<u>Motivation</u>: How do we design the best SSS remote sensing mission for different science drivers and cost constraints?

<u>Approach</u>: We developed a simulator capable of generating SSS data products for an arbitrary spacecraft mission including multi-frequency fixed-pointing or scanning microwave radiometers.

FOAM
Forward Ocean-Atmosphere Microwave
Radiative Transfer Model
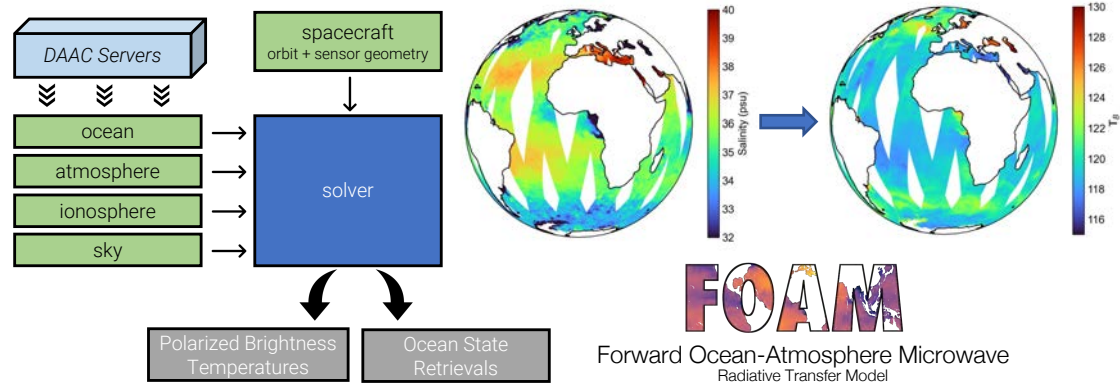
Several dielectric constant and ocean surface roughness models are provided, as well as atmospheric radiative transfer procedures and reflected galaxy emission tables. Access routines for a range of ancillary data sources are also included.
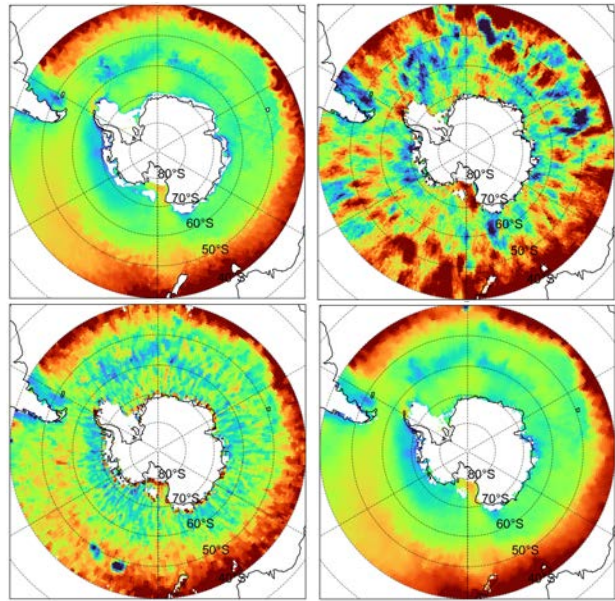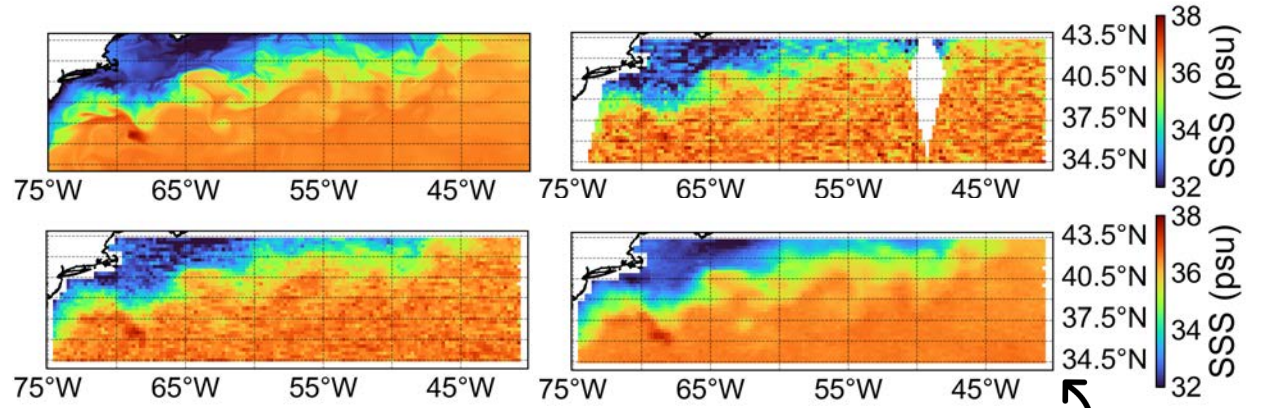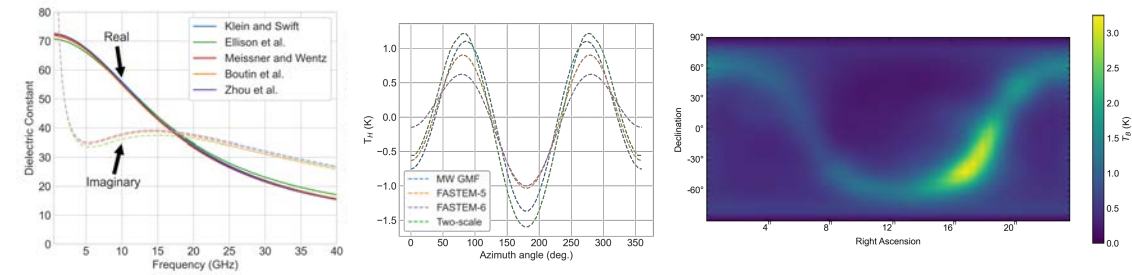
Case Study 1: Detecting fast eddy features from snapshot observations

Case Study 2: Measuring SSS trends in cold waters with corrupted ancillary data

<u>Takeaways</u>:
- Wideband radiometer systems can significantly improve observations in challenging environments
- Lower cost systems can be designed to maintain continuity at lower resolution
- Constellations can achieve rapid revisit beyond the poles