

ADAPTIVE OPTICAL TECHNOLOGY FOR ECOLOGICAL MONITORING

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ABSTRACT

Unlike the microwave region of the electromagnetic spectrum, the visible range is used more efficiently in water body monitoring systems. This is due to the fact that the energy of solar radiation or artificial light fluxes interacts intensely with the aqueous medium. Different parts of the spectrum of solar radiation are absorbed by water in different ways. The minimum of light absorption is observed at a wavelength of 470 nm, in the blue part of the spectrum, whose energy is halved already at a depth of 47 m.

Ellipsometry refers to optical technologies that use a change in the polarization of the light flux when it is reflected from a surface or refracted during a passage through a liquid. In this paper, an adaptive optical instrumental-information system for the diagnostics of water systems is provided. The system consists of a spectrophotometer and a spectroellipsometer, an information interface, a set of algorithms for identifying spectral images, a database of spectral standards, algorithms for solving inverse problems of spectrophotometry, spectroellipsometry, and an algorithm for learning the recognition of spectral images. The system can also be implemented as a portable device with the help of which the operator can perform real-time control of the quality of water resources without taking samples and conducting chemical analyzes

ON THE IMPACT OF LANDCOVER CHANGES ON LAND SURFACE TEMPERATURE VARIATION – A CASE STUDY IN THU DAU MOT CITY, VIETNAM

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ABSTRACT

Landcover (LC) changes will inevitably affect the surface temperature, both in micro and macro scope. Thu Dau Mot city of Binh Duong province has undergone a rapid and robust urbanization and industrialization during the past two decades. This development of the city certainly leads to crucial changes of landuse/landcover. The landcover changes in turn effect the land surface temperatures (LST), which may cause anomalies in the air temperatures and resulting in phenomenon like unusual micro-climate and city "heat islands". This paper presents a comparative study on the time series of LST with the corresponding landcover snapshots in the same area. Landsat TM and OLI have been used. Results showed that there is a positive, though not quite clear, correlation between the two series of collected data – LC and LST.