Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

G01-P01 会場:コンベンションホール 時間:5 月 25 日 18:15-19:30

RESEARCH OF GROUND PENETRATING RADAR IN EVALUATING THE EXISTENCE OF ERODED CAVES BEHIND SEAWALL

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As an island, Taiwan is especially sensitive to the impact of the global climate change. Due to the influences of global warming and climate change, coastal floods will be more and more frequent over Taiwan areas. The action of the strong wave force or typhoon force often causes many destroy of seawall, for example the eroded caves behind seawall. This damage not only affects the lives of residents behind seawall, but also causes the severe flooding in coastal area.

This proposal presents an application of the Ground-Penetrating Radar (GPR) to detect the failure potential of eroded caves in a seawall. The seawall structure site survey was selected at Chi-Gu seawall in Tainan. From a series of GPR tests, it was found that the position of the eroded caves in a seawall can be easily identified using GPR

キーワード: ground penetrating radar, seawall, eroded cave
Keywords: ground penetrating radar, seawall, eroded cave

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The study of a beach safety assessment?an example of Fulong Beach
The study of a beach safety assessment?an example of Fulong Beach

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This paper presents the beach safety assessment indicators to assess the safe area for beach recreation. The sea area safe for reaction is defined by the beach security assessment indicators, including wave height, beach type, tidal elevation, sea velocity and beach shifting sand. According to the results, wave height, beach type and tidal elevation are major important indicators affecting personal water height. Seawaters flow field is an important indicator of change in location during the recreation process, and beach shifting sand is an important indicator affecting the beach air quality in the recreation area. Based on the consideration of the above influencing factors, this paper proposes to delineate the recreation areas by beach rating method. In this paper, as seawaters affect the tidal wave and current, MIKE 21 HD hydrodynamic model and SW wave model are used to simulate the nearshore wave and current characteristics. With Fulong Beach in northern Taiwan as the site for analysis, this study compares the model computation results and the in-situ observation data proposed by Lin (2009). The simulation of in-situ observation data is consistent in terms of the split current generation position. In summary of the discussion on beach safe recreation area of Fulong Beach by applying the above assessment methods, it is found that the beach safe recreation area is 0-30m line during high tide and 0-90m line during low tide.

キーワード: wave height, beach type, wave model, tidal elevation, hydrodynamic model
Keywords: wave height, beach type, wave model, tidal elevation, hydrodynamic model

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Giving Consideration to Ecosystem Conservation and Energy Exploitation to Develop Renewable Energy

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Giving Consideration to Ecosystem Conservation and Energy Exploitation to Develop Renewable Energy
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ABSTRACT
The issue of low energy independent rate has been a serious problem in Taiwan, while while the development of renewable energy is an important energy policy at present to solve the energy problem. Offshore Renewable Energy is the most potential part of Taiwanese renewable energy resources, and at this stage the Taiwan government has also been active in promoting the development of offshore wind farms. However, another issue is marine spatial multi-use that indirectly affect the building of offshore wind farm. The main reason is overlapped between the development of sea and important ecosystems, and due to the long-term neglect of ecosystem conservation that was led to protest the development of offshore wind farm. In order to balance between ecosystem conservation and the development of offshore wind farms, this study focuses on the case of demonstration offshore wind farm, and we are especially from the perspective of ecosystem services to re-examine the development of the sea, and then through four service of ecosystem to analyze the services that provided from the ecosystem of demonstration offshore wind farm, as well as the benefits of these services to the stakeholder. From the results, we found that ecosystems provide many services to the stakeholders, and the stakeholders also gain a lot of benefit from the services of ecosystems. Due to the economic value of ecosystems is not priceless, but can not be estimated. If we pay attention to the sustainability of ecosystems, the renewable energy development would truly achieve the objective of sustainable utilization.

キーワード: Renewable Energy,, Ecosystem Services, Offshore Wind Farm, Taiwan
Keywords: Renewable Energy,, Ecosystem Services, Offshore Wind Farm, Taiwan

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Trend of ocean education in Taiwan: a statistic study of the number of students enrolled in ocean-related departments

Trend of ocean education in Taiwan: a statistic study of the number of students enrolled in ocean-related departments

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The numbers of students enrolled in ocean-related departments are statistically studied in this paper. Data of three academic years, 2001, 2005 and 2010, are analyzed and compared. All of these departments are classified into four groups: marine science, ocean engineering, marine navigation and other related departments. It is found that the total number of students increases quickly from 2001 to 2010 at all level of academic degrees. Moreover, some new departments which include ocean tourism, ocean culture and general marine affairs are established in recent years as more applications and job opportunities of ocean affairs appear.

キーワード: ocean-related departments, enrolled students, ocean education in Taiwan
Keywords: ocean-related departments, enrolled students, ocean education in Taiwan

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Compiling textbooks of ocean science for students under age eighteen
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In Taiwan, ocean-related courses and textbooks designed for students under age 18 are quite limited at each level of school. There are two reasons for this phenomenon. One is that the ocean knowledge is not seen as a basic science subject in comparison with physics, chemistry and biology. Another reason is that most experts and researchers work at the college level rather than high schools and under. To deepen the education of ocean science for younger students, textbooks entitled as Ocean science, technology and history suitable for students for senior and junior high schools, and elementary schools are compiled by the author. Different from textbooks used in universities and colleges, it requires more delicate strategies and vivid descriptions which are obviously beyond an academic ability of professors. To this end a team including teachers at different levels of schools is established to edit textbooks. Experiences that the authors acquired in editing this textbook are represented herein. They include how the structure of chapters was chosen, how the figures for easy comprehension were painted, and how the difficult and hard sentences were translated to simple expressions.

キーワード: ocean science, textbooks, students under 18
Keywords: ocean science, textbooks, students under 18

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Mathematical methods for deriving Viscous Boussinesq equations
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For both undergraduate and graduate students who are interested in fundamental theories of earth science, mathematical tools play an important role for understanding basic equations in many academic fields. In this paper, mathematical tools applied to derive the Boussinesq equations with viscous effects are introduced to elucidate the relation between applied mathematics and earth science. Mathematical techniques used are the scale analysis, the perturbation method and the Pade approximation. Parameters for measuring nonlinearity, dispersion effects, density ratio and viscous effects are also defined. Based on these definitions as well as mathematical methods, viscous Boussinesq equations for internal waves are derived and analyzed. Strong connections between mathematics and earth science are also demonstrated.

キーワード: scale analysis, perturbation method, Pade approximation, viscous Boussinesq equations
Keywords: scale analysis, perturbation method, Pade approximation, viscous Boussinesq equations