

meteoLCD Weblog

A weblog on climate, global change and climate measurements

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Albedo effects on radiative errors in temperature measurements



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Picture from the [website](#) of the EFLUM Lab. of the Ecole Polytechnique Fédérale de Lausanne.

Dr. Hendrik [Huwald](#) graciously sent me a copy of his latest paper (*) on the causes of errors in air temperature measurements. What he and his fellow researchers did was to take air temperature measurements using various classical shielded thermometers (as those commonly used in automatic weather stations) and compared these readings with those given by ultrasonic anemometers; these anemometers (see [here](#) the one used at meteoLCD) do not only measure wind speed and wind direction, but also air temperature, and these measurements are not affected by any radiative heating of the sensor or its shield. Most measurements have been made at an altitude of 2700m on the Glacier de la Plaine Morte, near Crans-Montana, Switzerland. The results given in the paper are staggering: over snow, high albedo gives readings that differ by more than 10°C (the classical shielded thermometer readings being always too high):

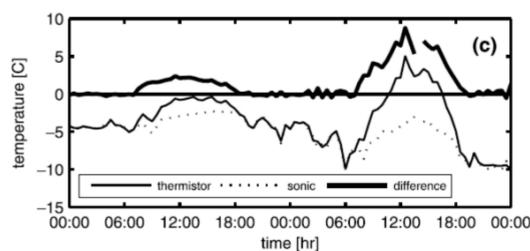


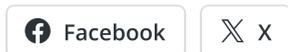
Figure 1. (a) Downwelling shortwave radiation, (b) wind speed, and (c) air temperature from a shielded thermistor and a sonic anemometer at Plaine Morte glacier, 12–14 March 2007.

The lower 2 lines show the thermistor (black line) and sonic (dotted line) readings during one day; the upper black thick lines gives the difference between thermistor and sonic. This is quite a remarkable warming artifact!

This very interesting paper should be mandatory reading for those who foolishly still have a childish faith in extremely dubious measurements and data series, as for instance those of the [CRU](#) that laid the foundation for the AGW craze.

(*) Water Resources Research, Vol. 45, W08431, 25Aug2009.
doi:10.1029/2008WR007600,2009

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