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### EFFECTS OF COSMIC RAY INPUT ON CLOUDS AND CLIMATE IN ANTARCTICA

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The effects of cosmic rays on the clouds and climate in Antarctica are investigated using nine years of data (2001-2009) covering solar maximum (2001-2002) and long deep solar minimum (2006-2009). The data include mainly the atmospheric electrical parameters and meteorological parameters measured at the Indian Antarctic station Maitri (70°45'S, 11°43'E) and solar cosmic ray flux obtained using the ACE (Advanced Composition Explorer) satellite. Meteorological data from the Russian Antarctic station Vostok (78°27'S, 106° 52'E) and New Zealand Antarctic station Scott Base (77°51'S, 166°46'E), and neutron monitors data from the American station McMurdo (77°51'S, 166°40'E) are also used. The data are systematically analyzed. The results indicate that the changes in the electrical properties of the high latitude atmosphere due to cosmic ray flux affect the cloud properties and hence the radiative balance of the high latitude climate. The results are discussed in terms of the association of the cosmic ray flux with the production of ions in the atmosphere that leads to cloud condensation nuclei (CCN) and formation of cloud drops which scatter the solar radiation back to space. Depending on the changes in the cosmic ray flux, these processes can enhance/reduce the albedo of the planet and hence cause cooling/heating of the atmosphere.