

EDITORIAL COMMENT

Dear Reader,

The new and first for 2017 English language issue of the journal is in front of you. The subject of this issue includes articles grouped into four main sections – *Ecomonitoring*, *Man and Biosphere*, *Forest Biology* and *Microorganisms and Environment*.

It is well known that plants, animals, and sea life are spreading beyond their native ranges faster and farther than ever before by various human activities and the rates of invasion are increasing worldwide. Related with dramatic environmental changes of many aquatic systems the implementation of ballast water management convention is a necessary step for saving the Black sea ecosystem and biodiversity. Efficient methodology for development of information model or database of waste disposal sites or landfill sites is proposed applying received remotely and *in-situ* data from Earth surface monitoring is proposed. Procedures of morphological processing, data normalization and visualization models are included too. As the input data of the algorithm for constructing the information model are used the "raw" data of the aerospace monitoring results, field and laboratory studies, information from Internet sources and regulating documents. In terms of biochemical aspect, dump is a chemically dangerous and one of the most complex objects because many chemical conversion and reaction products still remain a mystery. That is why a method for estimating parameters and characteristics of the chemical processes in large municipal landfills and solid waste disposal sites according to the waste monitoring from space is developed. The assessment of volume and mass of landfill gas and its main component – methane is shown as an example.

In the section *Man and Biosphere* two articles are presented focused on the adequate assessment of the fire severity and fire risk targeted to development of fire-prevention policies. The negative effect of forest fires on the plants and soil depends on the fire severity and time of exposure. The role of the forest fire severity on the vegetation cover of the area of Svilengrad Municipality, using NDVI (Normalized Difference Vegetation Index) before fire and after fire derived from LANDSAT 8 TM/ETM images was examined. The comparison of the data from NDVI and those observed on the terrain data was also carried out. Together with NDVI a second important index has been frequently used to estimate the level of fire risk - the Fire Weather Index (FWI). Aiming to estimate the applicability for accessing the associated risk of fire the NDVI index variability during different summer time periods was analysed for Vitosha mountain region. As could be seen development of a fire risk assessment methodology based on using NDVI data, especially during summer periods, appears to be a promising technique for regions where the fire events have been frequently observed.

The section *Forest Biology* examines the mountain resources of Bulgaria – waters, forests, pastures, game, agriculture, stock-breeding, resorts and tourism, combined with cultural and historical heritage as opportunity to overcome crisis processes in economics in the period of transition, supporting entrepreneurship in various economic sectors in mountain regions. Bulgaria, like any other Balkan country, has big mountain massifs whose resources are reliable basis for fruitful collaboration on mutual projects for development of mountain resources in Europe, like “Katun” project.

The largest section *Microorganismes and Environment* concerns important for science and society microbiological issues like detoxication of metal contaminated sewages, antibiotic and toxic metal resistance, the effect of UV-B radiation on the biomass production and viability of algal cells, and biofilm-formation potential of the emerged pathogens in drinking water.

Nowadays, the industry leads to steadily increasing of the solid waste volume, especially food waste which is a serious hasard as the result of their uncontrolled rotting. Immediate solution is necessary also for detoxication of metal contaminated sewages. The available microbial biotechnologies for removal and accumulation of such metals as Pb, Zn, Cd, Cr, Cu, Ni, Mn, Al, Fe have some disadvantages - discovering the microorganisms that are widely spread in nature and resistant to higher than natural concentrations of metals. The search of efficient industrial technologies for obtaining environmentally friendly energy sources, for instance, molecular hydrogen is

the third worldwide issue. As a separate class of extreme factors antibiotics together with UV radiation and toxic metals are considered. The newest study of the Antarctic and Black Sea microbial communities' resistance to antibiotics allows revealing the common features and regularities to these extreme biological factors. It should be emphasized that microbial communities are subject to simultaneous impact of the various factors in natural extreme ecosystems. That is why the resistance of Antarctic cliff microorganisms at least to two types of extreme factors, i.e. to antibiotics and toxic metals is compared. Studies on the nature of bacterial resistance to toxic metals and antibiotics on 12 strains of aerobic chemoorganotrophic bacteria indicated plasmid localization of genes, coding resistance to Cr (VI) and Co²⁺. In general, demonstrated resistance of microorganisms isolated from «ecologically pure» and non-contaminated by anthropogenic factors ecosystems to antibiotics and toxic metals is fundamentally new finding confirming the phenomenon of simultaneous resistance of microbial communities to different extremal factors.

In the light of One Health concept biofilms in drinking waters are object of increasing scientific interest during the last two decades. As attached microbial communities they are ubiquitous in natural waters and purified drinking water and represent one of the factors for deterioration of the bacteriological quality of drinking water. On the other side biofilms provide favorable conditions for settlement and survival of pathogenic bacteria, that can enter the drinking water as a result of erosion and sloughing of the biofilm and can pose a health risk during water consumption, irrigation, food industry, etc.

Summarizing the proposed sections and publications, the editorial board tries to point out the basic journal's commitment selecting the most attractive articles and hopes to answer some of your research interests and expand your future scientific research.

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Editor

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Sofia