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a Forum of Humanosphere Science School 2015 (HSS)

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"Innovation in Science & Technology Towards Sustainable Future"

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September 29-30, 2015 at LIPI Auditorium
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Indonesian Institute of Sciences (LIPI)

Research Center for Biomaterials (LIPI)
2015

PROCEEDINGS

THE 5th INTERNATIONAL SYMPOSIUM FOR SUSTAINABLE HUMANOSPHERE [ISSH]-

A Forum of Humanosphere Science School [HSS]

"Innovation in Science and Technology towards Sustainable Future"

Jakarta, 29 – 30 September 2015

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Edited by:

Prof. Dr. Subyakto (LIPI)
Prof. Dr. Eddy Hermawan (LAPAN)
Dr. Ir. Wahyu Dwianto, M.Agr. (LIPI)
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PREFACE

This publication contains papers that were presented at **the 5th International Symposium for Sustainable Humanosphere (ISSH)** that was held in Jakarta from 29-30 September 2015. All papers were formatted and edited before published without changing original meaning and views of the author(s).

The symposium is a part of **Humanosphere Science School (HSS)**, an annual event organized by a good collaboration among Research Center for Biomaterials - Indonesian Institute of Sciences (LIPI), Research Institute for Sustainable Humanosphere (RISH) - Kyoto University, and National Institute of Aeronautics and Space (LAPAN). The focus for this year event was "**Innovation in Science and Technology towards Sustainable Future**".

This year, the committee has received 31 full paper submissions covering the field of atmospheric/ionospheric science, remote sensing (science and technology), biospheric science, geospheric science, general forestry, and community-based development and social economic science. The 2015 **HSS-ISSH** participants were students, researchers and lecturers coming from Japan, Malaysia, and Indonesia.

On behalf of the committee, I humbly thank you to all authors for the contribution and also dedicated editor team members who have spared their valuable time to take all the great efforts in the making of this proceedings.

Lastly I hope this proceedings will be a useful source of information and achieve its primary objective of disseminating new experiences and information to researchers, academics, policy makers and students.

Bogor, 30 December 2015

Apriwi Zulfiri, M.Sc

Chairman of ISSH 2015

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KEYNOTE SPEECHES

THE IMPACT OF CLIMATE CHANGE ON THE DECLINE IN RICE PRODUCTION IN INDONESIA

Joko Wiratmo [1*], Ruminta, Yuyun Yuwariah, Yayat Rochayat Suradinata [2]

[1] Department of Meteorology, Faculty of Earth Science and Technology, Institut Teknologi Bandung, Jl. Ganesha 10 Bandung 40132 Indonesia

[2] Department of Agriculture, Padjadjaran University, Jl. Raya Bandung Sumedang km 21 Jatinangor, Sumedang 45363 Indonesia

*Corresponding author: joko.wiratmo@meteo.itb.ac.id

Abstract

Climate change due to global warming has been, is and will happen. The impact that can be felt are increasingly frequent extreme weather and climate, such as floods, droughts, tornadoes-like, tornadoes, storms, cyclones, El Nino, La Nina and others. The melting of the icebergs at the poles will increase the mean sea level soaking low coastal areas that agricultural land will be narrowed. Reduced agricultural land due to sea level rise will increase the risk of declining agricultural production. Northern coast of West Java in particular Karawang as one of the national granary also threatened agricultural area narrowed due to heightened sea levels in particular areas bordering the Java Sea. Temperature is one indicator of global warming which could threaten the improvement of agriculture especially rice production due to increased respiration and evapotranspiration and shorten the life of the plant. Rice production is also expected to be affected by reduced rainfall conditions. The above understanding often involves large scale that need to be investigated further at local and micro scale. The results show that climate change will bring important impact on agricultural systems in Indonesia, especially in Karawang in 2030. The distribution level impact of the disaster is uneven. The most visible impact indicated by the hazard index value higher than the other is subdistrict Tempuran. Reduction of rice production, reduction of ***planting*** area and harvested area indicates this subdistricts is the most affected.

Keywords: *climate change, local scale, **rice production**, KRAPI*

Introduction

Problems of food is a major concern because of the projected impacts of future climate change indicate that there will be a reduction in food production in many places in the world. At this time the disaster was widely felt, for example in sub-Saharan Africa that lives and communities heavily dependent on agriculture. Agriculture in the region siphon 85% of the water needs of the people there (Knox et al, 2012). Many researchers (Zhon and Tung (2013), Lee et al (2012), Osborne and Wheeler (2013) and others) and institutions in the world who also reported on the disaster that might occur as a result of climate change, not least in Indonesia that have a high degree of vulnerability (Measey, 2010).

In the future the islands of Java and Sumatra are generally experiencing drought, while in Kalimantan, Sulawesi and Papua generally become wetter. Therefore, the availability of water for agriculture to be disturbed, especially in Java and Sumatra. The availability of water is an important factor controlling agricultural production where if water availability is affected then the plant production also disturbed.

In addition to the water, the climate parameters that clearly affected by global warming and climate change is the temperature. Increased temperatures caused crop evapotranspiration also increases and shortens the life of the plant and reduce agricultural area (Lobel and Field, 2007; Sultan, 2012). Increasing temperature few degrees Celsius would have a significant impact for the agricultural sector

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