

Glacier variations of Hielo Patagónico Norte, Chile, for 1944/45–2004/05

Masamu ANIYA

Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Ibaraki 305–8572, Japan

(Received September 29, 2006; Revised manuscript accepted November 22, 2006)

Abstract

Variations of 21 outlet glaciers of Hielo Patagónico Norte was elucidated for 1944/45–2004/2005, using various sources of remote sensing data including aerial surveys. Of 21, 17 glaciers are found to be calving more or less including one tidewater glacier, San Rafael. These calving glaciers were classified into three types, according to iceberg production; those with (1) many large icebergs, (2) many small icebergs, and (3) no or few icebergs. These three types appear to indicate the stages in retreating in some calving glaciers. The type (1) indicates a rapid retreating stage, often accompanied with snout disintegration, which is preceded or followed by the stage (2) or (3). The largest glacier of the HPN, Glaciar San Quintin has lost area ca. 29 km² over the last 60 years, while Glaciar Reicher retreated ca. 6 km. Among debris-covered glaciers, Glaciar Grosse started retreating actively since the mid-1980s, after forming a proglacial lake, while the neighbor glacier, Glaciar Exploradores has been more or less stagnant. Although the general trend in the past 60 years is retreat, there were some episodes of small advances. Glaciar San Rafael made advance between 1996 and 1999, which was probably caused by topographic control of fjord width along with the influence of depth as well.