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Radiosonde descent data: quality and next steps

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In recent years National Meteorological Services have expressed an increasing interest in using the descent phase of operational radiosonde soundings. After a sounding balloon burst, a radiosonde continues measurement and can provide another linked, but still independent profile data measured at a downstream location and about two hours after the launch.

In response reporting of descent data was added to the Vaisala MW41 software. Various NMSs have been looking at the descent data provided from their own radiosonde operations. Some data is already sent on the GTS. In co-operation with meteorological community a radiosonde specific template for descent data has been defined.

Radiosonde descent reports have been monitored in the operational ECMWF system since June 2019. Initial results show station dependent differences against model for stratospheric temperatures. The reason is likely linked to to descent rate of falling radiosonde, that can be highly varied at stratosphere altitudes. For most flights, the raw descent winds show reduced variability compared to the ascent winds.

Recently, in collaboration with ECMWF and NMS's, a better understanding has been obtained on some of the factors affecting the quality of radiosonde descent data. Work continues for calculation and data filtering to get most out of the valuable descent phase measurement data from radiosonde observations. It seems likely that in the near future reports of descent profiles can contribute to improved analyses/forecasts.

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