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ICZM for sustainable development of coastal land subsidence area using system dynamic approach

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Land subsidence in Taiwan coastal zone has caused severe impact on natural environment and people welfare. In particular, some coastal areas in the western Taiwan, which were previously above high-tide level, have become the low-lying area and suffered the threat of sea water inundation during Typhoon seasons. Based on the concept of Integrated Coastal Zone Management (ICZM), the current study adopted the System Dynamic (SD) approach to outline the dynamic, interrelated, and feed-back loop system structure. A SD model was built using the DSR (Driving force, State, Response) sustainable development indicator system. In addition to the assessment of sustainable development, DSR can delineate the causal loop relations in the whole system. The causal loop diagram of the land subsidence SD model integrates all related DSR factors which have been partitioned into three subsystems. Several managerial strategies have been analysed using the proposed SD model to evaluate their performances of sustainable development in the coastal land subsidence area.

Biography

Yang-Chi Chang received his PhD degree in Civil Engineering from Purdue University, West Lafayette, Indiana, USA. Before joining National Sun Yat-sen University (NSYSU), he was a Researcher Fellow at the Energy & Resources Laboratory in Industrial Technology Research Institute. He is now a Professor of the Department of Marine Environment and Engineering in NSYSU, Kaohsiung, Taiwan. His research interests include marine environmental system analysis, information technology applications, and integrated coastal zone management. He has published more than 25 papers in reputed journals and has been serving as an Editorial Board Member of Ocean and Coastal Management.

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