

Measurements of isotopic composition of vapour on the Antarctic Plateau – Supplementary materials

1. Humidity calibration

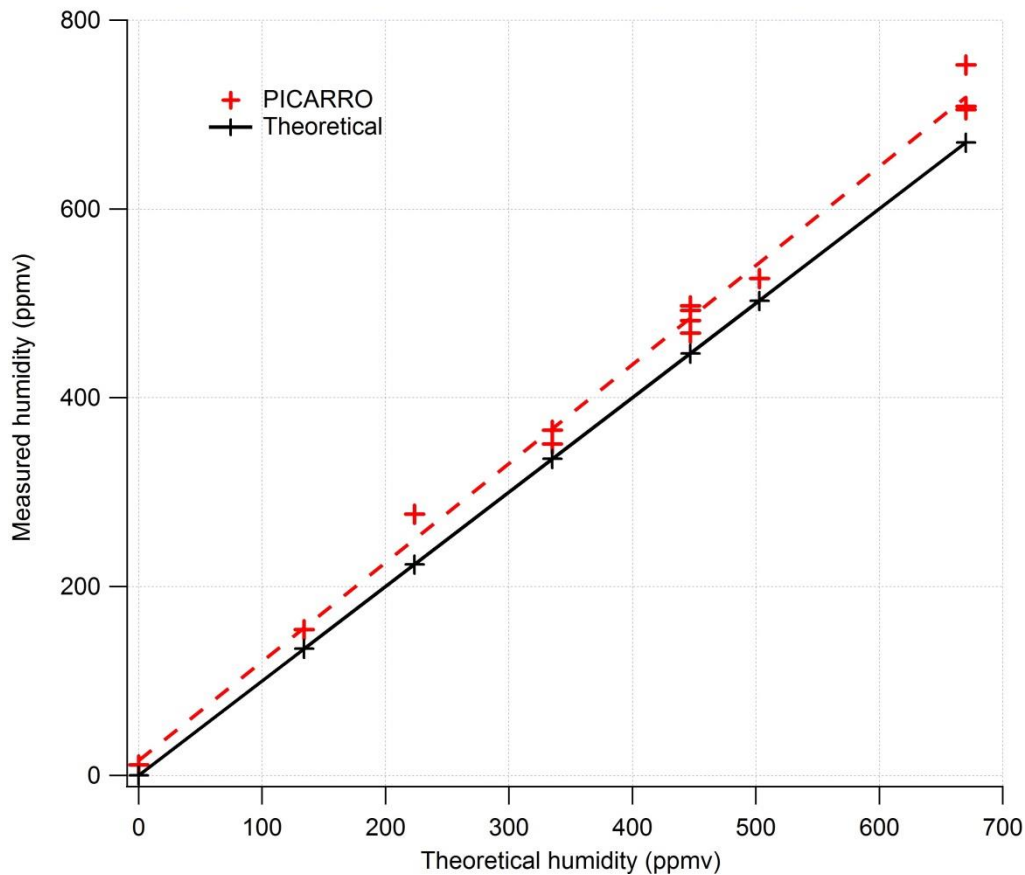


Figure S1: Measured humidity by the Picarro (red crosses, data and dashed lined, fit) on the field compared to the theoretical produced humidity by the calibration device (black line).

Infrared spectrometers humidity measurements are not absolute and also have to be calibrated against trustworthy humidity etalon. Usually, dew points generators provide the best performances to create known stable humidity but they cannot be used for humidity levels corresponding to saturated vapour pressure under 0°C. Here, we used the calibration device which is physically dominated by the fluxes of liquid water and air sent to the instrument to produce known stable humidity.

There is a linear bias between the humidity measurement and the produced theoretical humidity which stands around 7% of the total value. This linear bias has been taken into account and the humidity measurements presented in the main manuscript have a typical uncertainty of 2%.

2. Richardson number

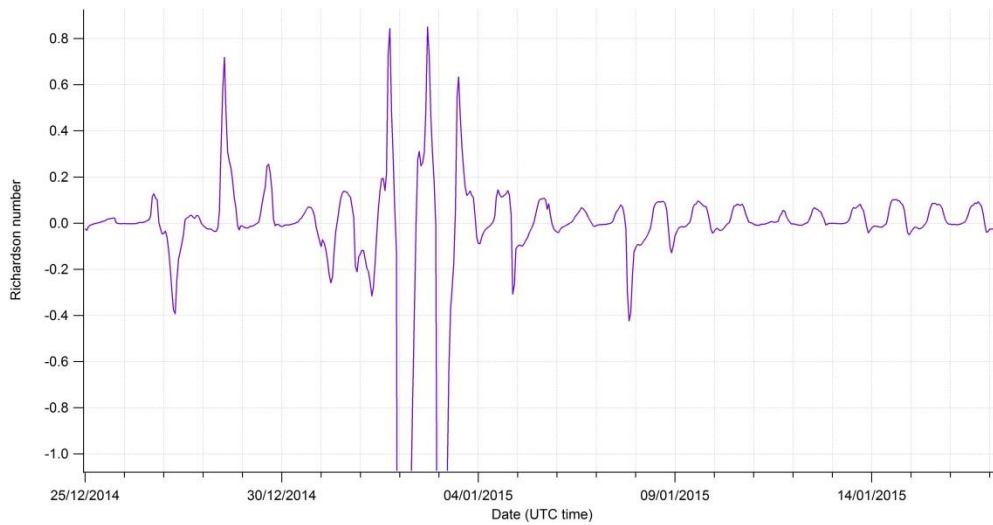


Figure S2: Richardson number at the ground level during the campaign

Erratic behaviour of the Richardson number during regime 1 (from December the 25th to January the 4th) indicates a weakened turbulent mixing of the first meters of the atmosphere compared to regime 2 (after January the 4th).