

Study of the surface energy balance at the Brazilian Antarctic Station in summer conditions using the WRF model

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The knowledge of the radiation balance and of the vertical turbulent flux of heat, mass and momentum, on different surfaces, is important for both diagnostic and prognostic climate change and environmental monitoring. The primary objective of this study is to investigate numerically the energy balance at the surface and thus the development of the planetary boundary layer during summer conditions in the region of the Brazilian Antarctic Station, on King George Island (62°05'S, 58°23'W).

The Weather Research and Forecasting Model (WRF) suitable to the Antarctic conditions was used in conjunction with the observational data obtained at the Brazilian station, by the ETA (“Estudo da Turbulência Antártica”) Project. We estimated the energy balance components using *in situ* observations of net radiation and soil heat flux. The sensible heat and latent heat fluxes were estimated using low response sensors that provide vertical profiles of wind speed, air temperature and specific humidity.

The ETA Project main objective is to obtain the surface energy balance with the surface turbulent fluxes estimated by the covariance method, during short-duration campaigns (*direct measurement*) and using different parameterisation formulae, during long-duration campaign (*indirect measurement*).

Funding agency: CNPq and INCT-APA.