



Long wave radiation behaviour at Halley and Concordia stations, Antarctica

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In polar regions, long wave radiation is the most important component of the surface radiative balance because it is the primary mechanism through which the loss of energy occurs. Due to this energy loss strong surface inversions are observed over the Antarctic Plateau most of the time.

Sets of long-wave radiation data (incoming and outgoing) from two Antarctic sites with the same latitude but at different altitude are analysed. The data considered for a coastal site (Halley) refer to years 2003 and 2004 whilst for the continental station (Concordia) are used the data acquired during 2005.

At Halley, during the summer, the net long-wave radiation ranges between -100 Wm^{-2} and 40 Wm^{-2} , while in winter it ranges between -40 Wm^{-2} and 30 Wm^{-2} . In both cases the peak of the occurrence distribution is around 0 Wm^{-2} .

At Dome C the long wave radiation oscillates into similar range of values, but its distribution shows a plateau between -75 Wm^{-2} and -50 Wm^{-2} in summer and a peak in the occurrence distribution at -25 Wm^{-2} in winter.

The differences in long wave radiation and long wave occurrence distribution is strongly related to the type and amount of clouds cover observed at each station both in summer and winter.