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ENVIRONMENTAL-INFORMATICS- A SOLUTION FOR LONG TERM ENVIRONMENTAL RESEARCH

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ABSTRACT

During recent decades the stirring up of the processes of globalization practically in all spheres of present day civilization has aggrivated and brought forth numerous problems resulting from nature-society interactions. To overcome these problems, it is necessary to develop and adopt new concepts and techniques to evaluate the changes occurring on the earth ecosystem. For this, application of information technology is the best option. Various applications of information technologies are providing the ways to understand the environmental complexity across the entire range of scales. Understanding this complexity through applications will develop new strategies and ideas to manage ecosystem.The current research deals with one such field, i.e.,environmental-informatics- new approach to process, analysis and synthesis of environmental systems using various models and IT applications.

Key words: Environmental informatics, Ecological informatics, Computational environmental research, Environmental application.

INTRODUCTION

The junction between present and future societies lies in the global commons: the shared physical, biological, and intellectual resources of the planet. The environment- specifically intact, functioning ecological systems- is essential to opportunities for individual development, the health and well-being of citizens and communities, and the generation of new wealth. Environmental science and technology are therefore a vital component of productive knowledge and thus a high priority for the Nation.

From past many decades, environment has been the source for industrialization and urbanization as a resource. As the population of world is growing rapidly and as its demands for survival, the stress on environment for its resources is also increasing through various reasons whether increase in technology or in energy dependency, international trade or in social complexity. For all this there should be something there

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and AI models by the embodiment of evolutionary algorithms in process-based differential equations, the embodiment of fuzzy logic in artificial neural networks or knowledge processing;
- Adaptive agents to facilitate adaptive simulation and prediction of ecosystem composition and evolution.

Reaching more accurate decision-making system with consensus based efforts with a recalling technique artificial intelligence will need the combination knowledge from scientists to engineers with complete network of decision makers.

Future perspectives

The system of environmental management has many aims, including complexities like intertwined of system factors, modeling expressions, interpretation of research results, etc., have to keep in mind while decision making. The system has to be simplified assuming the final errors in mind in terms of static or single objective, to measure the complex systems. The risk of failures of system analysis depends upon how accurately the system is simplified. This risk is the major challenge faced by the environmental researchers.

The insufficiency of data, moderate measures, natural conditions, and quality records, as well as the other relevant socio-economic and cultural factors can become the barrier for having the proper management. For these kinds of problems the researchers have to be solid on the study site as local managers and other people interrupt. Information Technology's involvement will provide the facility for studying the site without heavy involvement of on site investigation and with better knowledge and understanding. This kind of facilities encourage the agencies and research to build up the online-database management system which can help in decision support system to help the environment by giving pressure on the government and other social agencies to apply the proper management techniques and to develop more accurate, fast and friendly techniques for nature.

Today along with the information technology, remote sensing instruments can help in better understanding to study sites by providing the raw data. With the help of innovative technologies the data mining is possible which give a more accuracy in decision making and give the good results with the developed strategies. With wired or wireless network the data sharing and distribution is possible which facilitate us to understand the modeling results and for the spatial analyses. Computer can become the door through which we can cross many limitations by achieving a target of high-end

sophisticated knowledge management for the better understanding of complexities of environmental systems, over come the uncertainties and with support system. With this kind of facilities a better view, knowledge and understanding develop and a better sustainable strategies could be develop with maximum support system, complete database and information .

Conclusion

The applications of IT have overcome the difficulties while handling dynamic and uncertain aspects of real-world environmental systems. As the nature of environment is not static and the conditions of environmental management system are changing with the time, the demand of periodic update in decision support is increasing. It is the need of management system in context of users and decision makers that the research outputs must be "dynamic". The advancement in IT will help to develop the new techniques and tools to environmental management system, however the role of these technologies has been limited but with the implementation and generation of graphical forms and visual presentations these limitations has been minimized. This role of new methodologies and better understanding of research outputs not only help to establish better environmental management system but also help in making sustainable development strategies. There contribution in management is associated with artificial intelligence techniques to promote long term usability of environmental informatics. With this trend of information technology in environment, will help to understand the complex environmental system and work as new niche in the field of engineering and environmental science.

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