ICTAR

International Conference on Transdisciplinary Approach Research

Organized by Universitas Negeri Gorontalo Indonesia and Ehime University Japan

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Conference Book

EHIME UNIVERSITY

Preface

ICTAR 2017

We are happy to host this year's ICTAR 2017 (International Conference on Transdisciplinary Approach Research) in Universitas Negeri Gorontalo. I would like to welcome all of you to the historic and beautiful city of Gorontalo. This part of the world is where the scientific revolution about understanding nature started. Instead of exaplaining natural phenomena by recourse to traditional religion or myth, the cultural climate was such that men began to form hypotheses about the natural world based on ideas gained from both personal experience and deep reflection. In the words of the founder of our university, to whom we are deeply grateful for creating this institution; our world is today going through a new era that is commonoly referred to as the "age of information". Globalization is eliminating frointiers as well as drawing markets together while raising competition from a regional to a global level. In an age such at this where the content and scope of information has reached such great dimensions, there are two fundamental principles that enable instituations and states to survive and be successful: To acquire Knowledge and to use and share it efficiently. Universitas Negeri Gorontalo strives to achieve this by stressing creativity, inquisitiveness, a multi-faceted learning enviroment and academic excellence.

As the Chairperson of the Organizing Committee, I take the privilege to welcome you to this epoch-making conference on ICTAR 2017 (International Conference on Transdisciplinary Approach Research), taking place for the first time in Gorontalo, Indonesia. We hope by this opportunity Universitas Negeri Gorontalo and the beautiful city of Gorontalo will be known better.

We would like to thank our Rector, Prof. Dr. Syamsu Qamar Badu, M.Pd and Board of the trustees of Universitas Negeri Gorontalo for their vast support for hosting ICTAR 2017 International Conference on Transdisciplinary Approach Research. We thank Conference Chair, Prof. Masayuki Sakakibara and Conference Secretariat for this collaborational conference. Finally we thank all plenary speakers and all contributors for attending this year's ICTAR 2017 and visiting us in Universitas Negeri Gorontalo, Gorontalo. We hope that you will enjoy your stay here and look forward to welcoming you in the following year's conference.

August 19, 2017
On behalf of the local Organization Committee
Ramli Utina
Chairs

A Study on Biogeophysical Condition of Limboto Lake, Gorontalo Province

Author (s): ERAKU, Sunarty[1]
Co- Author (s): BAHSOAN, Rifadli[2], AMALI, Ningrayati[2] and ISA, Ishak[1]

[1]*Faculty of Mathematics and Natural Sciences, Universitas Negeri Gorontalo*
[2]*Faculty of Engineering, Universitas Negeri Gorontalo*

The rapid growth of water hyacinth in Limboto Lake damages the ecosystem of the lake and thus leads to the siltation of the lake. In addition, erosion and sedimentation due to the farming activities and illegal logging surround the upstream worsen the situation. By that, this study aims at investigating the biogeophysical condition of Limboto Lake; this is to reconstruct the lake's condition. The data were collected through field surveys and interviews. Methods of analysis were due by employing spatial and ecological approach with a system called Geographic Information System. The results report that continuous sedimentation and shrinkage on the Limboto Lake influence the depth of the lake; in other words, the lake siltation is inevitable. On top of that, the explosion of human population which leads to the mass exploitation of the land to open farming areas and residencies are also a contributing factor towards the depth of the lake. In 1932, the width of the lake was 7000 ha with the depth of 30 meters and, in 1961, the width became 4250 ha with the depth of 10 meters due to the continuous damages on the lake. This condition worsened in 2001 whereas the lake suffered from a significant drop to the width (2934.25 ha) and depth of the lake, even though there was a rise of about 100 ha in 2008 (3000 ha). The total drop of the width of the lake from 2001 to 2015 is of 826.75 ha. Therefore, the remaining width, in 2015, was 2107.50 ha.

Innovation of Wooden Stage House for Earthquake Resistant Construction

Author (s): AYUDDIN[1]
Co-Author (s): BADU, Syamsu Qamar[2]

[1]*Department of Civil Engineering, Gorontalo State University*
[2]*Department of Mathematics, Gorontalo State University*

One of the orientations to produce innovation of earthquake-resistant wooden stage house is to give knowledge to the community about the importance of retrofitting on a construction in maintaining the stabilities of the wooden stage house structure when subjected to earthquake loads. The considerations in this innovation are the house roof model, the connection model at the beam column joint, the connection models used, and the foundation. The most important parts of this wooden stage house innovation are the foundation model. The foundation uses rectangular reinforced concrete and will cover 20% pole from the height of lt.1 wooden stage house by 3 m. The foundation is attached to the pole with a very thorough level of work because of the idea that the strength of the wooden house depends on the design of the foundation. The foundation concept also provides a level of safety and comfort. In addition, this innovation also considers the concept of load reduction that is open portal innovation that reduces the heavy load of the wooden stage house itself. Thus, an earthquake inertial force can be channeled from each structural element to the main structure of the horizontal force, which then transfers these forces to the foundation and soil.

Petrography Volcanic Rock: Volcanic Rock Alteration Study of Colo Volcano Indonesia

Author (s): AMIN, Abd Kadir Mubarak A[1]
Co-Author (s): BADARI, Alifia Widya Warapsari[1], SALAMA, Tedy Harianto[1], MANYOE, Intan Noviantari[1] and LASETI Khairul Hijaz[1]

[1]*Geological Engineering Study Program, Departement Science and Earth Science Technology, Gorontalo State University, Gorontalo*

The existence of Colo Volcano on the southwest side of the North Arm of Sulawesi Magmatic Arc show evidence of evolutionary difference plate under Tomini Bay.Colo Volcanism activity indicated a product of slab rollback final extension of the Gulf Gorontalo. This study aims to investigate the alterated vulcanic rocks of the Colo Volcano.In this study, petrographic analysis is used to determine mineral composition based on petroscopic. Several lava and pyroclastic outcrops, indicating an alteration of the Colo Volcano product. The analysis showed andesite lava on gray-green thin incisions, subhedral-anhedral shape, mineral composition consist of hornblende (10%), biotite (10%), quartz (15%), pyroxene (10%), orthoclase (10%), Plagioclase (10%), opaque minerals (20%) and glasses (15%). The Orthoclase, is white-blueish-gray, orthorhombic, low cleavage, twinning altered look. Locally shows colorless-blue-grayish, subhedral-anhedral shape, mineral composition consisting of hornblende (10%), biotite (10%), quartz (50%), pyroxene (5%), orthoclase (5%), opaque minerals (15%) and glasses (5%). It might consist of cholorotisation of biotite. The lava exposed on Mount Ambu shows the presence of smectite alteration and pyrite mineralization, on thin incisions including blue-gray-brown, subhedral-anhedral shape, mineral composition consist of hornblende (10%), biotite (5%), quartz (10%), Olivine (5%), plagioclase (20%), orthoclase (15%), opaque minerals (15%) and glasses (20%)

Universitas Negeri Gorontalo
Jl. Jenderal Sudirman No. 6 Kota Gorontalo - Indonesia
Telp: (0435) 821125-821752, Fax: (0435) 821752
Website: www.ung.ac.id