

## Glaciological Research Project in Patagonia 2006–2009: Studies at Glaciar Perito Moreno, Hielo Patagónico Sur, in area of Hielo Patagónico Norte, and along the Pacific Coast

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### Abstract

The Glaciological Research Project in Patagonia (GRPP) 2006–2009 was carried out with several objectives at Glaciar Perito Moreno of the Hielo Patagónico Sur (HPS), in the area of the Hielo Patagónico Norte (HPN) and along the Pacific coast. At Glaciar Perito Moreno, hot water drilling was carried out at about 5 km upstream from the terminus, reaching the glacier bottom at ca. 515 m, in order to monitor subglacial water pressure. Good positive correlations among air temperature, subglacial water pressure and glacier flow speed were found. Based on <sup>14</sup>C dating of tree and organic samples, it is proposed that Glaciar Perito Moreno made two Little Ice Age (LIA) advances at AD1600–1700 and ca. 130–100 y BP (AD1820–50).

Fan deltas located at the mouth of big rivers around Lago General Carrera (Buenos Aires) and Lago Cochrane (Pueyrredon), in the area east of the HPN, were investigated to elucidate their development. The variations of 21 outlet glaciers of the HPN elucidated from aerial surveys for 2004/05–2008/09 revealed an areal loss of 8.67 km<sup>2</sup> in four years. A general slowing down of retreats was observed with a few exceptions. Meteorological measurements at Glaciar Exploradores of the HPN from 2005 to 2009 indicate that air temperature ranged from 17.4°C to –10.5°C. The total annual precipitation was about 3000 mm. Glacier surface melt was observed at two spots. Sediment and water discharges from the glacier showed that while water discharge fluctuated a lot, suspended sediment concentration was rather stable in summer.

A single channel seismic profiling during the JAMSTEC MR08-06 cruise identified a probable submerged moraine formed before the last glacial maximum (LGM) in the Golfo de Penas, south of Taitao Peninsula. Piston coring along the Chilean coast further indicates that ice-rafted debris recorded the LGM and earlier Late Pleistocene events of the glacial advance.

Key words: Patagonia Icefield, Glaciar Perito Moreno, glacier variation, Glaciar Exploradores, Mirai08-06 cruise