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Investigation of the 3D temperature distribution patterns above the Antarctic Peninsula using remote sensing data - A contribution for polar climate monitoring

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West Antarctica and the Antarctic Peninsula are in the focus of current studies on a changing environment and climate of the polar regions. A recently founded Junior Researchers Group at the German Aerospace Center (DLR) is studying changing processes in cryosphere and atmosphere above the Antarctic Peninsula. It is the aim of the group to make use of long-term remote sensing data sets of the land and ice surfaces and the atmosphere in order to characterize environmental changes in this highly sensitive region. One of the PhD projects focuses on the investigation of the 3D temperature distribution patterns above the Antarctic Peninsula.

Temperature data sets ranging from MODIS land surface temperatures up to middle atmosphere data of AURA/MLS will be evaluated over the last approx. 12 years. This 3-dimensional view allows comprehensive investigations of the thermal structure and spatio-temporal characteristics of the southern polar atmosphere. Tropospheric data sets will be analyzed by multivariate statistical methods and will allow the identification of dominant atmospheric circulation patterns as well as their temporal variability. An overview of the data sets and first results will be presented.