Geophysical Research Abstracts
Vol. 15, EGU2013-4298, 2013
EGU General Assembly 2013

Secular atmospheric temperature changes at very high elevation in the Mont Blanc area from englacial temperatures

Adrien Gilbert and Christian Vincent
UJF-Grenoble 1 / CNRS, LGGE UMR 5183, Grenoble, France (gilbert@ujf-grenoble.fr)

Air temperature changes at very high altitude over the last century remains a main question due to the paucity of observations. Englacial temperature measurements performed in boreholes provide a very good indicator of atmospheric temperatures for these very high elevations although they are not directly related to air temperatures. Here, we analyzed seven deep borehole temperatures located on three different sites between 4240 and 4300 m a.s.l. in the Mont Blanc area using a heat flux model and a Bayesian approach. Simultaneous inversion of these temperature profiles allowed us to extract the atmospheric temperature changes over the last century. Our study exhibits a mean warming rate of 0.15 K/decade between 1900 and 2005 which is not significantly different of the regional trend in North West Alps observed at lower altitude. It suggests no altitude dependency of air temperature trends.