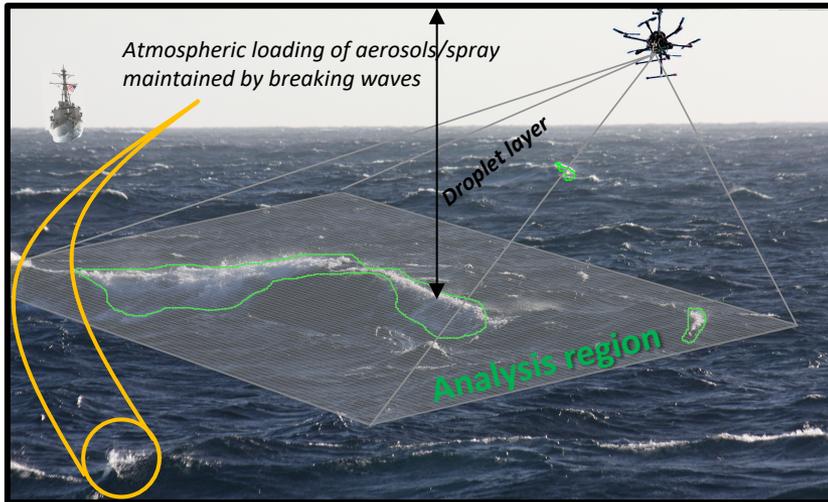


sUAS-based Remote Sensing of Surface Waves and Breaking using an EO/IR Camera System



Idealization of operational deployment and sampling of an sUAS equipped for wave breaking sampling based on proposed effort.

Problem Statement

- We are proposing to develop a novel technique for directly measuring surface wave breaking characteristics and statistics from sUAS using electrooptical (EO) and infrared (IR) imaging.
- Our approach has three major phases: (1) platform selection and payload design, (2) field test with complimentary validation from standard met/ocean measurements, (3) in-depth algorithm development and validation.
- Our approach will augment current environmental sensing capabilities from sUAS for a more integrated and complete measurement from these versatile platforms.

Impact

- US Navy ships rely on EO/IR systems for navigation, battlespace awareness, and self-defense. These systems' performance depends critically on the properties of the nearby atmosphere.
- EO/IR system performance is significantly degraded by signal attenuation due to scattering from aerosols and sprays generated from surface wave breaking.
- Enhanced sensing and characterization of this natural process will improve system performance models and prediction.
- Success will be measured by validation of the developed sampling and analysis technique using standard metrics.

Transition

- The developed technology and capabilities will transition to augmenting the PI's on-going, and pending, research studies involving sUAS and atmosphere-ocean characterization for improving propagation environment forecasting.
- The deliverables from this project will be transitioned to enhance and enrich Navy-relevant STEM education and outreach programming being developed by the PI as part of a funded partnership between NPS and Stanford University.
- Opportunities to leveraging this technology to seek additional research funding and operational applications will be explored.