Breakout Workshop: 3. High temporal/spatial resolution applications

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Description:

High spatial resolution (< 50 m) and high frequency (<2 hr) ocean observations from space provide a unique capability for assessing and quantifying change in highly dynamic environments on scales commensurate to key observable processes (e.g., phytoplankton bloom evolution) and features (e.g., habitats). Existing geostationary missions, such as the South Korean Geostationary Ocean Color Imager (GOCI), have demonstrated the feasibility and utility of high-frequency ocean color observations, while high-spatial resolution sensors, such as the European Sentinel-2, have provided an exciting opportunity to capture fine scale aquatic features not previously observed. Yet, although there is new remote sensing asset development in the coming decade, observational gaps and technological challenges remain for high quality, high temporal and high spatial resolution remote sensing of highly dynamic and spatially complex processes in open ocean and coastal, estuarine, ice edge and inland aquatic environments. This breakout workshop will provide a forum to address these observational gaps and technological challenges. One of the objectives of the session is to identify how existing, or planned, high resolution remote sensing technologies can support applications/science end-users and stakeholders and determine what still must be developed. The breakout session will also facilitate an open discussion on the status and future directions of high spatial resolution remote sensing for coastal, estuarine, ice edge and inland aquatic ecosystems, including an update on NASA's planned mission Surface Biology and Geology (SBG). The workshop will also delve into the new science enabled by the high temporal resolution data available from GOCI, GOCI -2, Himawari 8 and ABI, and will explore emerging opportunities to study tidal and diurnal processes including photo-physiology, net phytoplankton production and distributions of optically active substances in time and space of the open ocean and its margins.

Key Questions:

1. High Temporal Resolution Capabilities Discussion
   - How can existing or planned, high temporal resolution observational capabilities be utilized in the study of the open ocean and its margin systems?
     - Successful utilization of current or planned high temporal resolution observations
     - New science enabled by high frequency ocean color observations.

- What challenges, limitations or uncertainties are associated with the usage of high temporal remote sensing observations and what gaps exist in current or planned remote sensing infrastructure?

2. High Spatial Resolution Capabilities Discussion
   - How can existing or planned, high spatial resolution observational capabilities be utilized in the study of aquatic margin systems?
     - Successful utilization of current or planned high spatial resolution observations
     - New science enabled by high spatial resolution coastal, estuarine, ice edge and inland aquatic data.

   - What challenges, limitations or uncertainties are associated with the usage of high spatial resolution remote sensing observations and what gaps exist in the current or planned remote sensing infrastructure?

3. Data Usage Discussion
   - What applications can be better achieved by using both high temporal and high frequency data?
   - Can high temporal and high spatial resolution observations be fused into a single product?
   - What are end-user objectives and requirements for high temporal or spatial resolution remote sensing products and their application? Specific topics include identifying key data products, format and metadata, product interoperability, data access, and tools needed for research and applications in aquatic environments.