

Developing gully erosion network map and analyzing of 2-time series variation of gully erosion for environmental conservation, effectively using satellite imageries in west part of Inle lake in Myanmar

*Asuka Wachi¹, Takahisa Furuichi², Taku Izumiyama³, Toru Inada¹

1. Asia Air Survey Co., Ltd, 2. Hokkaido University, Graduate School of Agriculture, 3. IHI Corporation

Lake Inle is located on Shan Plateau in Eastern Myanmar. Its environment and natural resources in the catchment areas attract many tourists and are foundation of the local economies, societies and cultures. In recent years, some issues have become imminent. For example, water pollution due to increased wastewater from dwellers and agriculture, acceleration of soil erosion due to expansion of agricultural land and reduction of forest areas in the catchment, excessive sediment deposition in delta and lake areas because of sediment discharged from the catchment and so on. In particular, it is reported that gully erosion is one of major process as the cause of sediment discharge. Improving conservation management of the lake area and catchment has become an important national task.

In this research, focusing on sediment discharge from the upper stream catchment, several small catchments were selected from the Upper Balu River catchment and the Kalow River catchment in the west of Inle Lake where severe gully erosion is observed. Two time series gully network map were created using satellite imageries taken in 2006 (QuickBird resolution 2.5 m) and in 2015 (RapidEye resolution 5 m) and analyzed its change. In order to grasp the current detail situation, the topography was analyzed using DEM (AW 3D 2 m mesh) created from the satellite imagery of 2013.

Forest Department and Irrigation Department in Myanmar have been promoting countermeasures to prevent soil erosion respectively. However the site where countermeasures were taken has been decided by the field observation of the staff members, and quantitative methods such as using satellite imageries were not taken. If the condition of catchment erosion can be evaluated quantitatively, it will make it possible to take effective and efficient measures for erosion.

Keywords: Gully network, Watershed Management, Prevention for soil erosion, Remote Sensing, Topography analysis