



On interannual variations of the winter temperature at Faraday/Vernadsky Antarctic Station

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The interannual variations of the winter temperature at Faraday/Vernadsky Station, West Antarctic Peninsula are investigated. The meteorological READER surface air temperature and wind velocity/direction data for 1947-2007 period as well as the temperature and zonal/meridional wind distribution at 1000 hPa from the NCEP-NCAR reanalysis data (1979-2007) were used. The possible reasons of observed winter warming are discussed. The winter warming is accompanied by narrowing of the temperature variation range between -14°C and -4°C during 1950s to -8°C and -4°C in last decade. Positive trend in annual mean and winter mean temperature corresponds to lowering of the "depth" of cold winter anomalies, which can relate to the area located to the east of Antarctic Peninsula. The indications are seen from agreement between the interannual variations in winter temperature at Faraday/Vernadsky and the east-west migrations of quasistationary distribution of surface air temperature and zonal/meridional wind in Antarctic Peninsula region. The meteorological observations at Faraday/Vernadsky station display long-term changes in the wind distribution pattern: the appearance frequency of the "continental" wind ($0^{\circ}\text{E}\pm 45^{\circ}$ azimuth) observation has been reduced but the appearance frequency of the "ocean" wind ($180^{\circ}\text{E}\pm 45^{\circ}$ azimuth) has been increased threefold in the last two decades in comparison to 1950s-1970s. That is evidence of the structural change-over of circulation pattern in the region which is advantageous for warming. Results show that the changes in the quasistationary pattern in Antarctic troposphere contribute to the local climate change in Antarctic Peninsula region.

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