NOAA NESDIS Commercial Data Program (CDP) Overview and Status

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National Environmental Satellite, Data, and Information Service

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Commercial Data Program (CDP) Supports the NESDIS Strategy

Maintain a hybrid architecture to meet NOAA's requirements:

- *Government owned systems*
- *Commercial data*
- *International partnerships*

Artist rendering of Terran Orbital's SmallSat GEO. Credit: Terran Orbital

"Buy and partner where we can and build what we must"

Commercial weather data supplements government program observations for improved coverage and more ***accurate weather forecasts***.

NESDIS Commercial Data Program (CDP) Mission

PURPOSE : Acquire commercial space-based environmental observation data to support NOAA's operations.

TWO PILLARS :

1. **Commercial Weather Data Pilots:**
   Demonstrates the quality and impact of commercial data on weather and space environment applications

2. **Commercial Data Purchases:**
   Procures data-as-a-service from commercial vendors for operational weather forecasting and space environment applications

IMPACT: Improves the accuracy and timeliness of NOAA's weather forecasts, space weather and atmospheric monitoring, ocean observations, and other critical environmental applications.

NESDIS CDP Operational Radio Occultation (RO) Data Buys (RODB)

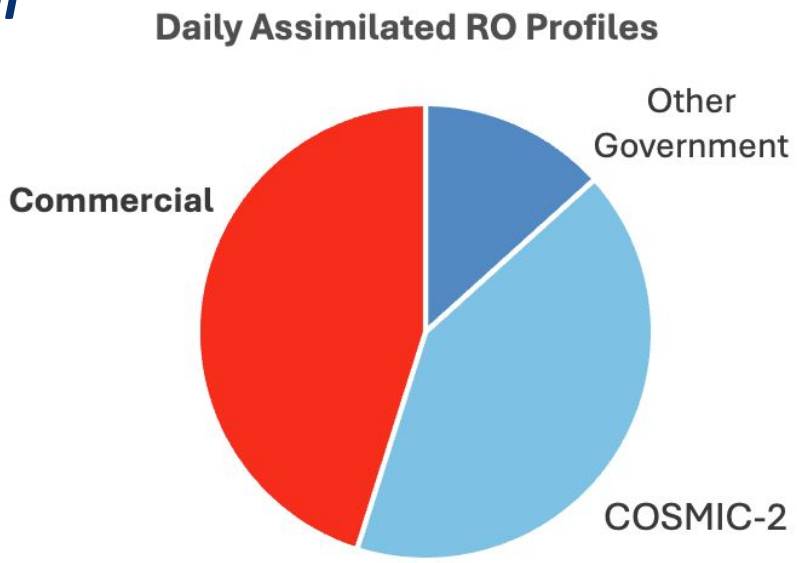
NESDIS CDP successfully purchases and integrates commercial GNSS-RO data for operations.

Delivery Order- 4: 18 September 2024 to 18 September 2025

- PlanetiQ 2,200 RO/day, Spire 800 RO/day

Delivery Order- 5: Planning to award in August 2025 with a 1 year PoP

- *RO 4,000-10,000/day*
- *TEC 1,500-4,000/day*
- *High Signal to Noise Ratio (SNR) RO 500-1,000/day (NASA Funded)*



Source: NESDIS CDP, UCAR COSMIC, 12/2024. Commercial data consists of coordinated NOAA (CDP) and EUMETSAT purchases.

Commercial GNSS-RO data from NESDIS CDP and EUMETSAT purchases make up nearly half of all RO data assimilated into weather models.

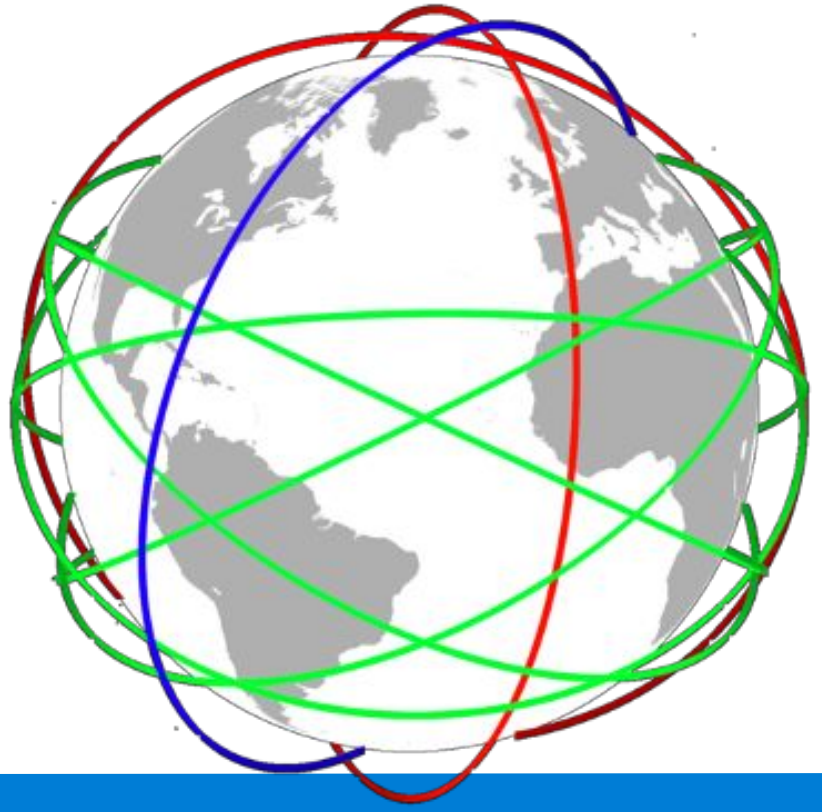
GNSS RO Analysis of Alternatives (AoA)

Statement on the release of the Radio Occultation Analysis of Alternatives Phase 1 Report:

Summary and Commercial Data Program RO Objectives:

- NOAA will seek to increase RO commercial data acquisitions in the equatorial regions as COSMIC-2 degrades in addition to increasing RO commercial data purchases in the polar orbit.
- Focus on diverse orbits with appropriate data latency
- NOAA plans to align with the Radio Occultation Modeling Experiment (ROMEX) study, which recommends a minimum of 20K RO profiles/day.

Available: AoA Phase 1 Report

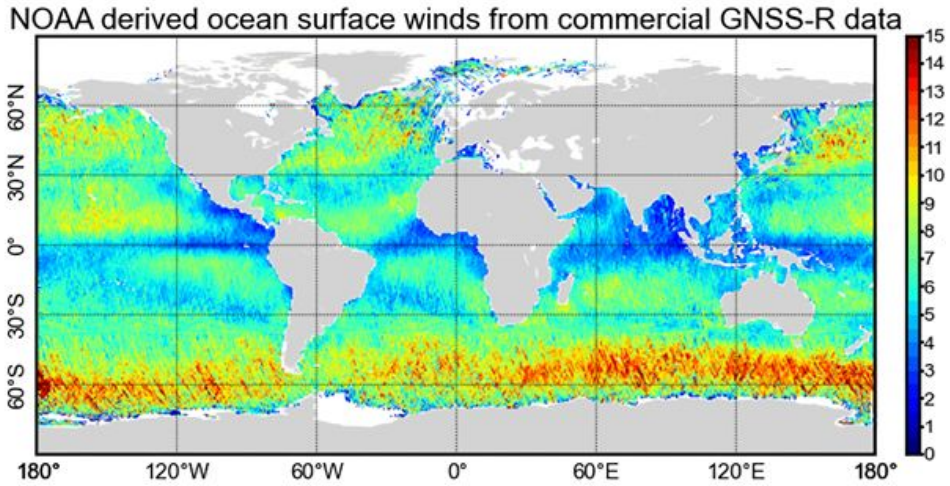


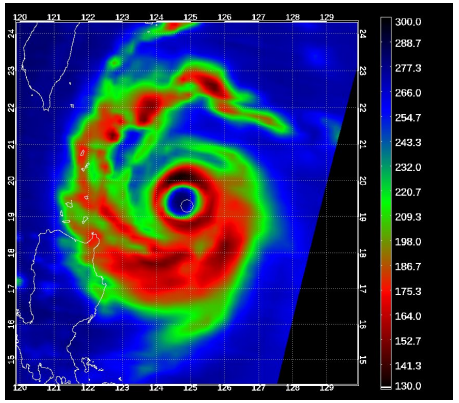
AoA Phase 2 Plan:

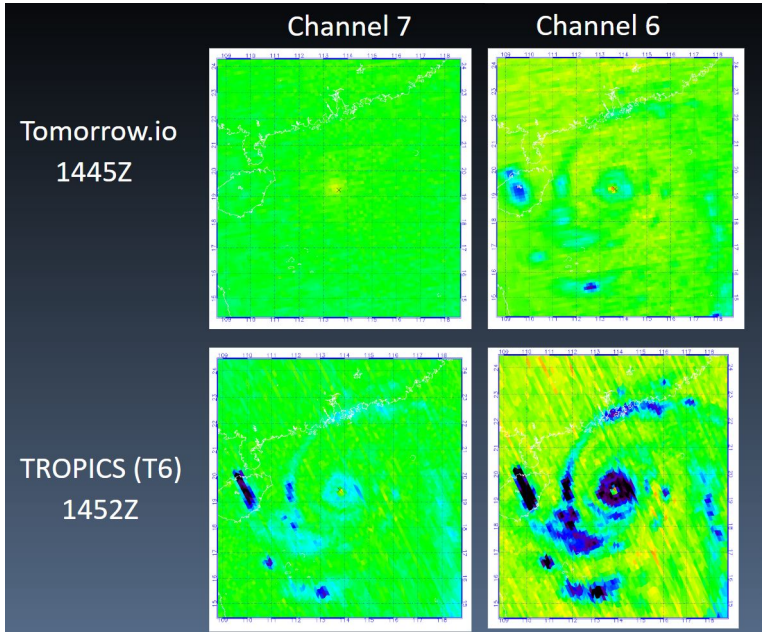
- Market research on capabilities and interest
- Identify Study constraints for RO, TEC, and Scintillation
- Understand Gaps
- Identify constellation solutions and optimize from Phase 1
- Complete by end of 2025

Commercial Weather Data Pilots

- GNSS-Reflectometry Ocean Surface Winds (OSW) Pilot – ongoing and new
- Microwave Sounder Pilot – ongoing
- HyperSpectral Microwave data (Joint Venture Program with CDP coord) – Jan 2026
- Space Weather Pilot – Completed in 2024
- TBD Pilot - 2026





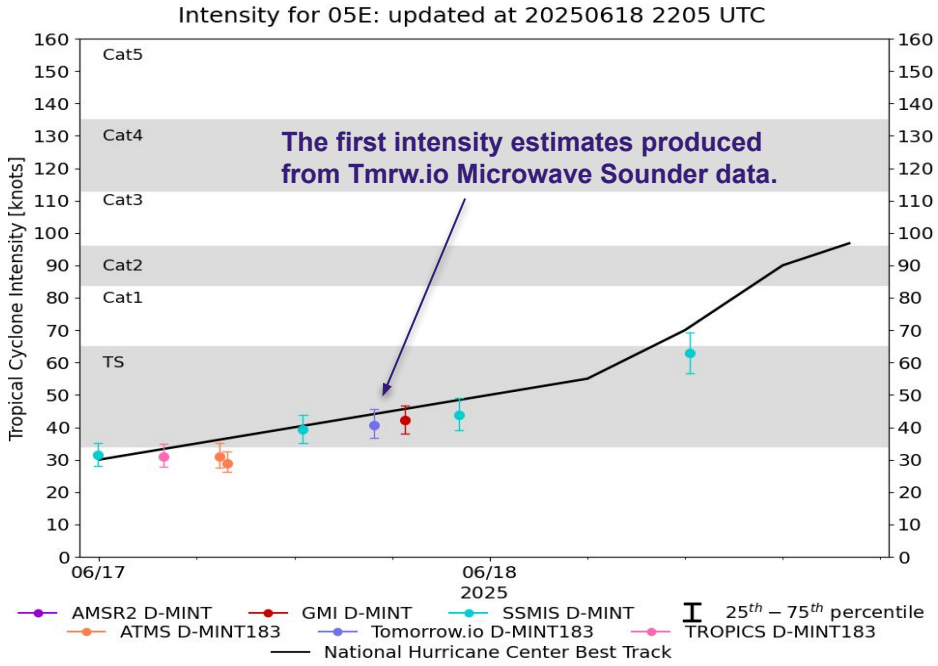


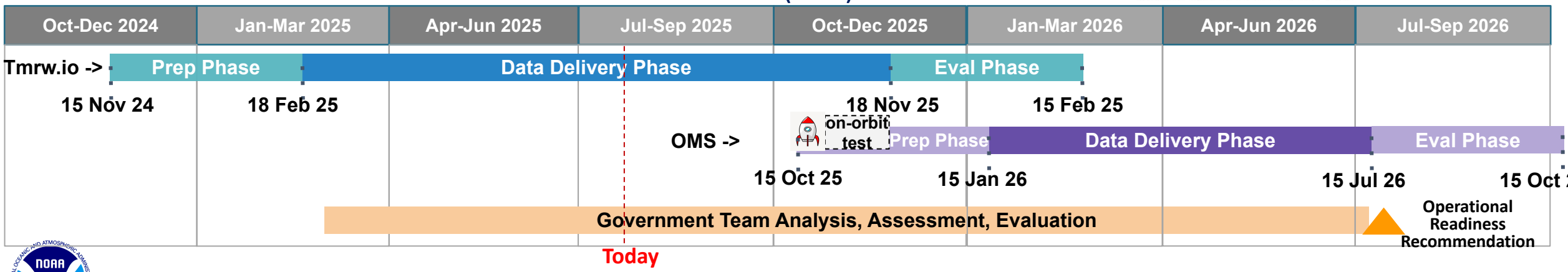
Microwave Sounder Pilot

NOAA awarded two Microwave Sounder Pilots to ***Tomorrow.io*** and ***Orbital Micro Systems (OMS)***

- **Purpose**: Assess the quality and impact of commercial Microwave Sounder observation data
  - Investigate **Utility, Benefits to NWP models and Assess Tropical Cyclone imagery**
  - Microwave data products focused on vertical temperature and moisture profiles
- Tomorrow.io operates 6 Microwave Sounder satellites (three in SSO & three in 45° orbit)
- OMS launches their first Microwave Sounder in Oct (SSO)

Hurricane Erick intensity estimates derived from various MWS platforms for June 17-18, 2025 (from UW-CIMSS)

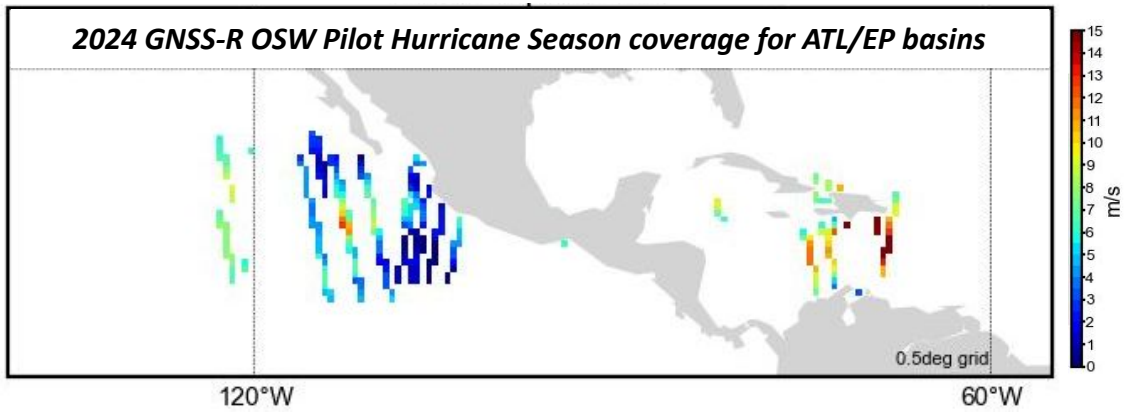




GNSS-Reflectometry (GNSS-R) Ocean Surface Winds Pilot

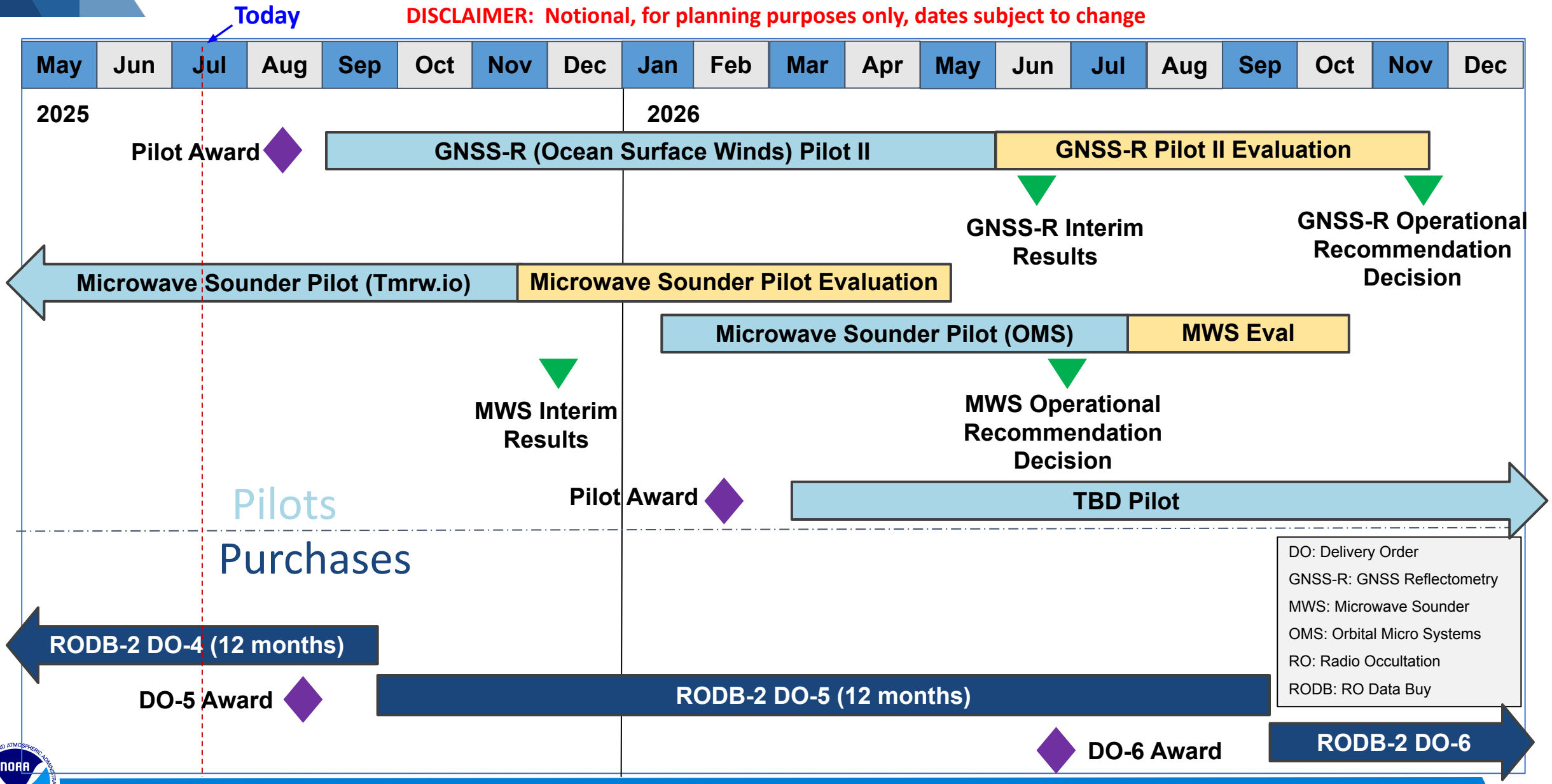
- **Executed a pilot study in 2024-2025 for GNSS-R Ocean Surface Winds (OSW). Currently finalizing results and working to improve the Cal/Val Process for commercial data.**
- **Follow-on GNSS-R OSW High Signal to Noise Ratio (SNR) Pilot:**

  An additional Pilot was identified as key to reaching an operational purchasing capability. Pilot is planned for August 2025 - July 2026. Key goals include:
  - Collect during Tropical Cyclone (TC) season with a 6-9 month data delivery period
  - Evaluate potential of new high SNR sensors for better OSW characterization
  - Further assess impact of GNSS-R OSW data on numerical weather prediction (NWP)
  - Assess new data for use in TC prediction and monitoring



NOAA derived OSW product results in Atlantic and Eastern Pacific TC regions using commercial Spire GNSS-R data. The CDP GNSS-R Pilot Team determined that higher SNR data from a follow-on pilot may improve the impact of GNSS-R wind speed data on the tropical cyclone mission.

2025-2026 NESDIS CDP Planning - Pilots & Purchases



Discussion

NESDIS Commercial Data Program Information:

https://www.space.commerce.gov/commercial-data-program/

Backup

NOAA Data Sharing License Options

Operational Data Purchases	**Option 1**	**Unlimited distribution rights**
Commercial Weather Data Pilots	**Option 2**	**Distribution to U.S. Government agencies, National Meteorological Centers (NMC), WMO Met Centers, CGMS members, nonprofit organizations, Academic entities for non-commercial use with no further distribution**
	Option 2a	**Option 2 plus unlimited distribution after 24 hours**

- NESDIS CDP purchases commercial data with unlimited distribution rights (Option 1) and Pilots new data sources with more limited distribution rights (Option 2/2a).
- Why NOAA should continue unlimited distribution rights for Commercial Data Purchases:
  - Offer data to companies focused on analytics, market analysis, value-added weather product solutions, etc.
  - Comply with WMO Unified Data Policy (Resolution 1)
- Why NOAA must, at a minimum, offer "Option 2a" for all Commercial Data Buys and Pilots:
  - Provides benefit to ALL meteorological centers to improve global weather prediction
  - Saves NOAA $$ by not double-buying the same data (e.g. NOAA-EUMETSAT data sharing). Int'l centers may stop sharing to the U.S. if NOAA ceases data sharing to them.
  - Supports academic product improvement developments
  - Option 2a still allows commercial entities and general public to benefit from older data