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# WMESS 2016

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## WORLD MULTIDISCIPLINARY EARTH SCIENCES SYMPOSIUM

Eco-friendly Symposium - WMESS



### ABSTRACT COLLECTION BOOK



*the more you save the Earth  
the more you get wealth*

save the EARTH



## Preface

This Abstract Collection consists of the abstracts of papers presented in the "World Multidisciplinary Earth Sciences Symposium" in the city of romance Prague (Czech Republic) during 5-9 September 2016. The World Multidisciplinary Earth Sciences Symposium (WMESS) aims to provide a forum for discussion of the latest findings and technologies in different fields of Earth Sciences, to give opportunities for future collaborations. WMESS wants to be a platform for sharing knowledge and experiences in the fields of Earth Sciences, to lead for providing a forum for early career researchers for presentation of their work and discussion of their ideas with experts in different fields of Earth Sciences such as; Tectonics & Structural Geology; Engineering Geology; Geotechnics; Hydro-Hydrogeological Sciences; Natural Hazards; Geomorphology; Geochemistry, Mineralogy, Petrology & Volcanology; Stratigraphy, Sedimentology & Palaeontology; Geophysics & Seismology; Geodesy, Photogrammetry & Cartography; Informatics, Geoinformatics & Remote Sensing; Mining Engineering; Mineral Processing; Blasting & New Technologies; Natural Resources; Environmental Sciences; Energy, Resources & Pollution & the Environment; Environmental Legislation; Biogeosciences; Geological Heritage & Geoparks; Urban Planning; Atmospheric Sciences – Climate; Modelling and Soft Computing Techniques in Earth Sciences; Medical Geology; Occupational Health and Safety.

WMESS 2016 will be the 2nd of the Annual series and the main mission of the "World Multidisciplinary Earth Sciences Symposium - WMESS" is to lead to contribute in multidisciplinary studies related with atmosphere, biosphere, hydrosphere, lithosphere and pedosphere of the Earth and interaction of the human with them. As another mission, it provides a forum for this diverse range of studies, which report very latest results and document emerging understanding of the Earth's system and our place in it. The Scientific Committee and Institutional Scientific Partners of WMESS was completed by paying strict attention, and all members were selected from well-known, very much appreciated, productive and representatives of the different countries. We are deeply grateful to the members of the scientific committee and institutional scientific partners (International Association for Engineering Geology & the Environment – **IAEG**, International Union of Soil Sciences – **IUSS**, International Geographical Union – **IGU**, The International Association of Hydrogeologists – **IAH**, Geological Sciences of Italy – **SGI**, Czech Soil Science Society – **CSSS**, Arabian Geosciences Union – **ArabGU**, The Society of Economic Geology of Romania – **SEGR**, World Meteorological Organization – **WMO**, International Medical Geology Association – **IMGA**, Russian Mineralogical Society – **RMS**, University of Petrosani) of WMESS.

We would like to express our sincere gratitude to all participants of WMESS 2016 from 50+ different countries all over the world for their interests and contributions in WMESS 2016. We wish you enjoy the World Multidisciplinary Earth Sciences Symposium – WMESS 2016 and have a pleasant stay in the city of romance Prague. We hope to see you again during next event WMESS 2017 which will be held in Prague (Czech Republic) approximately in the similar period.

**Prof.Dr. Işık YILMAZ**

President of WMESS – Chair of WMESS 2016



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## **Biomass plants site selection using multi criteria spatial analysis**

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### **ABSTRACT**

In this study we developed a decision support system based on multi criteria spatial analysis in order to select sites suitable to locate biomass plants. A set of environmental, economic and social criteria was defined, evaluated and weighted in the context of Saaty's analytic hierarchies. The best alternatives were obtained after applying Analytic Hierarchy Process (AHP). The model was applied to the central region of Portugal where forest and agriculture are the most representative land uses. Finally, sensitivity analysis of the set of factors and their associated weights was performed to test the robustness of the model. The sensitivity analysis provided insight into the most influent factors on the model, such as geomorphology, crop types, vegetation cover, potential demand and transport cost. The proposed evaluation model provides a valuable reference for decision makers in establishing a standardized means of selecting the optimal location for new biomass plants.

**Key words:** Biomass; multi criteria analysis; GIS; optimal location; AHP; sensitivity analysis.

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