

Weathering Satellite System in Royal Belum: A Methodological Framework and Challenges

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Abstract

Southeast Asia are almost 80% covered with tropical rainforest. One of the largest tropical rainforest are located in the far north of Peninsular Malaysia is 370, 000ha evergreen forest in the Belum-Temengor Forest Complex. It is the second largest single forest block in Peninsular Malaysia after Taman Negara National Park. Belum-Temengor is a hilly to mountainous region ranging in altitude from 130m to 1,533m, straddling the Main Range, Peninsular Malaysia's backbone. Conversation at Belum- Temengor is based on a series of land use categories, and one of the categories are gazette as a protected area in 2007 namely as Royal Belum State Park (119,500ha). There were many conservation initiatives in order to protect this forest from illegal harvesting of forest products and wildlife poaching that continue to pose a severe threat to its biodiversity. The impact from all the illegal activities also contributes to climatological changes for the forest and their surrounding as well. As the forest gives the most natural gasses (Oxygen (O₂) and Carbon Dioxide (CO₂)) to the globe as well as the cooling effects, few studies on the carbon stock and climate change on going as for this area. For forestry and natural resource management purposes the Global Navigation Satellite Systems (GNSS) help address a number of navigational, positioning and mapping needs. Normally, satellite navigation and positioning system are used from the GNSS signal in space emitted to its receiver located on the ground or attached to any movable objects (animals, vehicles, etc) to attain their accurate whereabouts. For forest managers the use of GNSS system to gather the information on the land boundaries, forest plots inventory, road mapping and other features of interest. Nowadays GNSS signal capabilities is routinely use in numerical weather forecasting. Both observations of Total Electron Content (TEC) in the ionosphere and Integrated Water Vapor (IWV) in the troposphere are valuable for atmospheric sciences. In this

research, the application of the continuously long hours of GNSS observation across the Royal Belum Forest will provide significant water column information of the Royal Belum Integrated Water Vapour (RBIWV). Focuses solely on RBIWV, the cooling effect of the Royal Belum State Park towards the climatology of Malaysia as well as its climate change impact to the region can be quantitatively attributed.