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An analysis of ten years atmosphere-surface water and energy transfer data from a micrometeorological station in Salento peninsula (southern Italy).

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Data from a ten years (2003-2013) period of activity of the ISAC-Lecce micrometeorological station (www.basesperimentale.le.isac.cnr.it) have been analyzed focusing on the atmosphere-surface water and energy exchange. Some suitable indices have been calculated such as the Bowen ratio, the aridity index (ratio between precipitation and potential evapotranspiration), the ground water storage fraction (ratio of the difference between precipitation and real evapotranspiration and the precipitation). Possible trends of annual and seasonal averages in the ten years period are considered, and correlations between these and other derived and measured quantities are explored, trying to take also into account the statistical uncertainty associated to measurement errors and missing data.

First results indicate a significant correlation between the aridity index and the surface soil water content, and a fair inverse correlation between the former quantities and the Bowen ratio. Divergent trends for the aridity index (negative) the Bowen ratio (positive) and the ground water storage fraction (positive) are also found in the ten years period, that are likely to be associated to an increasing concentration of stronger spot precipitation events in the last years. This analysis also allows an estimation of the magnitude and the last years trend of the ground water table recharge, that is at present the source of about 80% of fresh waters for public use in Salento peninsula.