



OH and RO₂ radicals at Dome C (East Antarctica): first observations and assessment of photochemical budget

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Measurements of OH and total peroxy RO₂ (HO₂ + organic peroxy) radicals were performed in December 2011/January 2012 at the Dome C Concordia station (East Antarctica, 75.1°S / 123.3°E) in the frame of the Oxidant Production over Antarctic Land and its Export (OPALE) project. The goal of these first on the East Antarctica plateau radical measurements was to estimate the oxidative capacity and assess the role of snow emissions on the radical budget in this part of Antarctica. The OH concentration levels were found to be in general similar to those observed at South Pole. However, based on the analysis of the OH sources and sinks derived from the available measurements of NO_x, HONO, HCHO, H₂O₂ and others, it has been concluded that, in contrast to South Pole, the photolysis of HONO is the major OH source at Dome C site. The role of HONO as the major source of OH is also supported by an excellent correlation of OH with the production rate of OH from the HONO photolysis. The observed diurnal profiles of OH and RO₂ are discussed in relation with boundary dynamics and the variability of photolysis and snow emissions rates.