

EGU21-5833

<https://doi.org/10.5194/egusphere-egu21-5833>

EGU General Assembly 2021

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Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) Mission: Advanced Hyperspectral and Multi-Angular Polarimetric Satellite Observations for Science-driven Applications

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The next great contribution from NASA to study the Earth's ecosystems, including the open ocean and coastal and inland waters, is the PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) mission. PACE will build upon the remote sensing legacy that NASA earth science has established with over four decades of satellite instruments beginning with CZCS (Coastal Zone Color Scanner) launched in 1978 and following with SeaWiFS (Sea-viewing Wide Field-of-view Sensor), MODIS (Moderate Resolution Imaging Spectroradiometer), and VIIRS (Visible Infrared Radiometer Suite). PACE is expected to launch in 2023 and will carry the hyperspectral Ocean Color Instrument (OCI), as well as two multi-angle polarimeters (SPEXone and HARP-2). OCI will provide an unprecedented view of the entire earth every two days.

This presentation will highlight the capabilities of the novel hyperspectral and multi-angular polarimetric instruments on board the PACE observatory, showcasing PACE's ability to fill societal needs and enable decision-making, in support of advanced climate observations, optimized biothreat assessment, food security support and assurance, and sustainable fishery and aquaculture monitoring and prediction for the benefit of humanity and its next generations. PACE will continue heritage MODIS and VIIRS visible, near-infrared, and shortwave-infrared data products at 1 km resolution, as well as produce new hyperspectral and multi-angular polarimetric advanced data products, not possible with MODIS and VIIRS due to their design and technological limits. PACE will leverage emerging remote sensing technologies to advance aquatic and atmospheric remote sensing in ways that fulfill real-world needs.