COLORED DISSOLVED ORGANIC MATTER (CDOM) CHARACTERIZATION BY ABSORPTION AND FLUORESCENCE SPECTRA

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Colored dissolved organic matter (CDOM) absorption and fluorescence spectra were analyzed from samples collected in the Lena River Delta region (Siberia, Russia; summer-2013) and in the Alfacs Bay (Ebro River Delta, Spain; summer-2013/winter-2014) in order to use optical measurements to infer loading and origin of CDOM. Absorbance spectra and Excitation-Emission matrices (EEMs) were obtained with a HORIBA Aqualog® spectrofluorometer. CDOM absorption at 443nm (a_{443}) and terrestrial absorption slope (S_{TER}, 275–295nm) were inversely related (r^2=0.49; $p<0.05$) and differed significantly ($p<0.05$) among the campaigns. The highest a_{443} values were presented by the Lena (1.28±0.81m^{-1}) followed by Alfacs summer (0.53±0.33m^{-1}) and Alfacs winter (0.32±0.27m^{-1}) samples. A significant vertical decrease of a_{443} over the water column was observed within the Lena samples, with the highest values in the surface samples (2.10±0.7m^{-1}) and the lowest values within the bottom (5–25m; 0.71±0.25m^{-1}) ($p<0.05$). No differences between surface and bottom samples were found for the Alfacs samples ($p>0.05$). The slope ratio between S_{TER} and the marine absorption slope (S_{MAR}, 350–400nm) showed that surface Lena waters were under influence of terrigenous CDOM while the deeper layer was characterized by marine CDOM content. Traditional “peak-picking” method for EEM analysis detected four components: UVA and UVC humic-like (peaks C and A, respectively; allochthonous; detected in all samples) and tyrosine- and UVA marine humic-like (peaks B and M; autochthnous). However, peaks B and M were characteristic from bottom Lena samples and few Alfacs samples presented peak B. Parallel-Factorial-Analysis will be further applied on EEMs to precisely detect the CDOM components.