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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
يُؤَيِّدُ بَيْنَهُمُ الْمَعَارِفَ وَيَلْمِزُهُمْ
Garden of Knowledge and Virtue

INOCEM/IIUM

International Conference - المؤتمر الدولي حول

on

Oceanography and Sustainable Marine Production:

A Challenge of Managing Marine Resources under Climate Change

ICOSMaP – 2013

Kuantan - Malaysia, 28-30 October 2013

CONFERENCE PROCEEDINGS

Edited by

Abdelouahab CHOUIKHI

Inter Islamic Science & Technology Network on Oceanography, Izmir – TURKEY

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Background

The effects of climate change have now been well established with significant impacts on oceanographic processes and marine resources. According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the global mean surface air temperature increased by 0.74 °C, while the global mean sea surface temperature rose by 0.67 °C over the last century. According to that report, the World would be 3.3 °C warmer by the end of the next century with a range of uncertainty of 2.2 to 4.9° C.

This increase of temperature will create potential negative impacts on the coastal wetlands, shorelines, estuaries, coral reefs, mangroves and ocean margin ecosystems with several key drivers: alterations in precipitation patterns with the decrease of subsequent delivery of freshwater, nutrients and sediment to the coastal zone which is the most productive and also will cause the sea level change;

The increase of ocean temperature will create alterations in circulation patterns; changes in frequency and intensity of coastal storms and increased CO₂ levels in atmosphere and seawater.

Over the next decades, the increasing rates of the sea-level rise, the intensity and frequency of coastal storms and hurricanes will increase threats to wetlands, shorelines, and coastal development. Estuarine productivity and particularly fisheries resources will change in response to alteration in the timing and amount of freshwater, nutrients, and sediments delivery.

The changes in freshwater delivery to the marine coastal area will alter estuarine stratification, residence time, increase of the eutrophication phenomena, coral bleaching and higher CO₂ levels which is expected to reduce coral calcification, and making for coral more difficult to recover from other disturbances.

Ocean warming is expected to cause ward shifts in the ranges of many other marine organisms. For example, we will attend to the biological invasion of indo-pacific species in the Mediterranean Sea, inducing tropicalization of the marine environment. These ward shifts will include commercial species, and may have secondary effects on their predators and prey. Although these potential impacts of climate change and variability will vary from system to system, it is important to recognize that will be superimposed upon and in many cases intensify, other ecosystem stresses (pollution, harvesting, habitat destruction, invasive species, land and resources uses, extreme natural events) which may lead to more significant consequences.

Preface

This International Conference (ICOSMaP – 2013) on "**Oceanography and Sustainable Marine Production: A Challenge of Managing Marine Resources under Climate Change**" had taken place at Hotel "Sri Manja Boutique" which is located in the city of Kuantan, during 28-30 October 2013. This Conference is jointly organized by the Inter Islamic Sciences & Technology Network on Oceanography (INOC) and the faculty of Sciences-Institute of Oceanography & Maritime Studies - International Islamic University (IIUM), Malaysia.

It was the second time that the INOC scientific meetings were scheduled in Malaysia.

The official opening of the conference was addressed by Ass. Pr. Med Kamil ABD RASHID, Director of INOC; Prof. Dr. Kamaruzzaman Yunus, Dean of Faculty of Sciences; the President of INOC- Prof. Orhan Uslu, the representative of the International Islamic University's Rector (IIUM), Prof. Dato' Sri Dr. Zaleha bt Kamarudin and YAB Dato' Sri Di-Raja Haji Adnan Bin Haji Yaakob, Chief Minister of Pahang who wished the conference all the success, thanked the participants and the organizers and formally opened the conference. This opening session was followed by the signing ceremony of the Memorandum of understanding between IIUM and Kagoshima University of Japan

The following persons: Prof. Ojvind Moestrup (Denmark), Prof. Reiji Masuda (Japan), Prof A. Abu Samah (Malaysia) and Prof. A. Chouikhi (INOC) who have presented a key note were invited to the Podium during the different sessions and were presented the gift of the IIUM in appreciation of their contributions to INOC, INOC- IIUM and oceanography in general, and have thanked IIUM on behalf of all the recipients of the gifts.

One of the main INOC objectives was to stimulate young scientists to engage in research in the different fields of oceanography and simultaneously promote interactions with colleagues around the Islamic world. We were delighted with the great support of the scientific community which had been seen by the participation of many distinguished scientists working in diverse fields such as adaptation to and mitigation of the effects of climate change on sustainable marine resources , not only from Islamic world but also from other countries.

ICOSMaP – 2013 brought together almost 140 scientists and massive participation of PhD's students from 21 countries. More than 230 abstracts were submitted, out of which 97 were selected for oral and 74 posters presentations. Interesting debates and discussions on the different topics as well as an exchange of ideas and perspectives were held during the various sessions of the conference

These abstracts were organized in a Pdf in the format of the published Book of Abstracts, were made available at www.inoctr.org before the conference and distributed during the registration to the conference.

Besides the traditional topics of the Marine Resources under Climate Change, other topics mentioned below were included in this Conference. Four parallel sessions were scheduled and the four plenary introductory themes featured reviews covering the full range of ICOSMaP topics:

- **Oceanography, Coastal Processes & Geomorphology** (Effects of climate change on Oceanography; Coastal hydrodynamics: Coastal erosion and sediment transport; GIS and Remote sensing for marine application; Ocean acidification & CO₂ sequestration; Integrated Coastal Zone Management).
- **Marine Ecology & Biodiversity** (Marine environment & pollution; Marine plankton including Harmful algal bloom; Threatened & Invasive species; Conservation of marine resources;

Impacts of climate change on marine ecosystem & resources; Adaptation and minimization strategies of climate change effects; Sustainable development & environmental integration; Prevention of marine flooding and floods & hydraulic risk management; Artificial reef & marine ecosystem management)

- **Biotechnology & Marine Natural Products** (Issues & challenges in breeding & hybridization in aquaculture; Use of biotechnology for adaptation & minimization of climate change effects on marine resources; Genetic effects of aquaculture escapees; Marine Renewable Energy; Marine Pharmaceuticals)
- **Aquaculture & Fisheries** (Sustainable marine production, Effects of climate change on aquaculture & fisheries: assessment & minimization; Seafood security in the hanging climate; Environment-friendly aquaculture ; Disease & biosecurity in aquaculture ; Stock assessment & marine ranching , Aquaculture feed & nutrition)

I gratefully thank the able chairpersons and rapporteurs of the various conference sessions and all speakers for their valuable contributions.

I wish to thank many of my colleagues who have contributed in the preparation of this conference, especially the local organizing committee, Dr. Mohammad Mustafizur Rahman, the secretariat and assistants to the secretariat. I would like to thank the Scientific Committee and the International Advisory Board for their valuable advices and suggestions. Furthermore, I would like to express my appreciation to the International Islamic University of Kuantan for its support.



Opening session of ICOSMAP conference



Signing ceremony of MoU between IIUM
& Kagoshima University of Japan

(Photos of the conference: INOC- IIUM)



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