

WP 8:

Radio Navigation and Tracking Technologies



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WP 8 - Objectives

- Investigate the status and coverage of radio navigation and tracking technologies in the arctic region and the supporting infrastructure.
- Recommend future improvements.
 - In practise it was focused on AIS, GNSS and GNSS augmentation systems, even though systems as eLoran, LRIT, VMS, SSAS are discussed.

WP 8 - Work Structure

Analyses and field tests

AIS coverage

DGNSS availability

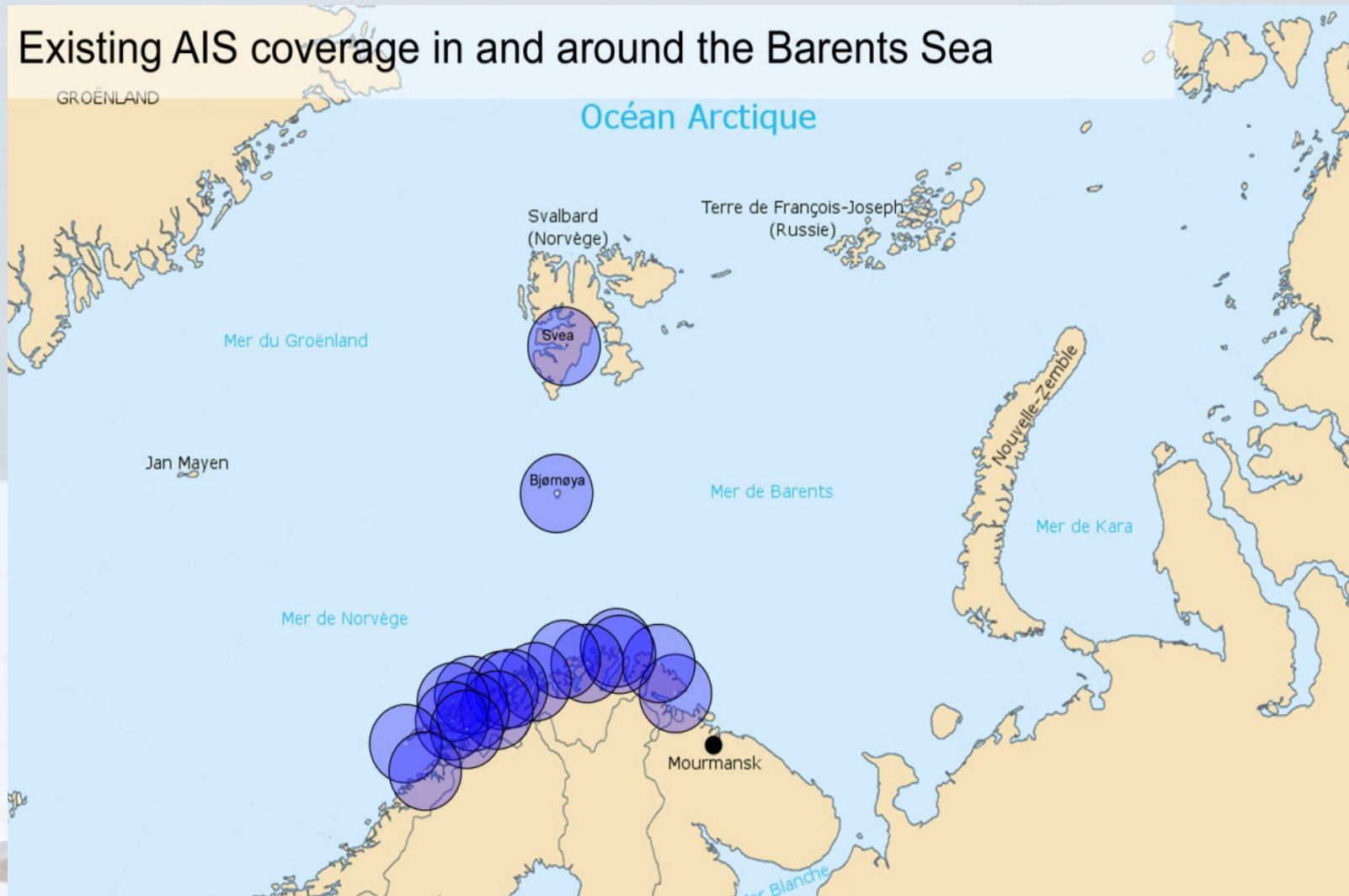


Recommended improvements

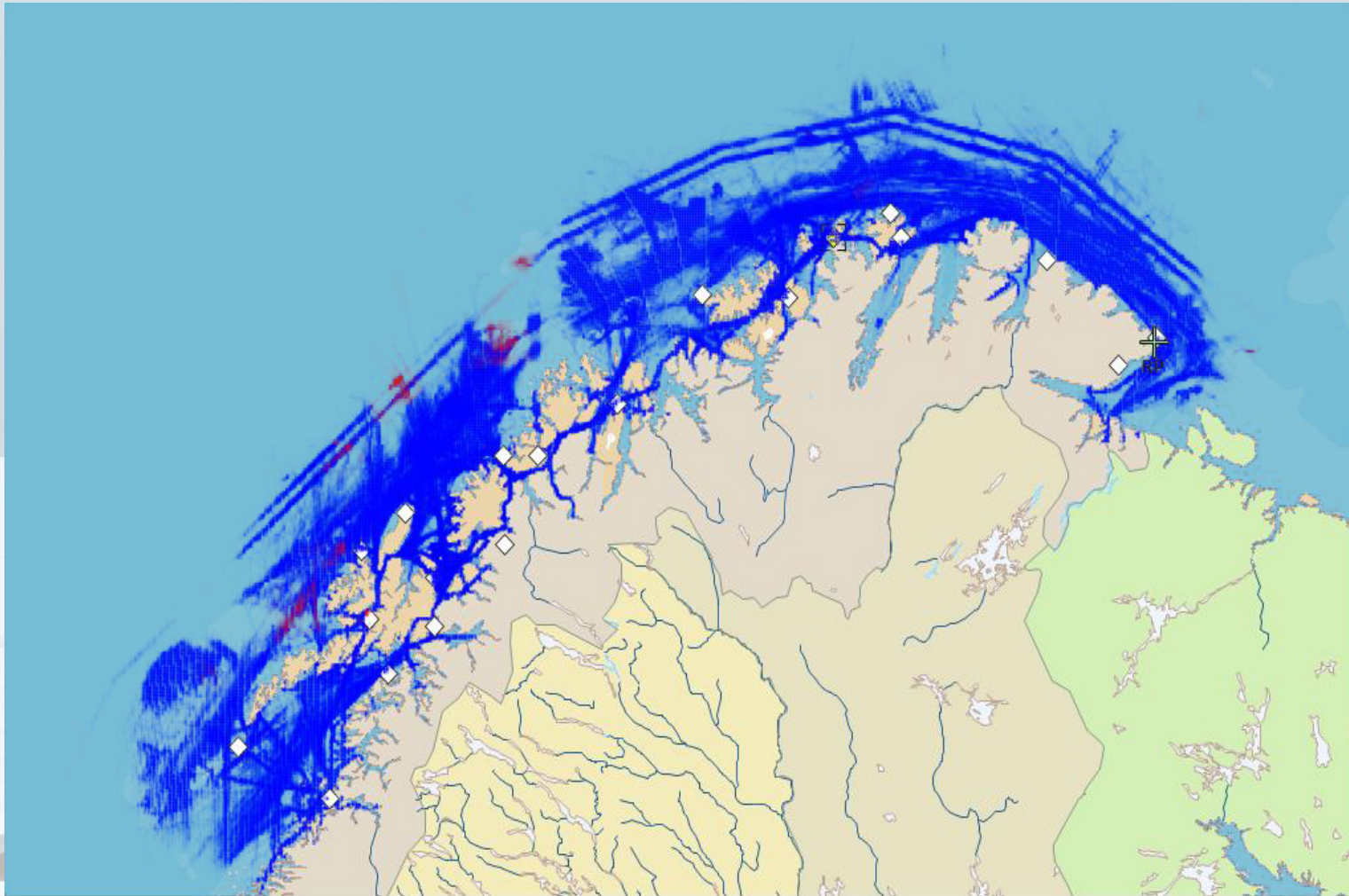
AIS



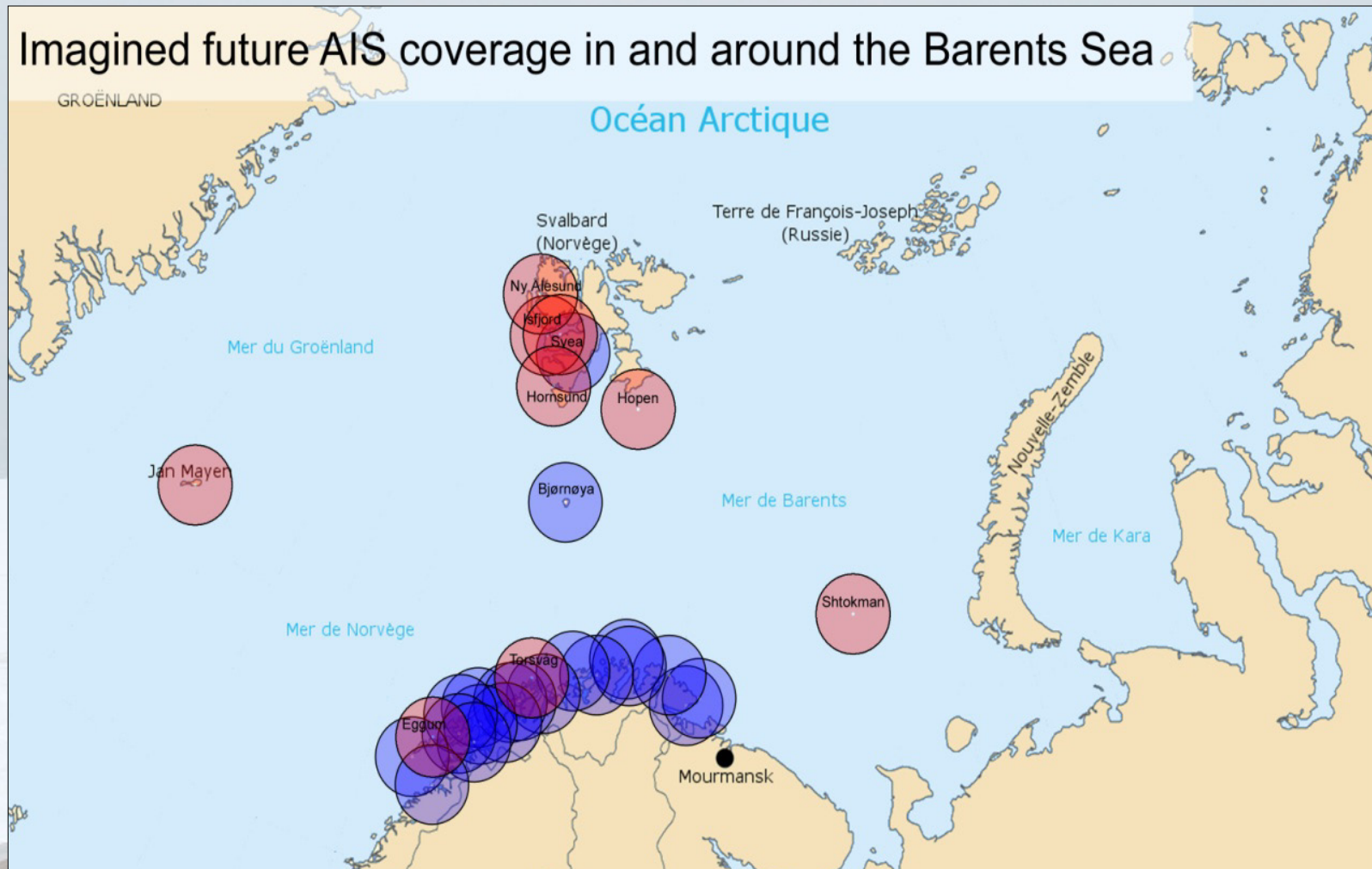
AIS Data collection and analysis



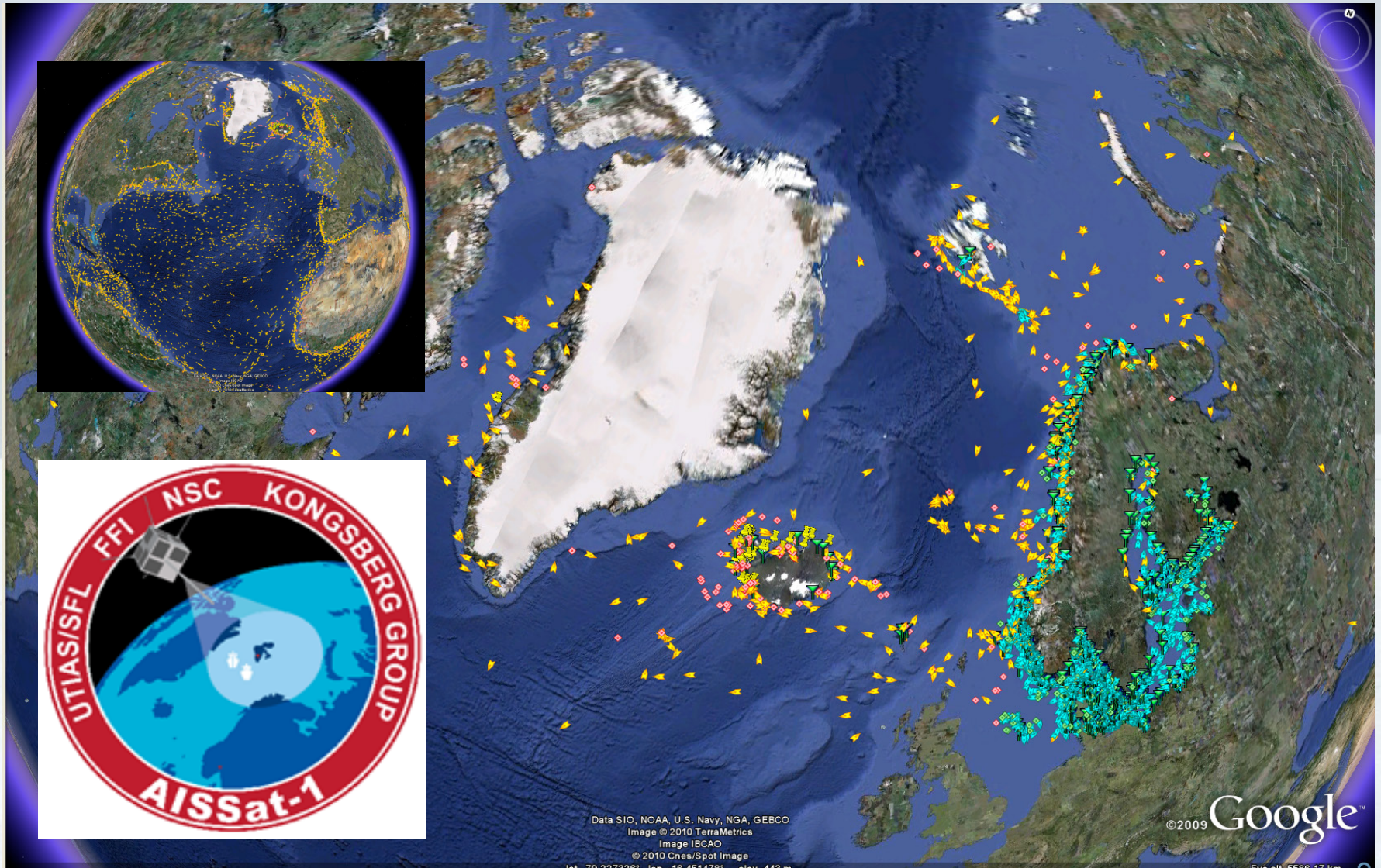
Data collection and analysis



Recommendations – AIS Infrastructure



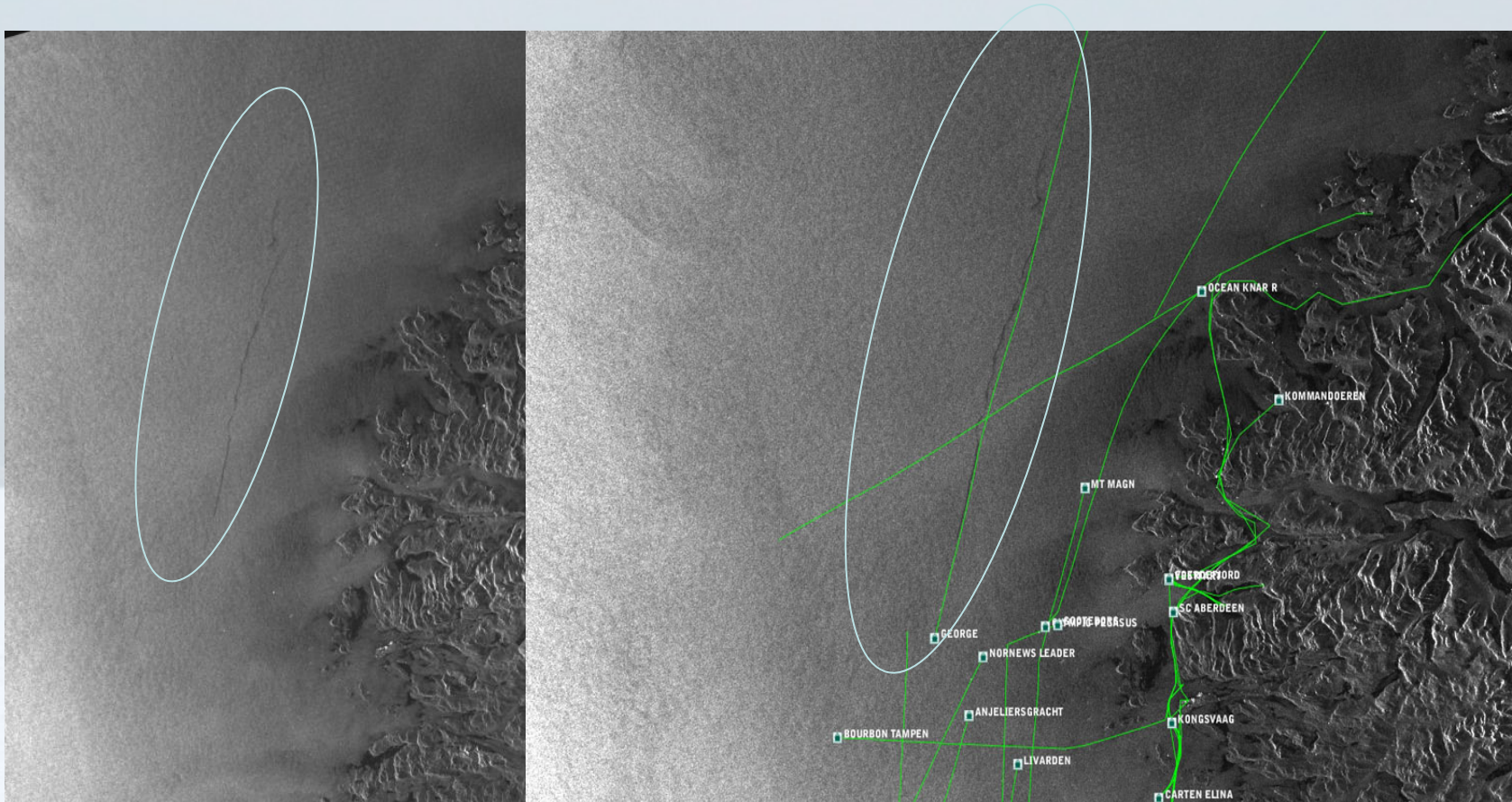
AISSat-1 First Results July 12, 2010



AIS data from AISSat-1 (Orange/Pink) added to AIS data from the Coastal Network (Green)

Oilspill monitoring and identification of source

Combining satellite images with AIS -a powerful combination



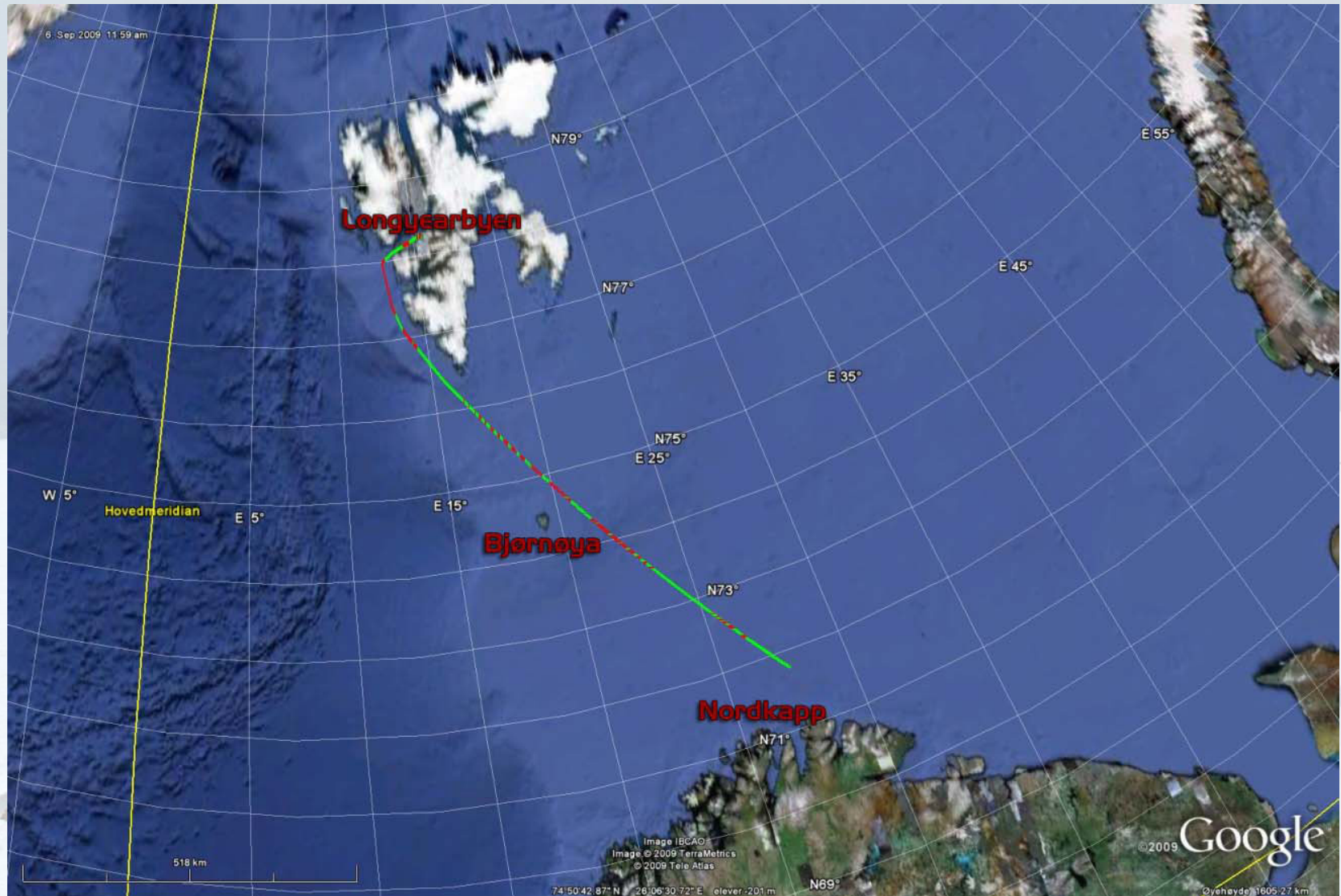
Oil spill outside the Norwegian coast, ships in the area. Warning with exact position, size and confidence level is given.

Combined with AIS, tracked back, one of the ship lanes closely corresponds with the potential spill. The vessel can easily be identified, and authorities can decide on further action.

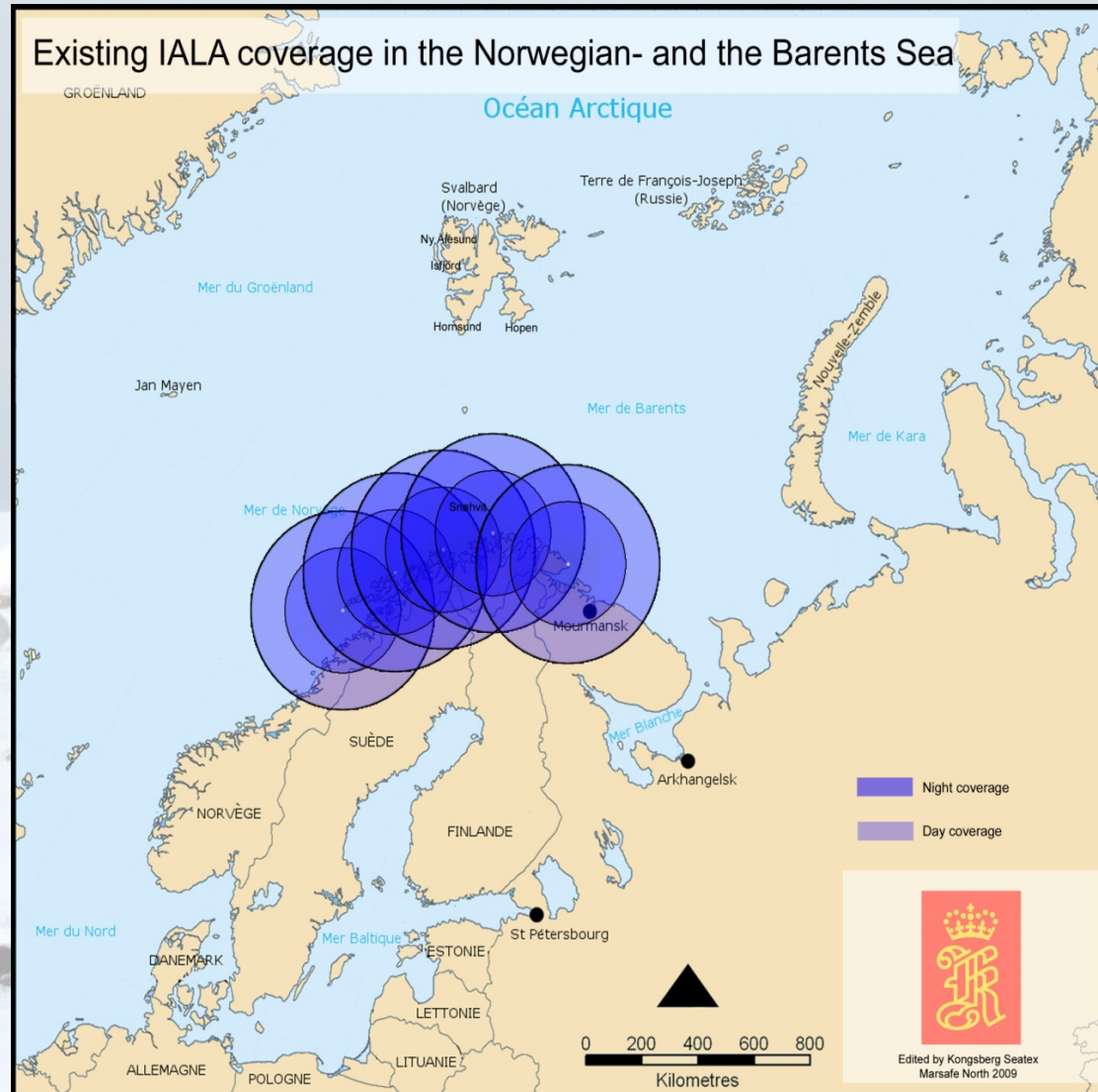
GNSS



EGNOS availability



IALA DGPS coverage



Visions and Future Needs

Recommendations

- AIS shore based coverage improvements based upon analyses and available adequate locations
- More AIS satellites aiming for continuously Arctic surveillance
- Alternative augmentation sources for GNSS that can provide a robust service with high availability
 - New infrastructure (Shore and satellite based)
 - Mobile/dynamic infrastructure
- Portal for GNSS information, GNSS forecasts, expected availability and accuracy in given position and time

Further Work

- We need a greater understanding of the Arctic GNSS conditions
 - Ionosphere/troposphere models
 - Scintillation effects
 - The effects of the Galileo introduction

