

OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Monday, October 8

Poster Session 1

16:00–18:00

Poster 97

PERFORMANCE OF A COMPRESSIVE IMAGER IN VISUALLY DEGRADED ENVIRONMENT

Resource efficiency is a critical element for sensing from unmanned platforms. A Compressive Line Sensing (CLS) imager can achieve this goal through optimization of source and receiver configuration, which allows offsetting resource requirements. For example, low pixel count receiver can be used, along with selected illumination (pattern), to reduce energy cost and data storage requirement. Scattering in visually degraded environment such as underwater comes from particulates and optical turbulence, the result of index of refraction fluctuations from typically temperature and salinity gradients. We setup a CLS system to explore its effectiveness in such degraded environments. A series of experiments were carried out at the Naval Research Lab Simulated Turbulence and Turbidity Environment (SiTTE), where the imaging path was subjected to various optical turbulence intensities and turbidities, with corresponding codebook modelled and optimized. The experimental results with different settings are presented. We discuss setup limitations, as well as improvement plans.

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