GEO-NETCast in the Americas: A Vision and Concept

First GEO-NETCast Participants Meeting
Seattle, Washington, USA

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What Is GEO-NETCast?

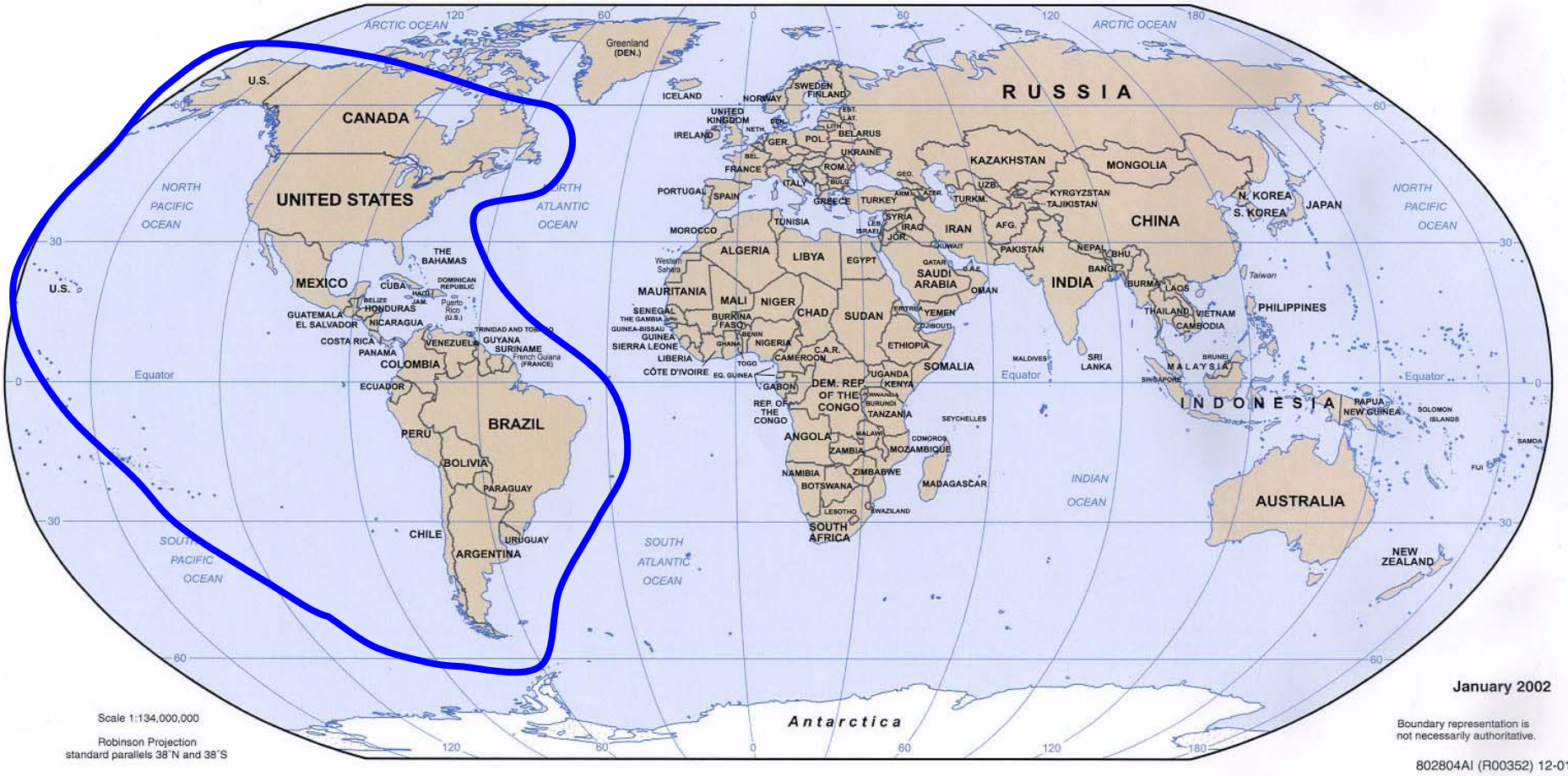
GEO-NETCast is a real-time data dissemination system -- in support of the GEO societal benefit areas -- by which environmental satellite and *in situ* data, products, and services are transmitted to users through satellites.

It is one component of the overall GEOSS architecture.

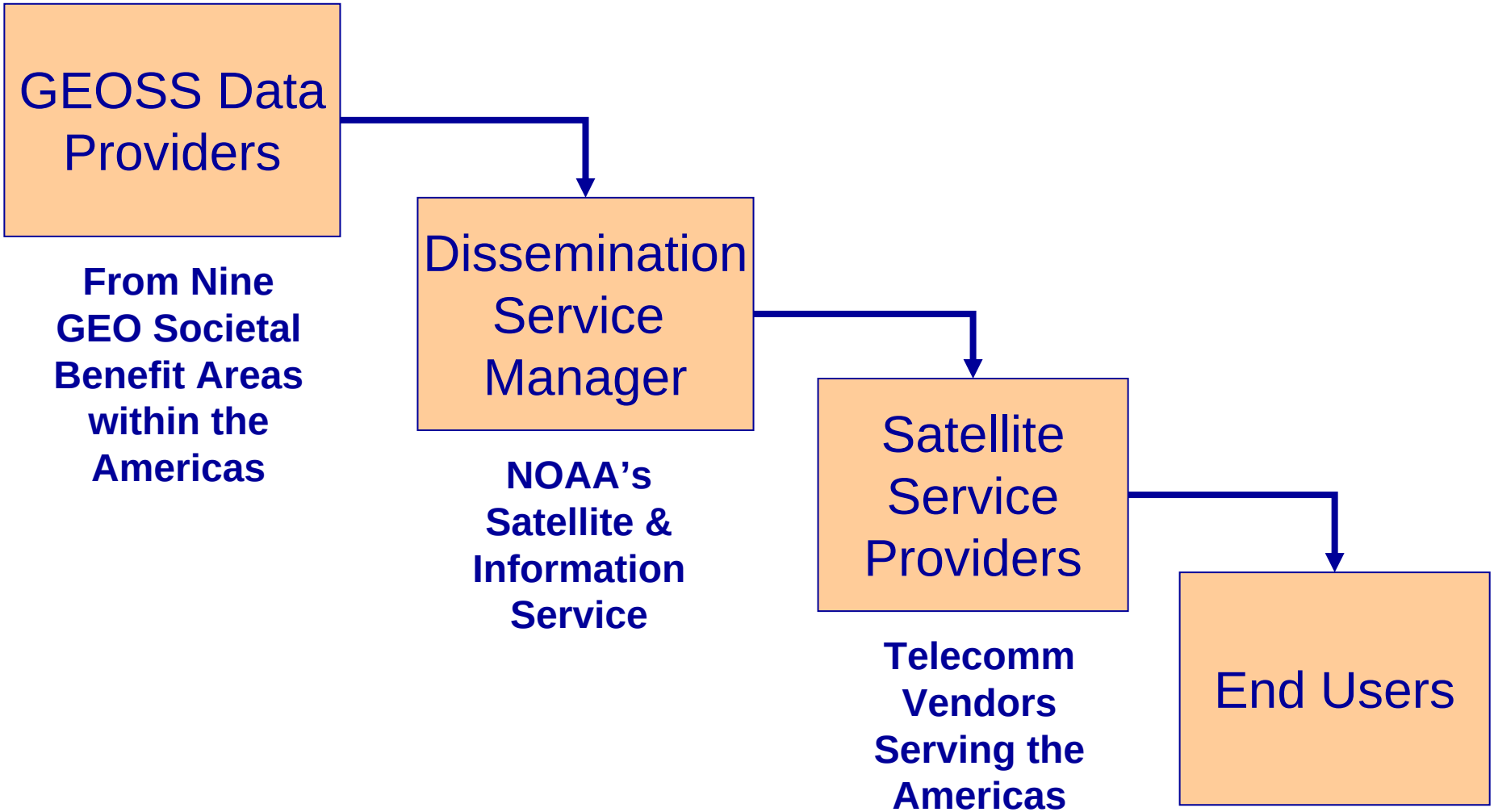
GEO-NETCast in the Americas…

-Is the proposed component of GEO-NETCast covering North, Central, and South Americas and surrounding ocean areas that would be demonstrated and implemented by the U.S./NOAA in coordination with its partners and the GEO-NETCast Implementation Group

Proposed Coverage Area



Major Participants



GEO Members and Organizations in the Americas Expressing Interest in GEO-NETCast (preliminary)

- **Argentina**
- **Brazil**
- **United States**
  - **Department of Energy**
  - **Environmental Protection Agency**
  - **Nat'l Aeronautics & Space Administration**
  - **NOAA**
  - **U.S. Geological Survey**
- **Committee on Earth Observation Satellites (CEOS)**
- **Federation of Digital Broadband Seismographic Networks (FDSN)**
- **International Institute of Space Law (IISL)**
- **Open Geospatial Consortium (OGC)**
- **World Meteorological Organization (WMO)**

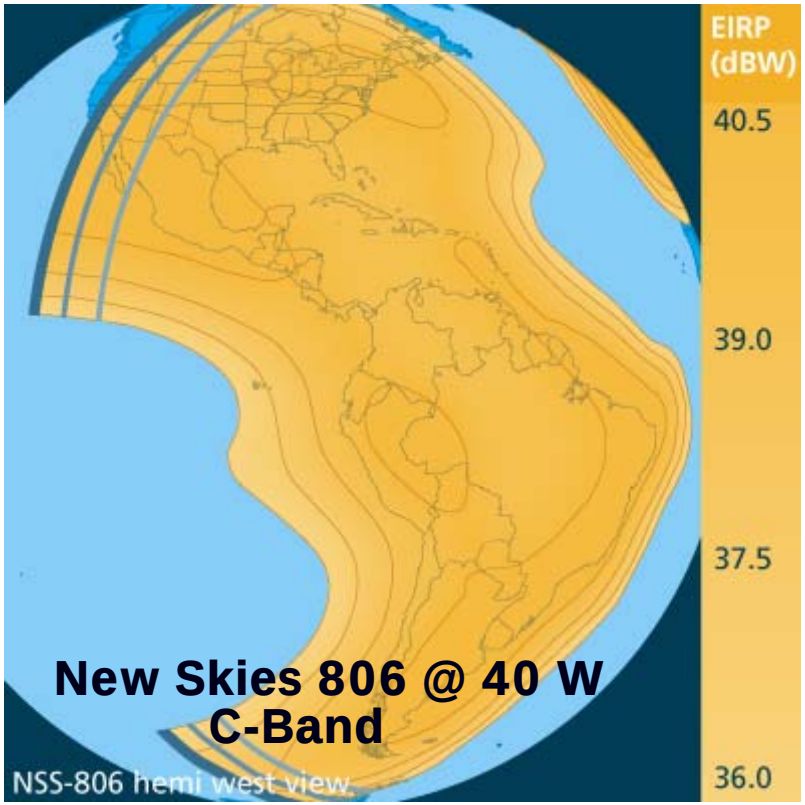
Proposed Concept

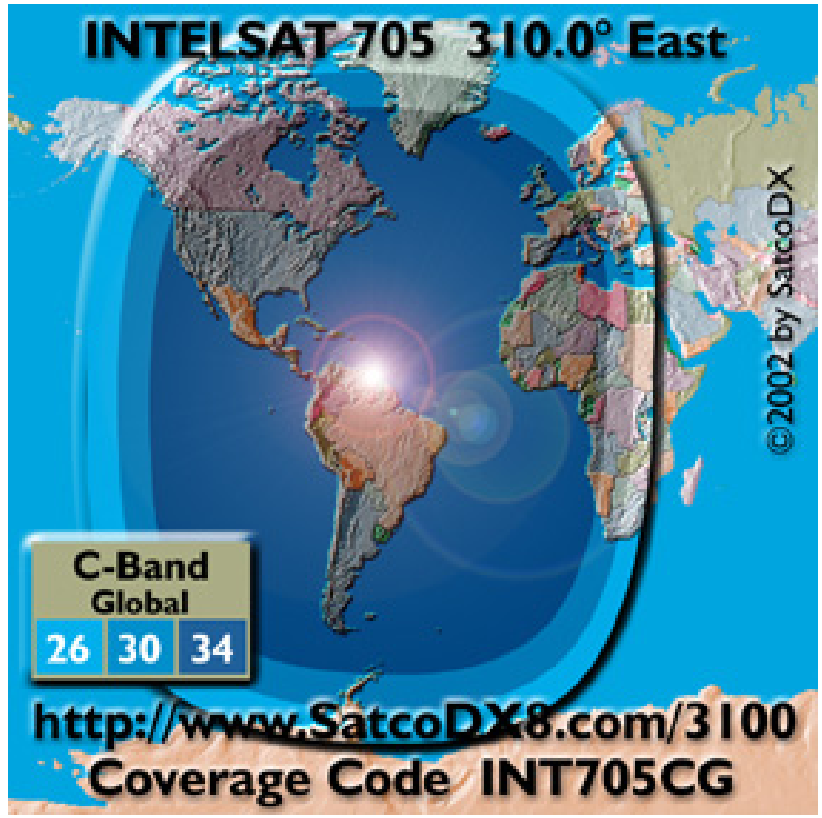
- **NOAA's Satellite and Information Service facility in Suitland, Maryland, USA would serve as a data collection and dissemination hub for GEO-NETCast in the Americas**
  - **NOAA would design, develop, and manage this regional hub**
- **Diverse regional GEOSS data providers in the Americas would send their data/products to the hub via existing terrestrial communication paths for real-time satellite broadcast within the footprint(s)**
- **Data could hop to/from regions outside the Americas through use of linked turnaround ground stations**

Proposed Concept (cont.)

- **End Users receive particular environmental data or products, based on their needs, via affordable ground receiving stations**
- **Recurring satellite communication costs would be paid by NOAA and, prospectively, its American partners**
- **Data hub development and day-to-day operational management would be NOAA's responsibility**

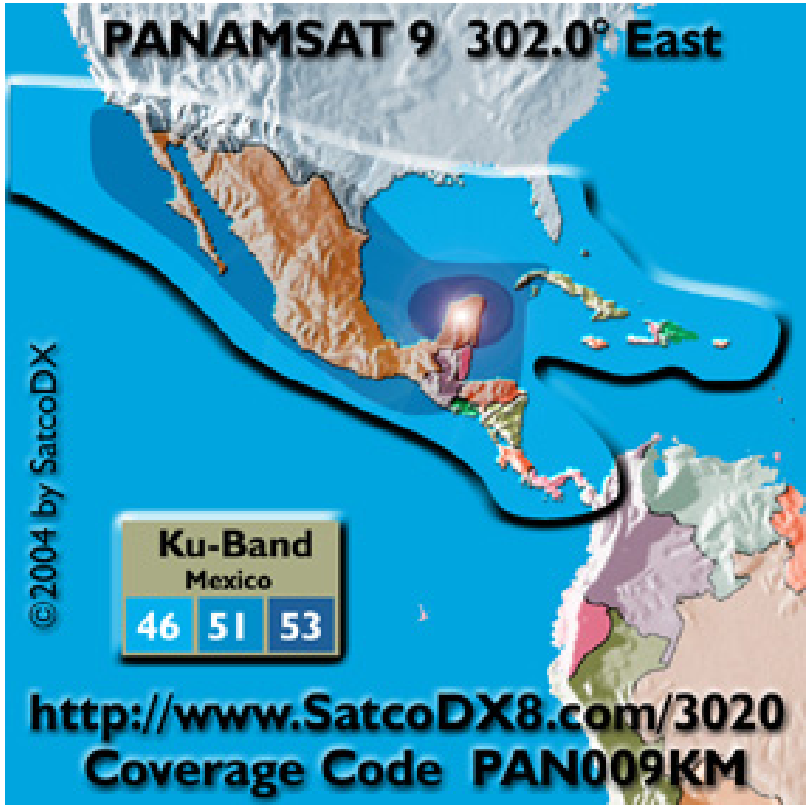
Sample Commercial Communication Satellite Coverage Maps over the Americas (C-band)

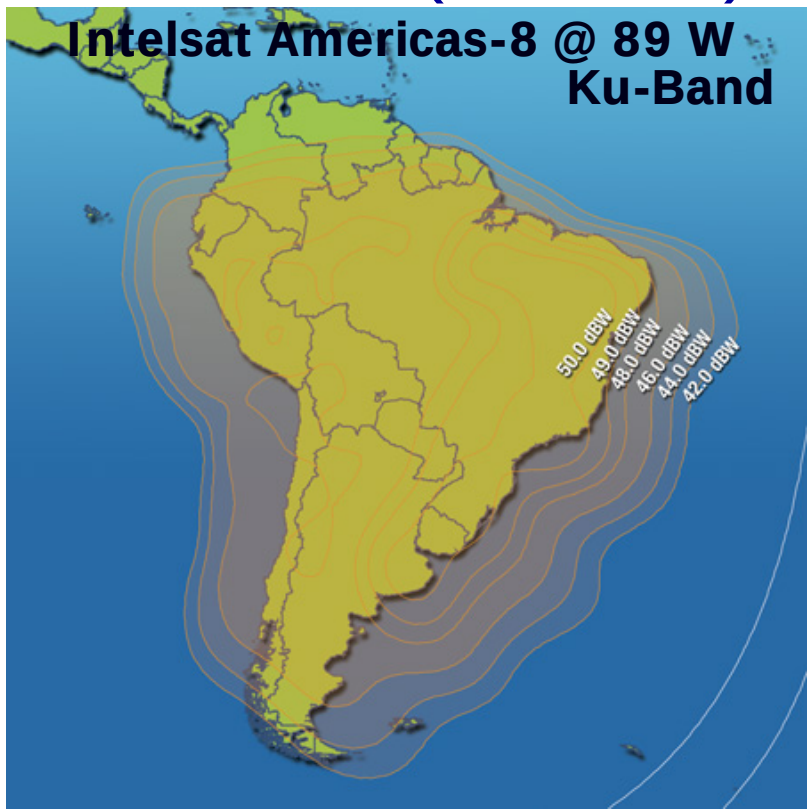




Many commercial satellite footprints from various commercial satellite vendors are available for evaluation. Supplemental use of NOAA satellite transponders will also be investigated.

Sample Commercial Communication Satellite Coverage Maps over the Americas (Ku-band)





Many commercial satellite footprints from various commercial satellite vendors are available for evaluation. Supplemental use of NOAA satellite transponders will also be investigated.

Current Status

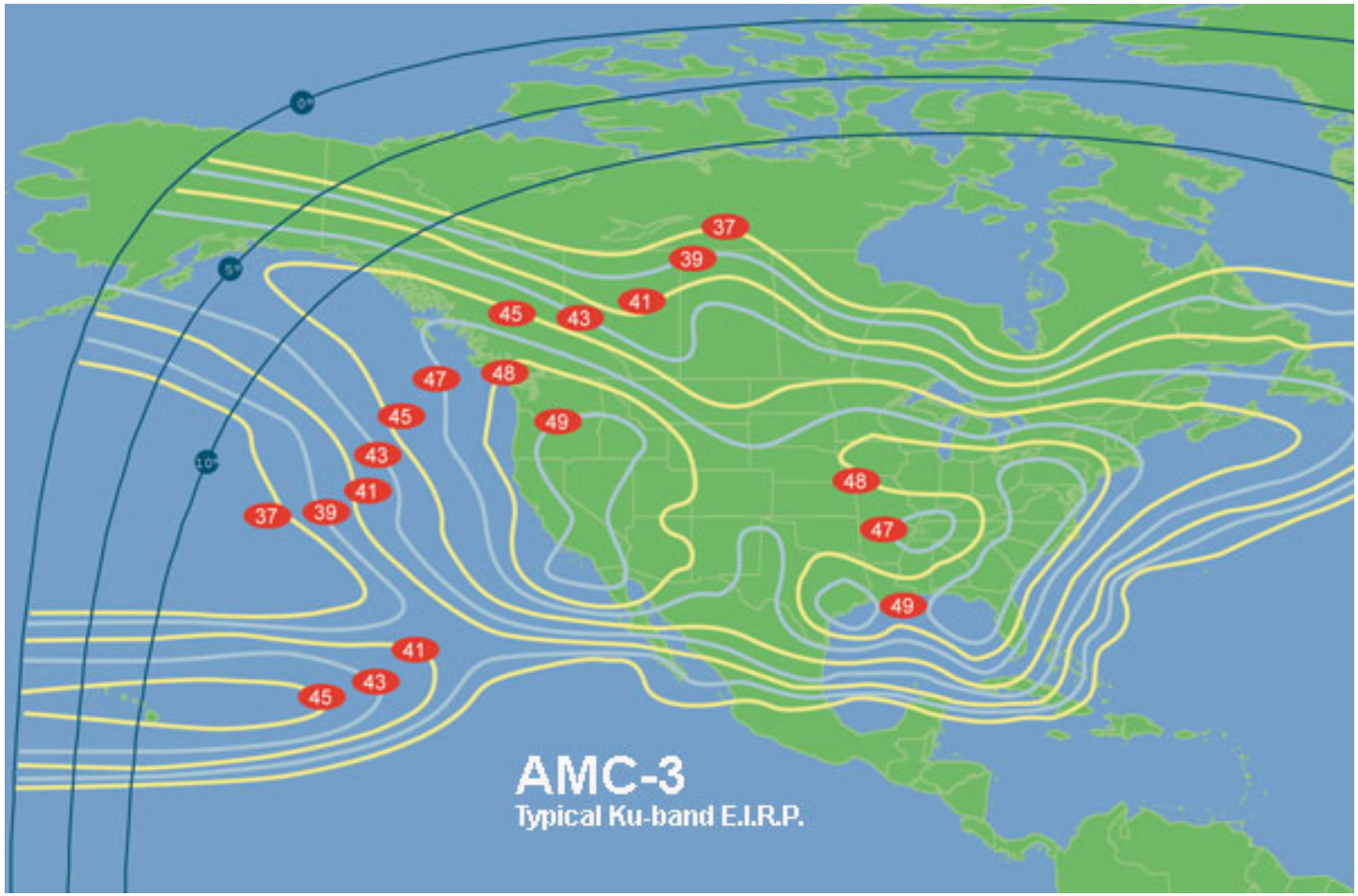
- No GEO-NETCast data collection and dissemination hub exists in the Americas
  - Currently using EUMETSAT's hub in Usingen, Germany
  - NOAA has been investigating a hub capability with Alternative Dissemination Methods as one potential application
- NOAA is sending demonstration products 24x7 to Germany hub for broadcast via a GEO-NETCast channel utilizing EUMETCast's shared, spare satellite bandwidth
- NOAA has recently purchased short-term Ku-band satellite service coverage over the U.S. to demonstrate turnaround link capability from Europe and to support a live demonstration here at this workshop

Sample of NOAA GEO-NETCast Demonstration Products

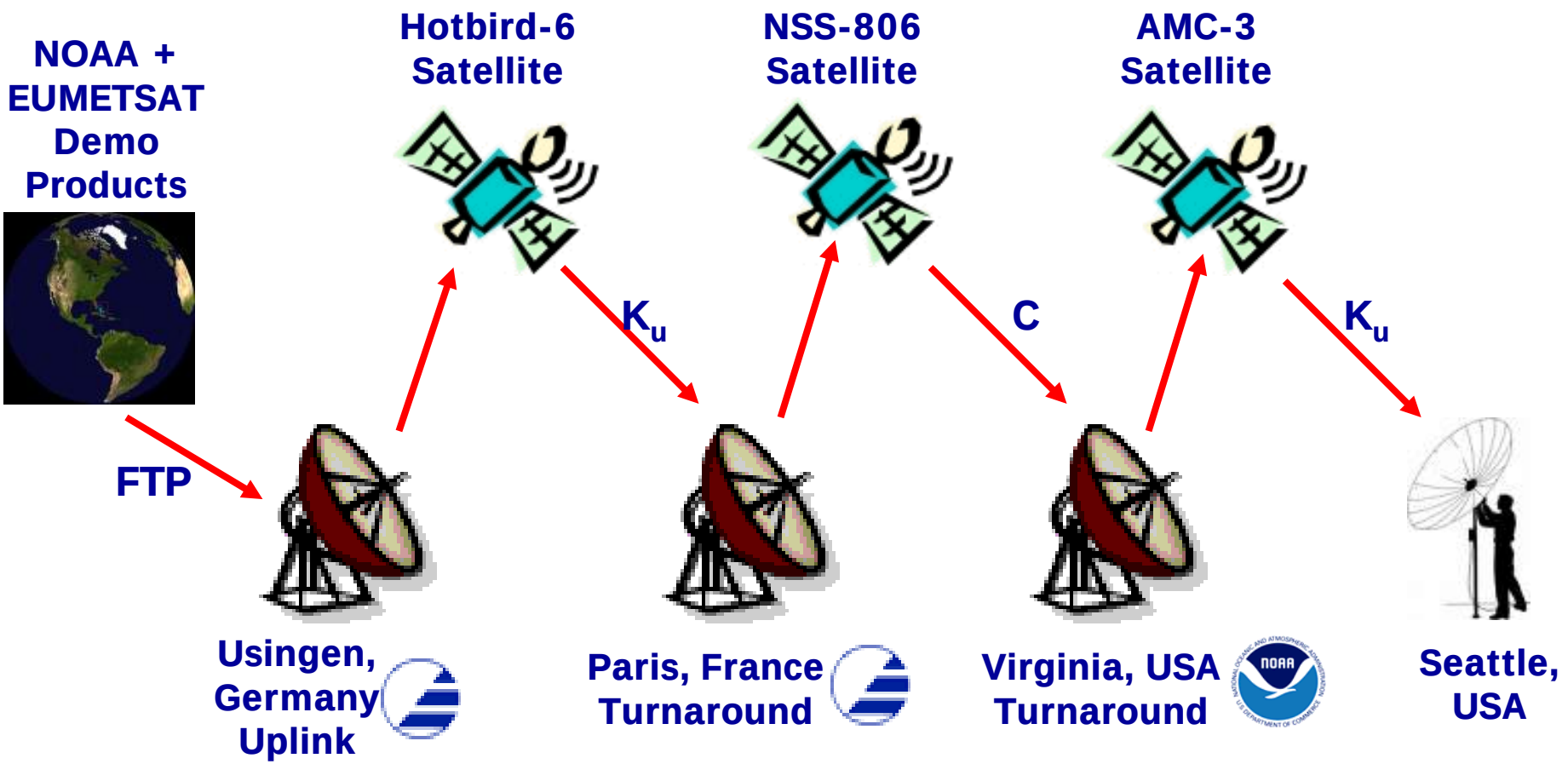
- Global Normalized Differential Vegetation Index
- Total precipitable water
- Ocean surface wind speed
- Chlorophyll concentration over the Caribbean Sea
- Soil moisture
- Land surface type
- Volcanic ash imagery and advisories
- Fire and smoke analysis
- Snow depth and water content

Will be adding in-situ products + products from all GEO societal benefit areas + products from other data providers

Satellite Coverage Footprint Supporting our Live Seattle Demonstration – Ku band

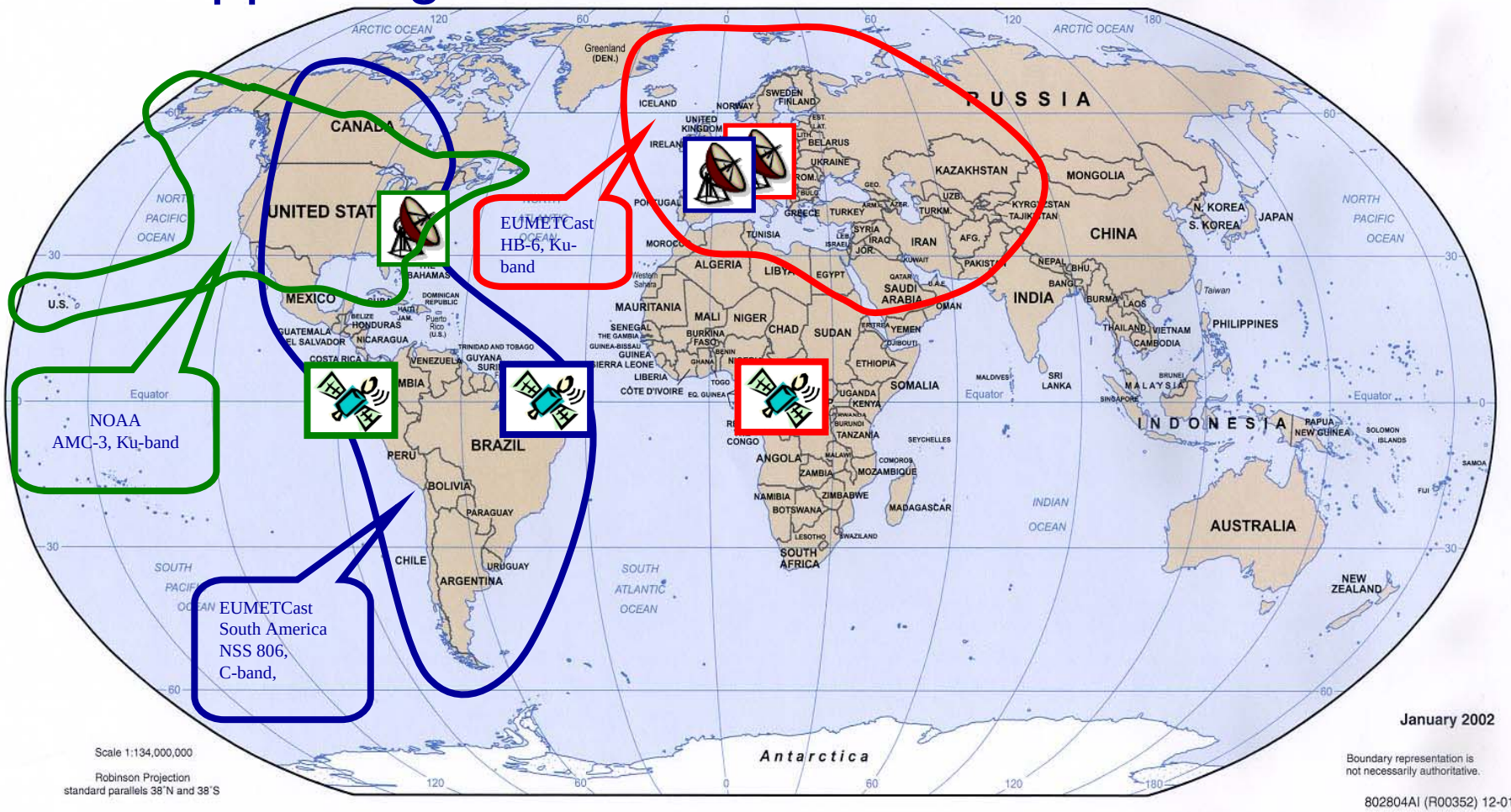


Current GEO-NETCast Data Flow to Seattle

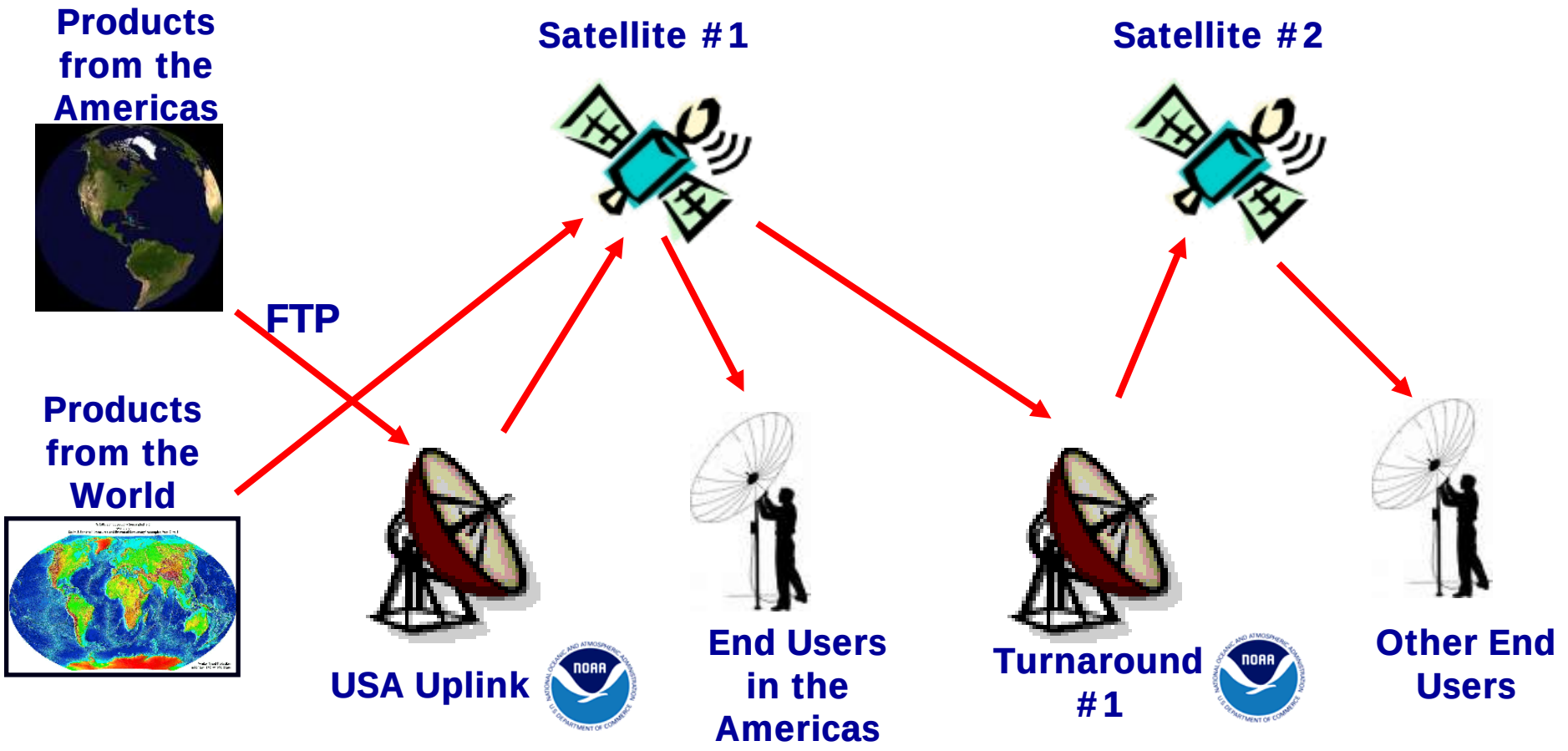


Group on Earth Observations

Current Satellite Infrastructure and Coverage Supporting the GEO-NETCast Demonstration



Future GEO-NETCast Data Flow To and From the Americas



Proposed Roadmap

- Phase 1 – Initial demonstration (2006; completed)
  - Leveraging existing EUMETSAT satellite dissemination infrastructure to broadcast NOAA demonstration products using shared bandwidth
- Phase 2 – Demonstration of satellite link capability in support of this GEO-NETCast Participants Meeting (in progress)
  - NOAA purchased Ku-band commercial satellite service covering the U.S. and is turning around NOAA+EUMETSAT demonstration products originating from EUMETSAT's Germany uplink station for broadcast within the U.S. Ku-band footprint

Proposed Roadmap (cont.)

- Phase 3 – Demonstration for the Americas
  - Develop, test, and deploy a U.S. data collection and dissemination hub for the Americas
  - Expand available products to include all GEO societal benefit areas and more than just NOAA products
  - Evaluate/acquire communication satellite services over the Americas
- Phase 4 – Operations for the Americas
  - Transition to routine 24x7 dissemination operations once Phase 3 demonstration has been validated

2006-2007 U.S./NOAA Activities

- Refine NOAA's vision and concept for a GEO-NETCast in the Americas
  - A draft NOAA document has been written and is being distributed for review
- Develop and approve NOAA's Level 1 Requirements specifications and cost estimates
- Begin development of a data collection and dissemination hub
- Evaluate communication satellite provider services and costs to provide coverage for the Americas
  - Ku and/or C band
  - Digital Direct-To-Home Television protocols (e.g., DVB-S, ATSC)
- Identify user product requirements
- Engage other potential data providers regarding their data/product size, frequency, etc.

Past and Potential GEO-NETCast Live Demonstrations

- European Commission, Belgium, 5/3/06
- GEO Capacity Building Committee Workshop, Brazil, 5/29/06
- First GEO-NETCast Participants Meeting, USA, 7/19/06
- GEO Architecture and Data Committee Meeting, USA, 7/20/06
- GEOSS Workshop, IEEE Int'l Geophys. and Remote Sensing Symp., USA, 7/30/06
- USGEO Meeting, USA, 9/06
- Meeting, Committee on Environment and Natural Resources, USA, 9/06
- GEO User Interface Committee Meeting, Canada, 9/06
- GEO Plenary-III, Switzerland, 11/06

How Can You Contribute to GEO-NETCast?

The Implementation Group Requests Your Input

- *End Users*: Tell us your environmental data product needs (type, frequency, size, etc.)

- *Data Providers*: Tell us what potential environmental data you wish to contribute to the GEO-NETCast real-time data stream

Fill out two feedback forms provided, and mail them to the Implementation Group at the address at the bottom of the form.


Thank you