

SPECTRAL DATA FROM SYNERGETIC REMOTE SENSING SYSTEM IN OPTICAL AND MICROWAVE WAVELENGTHS

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ABSTRACT

Remote sensing systems are applied for measuring different characteristics of land covers in optical and radio wavelengths. Over the last years optical devices are extensively do research in laboratory/terrain and have found applications in high significant fields such as environmental monitoring and food security. The spectral response of land covers is associated with target types, their properties and requires solving a number of multidimensional problems. Together with the above parameters for better interpretation and finer data modelling lead the necessity of using data from a variety of sources. The team has the idea to exploit integrated optical multichannel and microwave devices. This approach allows acquiring data from synergetic remote sensing system. For this purpose measuring systems were designed: a portable lab/field VNIR spectrometer integrated with laboratory NIR spectrometer (400-2500) nm and a passive microwave radiometer (between 0.8cm, and 21cm). The concept of synergetic use of multispectral and microwave data for creation and validation of new models for environmental monitoring is presented in following steps: - Precise in-situ and laboratory data; - Preliminary data processing such as sensors' calibration errors, data fusion; - Multifeatures object creation in geoinformational databases with access control based on web technologies; - Soil properties, vegetation state modelling, landslides prediction; - Decision support. The joint use of the available remote sensing devices based in Space Research and Technology Institute at Bulgarian Academy of Sciences /SRTI-BAS/ and Kotel'nilov Institute of Radioengineering and Electronics at Russian Academy of Sciences, Fryazino department /FIRE-RAS/ create opportunities especially in follows applications: specification of technical tasks for development of unique equipment; development of technologies in complex analysis and interpretation of satellite data in remote sensing of marine coastal waters; to diagnose the condition by determining the environmental impact of anthropogenic activities and the change of climatic factors over time.

**KEYWORDS: OPTICAL SPECTROMETRIC SYSTEM, MICROWAVE DEVICE,
SYNERGETIC REMOTE SENSING SYSTEM DATA**

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