MESSAGE FROM VICE – CHANCELLOR
UNIVERSITI MALAYSIA SABAH

Assalamualaikum Warahmatullahhi Wabarakatuh.

It is my great pleasure and honor to welcome all of you here today to the 12th Seminar on Science and Technology 2018 with the theme of ‘Innovating and Sustaining Research Excellence’.

I wish to extend my deep appreciation to the Faculty of Science and Natural Resources in organizing this event. We expect that the S&T 2018 seminar will be a great platform to further develop and disseminate the valuable knowledge and latest innovation in science and technology. I believe that the academicians, scientist, researchers and innovators will continue to expand the knowledge from time to time, and able to share and discuss new findings, in order to enrich the culture of research and response to the future needs. It is envisaged that the innovation and research will result in expanding good collaborations between universities, research institutions, government agencies, and industries in the national and international levels. We will have an opportunity to learn, listen, and share the worthwhile experience from the best experts in the field and various topics. I hope we can share as much as we can from this seminar, enriched with a better understanding and sustaining the research excellence.

Universiti Malaysia Sabah is committed to its perspective in supporting innovation and research to the development of science and technology in Malaysia. Following the encouragement made by the government to raise the younger generations interest and awareness in science, technology, and innovation. With that in mind, this will revive our effort to increase the students and younger generations’ interest, ability, and innovations of science and technology through learning, teaching, and research. We are all optimistic and hope that the innovation and research culture move towards, in order to overcome social, economic, and environment issues.

Finally, it is truly an honour, and a privilege for FSSA to organize this seminar. Therefore, I would like to express my congratulations to the organizing committee for their tremendous efforts in organizing the seminar. Again, much appreciation to the participants and invited speakers, and the guest for having taken the time to join us here for the next two days, and I wish that the seminar will be a success and a fruitful discussion.

Thank you and Happy Seminar!

Wassalamualaikum WRT WBT.

“RESEARCH AND INNOVATION DEVELOP EXCELLENCE UNIVERSITY ”

PROF. DATUK DR. D KAMARUDIN D MUDIN
Vice – Chancellor
Universiti Malaysia Sabah
MESSAGE FROM
DEAN OF FACULTY OF SCIENCE AND NATURAL RESOURCES,
UNIVERSITI MALAYSIA SABAH

Assalamualaikum Warahmatullahhi Wabarakatuh, in the name of God, the most gracious and most merciful. Alhamdulillah, all praises are due to Allah, the Almighty, beneficent, and merciful for granting the successful of the 12th Science and Technology (S&T) 2018 Seminar organized this year.

First and foremost, I would like to take this opportunity to welcome all the participants who partake in the seminar this year. My utmost appreciation goes to the keynote speakers who incline in sharing their knowledge, expertise and experience related to science and technology.

Organizing the Science and Technology seminar is in line with the deputation promoted by the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) which is to ‘Explore, Develop and Benefit Science, Technology and Innovation (S&T) to Acquire Knowledge, Create Wealth and Ensure The Well-Being of Society to Achieve a Competitive, Well-Established and Inclusive High-Income Economy’. It is hope that the 12th S&T seminar will contribute to the constructive ideas and knowledge for all parties towards the strengthening of the science and technology domain to achieve a highly developed nation. Furthermore, it is also expected that this seminar will enhance the networking among various disciplines of researchers.

Finally, I would like to extend my gratitude to all parties who have successfully participated and involve in this seminar. Acknowledgment also goes to the committees involved in the accomplishment of the 12th S&T 2018 seminar.

“BERTEKAD CEMERLANG”

PROF. DR. BABA MUSTA
Dean
Faculty of Science and Natural Resources
Universiti Malaysia Sabah
MESSAGE FROM CHAIRMAN

Assalamualaikum Warahmatullahhi Wabarakatuh.

It is with great honour and privilege for me as the chairman to welcome all fellow participants, speakers, and invited guests in the 12th Science and Technology (S&T) 2018 seminar. I am indebted thankful to all the organizing committee that involved in the successful of this seminar. My warm welcome also goes to the International attendees that coming from outside Sabah, ‘Welcome the the State of Sabah, Land Below the Wind’, there is a great opportunity to explore in the Nature Resort City of Kota Kinabalu.

The 2018 S&T seminar is a continuation of the 2013 S&T seminar that was initiated to raise the cohesion of different research sphere. It is highly hope that the 12th S&T seminar would be pre-eminent platform for the up-to-date research and innovation discussion and outcome sharing in various field. The seminar theme on ‘Innovative and Sustainable Research Excellence’, is inline with the prolonged aims of this seminar to provide prospects for researchers and academicians to interact, expand and exchange ideas; centering on the latest research activities; to establish and strengthened multidisciplinary collaboration to enhance the nation's niche research and development. We are very privileged to have in attendance so many distinguished experts and researcher, as well as observers from various field.

Correspondingly, the seminar also highlights various concepts and topics in science and technology encompassing engineering and technology, bioscience and biotechnology, sustainable agriculture, forestry, food science and nutrition, earth science and natural disasters, environmental science, renewable energy, health and science medical, mathematical and statistical data such as ICT and computer and visual graphics. Again, I would like to extend highest gratitude to those who had dedicate their time and efforts for the successful preparation and organisation of the 12th S&T seminar, the committee member, Faculty of Science and Natural Resources, Universiti Malaysia Sabah, keynote speakers, presenter, fellow participants for all the support and unyield collaboration.

Conclusively, we hope this seminar will benefit all participants and presenters and achieve their initial goals. I wish you all a very successful seminar and assure you of the full support from our committee.

Thank you

“Innovative and Sustainable Research Excellence”

DR. RODEANO ROSLEE
Chairman
12th Seminar on Science and Technology 2018
Faculty of Science and Natural Resources
Universiti Malaysia Sabah
KEYNOTE SPEAKER 1

PROF. DR. SANUDIN TAHIR,
Professor of Geology,
Faculty of Science and Natural Resources,
Universiti Malaysia Sabah

Title:
NEOGENE STRATOVOLCANIC SEQUENCE AND GEOSITES POTENTIAL FOR THE FUTURE GEOPARK IN SEMPORNA PENINSULA, SABAH, MALAYSIA

Abstract
The Miocene to Late Pleistocene volcanic activities formed the current mountain chain of Semporna Peninsula, Sabah and contributes to the development of thick sequence of pyroclastics and lava flows of andesitic, dacitic and basaltic rock types. It has been accepted that during the period, the area was subjected to series of volcanisms and formed the major morphological features of the peninsula. This volcanic sequence is underlain by the Early Cretaceous pillow lava basalt, and overlain by the late Pleistocene volcanic apron, contributing to the present topography of the area. The sub aerial of the latest lava flows of the region indicates volcanism consistent with tholeiitic basalt. This late Pleistocene volcanic apron covers an extensive area overlaying the older volcanic rock units. The potentiality of the rock units in this mountain chain has been revealed by Malaysian Geoheritage group and has been devoted to the detection of various characteristics for the establishment of another geopark antecedent to the earlier proposed Kinabalu Geopark. The Andrassy, Lucia, Maria, Wullersdorf and Magdalena mountains formed the major topographic features of Tawau hills and the major component of the volcanic sequence of the area. This volcanic sequence comprises of geological features of scientific, historical, recreational and aesthetic values. Thus, it is suggested to conserve these varieties of geological features for the future generation and to allow research activities for the advancement of sustainable natural resources in Sabah. Geoconservation is necessary as a focus for substantial leisure activities and tourism. This proposed geological heritage programmed would prove its specific utility for raising public awareness and stimulating sustainable development on the basis of geotourism. This will help to conserve protected areas and consider them as essential components for the public interaction with their environment.
KEYNOTE SPEAKER 2
PROF. DR. PHUA MUI HOW
Professor, Kelvin Tan Aik Pen Forestry Chair
Faculty of Science and Natural Resources,
Universiti Malaysia Sabah

Title:
AIRBORNE LIGHT DETECTION AND RANGING FOR TROPICAL FOREST ABOVE-GROUND BIOMASS ESTIMATION

Abstract
Accelerated greenhouse gas emissions, especially carbon-based emissions, are the causes of global warming. Tropical rainforests are an important sink and source in global carbon cycling. Reducing Emissions from Deforestation and forest Degradation (REDD) has been under negotiation by the United Nations Framework Convention on Climate Change as a mitigation strategy against the increasing carbon emissions due to land use and land cover change. Satellite imaging including optical and Synthetic Aperture Radar data may substantially underestimate aboveground biomass (AGB) or carbon stock due to data saturation at high AGB forests. In contrast, light detection and ranging (LiDAR) is an active remote sensing that emits laser pulses to the target area and records the travel time of the reflected pulse. The emitted lasers fall on the canopy surface and also penetrate the forest canopy to assess the dense and complex forest structure. Airborne LiDAR data have been acquired in different tropical rainforests of Sabah including lowland tropical forest, primary and logged-over hill dipterocarps as well as montane rainforests. AGB estimation model was developed for each forest type using LiDAR metrics. Among the metrics, laser penetration rate at certain canopy height or mean canopy height model or a combination of both was able to estimate the AGB with good accuracy. AGB estimates at fine spatial scales using airborne LiDAR will be important to upcoming spaceborne LiDAR missions such as GEDI for modelling of tropical forest ecosystem services.
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