



STAR Cooperative Research

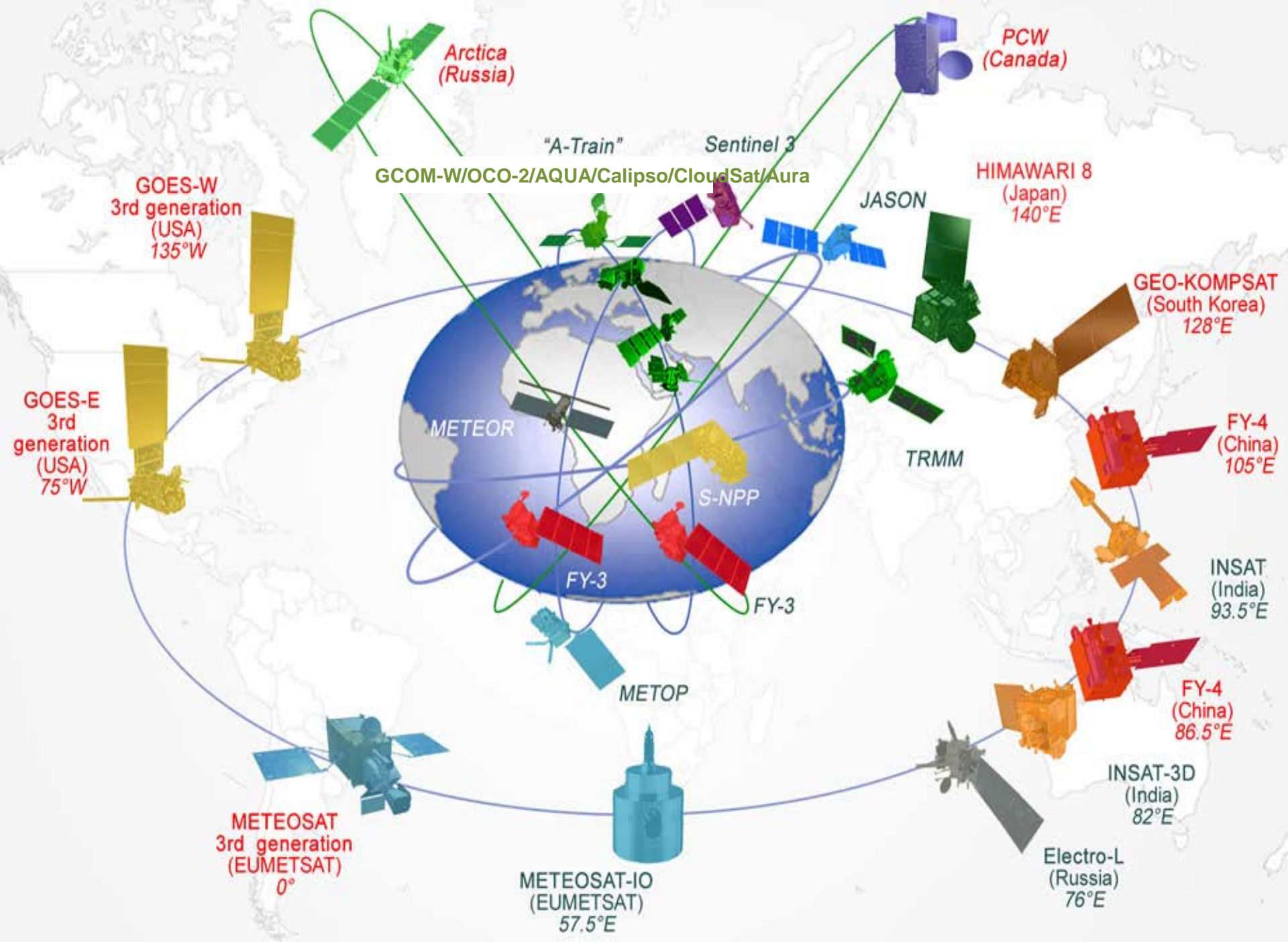
Just where do we think we are going?

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STAR Organization







Where is NESDIS Trending

NESDIS

- Mission NESDIS; GOES-R, JPSS, Polar FO, Jason-3, DSCOVR FO
- Developing Enterprise Ground System Architecture
- Developing Systems Engineering Expertise, Mission and Requirements management
- More focus on NOAA internal Line Office customer, less on NOAA external customer
- NESDIS as data and info services provider to line offices
- NWS , NOS ... as delivery of external services and societal benefits
- Requirements-based and driven

STAR

- More focus on supporting the internal NOAA services delivery architecture
- More focus on supporting system development, less on science application development; less focus on polishing diamonds.
- More focus on supporting interagency and international Obs. Syst. Partnerships
- Ingest, Ground Processing, Dissemination, Science-based Applications as ONE;
- More supervision of STAR external engagements



White House Multi-Agency R&D Priorities (Holdren Guidance Memorandum)

OSTP 3 Earth Observations

OSTP 3.1 Innovative approaches to Earth observation incl. technology, low-cost satellites & disaggregated instrumentation

NOAA Priorities (USec Kathy Sullivan Annual Guidance Memorandum)

NOAA 3 Invest in Observational Infrastructure

NOAA 3.1 Launch JPSS and GOES-R on schedule

NOAA 3.2 Dev Space-based observing enterprise that is flexible, responsive to new technologies, and economically sustainable

NOAA 4 Achieve Organizational Excellence

NOAA 4.1 Strengthen alignment of R&D to support NOAA operational missions, including advancing R2A

Observing and Prediction Priorities (DUsec Manson Brown Guidance Memorandum)

MB 1 Making communities more resilient

MB 1.1 Enhancements to Environmental Modeling Processes

MB 1.2 Advancing NOAA's Total Water Prediction Initiative

MB 3 Observational Infrastructure

MB 3.1 Filling Critical Gaps in Arctic Observations

MB 3.2 Promoting an Enterprise Ground System

NOAA R&D Priorities (Chief Scientist Rick Spinrad Guidance Memorandum)

SRGM 1 Integrated Earth System Processing (sic) and Prediction

SRGM 2 Observing System Optimization

SRGM 3 Decision Science, Risk Assessment and Risk Communication

SRGM 4 Data Science [Big Data, Data Fusion, Data Assim.]

SRGM 5 Water Prediction [Tuscaloosa National Water Center]

SRGM 6 Arctic

NESDIS HQ Priorities (AA Stephen Volz, Priorities Guidance Memorandum)

NESGM 1 Optimizing Use of all Available Data Sources

NESGM 2 IT Security Compliance

NESGM 3 Archive & Access

NESGM 4 Commercial Pathfinder



FY18 NOAA Initiatives

(23 under consideration)

NESDIS FY18 SUBMISSIONS

- NOAA Enterprise Digital Archive and Stewardship capability
- NOAA Cybersecurity and Resilience
- Satellite Ground Services: Service Life Extension
- Non-NOAA Satellite Data Exploitation
- Maturing and Sustaining NOAA's Observing System Integrated Analysis (NOSIA)
- Integrated Flood and Drought Information Services
- Filling NOAA's Arctic Observing Gaps to meet Highest Priority Needs



R2X Initiative

- NOAA Chief Scientist, R2X Initiative (legacy intent)
- Seeks \$10-30M /yr starting in FY17 focused on log-jam at TRL 5-7
- 100+ Letters of Intent from (OAR, NWS, NOS, NESDIS, NMFS, OMAO)
- Down-selects: 100 → 85 ; → 60 ; → 33 → 24 received RFP
- 6 NESDIS invited to submit full proposals, (Transition Plan; Giver-Receiver Collaboration; Acceleration through TRL)
 - *Leveraging GPM Mission through R2O and NOAA Multi-satellite Precipitation Products*
 - *Enhancing the S4 O2R / R2O Testbed Infrastructure*
 - *Accelerating use of SMAP in NOAA Global Forecast System, Climate Forecast System, Drought Monitoring and Flood Forecasting Operations*
 - *Implementation of reduced troposphere / stratosphere Chemistry Algorithms into the NGGPS*
 - *NOAA Polar Watch: Ocean Remote Sensing in Support of National Polar Priorities*
 - *Apply Sentinel-3 Ocean Color Data to Lake Erie Harmful Algal Bloom (HAB) product and transition forecast to operational status*

x = Operations, Intended use, Commercialization, Other



Where is STAR Trending?

- Build on Core Strengths to establish foundation for Center of Excellence
- Emphasis on building capability and capacity for exploitation of future integrated observing systems
- Greater reliance on CI's for science research and applications development? Task III ?
 - Cooperative Institutes are Centers of Excellence in NOAA relevant fields
 - They develop the future scientific and technical talent we need (see last slide)
 - They help us execute our NESDIS mission (Task II)
 - They often show us what is possible (Task III)



Strategic Mission R&D Priorities

Year-End Investments 1

Development of common technical methods among NOAA, allied agencies and communities of practice to ensure traceable calibration and inter-calibration process standards among remote observing sensors, platforms and systems. Motivated by necessity for NOAA to maintain long term consistency among remote sensing satellite and in situ observations and for establishing and validating continuous, reliable and well-characterized global and regional Environmental Data Records across current, past and future generations of observing systems.



Strategic Mission R&D Priorities

Year-End Investments 2

Integrated Observing Systems and Data Fusion – Development of physically (internally) consistent multi-variate, and multi-scale 4D environmental state descriptions that improve situational awareness for forecasting and other NOAA decision support, adapting advanced dynamical-mathematical optimization methods employed in NOAA’s model data assimilation system.



Strategic Mission R&D Priorities

Year-End Investments 3

Development of NOAA enterprise technical means for leveraging non-NOAA domestic, and international satellite observations and capabilities that contribute to NOAA's global and regional observing missions and operational decision support needs.



Strategic Mission R&D Priorities

Year-End Investments 4

Development of physically consistent satellite data products across orbits and sensors enabled by adoption of universally accepted standard channel selections. Development common scientific retrieval algorithms that can be implemented within a single enterprise development, testing and processing framework using consistent physics, radiative transfer, analysis utilities, and accelerated with consistent repeatable business processes.



Strategic Skills & Expertise & Succession Investments

Data Assimilation

Instrument Science and Engineering

Ocean Science and Modeling

Radiative Transfer

Science Data Systems

Science Liaison / Communication

Earth Science or relevant technology discipline education

Operations / Systems Perspective

Understanding of formalized systems development

Understanding of formalized software development