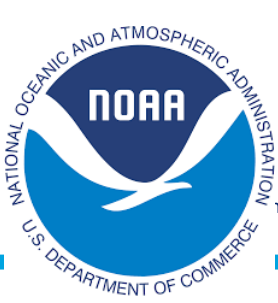
2022

Antenna Arraying Techniques at NOAA

- Ken Watts, NOAA/NESDIS Office of Common Services (OCS)

Presented to CGMS-53 WGI session, agenda item 8.1

Coordination Group for Meteorological Satellites



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NESDIS Antenna Array Executive summary

The purpose of this presentation is to provide the CGMS working group constituency with a high-level overview of NOAA/NESDIS activities centered on the adoption and utilization of antenna arraying techniques.

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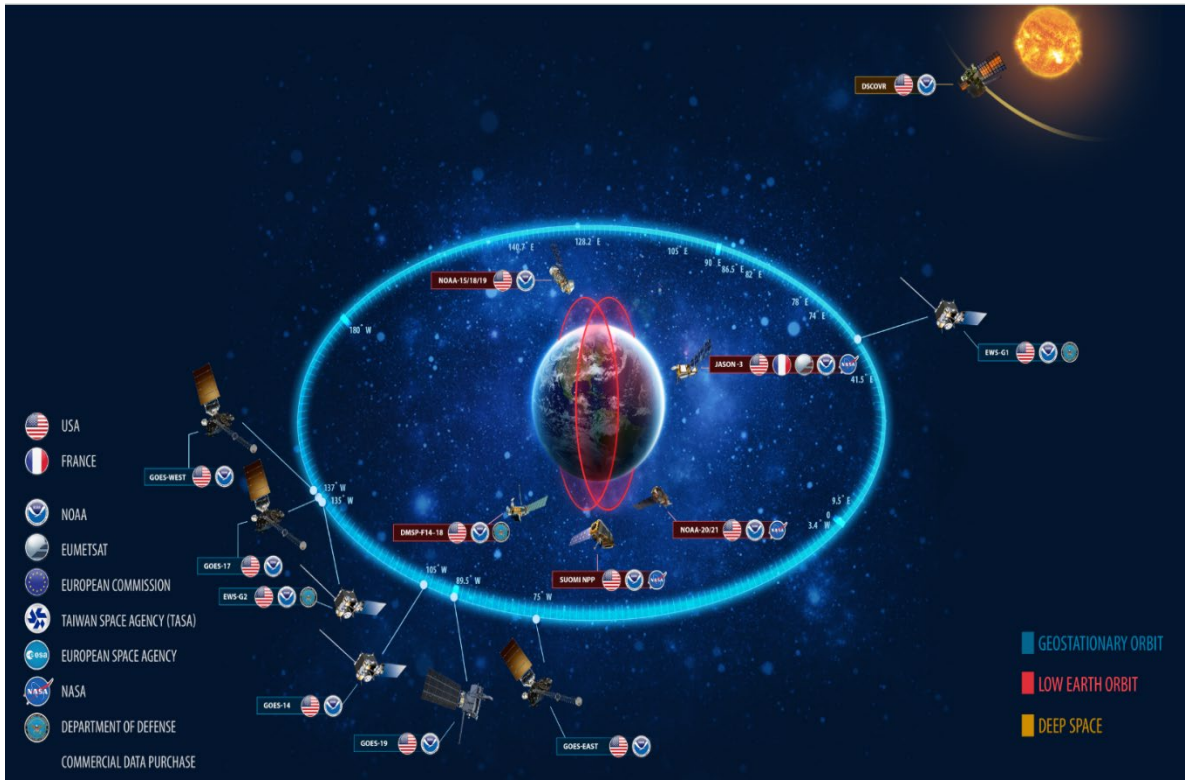

- NESDIS:
  - Owns and operates LEO satellite missions (NOAA-20 and -21)
  - Provides coverage to US Government and International partnership missions including (**EPS-SG**, Jason-3, Suomi NPP, DMSP, EWS-G, others)
- Future planning encompasses continued LEO operational support for current and anticipated follow-on to NESDIS (NEON) and partnerships missions such as **EPS-Sterna**

A growing proliferated LEO (pLEO) environment will necessitate changes to ground system components to accommodate increasing support requirements in a cost efficient and low latency manner

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NESDIS Strategic Objectives for Antenna Array Assessment

- Assess status and maturation of current commercial technology
- Assess technical performance against live NESDIS missions
- Correlate with Enterprise Roadmap Common Service objectives
- Assess NESDIS business case alignment
- Cost Benefit Analysis

Current NESDIS Market research - understand the development trajectory of current commercial industry capabilities for Electronically Scanned Arrays (Passive and Active), Digital Beam Forming and Hybrid Antenna Arrays

- Conducted a Cooperative Research and Development Agreement (CRADA) with L3Harris in 2023
- Completed commercial market research through multiple Broad Agency Announcements (BAAs) and Requests for Information (RFI)

Future Market Research may include additional CRADAs and/or demonstrations of hybrid phased arrays

Antenna Arrays may provide a viable solution for increased pLEO coverage

Conclusion:

- The advent of commercially developed cost high performance antenna arrays is an area of interest to NOAA/NESDIS as it seeks to continue it its provision of highly reliable LEO operational support to an expanding number of US and partner mission sets in a cost effective, low latency manner.