

TRAVERSES FROM PATRIOT HILLS TO SOUTH POLE: CHILEAN CONTRIBUTION TO ITASE

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Two oversnow tractor traverses have been performed by Chile from Patriot Hills to the South Pole and the East Antarctic ice sheet in 2004 and in 2008. These initiatives are a contribution, in collaboration with Brazil (2004), to the ITASE programme. In 2004 seven firn cores of a depth ranging from 4 m to 46 m were drilled from South Pole to Patriot Hills with a 50 m electro-mechanical drill every 2 degrees of latitude, with a total of 225 m of firn samples which are being analysed for their chemical composition at the Climate Change Institute, University of Maine, and in Brazil. In 2008 two firn cores with a total firn sample depth of 34 m were drilled from 88°S/48°E to 88°30'S/82°30'W with a 20 m electromechanical drill. In addition 105 surface snow samples were collected every 10 km along the route in 2004, and 20 surface snow samples in 2008 every 20 km. Additional measurements included ice depth soundings with a 150 MHz ice depth radar on loan from the University of Kansas, USA in 2004 and a radar from CECS in 2008; snow accumulation radar soundings of the top ~60 m firn layers of the glacier by means of a GSSI SIR 3000 400 MHz GPR in 2004; precise GPS positioning; stake deployment, gravity measurements and surface snow density (down to 1.2 m) every 20 km along the route; surface snow density (top ~1.2 m layer); and surface snow samples every 40 km for microbiological studies.

Results of chemical species for two 2004 cores are presented (IC5, 42.5 m depth, 82°30.5'S, 79°28'W, 950 m a.s.l. and IC6, 36 m depth 81°03'S, 79°51'W, 750 m a.s.l.), as well as general results from these two expeditions. The mean chemical concentrations for IC5 and IC6 agree with the spatial distribution as summarized by Bertler et al. (2006).