



The Preservation of Glacial Erosional Forms and Landscapes of the last Glaciations in subtropical area: Example from the High Mountains of Taiwan

H. T. Chu (1), Lionel L. Siame (2), S. W. Lu (1), C. Y. Wei (1)

(1) Central Geological Survey, Taiwan, (2) Université Paul Cézanne (Aix-Marseille III) - CEREGE, FRANCE (chuht@moeacgs.gov.tw / Fax: +886 2 2945-3697 / Phone: +886 920-482732)

Glacial erosional forms and landscapes in the high mountains of the north-central Taiwan have been recognized in the 30s of the 20th century. Only in the last few years, with the new findings in the field and recent records of absolute age dating, the existence of former glaciations in the Hsueshan, Nanhutashan area has been confirmed.

In this study, in the Chiaming Lake area in the south-central Taiwan, we will report the recent discovery of glacial moraines with striated boulders of indurated sandstone, and the scour of various streamlined bedrock features of assemblages of whalebacks, roches moutonnées, and depressions. The reasons for the preservation of glacial erosional forms and landscapes in the high mountains of Taiwan are several folds.

First, the last glacial retreats have been dated of approximately 7000 years ago in the Nanhutashan area. With this short duration of elapsed time, therefore, it is highly favorable the preservation of geomorphic surfaces with glacial erosional forms near or at the top of drainage divide where the effect of stream headward erosion and surface creeping are not obvious.

Second, hard and durable thick layers of meta-sandstone, meta-conglomerate, and quartzite is responsible for the formation of glacial erosional forms of roche moutonnée, striated bedrock, boulders, and pebbles.

Third, Subtropical high mountain valley glaciers are temperate glaciers. The extent of glaciers is frequently fluctuated. Therefore, glacial erosional processes are favorable to generate glacial erosional forms of varies sizes.

The existence and preservation of remnants of glacial erosion forms in the Chiaming Lake area shows that the last glaciation is rather extensive, during which the inferred altitude of the snow-line of approximately 3000 meter is an appropriated estimation in the high mountains of north- and south-central Taiwan.

The existence of glacial formation on the high mountains of Taiwan will provide unique information to the study of paleoclimate and paleoenvironment in this sub-tropical island.