

LIF LiDAR high resolution ground truth data, suitable to validate medium-resolution bands of MODIS/Terra radiometer in case of inner waterbody ecological monitoring

Vadim Pelevin (1), Peter Zavialov (1), Andras Zlinszky (2), Elizaveta Khimchenko (1), Viktor Toth (2), and Vyacheslav Kremenetskiy (1)

(1) Shirshov Institute of Oceanology of the Russian Academy of Sciences, Moscow, Russia (vvpelevin@gmail.com), (2) Balaton Limnological Research Institute of the Hungarian Academy of Sciences, Tihany, Hungary

The report is based on field measurements on the lake Balaton (Hungary) in September 2008 as obtained by Light Induced Fluorescence (LIF) portable LiDAR UFL-8. It was tested in natural lake waters and validated by contact conventional measurements. We had opportunity to compare our results with the MODIS/Terra spectroradiometer satellite images received at the satellite monitoring station of the Eötvös Loránd University (Budapest, Hungary) to make an attempt of lidar calibration of satellite medium-resolution bands data. Water quality parameters were surveyed with the help of UFL-8 in a time interval very close to the satellite overpass. High resolution maps of the chlorophyll-a, chromophoric dissolved organic matter and total suspended sediments spatial distributions were obtained.

Our results show that the resolution provided by laboratory measurements on a few water samples does not resemble actual conditions in the lake, and it would be more efficient to measure these parameters less accurately but in a better spatial distribution with the LiDAR.

The UFL instrument has a great potential for being used for collecting ground truth data for satellite remote sensing of these parameters. Its measurement accuracy is comparable to classic water sample measurements, the measurement speed is high and large areas can be surveyed in a time interval very close to the satellite overpass.