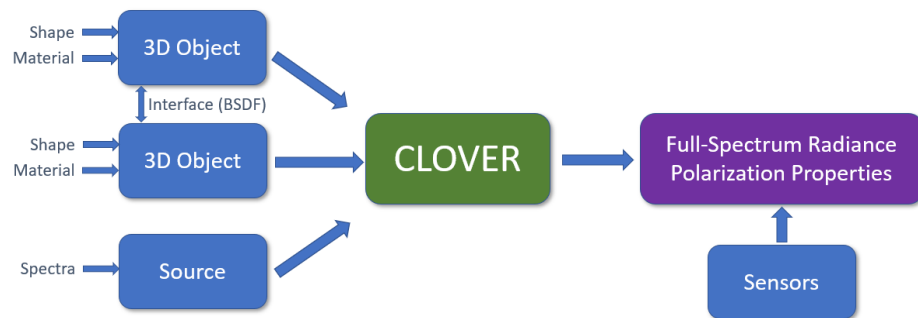
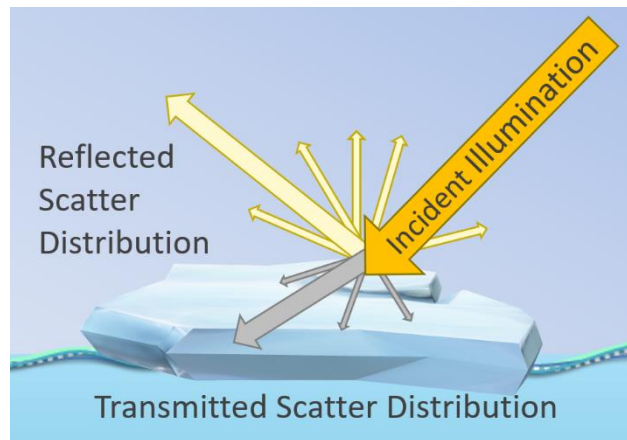


POLARIMETRIC MODELING OF COMPLEX SCENES AT VISIBLE AND INFRARED WAVELENGTHS

CLOVER (Coupled Land-Ocean Vector Renderer) is a unique 3D polarized radiative transfer code developed in the Remote Sensing Division to model spatially and optically complex scenes. Scenes of interest may be arbitrarily constructed, including 3D objects, a mix of active and passive sources, detectors, and imaging systems. Optically, each object in a scene is described by its shape, material, and its interface with adjacent objects (defined using a bi-directional scattering distribution function (BSDF)). All wavelength dependent inputs to the code can be supplied as spectra, so that having multiple wavelengths propagate within the system simultaneously is seamless. CLOVER can calculate the full-spectrum radiance and polarization properties in a single run.



IMPACT: The capability to model complex 3D scenes will aid in the advancement of the Navy's remote sensing capabilities. Modeling will improve our understanding of the physical processes responsible for observed spectral signatures as well as the phenomenology of satellite sensors producing high-resolution observations that are not now well understood, such as low-light illumination in the Arctic winter. Understanding of the visible to long-wave IR spectral signatures will improve satellite retrievals that feed into operational forecasts for safe operations of ships and submarines.



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