Recent climate variability in Southern South America reveals by the isotopic composition of a new deep ice core (Monte San Valentin, Northern Patagonian Icefield)

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An increasing number of tropical and subtropical ice cores has been extracted along the Andes of South America. At higher latitudes, numerous ice core studies have been completed in Antarctica. In order to close the gap between subtropical and polar environments in this unique 8000 km long latitudinal ice core records transect, a deep ice core (122 m) has been extracted in 2007 from the San Valentin glacier (3747m, 47 degrees S, 73 degrees W) located in the Northern Patagonian Icefield (Chile).

We focus here on the isotopic composition (oxygen 18 and deuterium) of the ice core and its preliminary interpretation. First, we will describe the glaciological aspects of the site, the local climate and the cloud cover from satellite data and various meteorological re-analyses. Second, we will briefly present a preliminary dating for the entire ice core based on a combination of different methods: radionuclide measurements and seasonal isotopic cycles counting from the surface down to around 50 m, the isotopic composition of atmospheric oxygen in air bubbles in the deepest part of the core (lower than 60 m) and glaciological modelisation. Lastly, based on preliminary results from a recent simulation of the LMDZ iso general circulation model including water stable isotopes and nudged by atmospheric reanalyses over the period 1979 2007, along with some target chemical measurements, we will discuss the interannual to decadal isotopic composition variations in terms of local and regional climate.