NATIONAL GEOSCIENCE CONFERENCE 2010
11 – 12 June 2010 • Grand BlueWave Hotel, Shah Alam, Selangor, Malaysia

ABSTRACTS

Keynote 1

Geoscience in support of climate resilient development

JOY JACQUELINE PEREIRA

Southeast Asia Disaster Prevention Research Institute (SEADPRI-UKM)
Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor D.E.
Email Address: joy@ukm.edu.my

Localised climate projection by the National Hydraulic Research Institute of Malaysia (NAHRIM) indicate a substantial increase in monthly rainfall over the northeast coastal region and a decrease in monthly rainfall in the west coast of Peninsular Malaysia by the year 2050. Simulations of future river flows in several watersheds in the east coast of Peninsular Malaysia indicate increases in hydrologic extremes, i.e. higher high flows and lower low flows when compared with historical levels.

With the onset of climate change, the number of disasters and people affected is anticipated to increase. Climate change is a process that influences all hydrometeorological hazards. Generally, geological hazards are not influenced by climate change. However, landslides and subsidence are to a certain extent influenced by the water table level that is sensitive to rainfall, which is in turn susceptible to climate change. Increases or decreases in water levels of rivers may also have consequences for water quality. Higher and extreme run-offs may result in increased risk of flooding, which in turn heightens the risk of landslide disasters in urban areas. Increased flooding, particularly in areas previously not exposed to the hazards could lead to dispersal of contaminants and toxins into rivers where wastewater treatment plants are overwhelmed. The possibility of circulation of environmentally hazardous substances in surface water where industrial sites and landfills are affected cannot be ignored. The consequences could be disastrous if such risks are not addressed.

In order to achieve sustainable human development, it is necessary to ensure that the planning process includes socio-economic considerations, management of resources and suitability of land, taking into account its potential geohazards and environmental impacts. In addition, the planning process also has to take into account the changing climate and its potential impacts so as to reduce vulnerability and ensure resilience of any proposed socio-economic development project. It would be more cost-effective to take adaptation measures early on, especially for critical infrastructure with long economic life. Current planning of critical infrastructure should take into account adaptation to the impacts of climate change to reduce the risk of disasters.

The issue of climate change and its interplay with the environment is complex, connected and highly variable in spatial and temporal scale. There is also a high level of uncertainty involved. Decision-making in the context of climate change demands an appreciation of the "big picture". The three dimensional spatial and temporal approach of geoscience allows for an appreciation of the "big picture" to address the complex interplay of environmental systems in a changing climate. The use of geoscience expertise, tools and mapping capabilities can contribute to assess the vulnerability of society to catastrophic and insidious hazards, both current and anticipated, in the onset of climate change.

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 36, No. 2, April-June 2010