

# **Annual Geological Conference 2002**

*Renaissance Hotel*

*Kota Bharu, Kelantan*

*26–27 May 2002*

## **\*\*\* Abstracts of Papers \*\*\***

### **Land use changes, soil erosion and decreased base flow of rivers at Cameron Highlands, Peninsular Malaysia**

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The hydrological cycle within any drainage basin can be viewed simply as inputs of precipitation distributed through a number of storages by a series of transfers, leading to outputs of basin channel runoff, evapo-transpiration and outflow of groundwater. Changes in land use within the basin have a profound effect upon the hydrological cycle as they directly influence interception, surface and soil moisture storages, as well as infiltration and overland flow. In highland drainage basins, the most visible impact of changes in land use is soil erosion, whilst other impacts include the lowering of groundwater tables and the decreased base flow of rivers.

Changes in land use at Cameron Highlands between 1947 and 1974 involved mainly an increase in area of tea estates and orchards at the expense of forests, but between 1974 and 1982, an increase in area of market gardens and residential/urban centers at the expense of forests. Between 1982 and 1990, there was a further increase in area of market gardens and residential/urban centers, but at the expense of tea estates and orchards. These changes in land use from forests through tea estates and orchards to market gardens and residential/urban centers, have had successively greater impacts on the ground surface, resulting in increasing rates of soil erosion. The eroded sediments have been, and continue to be, deposited along river channels and diversion tunnels in the area as well as in the Ringlet Reservoir. Increasing overland flow as a result of the changes in land use is also reflected by the rising trend (relative to the annual rainfall) of the annual discharge of the Sg. Bertam at Robinson's Falls for the period 1964–1997; a trend that has led to decreased base flows of the Sg. Bertam during periods of several weeks without rain.