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Simulation of ocean's spectral radiant thermal source and boundary conditions

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The analysis of radiant heat transfer for semitransparent natural or polluted seawater shows importance of spectral radiant thermal source and boundary conditions at the solution of the inhomogeneous heat conductivity equation and its physical interpretations. Simulation of spectral radiant thermal source inside upper oceanic depth within short wavelength of solar penetrating radiation was carried out for (a) deep seawater on region from $\sim$ 300 to $\sim$ 600 nm and (b) subsurface layers (not more $\sim$ 1 m) on one $\sim$ 600 - 1200 nm. Model boundary conditions on exposed surface are definite by absorptance (1) within long wavelength radiation (atmospheric and oceanic emittance on one $\sim$ 9000 nm), (2) natural convection and (3) thermal losses for evaporation. The formation of volumetric overheating, appearance subsurface temperature maximum and cool skin layer at solar radiation due to scattering and absorption coefficients of oceanic pollution are discussed. This phenomena determined by optical heterogeneity of seawater caused anthropogenic or natural pollution, phytoplankton, dissolved organic material (yellow substance) inside seawater subsurface zone was analyzed. Technogenic or natural pollutions - are considered as ensembles of selective scattering and absorbing particles with complex refraction indexes in difference spectral diapasons of external radiation. Spatial and temporal variability of inherent optical properties is investigated. Temperature distribution of upper heated depends also from radiant flux transmitted by top semitransparent polluted layer and volumetric reflectance of deep natural seawater. According to the numerical simulations regulation of thermal regimes would depend essentially from changing inherent and apparent optical properties. The suggested analysis can become an important and useful subject of researches for oceanologists and climatologists.