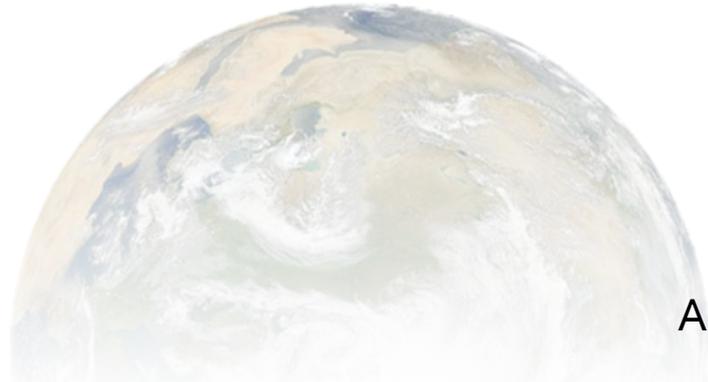
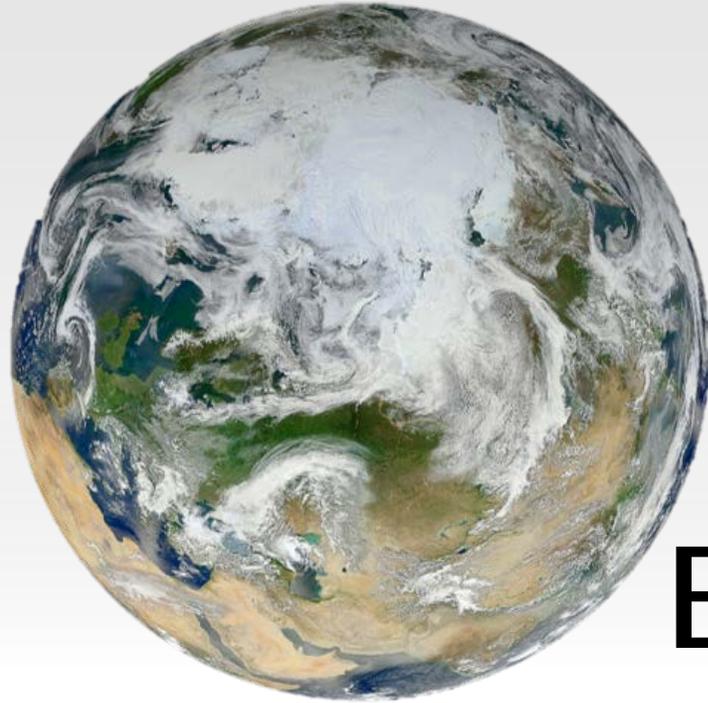




**CGMS**



# Measuring the Value of Environmental Satellites: An International Effort

Charles Wooldridge, Chair  
CGMS Socioeconomic Benefits Tiger Team

AMS Annual Meeting, January 2016, New Orleans, LA, USA



# Coordination Group for Meteorological Satellites (CGMS)

- Exchanges technical information
- Harmonizes meteorological satellite mission parameters
- Encourages complementarity, compatibility and mutual back-up

## 16 Members



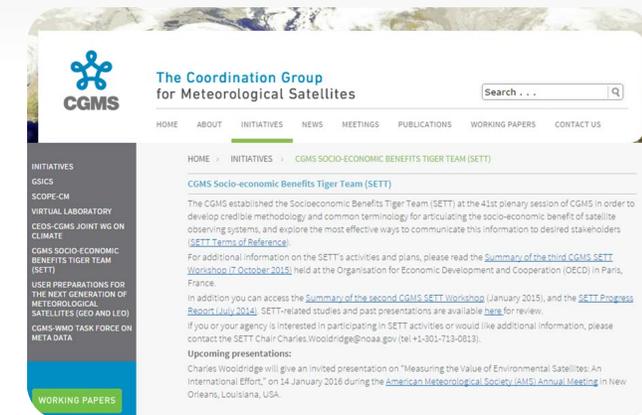
## 6 Observers





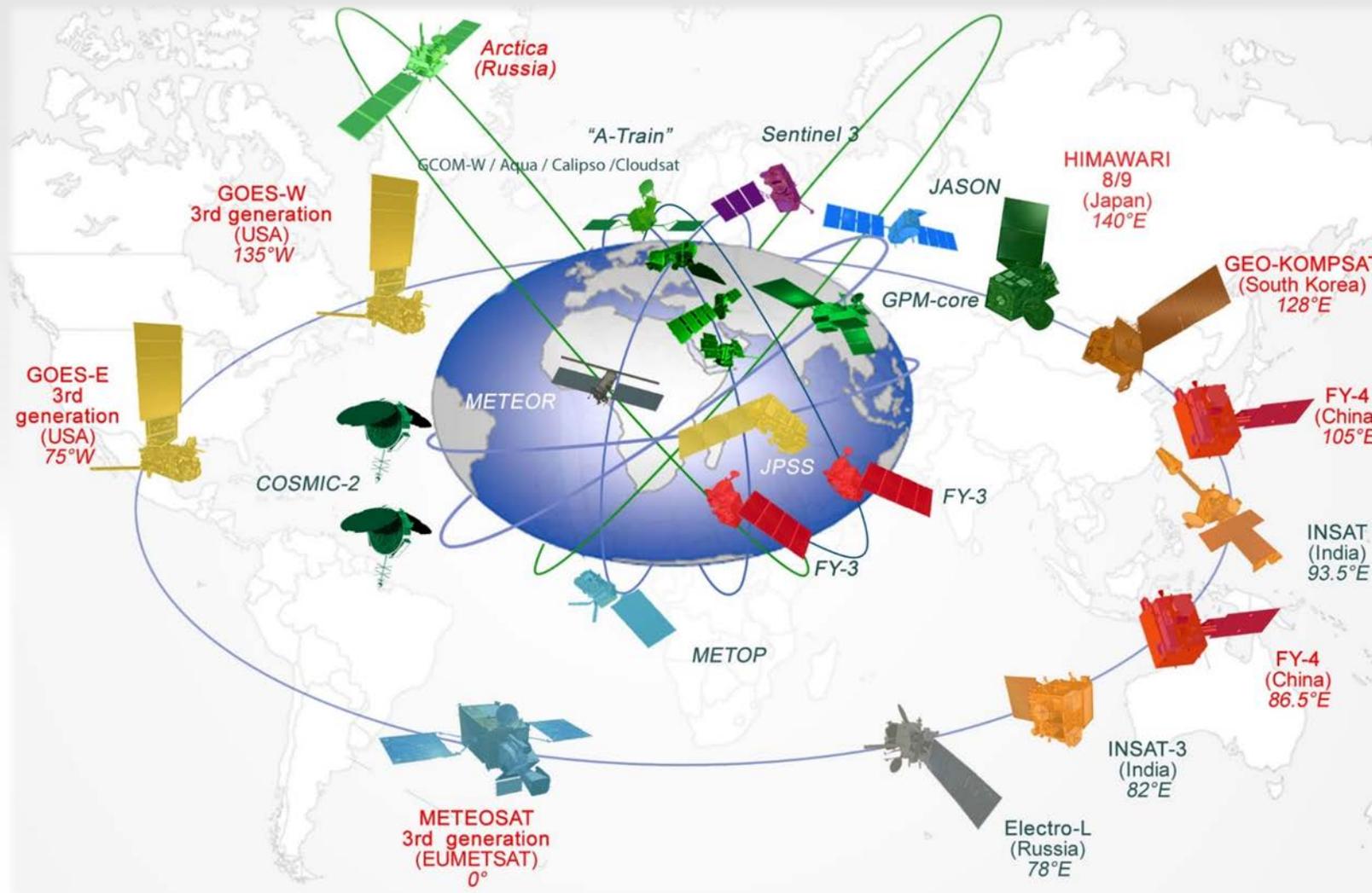
# SETT Activities

- ✔ Completed **literature review**
- ✔ Identified of **socio-economic expertise** in CGMS members, the WMO, and in related institutions
- ✔ **3 Workshops**
- Developed of **Guidance Document** for CGMS Members (In Progress)
  - Identified and described relevant economic methodologies
  - ✔ Outlined common terminology
  - ✔ Final editing and distribution
- Agreed on **pilot socioeconomic benefit study** (In Progress)
  - Identified what to measure
  - ✔ Drafted concept note
  - ✔ Seeking inputs/resources to move forward





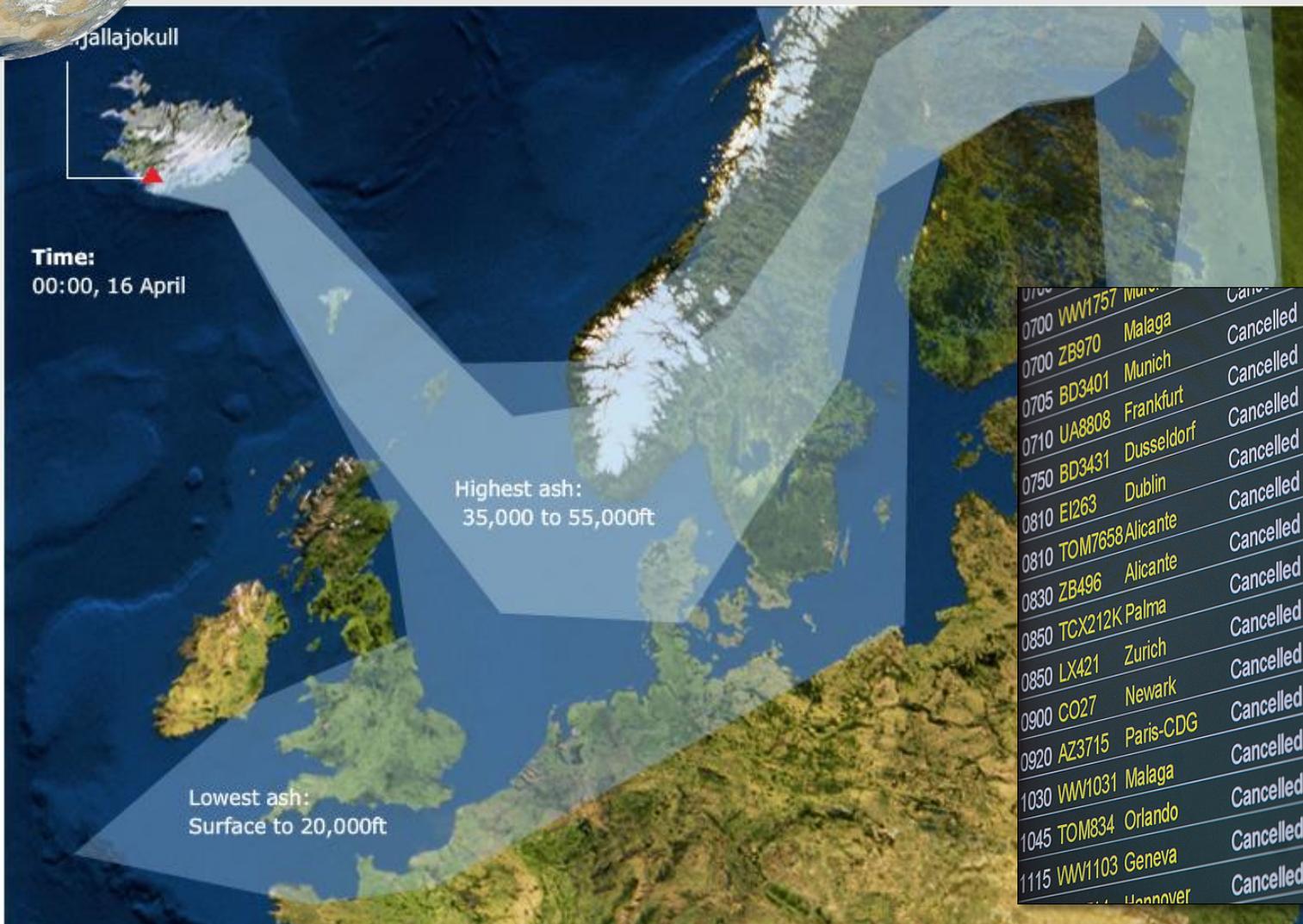
# Literature Review: How to optimize investment in observing systems





# Literature Review:

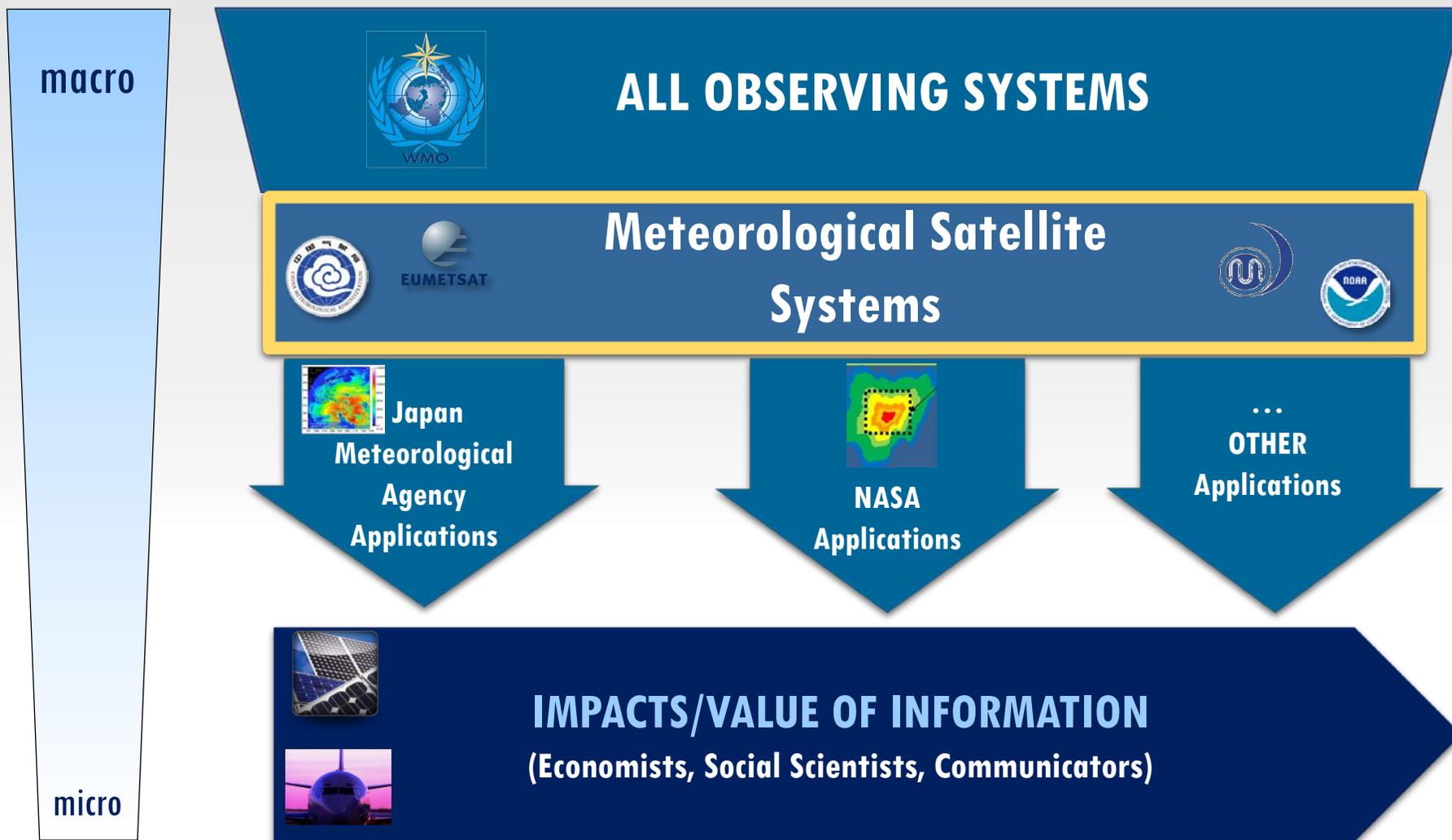
# The potential impact of use of Earth observations for volcanic ash advisories



0700 WW1757	Munich	Cancelled
0700 ZB970	Malaga	Cancelled
0705 BD3401	Munich	Cancelled
0710 UA8808	Frankfurt	Cancelled
0750 BD3431	Dusseldorf	Cancelled
0810 EI263	Dublin	Cancelled
0810 TOM7658	Alicante	Cancelled
0830 ZB496	Alicante	Cancelled
0850 TCX212K	Palma	Cancelled
0850 LX421	Zurich	Cancelled
0900 CO27	Newark	Cancelled
0920 AZ3715	Paris-CDG	Cancelled
1030 WW1031	Malaga	Cancelled
1045 TOM834	Orlando	Cancelled
1115 WW1103	Geneva	Cancelled
1145	Hannover	Cancelled
1545 ZB970	Dublin	Cancelled
1605 EI273	Dublin	Cancelled
1610 WW1529	Nice	Cancelled
1620 TCX507K	Funcheneria	Cancelled
1645 KL1430	Amsterdam	Cancelled
1715 LH4917	Munich	Cancelled
1725 MKG337	Paris-CDG	Cancelled
1745 WW1723	Faro	Cancelled
1810 EZY8505	Grenoble	Cancelled
1815 KL1432	Amsterdam	Cancelled
1820 LH4905	Frankfurt	Cancelled
1830 PK792	Islamabad	Cancelled
1850 LX425	Zurich	Cancelled
1855	Dublin	Cancelled



# Approaches

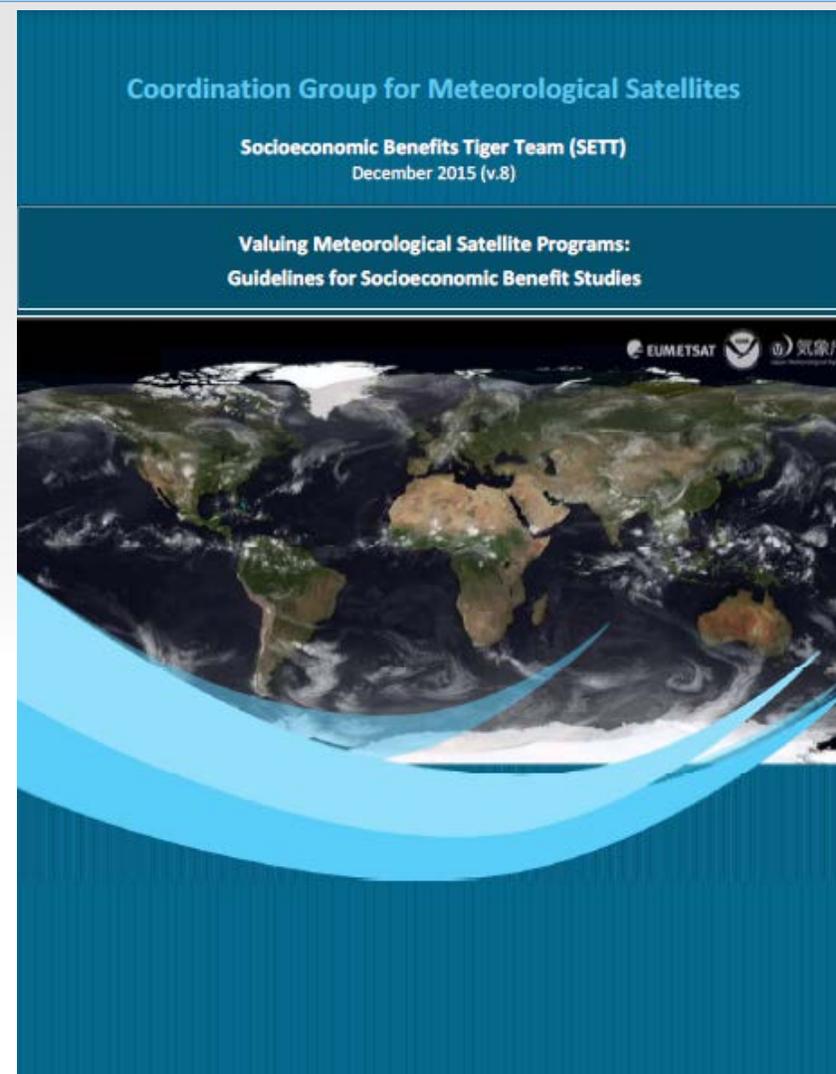




# Guidance Document

## Key Elements

- Context
- Framing the study
- Methodologies
- A general framework
- Lessons learned
- Key terminology
- Example studies



# Pilot SEB Study

An aerial photograph showing a red and white icebreaker ship navigating through a vast field of sea ice. The ice consists of numerous small, irregular floes separated by dark, narrow channels of open water. The ship is positioned in the center-right of the frame, moving towards the left. The overall scene is a high-angle view of a polar or sub-polar region.

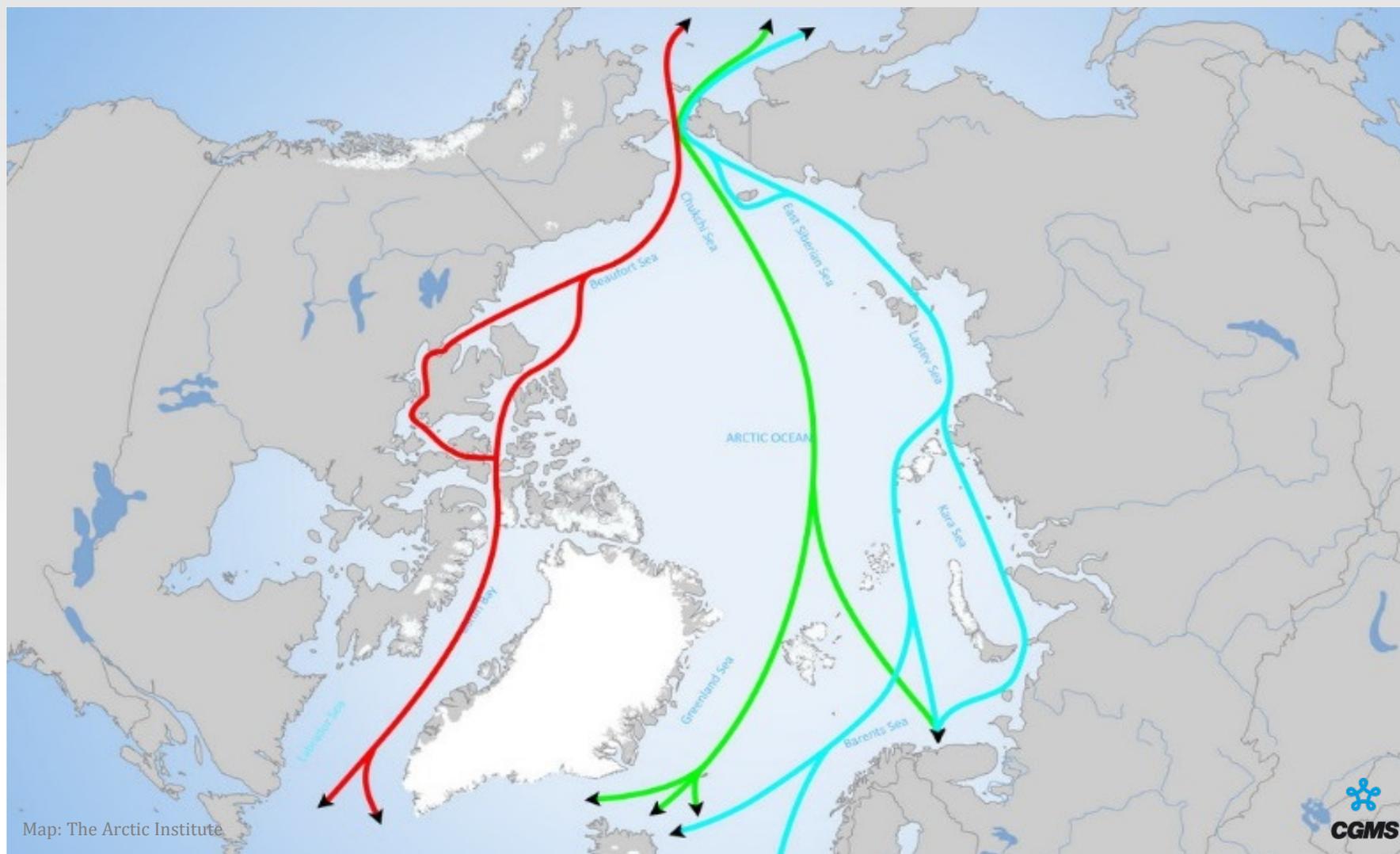
## Purposes

- Case study of best practices/lessons learned for CGMS
- Assessment of the socioeconomic benefits of improved operational sea ice products resulting from enhanced satellite data



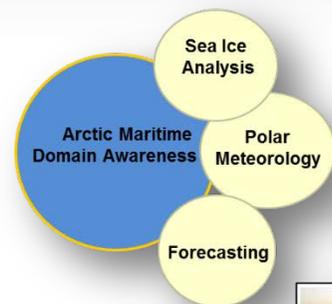
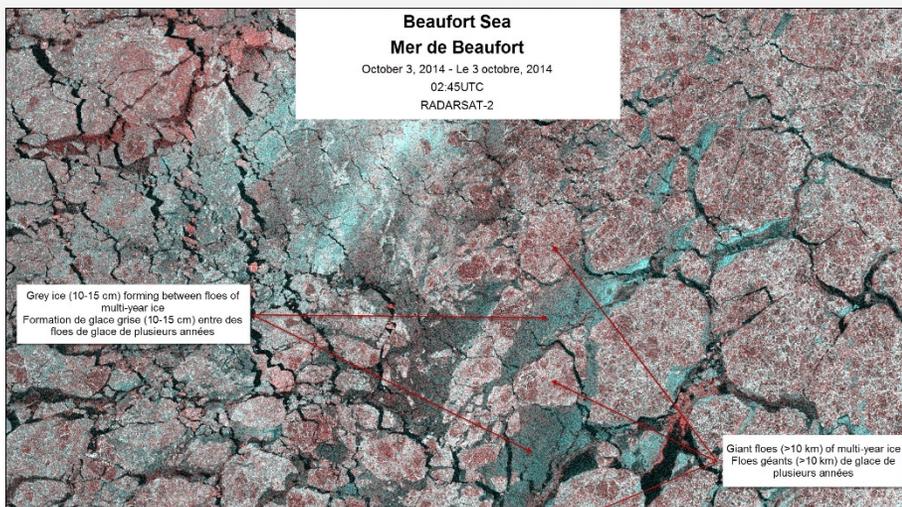
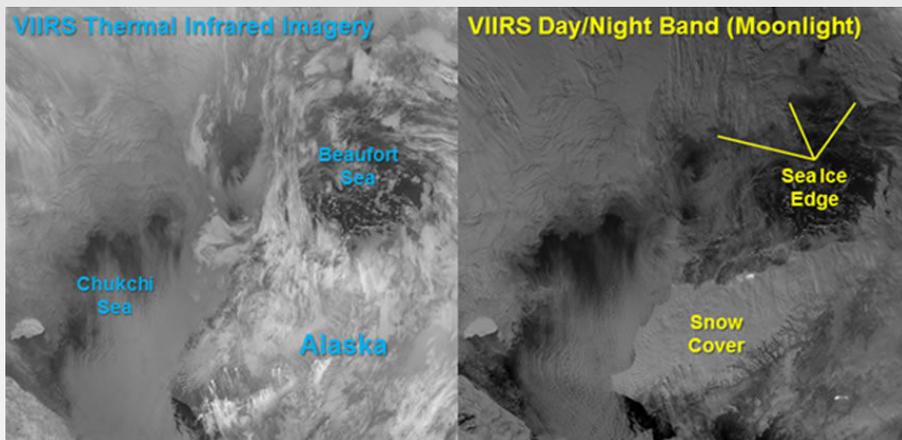
# Context

The remoteness of the Polar Regions limits the amount of direct observation of sea ice. Hence, **more than 95% of the data used in sea ice analyses are derived from the remote sensors on polar-orbiting satellites.** Sea ice analyses and forecasts are primarily prepared using satellite imagery and ice reconnaissance.”  
(U.S. National Ice Center)





# “Improved” How?





# Value... Of What? To Whom?



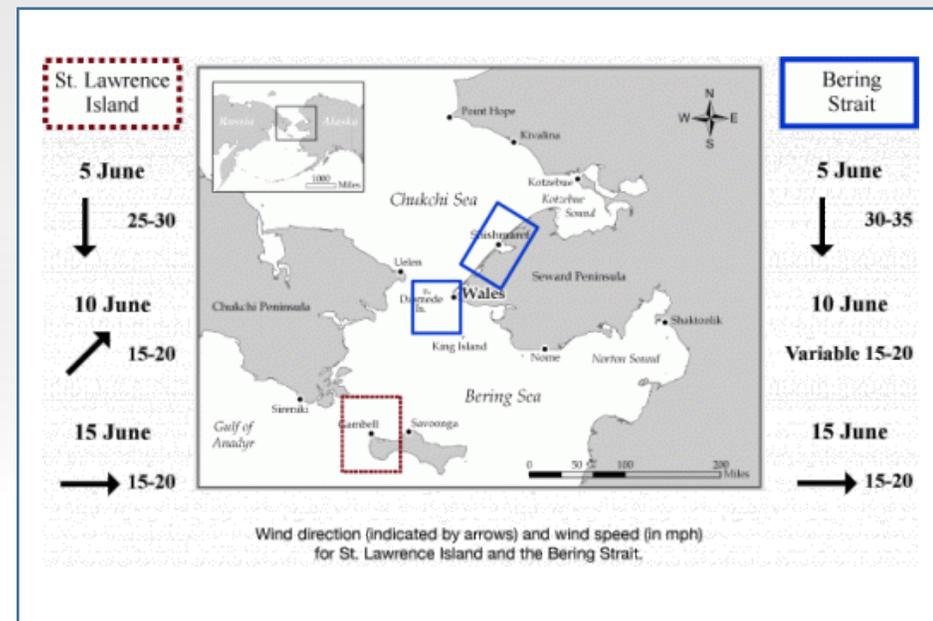
Credit: ABB)

Marine Transportation



Credit: Discovery Channel

Commercial Fishing



Native Communities



# Previous Analysis

- Canadian Ice Service savings from RADARSAT-1 = CAN 7.7 million/year
- Savings from improved routing information to commercial shipping = CAN 18 million/year
- Canadian Coast Guard savings = between CAN 3.6 million & 7 million/year.





# Next Steps

- Finalize & socialize the draft concept note
- Identify resources available for the SEB study:
  - Operational analysis
  - Economic analysis
- Develop a plan for communicating the results

Understanding and Assessing the Value of Improved Satellite Data  
for the Users of Operational Sea Ice Products and Information

Socioeconomic Benefit Study Concept Note

Coordination Group for Meteorological Satellite (CGSM)

Socioeconomic Tiger Team (SETT)

Participants include EUMETSAT, National Oceanic & Atmospheric Administration (NOAA), China Meteorological Administration (CMA), Canadian Space Agency (CSA), JAXA, Korea Meteorological Administration (KMA), and University Corporation for Atmospheric Research (UCAR)



November 2015



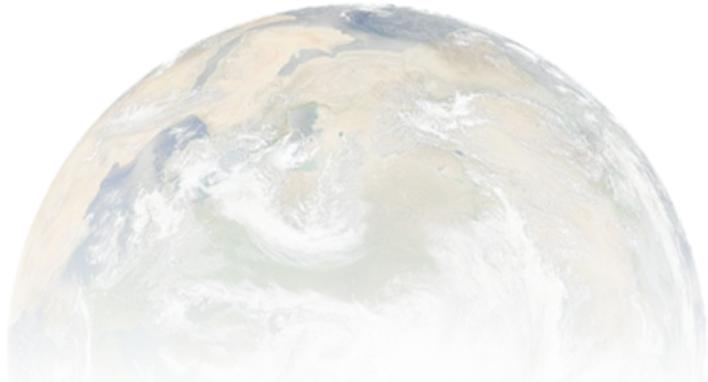
# The Way Forward

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- **Distribute Guidance Document** to CGMS members
- Move forward with the pilot **Socioeconomic Benefit Study (SEB)** and identify resources needed for successful completion



**CGMS**



# Thank you.

[Charles.Wooldridge@noaa.gov](mailto:Charles.Wooldridge@noaa.gov)

[http://bit.ly/CGMS\\_SETT](http://bit.ly/CGMS_SETT)