

EDITORIAL COMMENT

Dear Reader,

In this editorial review of the second English edition for this year, you will find intriguing data from studies presented in 4 thematic areas – *Man and Biosphere*, *Space Technology and Environmental Monitoring*, *Microorganisms and Environment*, and *Renewable Energy Sources and Biofuels*.

In the first article of the rubric *Man and Biosphere* the emphasis is placed on using the principle of resource saving, which is more economically and environmentally advantageous. It is known that to be effective, the waste management system needs not only to meet the conditions in which it will function but also to adhere to international standards that ensure the development of a sustainable development strategy that is an integral part of the environmental aspects of our society. In essence, the sustainable development of society combines the constant improvement of economic and social conditions of life with the long-term preservation of the natural foundations of this life. It has been demonstrated that in order to improve environmental and economic efficiency, it is necessary to create conditions in the field of waste production that ensure minimal penetration of waste streams into the environment and at the same time increase the maximum re-engagement of many types of waste in the field of material production. Thus, the main trend in the development of the concept of waste generation must be a holistic environmental approach both to reduce global and local environmental risks and to economic growth that changes the type of technological development in a stable type. The different ecosystems that develop in urban areas are the result of interactions between organisms and a number of geological, topographic, hydrological and climatic factors. A certain contribution to the rapidly developing Urban Ecology in the last few decades has been the study of Fluvisols class soils in the region of Sofia. The object of the study is a deposit of sands and gravel in the area of "Koriata". The data on the landscape planning carried out on the territory of this area aim to improve not only the ecological and social parameters of the city but also the quality of life and the health of the people. It has been shown that plant diversity not only changes the soil substrate but will increase more than seven times and will meet the needs of people from thematic water parks within Sofia. To another world-famous tourist destination leads us the survey on the fractal nature of the Maldives archipelago. It focuses on the evaluation of the fractal properties and the coefficients of nonlinearity (fractal dimensions) of the spatial distribution of the main atolls of the Maldives. This is the world's most vulnerable zone in terms of global warming and the possible negative consequences for the country and the population of the increase in the ocean level. On the other hand, the risks of natural disasters (tsunami, storms, etc.) are common negative phenomena that attack the country. Highly developed tourism - more than 30% of GDP and increased urbanization is another factor causing ecological problems for the local population. The link between fractal nature and possible ways of avoiding pollution is also at the focus of this study.

A well-illustrated article from the rubric *Space Technology and Environmental Monitoring* presents data on how recent advances in spatial and spectral resolution of satellite sensors can contribute to the study of biodiversity aspects. The advantages and challenges associated with the use of such technologies for biodiversity conservation are discussed. The implementation of a methodology for interim environmental monitoring contributes to complementing the available ecosystem data base, taking into account different impact indicators. The article shows that data from remote ecological monitoring based on remote sensing can provide valuable information on patterns of ecological diversity and have the potential to become an effective assessment tool and its conservation. The article focuses on the aspects and prospects of applying interim environmental monitoring in terms of the possibilities of distance studies to assess environmental processes and to analyze the state of landscape characteristics and species diversity. This article highlights the possibilities of interim environmental monitoring to provide responsible institutions with high-quality data on the potential of ecosystem services.

One of the indicators of climate change, both globally and on a regional scale, is high mountain ecosystems. They are too vulnerable to environmental changes and this makes them a subject of high scientific interest in terms of acquiring knowledge of their functioning in a changing environment. The assessment of the actual state of these ecosystems is of great importance for the development and

implementation of appropriate good governance practices that could enhance the resistance of ecosystems and adaptation to climate change. Despite the existing methodologies for assessing the status of different ecosystems developed both at European and national level, methods for remote monitoring of forest ecosystems were used for the first time as a relatively new approach that provides greater opportunities for ecosystem analyzes and an assessment of the state of the landscape. This gives them some advantage over Earth's methods, but in combination, the objectivity of the research increases. Several indices for analyzing the functional state of the ecosystem have been developed and described primarily intended for forest health assessment. The assessment of the current state of the high mountain ecosystems in selected territories of the southwest Rila mountain and on the territory of Vratsa Balkan Nature Park is based on aerospace data. The interpretation is based on the analysis of satellite images using the Normalized Difference Vegetation Index (NDVI) and Normalized Difference Water Index (NDWI) of the leaf mass.

In an extensive microbiological survey, the biofilm formation ability of enteropathogenic *Yersinia enterocolitica* 8081 bio/serotype 1B/O:8 in binary and multi-species biofilms with certain bacterial strains was investigated. Regardless of the action of the disinfectant applied in water (most commonly activated chlorine), the bacterial restoration process and the formation of biofilm arise in drinking water supply systems (DWSS). It has been shown that bacterial biofilms on pipeline surfaces and DWSS facilities account for up to 95% of the total active biomass, and by the release of biofilm the number of bacteria in drinking water can be increased. In the article (under rubric *Microorganisms and Environment*.) the interactions between the different types of bacteria in binary biofilms of enteropathogen with three bacterial species isolated from drinking water and water-related biofilms were evaluated. The effect of each individual partner strain involved in the biofilm formation with participation of *Y. enterocolitica* in the four-species biofilm was assessed by excluding one by one the isolates from the sessile community. In view of the increasing interest in the application of microorganisms for the treatment of wastewater containing metals, the optimal conditions for the removal of toxic metals (CrO_4^{2-} , Cu^{2+}) by microorganisms based on thermodynamic prognosis and its experimental rationale have been investigated. Theoretical evidence has been obtained for experimentally confirmed interaction between microorganisms and the reduction or precipitation of metals. The approach developed is a methodological basis for the rapid and efficient treatment of wastewater containing metals.

In the rubric *Renewable Energy and Biofuels* a generalized approach for the determination of hybrid systems with renewable energy sources is presented. This approach facilitates the sizing of installed photovoltaic and wind power capacities and can assist in choosing an accumulator to provide power to the load in the absence of sufficient power output or to assess energy exchange with the grid.

At the end of this issue you will find information about the XIIth National Scientific Conference with International Participation ECOLOGY AND HEALTH' 2018 carried out in Plovdiv (Bulgaria) on 7 June 2018. The Editorial Board of the journal has the pleasant obligation to publish the more significant scientific papers presented at the Conference.

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