To: Chief Scientist, Jeff Wise
Field Operations Officer, Rick Hester

From: Michael Behrenfeld
Equatorial Box Project Principal Investigator
Oregon State University

RE: End of cruise report for KA2-2007

The May-June 2007 cruise represents the fourth and final field study for the NASA sponsored Equatorial Box Project. The objectives of this study are to validate and improve descriptions of ocean biological and biogeochemical processes from satellite-based conversion models and ocean-circulation-ecosystem models.

Measurements conducted during the 2007 cruise using the ship's flow-through seawater system were: spectral light absorption, attenuation, and backscattering, light absorption by colored dissolved organic matter, optical determinations of particle size distributions, particle size distributions measured using a coulter counter, phytoplankton variable fluorescence, phytoplankton photosynthesis-irradiance relationships, phytoplankton pigment composition and pigment absorption spectra, chlorophyll concentration, macronutrient concentration, dissolved organic carbon and nitrogen concentration, macronutrients, colored dissolved organic carbon concentration, and particulate nitrogen and carbon concentration.

Samples were also collected from Niskin bottles on the CTD rosette for analysis of macronutrient concentration, chlorophyll concentration, colored dissolved organic carbon concentration, and particulate nitrogen and carbon concentration.

Measurements of ambient downwelling photosynthetically active solar radiation (often referred to as 'short wave sunlight') were continuously logged from May 9 to June 6 and periodic deployments were made of a hyperspectral tethered spectroradiometer buoy (HTSRB) for measurements of spectral upwelling and downwelling sunlight.

Over the course of the study we completed 20 photosynthesis-irradiance experiments, 4 size fractionation experiments for optical properties, and 8 HTSRB casts. We also collected over 30,000 measurements of optical and fluorescence properties from the flow-through system, completed CTD bottle measurements at all whole-latitude CTD casts along the 125^{o} and 140^{o} TAO lines, and completed discrete sample filtrations from the seawater flow-through system at 69 locations.