THE ELECTRICAL AND CHEMICAL PROPERTIES OF VISIBLE DUST LAYERS IN THE DEEPEST PART OF THE DOME C ICE CORE


(1) British Antarctic Survey (BAS), Cambridge, UK. (2) Department of Chemistry, University of Florence, Italy. (3) Laboratoire des Sciences du Climat et de l’Environnement (LSCE), Gif sur Yvette, France. (4) Laboratoire de Glaciologie et Geophysique de l’Environnement (LGGE), Grenoble, France. (5) University Ca Foscari, Venice, Italy. (6) Institute of Climate and Environmental Physics, University of Bern, Switzerland. (7) University of Milan Bicocca, Italy. (8) Department of Geophysics, University of Copenhagen, Denmark (prfb@bas.ac.uk)

The EPICA science team has conducted continuous electrical and chemical analyses of the ice drilled during the 2002/03 field season. Electrical records of the newly recovered ice (2864.22-3118 m) using DEP (DiElectric Profiling) and ECM (Electrical Conductivity Measurements) generally vary in concord. They show repeated large-scale fluctuations which we attribute to past climate changes, and are used to establish a first estimate of the age of the ice. However this presentation focuses on fine-scale variation in the records. Close examination of the high-resolution conductivity records surrounding visible dust layers in the profiles reveal some significant differences between the two. Tentative chemical analyses partly explain the differences. The clearly apparent variations of the various measurements at the dust layers are superimposed on a relatively smooth background signal. They provide an interesting opportunity to assess the extent of post-depositional diffusion in the ice. In addition the chemical composition of the dust and ice at each layer is different and we present some speculation about their origin.