

## **Progress Report: Integrated Global Radiosonde Archive**

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Since the last progress report, the Integrated Global Radiosonde Archive (IGRA) processing system has continued to update the data set with the latest soundings on a daily basis. In addition, monthly means are computed five days after the end of each month, and the data are routed into the NCDC archive on a monthly basis. The updated data are made available online immediately after the completion of each update. Over the past year, our efforts have focused on initial steps towards enhancing the IGRA system's ability to incorporate historical and real time data from multiple sources.

The data set is currently being updated in real time with only one source, namely, reports received at the National Centers for Environmental Prediction (NCEP) via the Global Telecommunication System (GTS). However, there are several other data streams that could enhance the completeness of IGRA upon their arrival at NCDC. Of particular interest are 1) typically higher-vertical-resolution radiosonde observations from U.S.-operated stations around the world that are provided directly by the National Weather Service and 2) GTS reports forwarded to NCDC by Roshydromet which sometimes contain soundings not received at NCEP. We have therefore written programs for ingesting these three data streams and reformatting them into IGRA format and are currently running them as part of an automatic test process. The next step is to add programs for merging these data streams with the GTS data. These procedures will constitute a fully automated version of the semiautomatic merging methods described in Durre et al. (2006) and will simplify the process of adding sources such as those recently digitized by the Climate Data Modernization Program (CDMP).

The program currently ingesting the NCEP GTS reports does not produce output for observations from ships and is not easily modified. Since a number of users in the reanalysis and satellite calibration communities have requested access to ship observations, we have rewritten the ingest process accordingly.

Two additional IGRA-related activities for the past year are worth noting. First, in addition to the real-time data streams mentioned above, 33 sources of additional historical data have been acquired and reformatted. They include 16 from the Climate Database Modernization Program, five from NCDC's archive, three from NCAR, two from Meteo-France, and one each from the U.S. Air Force 14th Weather Squadron, the British Antarctic Survey, the Institute for Atmospheric and Climate Science at ETH Zurich in Switzerland, the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and the National Geophysical Data Center. These data will enhance the temporal and spatial coverage of IGRA radiosonde data through time and thus are of value to both IGRA and future reanalysis efforts. Second, A paper documenting trends in

IGRA-derived surface-to-500 mb precipitable water was published in the Journal of Geophysical Research-Atmospheres in 2009 (Durre et al. 2009). Our plan for the next year is to make the time series generated for this paper available to the public and begin to update them on a regular basis.

## **References**

Durre, I., R. S. Vose, and D. B. Wuertz, 2006: Overview of the Integrated Global Radiosonde Archive. *Journal of Climate*, **19**, 53-68.

Durre, I., C. N. Williams, Jr., X. Yin, and R. S. Vose, 2009: Radiosonde-based trends in precipitable water over the Northern Hemisphere: An update, *J. Geophys. Res.*, **114**, D05112, doi:10.1029/2008JD010989.