

# OCEAN OPTICS XXIV

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Tuesday, October 9

Poster Session 2

10:30–12:30

## **Poster 245**

### **MAPPING WATER TURBIDITY USING DAILY METRE-SCALE SATELLITE IMAGERY**

Landsat 8 and Sentinel-2A/B data has impressed the water remote sensing community in recent years. For certain applications or regions, a higher spatial resolution and temporal frequency is still needed. Commercial satellite constellations could provide an opportunity for up to daily high resolution mapping of water turbidity. Significant challenges exist related to the processing and atmospheric correction for sensors with limited broad spectral bands. PlanetScope (PS) and RapidEye (RE) are two constellations of optical imaging satellites operated by Planet Labs Ltd. PS consists of 100+ nanosatellites which can together provide daily global coverage at 3 m spatial resolution. The imager on PS has four wide spectral bands (Blue, Green, Red, NIR), and offers water turbidity mapping capabilities using the Red or NIR wavelengths. RE is a 5 satellite constellation with a 5 m ground resolution and offers spectral coverage in 5 bands (Blue, Green, Red, Red-Edge and NIR). Similarly, RE can provide turbidity estimates from the Red, Red-Edge and NIR bands, and with the Red-Edge offers the potential for assessing the chlorophyll a absorption in turbid productive waters. Together these satellites could offer improved capabilities of monitoring turbidity and water quality. We present the dark spectrum fitting aerosol correction originally developed for Pléiades (Vanhellemont and Ruddick, submitted), adapted to PS and RE. Surface reflectance and turbidity derived from both satellite constellations is compared with multi-site in situ measurements. Consistency of several PS imagers is evaluated with near-simultaneous overpasses. Turbid water chlorophyll mapping using the Red-Edge bands on RE is demonstrated.

**Quinten Vanhellemont**, Royal Belgian Institute of Natural Sciences, [quinten.vanhellemont@naturalsciences.be](mailto:quinten.vanhellemont@naturalsciences.be)

Kevin Ruddick, Royal Belgian Insitute of Natural Sciences, [kevin.ruddick@naturalsciences.be](mailto:kevin.ruddick@naturalsciences.be)