Séminaire - Groupe OSUG Neige

7 avril 2010, 10 :00
Salle Louis Lliboutry, LGGE

Charles Fierz, SLF Davos

The Antarctic snow cover: a challenge for Alpine snow cover modellers

Exchange processes between East Antarctic snow and the atmosphere are still not well understood. This leads, for example, to uncertainties in estimations of the surface mass balance and the interpretation of snow stratigraphy. At Dome C, low accumulation rates, strong winds, very low temperatures and the difficulty in obtaining good quality meteorological measurements over longer periods of time all contribute to challenge snow-cover modellers. For example, in an Alpine environment, one is used to snowfalls “resetting” the model, something that can hardly be expected on the East Antarctic Plateau. Furthermore, even so I can discuss about the observations made in situ with our colleagues, I lack the necessary feeling for Antarctic snow. In this presentation, I will focus on the surface mass balance and how precipitation and deposition can be dealt with to match what I as an Alpine modeller think it should look like. Observations tell us that the measured density over the top 10 cm of the snow cover is around 300 kg m-3, roughly representing the mean yearly accumulation at Dome C. What are the mechanisms behind this seemingly rapid densification? We explore the action of wind based on the current understanding of drifting snow or the influence of water vapour deposition and sublimation at the surface. Finally, I look at the possibility of using temperature measurement to improve the quality of our simulations.