The 36th International Symposium on Remote Sensing of Environment,
11 – 15 May 2015, Berlin, Germany, ISRSE36-345

USING 710 NM AND 815 NM REFLECTANCE PEAKS IN RETRIEVING WATER QUALITY PARAMETETS OF CDOM-RICH LAKES

T. Kutser, B. Paavel, T. Kauer

Estonian Marine Institute, University of Tartu, Mäealuse 14, Tallinn, 12618, Estonia - Tiit.Kutser@sea.ee

THEME: Water cycle.

KEY WORDS: Lakes, water quality

ABSTRACT:

Traditional remote sensing products are not sufficiently accurate and stable in CDOM-rich lakes like those dominating in boreal zone and Arctics. The situation is worse in extremely brown lakes where the water leving signal is negligible in the whole visible part of spectrum. The only detectable signal in those lakes is near 710 nm and near 815 nm. The latter peak has been used before for estimating TSS in highly turbid waters. We show that the height of both the 710 nm and 815 nm peaks is highly correlated with chlorophyll-a concentration. Correlation with TSS, and it's organic and inorganic fractions separately, is not as high. Estimating CDOM concentration in lakes with extreme CDOM is problematic as there is nearly no water leaving signal in visible part of spectrum even in green and red. The green to red ratio has been shown to be the best algorithm for CDOM mappingin in lake waters where water leaving signal is often negligible in blue. Absence of suitable bands in satellite sensors limits the use of 815 nm peak to airborne and in situ hyperspectral measurements.