

An Overview of EM Propagation Research at the Naval Research Laboratory

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The Marine Meteorology Division of the Naval Research Laboratory located in Monterey, California conducts EM propagation-related basic and applied research, and state-of-the-art technology development to advance the capabilities of systems used operationally by the Navy for decision guidance. Research efforts focus on improving our understanding of the environment directly impacting EM propagation, accurately quantifying environmental conditions and variability, and effectively communicating the environmental impacts on deployed EM sensor, weapons and communications systems.

Several of the active research areas include i) a quantitative prediction capability of EM propagation and sensor performance through improved environmental prediction, ii) improved EM tactical applications through Unmanned Aerial Systems (UAS)-enhanced high-resolution mesoscale data assimilation and modeling, iii) refractivity data fusion, applying refractivity-from-clutter (RFC) processing and Numerical Weather Prediction (NWP) model data to generate short term forecasts, iv) new validation metrics for tactical-scale EM propagation and ducting, and v) quantification of uncertainties in the battle space environment related to EM propagation, including quantification of sensor performance sensitivities, environmental sensitivities, and effective communication of sensitivities.

This overview talk will highlight the various research efforts, new models, tools and technologies under development, and areas of future research.