

Movement of flow, sediment and nutrients in a watershed and the development of watershed management technique to reduce the impact on environment; targeting subtropical area

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【Outline of survey】

It has been recognized that water and the associated movement of materials such as sediment and nutrients are important to conserve ecosystem existing in watershed. Among others, red soil yield, transport toward the coastal zones and deposition on corals are one of the major environmental problems in Okinawa, Japan, in which agricultural area is the major source of sediment yield. In the past, sediment yield, sediment and nutrient movement, and the subsequent effect on environment such as damage of corals have been treated separately. The present project treats the problem as an integrated system, where the several countermeasures to reduce sediment yield are evaluated quantitatively by field observations and the numerical simulation employing such as modified WEPP model. They provide the best combination of the countermeasures. The corals are very sensitive to the aquatic environmental change, and therefore they are used as an indicator of the environment. The knowledge obtained and the techniques developed herein are applicable to the Southeast Asian countries where the same problems are occurring due to rapid land development.

【Expected results】

Movement of water, sediment and nutrients are observed in a watershed including adjacent coastal area in Okinawa, which provides basic data for the movement of substances. Effective countermeasure to reduce impact on natural environment will be proposed based on the field observations and the numerical simulation developed herein. These studies can provide a criterion of red soil yield which allows the permanent living of corals.

【References by the principal researcher】

S.Ikeda, Y.Akamatsu and Y.Toda: Flow, Sediment, and Nutrient Transport in a Riparian Mangrove, Riparian Vegetation and Fluvial Geomorphology (Water Science and Application 8), American Geophysical Union, pp.171-185, 2004.

【Term of project】 FY 2005- 2009

【Budget allocation】 73,000,000 yen

【Homepage address】 <http://www.cv.titech.ac.jp/~ikeda-lab/>