Geophysical Research Abstracts,
Vol. 10, EGU2008-A-04434, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-04434
EGU General Assembly 2008

Parameterization of particulate and dissolved absorption coefficients for the Black sea coastal waters

E.V. Dmitriev (1), G. Khomenko (1), T.Y. Churilova (2), M. Chami(3)

(1) Laboratoire de Physico-Chimie de l'Atmosphere, Universite du Littoral Cote d'Opale, France, (2) Institute of Biology of Southern Seas, National Academy of Sciences, Sevastopol, Ukraine, (3) Laboratoire d'Oceanographie de Villefranche, Villefranche sur Mer, France (Egor.Dmitriev@univ-littoral.fr / Fax: +33 328-658244 / Phone: +33 328-237649)

The light absorption by components of ocean and sea waters significantly contributes to the spectral distribution of the water leaving radiance. Actually, there are several parameterizations of the particulate and dissolved absorption for relatively clear open ocean waters (case I waters, phytoplankton dominated) and for turbid coastal waters (case II waters, for instance, yellow substances or mineral dominated). We propose here parameterizations of the phytoplankton, CDOM and NAP spectral absorption coefficients for the Black Sea coastal waters. To consider whether the well established parameterizations obtained before for different waters are applicable to the Black Sea, we employed a dataset obtained during the measuring campaign in summer 2002 at the offshore oceanographic platform located 600 meters from the southern Crimea coast. An analysis of the absorption budget have shown that Crimea coastal waters clearly fall in the case II water type with a yellow substance dominated regime. We have applied the log-log regression combined with the low-pass filter as the most reliable method to evaluate parameterizations of the particulate and phytoplankton spectral absorption coefficients. To parametrize the absorption by NAP and CDOM, we used the nonlinear least-square method as the most precise in order to estimate the slope parameters. We compared parameterizations by different techniques and studied stability and reliability of our results. We have shown that the parameterizations are strongly sensitive to the choice of statistical method. Thus, for each case it is necessary to verify the accuracy and the stability to make the optimal choice. Statistical significance of the

estimated parameters was verified by the bootstrap method. We revealed that the well established parameterizations obtained before do not fit our dataset and strongly differ from our parameterizations for the Black Sea coastal waters. The developed method of the parameterization of the light absorption is more precise for the case II waters.