Meteorological measurements under icing conditions: challenge and results in MeteoSwiss

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Meteorological observation under icing conditions is a challenge both for surface and upper air measurements. This talk will highlight some of the difficulties encountered in harsh environmental conditions as it is the case in Alpine regions in Europe. One of the most demanding surface observations in freezing conditions is wind measurement, the evidence of a frozen wind sensor being sometimes difficult to estimate. Humidity measurement both at surface level or using a radiosonde humidity sensor may as well suffer from icing conditions. These different challenges in surface and upper air technologies will be presented. They have been more intensely studied and experienced over the last years in MeteoSwiss since this period of time corresponds to the renewal of our surface network, thus offering the opportunity of also re-thinking the use of (or upgrading) our current meteorological surface methods of observations. New upper air remote sensing technologies have also been added to the surface network, and the different challenges in upper air technologies that are bound to harsh environmental conditions will also be presented.