Bulletin of Glaciological Research 24 (2007) *95–107*

Glaciological and geomorphological studies at Glaciar Exploradores, Hielo Patagónico Norte, and Glaciar Perito Moreno, Hielo Patagónico Sur, South America, during 2003–2005 (GRPP03–05)

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(Received October 2, 2006; Revised manuscript acepted November 22, 2006)

Abstract

The major results of the Glaciological Research Project in Patagonia (GRPP) 2003–2005, which targeted Glaciar Exploradores of the Hielo Patagónico Norte (HPN) and Glaciar Perito Moreno of the Hielo Patagónico Sur (HPS), were reported. Studies at Glaciar Exploradores include recent glacial chronology, glacier flow measurements with D-GPS, meteorological measurements with an AWS and hydrological measurements at the outlet stream. Three moraine systems were recognized, and most recent two of them were formed sometime between the 12th and 17th century and the early to mid-19th century. The annual glacier flows in the area within 5 km from the terminus ranged 48 to 138 m in 2003–2004. Strong emergence velocity was observed near the terminus. The annual precipitation near the terminus was close to 3000 mm, the mean annual air temperature was 7.5℃ and the annual specific runoff was about 6200 mm in 2005. Also the variations of 21 outlet glaciers of the HPN from 1944/45 to 2004/05 were presented with their notable characteristics. The area loss due to recession in 60 years amounted to ca. 100 km^2, of which close to 30% was accounted by Glaciar San Quintin, the largest glacier of the HPN.

At Glaciar Perito Moreno, observations and measurements were carried out for flow, strain grid and meteorological measurements, and calving activities. Flow velocity per day in December 2004 ranged 3.95 to 0.53 m, with the average of 1.66 m at the calving front. At the middle reach, the average daily flow velocity was 1.5 m, and the profile survey revealed that the inner zone maintained thicker conditions, but with no significant trend of additional thickening. The annual mean temperature near the EL (ca. 1350 m) was 1.0℃, while that at near the terminus was 6.3℃ in 2005.