The Coastal Ocean Color Imager Mission Concept

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ABSTRACT

The Coastal Ocean Color Imager (COCI) is a Canadian Space Agency mission feasibility study to develop moderate resolution UV-Visible Near-infrared (UVN) sensor capable of providing hyperspectral image data for proto-operational and science applications in coastal oceans, estuaries and inland water bodies. This concept is a collaborative feasibility study with NASA and NRL to explore the suitability and benefit of COCI as a complementary secondary payload on NASA’s Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission.

Central to the COCI mission concept is a wide swath imager mounted on a gimbal to provide sufficient coverage to image Canada on a weekly basis while offering flexibility to mitigate for sun glint and capture short term events such harmful algal blooms or contamination from flooding, effluents, or discharges. For typical imaging modes, the imager provides 110 spectral bands between 360 and 910 nm with 5 nm band spacing at a nominal 100 m nadir ground sampling distance with sufficient downlink capacity to regularly image Canada, USA, Europe and selected coastal regions globally. This capability provides a unique opportunity to generate quantitative data products used for inland and coastal water quality and resource management for recreation, public health, fisheries and ecosystem sustainability. The low-earth polar orbit provides frequent coverage of Canada’s northern territories and Arctic waters making it well suited to capturing and measuring the dramatic ecological changes occurring in Canada’s North due to climate change.

In this presentation, we provide an overview of the mission’s notional operational concepts including the priority applications used to define the mission observational requirements, primary data products and notional acquisition scenarios.