Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

HDS022-05 Room: 201B Time: May 26 11:45-12:00

Glacier lake inventory and recent changes of glacier lakes in the Bhutan-Himalays

Chiyuki Narama[1*], Takeo Tadono[2], Tsutomu Yamanokuchi[3], Sachi Kawamoto[3], Chika Abe[4], Jinro Ukita[4], Koji Fujita[5]

[1]RIHN, [2]Japan Aerospace Exploration Agency, [3]RESTEC, [4]Niigata Univ., [5]Nagoya Univ.

We started to make a new glacier lake inventory for the Bhutan-Himalayas, which have resulted from a Bhutan glacier lake studies in JST/JICA project. In the Himalayas, glacier lake outburst floods (GLOFs) have occurred at the rate of once or twice per decade. Because GLOFs cause serious damage downstream, inventories of glacier lake distributions and associated risk levels are useful for disaster planning and prevention. The first inventory of glacier lakes in the Bhutan-Himalayas was produced in 1998-1999 by the glacier lake research team at Nagoya and Tokyo Metropolitan universities. That report focused on lakes along the snowman trek route. A second glacier lake inventory for the Bhutan-Himalayas was published in 2001 by the International Centre for Integrated Mountain Development (ICIMOD) in Nepal. This inventory, based on Landsat 5 TM data (30-m resolution) for 1999, provided the following information for all glacier lakes in the Bhutan-Himalayas: location, map, latitude/longitude co-ordinates, areal distribution, length, distance to glacier, elevation, outlet information, and lake type. The downloadable polygon data for lake coverage, however, were not immediately GIS-compatible. Moreover, although expansion of some glacier lakes was noted in the report, changes in the condition of all glacial lakes in Bhutan-Himalayas since 2000 were not incorporated. The present study is intended to provide an update to the ICMOD glacier lake inventory, and provides a new and more detailed glacier lake inventory based on high-resolution ALOS satellite imagery; free public access to online glacier lake polygon data; time-series monitoring of glacier lake variation using satellite images; and re-evaluation of a dangerous glacial lake based on a field study. This presentation introduces the inventory and provides an overview of recent glacial lake behavior.

Keywords: glacier lake, inventory,, ALOS, GLOF, Bhutan-Himalayas