (WHOI)
  - Proposal for surface wave measurements at Station Papa funded, PI Jim Thomson (APL/UW)
- **Interactions with Pis and Projects:** (20 activities)
  - The CGSN Team supported BGC-Argo float deployments and CTD sampling on the Irminger cruise
  - Potential for EK-80 surveys at Pioneer discussed with postdoc Loranger (WHOI)
- **Presentations, Meetings and Tours:** (21 activities)
  - Reed and Batryn participated in the OOI Biogeochemical Sensor workshop
  - Plueddemann, Buffitt and White presented a community webinar on CGSN Infrastructure and Operations
- **Newsletter and Website contributions:** (11 activities)
  - Dobson contributed to a Newsletter article describing OOI glider data distribution to the IOOS GDAC
  - Reed and the CGSN Team contributed to a Newsletter article describing QARTOD GRT and CT
- **Other:** (14 activities)
  - Wired Magazine article noted the use of Pioneer Array to investigate an accident at sea
  - CGSN participated in the IOC-UNESCO sponsored GOOS Ocean Best Practices Community Workshop

# Science Highlight (Q3)

- **A case study for open data collaboration** (Levine et al., 2020)
  - Publicly available data from the OOI Pioneer Array moorings were used.
  - Members of the OOI Early Career Scientist Community of Practice (OOI-ECS) participated.
  - A case study was constructed to evaluate the impact of strong surface forcing events on surface and subsurface oceanographic conditions over the New England Shelf.
  - Two events were evaluated in detail; different event responses were characterized

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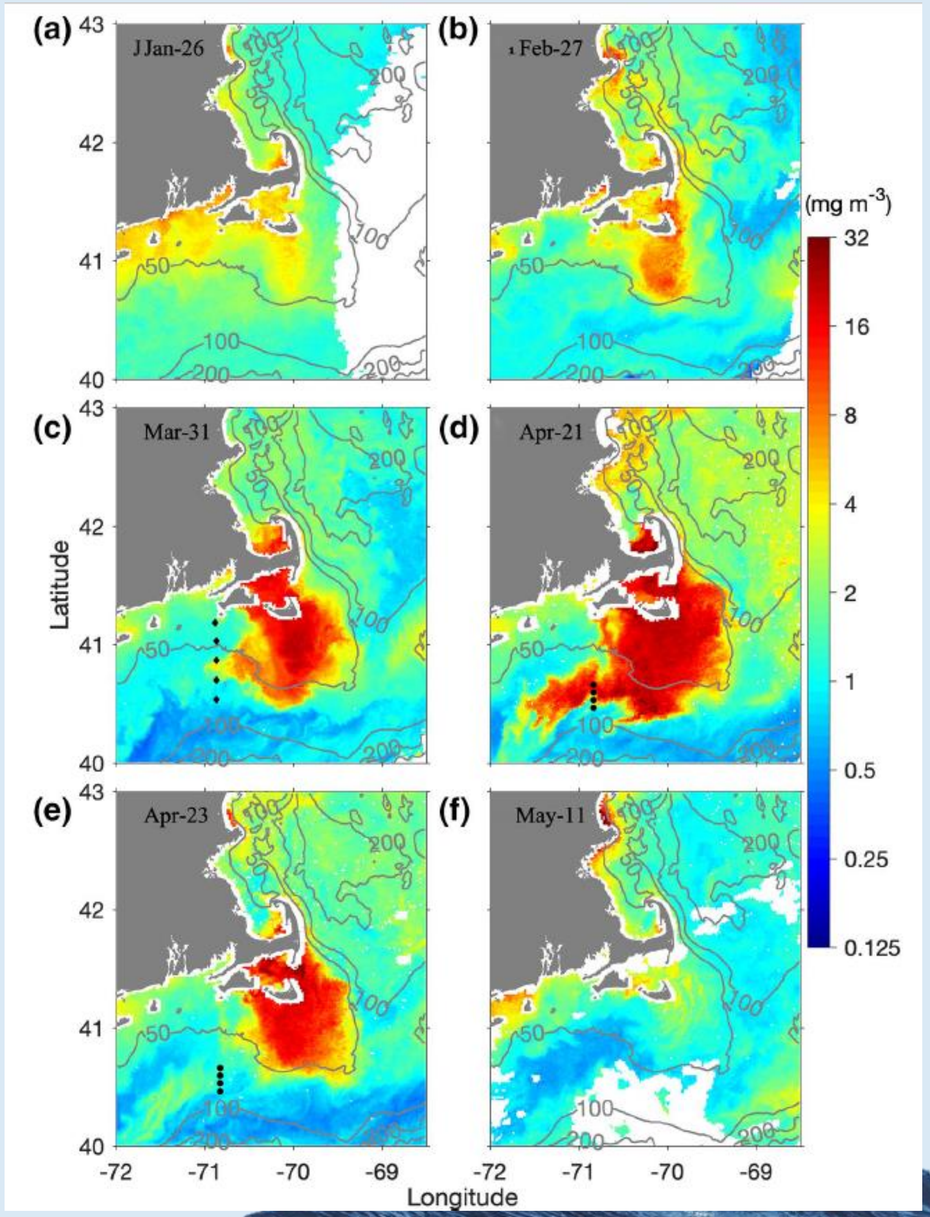
# Science Highlight (Q4)

- **A regional, early spring bloom … on the New England continental shelf** (Smith et al., 2021)
  - Data from a SPIROPA cruise were used along with Pioneer moorings, LTER, MVCO and satellite remote sensing
  - The bloom was initially concentrated in Vineyard Sound and over Nantucket Shoals
  - A surface filament later extended to the southwest, intersecting the Pioneer Array and the SPIROPA cruise sampling region
  - Diagnosis of this unusual event drew from three long-term observing systems

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# Questions?


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