**Diffuse attenuation coefficient of the photosynthetically available radiation *K*d(PAR) for global open ocean and coastal waters**

**SeungHyun Son**1,2 and **Menghua Wang**1

1NOAA/NESDIS, Center for Satellite Applications and Research (STAR)

E/RA3, 5830 University Research Ct., College Park, MD 20740, USA

2CIRA, Colorado State University, Fort Collins, CO, USA

**ABSTRACT**

Satellite-based observations of the diffuse attenuation coefficient for the downwelling spectral irradiance at the wavelength of 490 nm, *Kd*(490), and the diffuse attenuation coefficient for the downwelling photosynthetically available radiation (PAR), *Kd*(PAR), in the ocean can play important roles for ocean-atmospheric circulation model, biogeochemical model, and ecosystem models. Since existing *Kd*(PAR) models for the satellite ocean color data have wide regional variations, we need to improve *Kd*(PAR) model for the global ocean applications. In this presentation, we propose a new blended *Kd*(PAR) model from satellite measurements. The new method has been assessed using in situ optical measurements from the NASA SeaBASS database, and is applied to the MODIS and VIIRS to derive *Kd*(PAR) products and compared with in situ measurements. Results show that there are significant improvements in model-derived *Kd*(PAR) values using the new approach, compared to those from some existing *Kd*(PAR) algorithms. In addition, matchup comparisons between MODIS-derived and in situ-measured *Kd*(PAR) data for the global ocean show a good agreement. Synoptic maps of MODIS- and VIIRS-derived *Kd*(PAR) data generated using the new method provide very similar and consistent spatial patterns in the US east coastal region. Monthly maps of VIIRS-derived *Kd*(PAR) data for the global ocean are also generated using the new *Kd*(PAR) model, and provide spatial and temporal *Kd*(PAR) distributions, showing consistent results with those from the previous studies. Thus, our results show that satellite-derived *Kd*(PAR) data can be used as an important input for ocean-atmospheric circulation, biogeochemical, and ecosystem models.