Topic	T9.
Oral or Poster Presentation	Poster

ALBEDO EFFECT ON NEAR SURFACE AIR TEMPERATURE MEASUREMENT

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Focusing on temperature measurements for meteorology and climate an open issue concerns the evaluation of air temperature measurement uncertainty. The work presented faces one of the aspects of this problem related to the siting conditions.

The presence of snow-cover soil on a meteorological measurement site causes an increase of the fraction of reflected radiation on instruments. Solar shields used in modern meteorological thermometers and compact weather stations are mainly designed for protecting temperature sensors from incident solar radiation but their behaviour regarding to backwards radiation is often not guaranteed or declared. Therefore, reflection due to snow presence on the ground could cause an extra heating of the sensor producing a bias on near-surface air temperature records.

This work presents a method for the evaluation of this bias and an on-site experiment conducted to quantify the snow albedo effect on temperature readings of meteorological instruments.

The experiment, conducted in the frame of the MeteoMet project, involved instruments equipped with different temperature sensors and solar shields. A six-month measurement campaign was conducted in a selected site on the Italian Alps measuring the difference of temperature readings, Δt, between identical instruments placed on snow-covered surface and on natural soil. The experimental results show that the snow albedo effect can range up to a Δt of 3 °C and recommendations to end users and manufacturers are addressed on adding a proper component to the near surface air temperature uncertainty budget related to this effect.