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Variability of gas-trapping characteristics on the central Antarctic Plateau

Patricia Martinerie¹, Kévin Fourteau¹, Jérôme Chappellaz¹, Anaïs Orsi², Xavier Faïn¹, Geoffrey Lee³, Amaëlle Landais², and William Sturges³

¹Centre National de la Recherche Scientifique, Université Grenoble Alpes, Institut des Géosciences de l'Environnement, Saint Martin d'Hères, France (patricia.martinerie@univ-grenoble-alpes.fr)

²Laboratoire des Sciences du Climat et de l'Environnement, Gif-sur-Yvette, France

³Centre for Ocean and Atmospheric Sciences, School of Environmental Sciences, University of East Anglia, Norwich, United Kingdom

Central Antarctic Plateau sites display a strong contrast in deep firn gas ages with relatively high accumulation sites (South Pole, EPICA DML) showing very old (about a century) gas ages in the open porosity of deep firn on one side, and very young (few decades) gas ages and an absence of deep firn $\delta^{15}\text{N}$ plateau (indicative of remaining gas transport) at low accumulation rate sites (Dome C, Dome F, Vostok) on the other side. Multi-tracer results from an intermediate accumulation site named "Lock-in" will be presented. At this fairly low accumulation rate site (~ 3.6 cm water equivalent / year), very old air ages were obtained in deep firn but the lock-in zone looks narrower than at South Pole. Analytical results, as well as gas transport and densification modelling results will be discussed in terms of variability of gas-trapping characteristics on the central Antarctic Plateau and degree of understanding of the underlying mechanisms.