

THE CEOS FEASIBILITY STUDY FOR AN AQUATIC ECOSYSTEM IMAGING SPECTROMETER

The Committee on Earth Observation Satellites (CEOS) response to the Group on Earth Observations System of Systems (GEOSS) Water Strategy developed under the auspices of the Water Strategy Implementation Study Team was endorsed by CEOS at the 2015 Plenary. As one of the actions, CSIRO has taken the lead on recommendation C.10 : A feasibility assessment to determine the benefits and technological difficulties of designing a hyperspectral satellite mission focused on water quality measurements.

More specifically this report is a high-level feasibility assessment of the benefits and technological difficulties of designing a hyperspectral satellite mission focused on biogeochemistry of inland, estuarine, deltaic and near coastal waters - as well as mapping macrophytes, macro-algae , seagrasses and coral reefs - at significantly higher spatial resolution than 250 m, which is the maximum spatial resolution of dedicated current aquatic sensors such as Sentinel-3 and future planned aquatic sensors such as the Coastal Ocean Color Imager (COCI – 100 m res). Further, the GEO Community of Practice Aquawatch suggested that alternative approaches, involving augmenting designs of spaceborne sensors for terrestrial and ocean colour applications to allow improved inland, near coastal waters and benthic applications, could offer an alternative pathway to addressing the same underlying science questions. Accordingly, this study also analyzes the benefits and technological difficulties of this option as part of the high-level feasibility study.

Imaging Spectrometry, Aquatic Ecosystems; Future Sensors; Water Quality; Coral Reefs and Seagrasses

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