

RELAMPAGO

Colorado State University mobile radiosonde dataset

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1.0 Data Set Overview

During RELAMPAGO, Colorado State University (CSU) operated a Vaisala upper-air radiosonde system in a mobile configuration. In particular, balloon-borne Vaisala RS41-SG radiosondes were released from a mobile platform during Intensive Observing Periods (IOPs) in a variety of locations across Argentina. In total 105 soundings were collected and are contained in this dataset, covering the period from 31 October to 14 December 2018.

2.0 Instrument Description

The Vaisala MW41 radiosonde system was configured and installed in a van for the collection of mobile soundings in Argentina for RELAMPAGO. Vaisala RS41-SG radiosondes were used, and attached to 150-g meteorological balloons, which were inflated with helium. Data were collected and processed by a Vaisala Sounding Processing System and software version MW41 2.2.1.

Vaisala RS41-SG data sheet: <https://www.vaisala.com/sites/default/files/documents/WEA-MET-RS41-Datasheet-B211321EN.pdf>

3.0 Data Collection and Processing

Soundings were collected from a mobile platform in locations in a wide variety of environments, including pre-convective environments that supported surface-based and/or elevated convection; environments with failed convection initiation; convectively generated cold pools and outflows; and so forth. The primary regions of data collection were in the province of Córdoba in central Argentina, along with a smaller number of soundings in the province of Mendoza in western Argentina. The primary data quality control and assurance was automatically performed by the Vaisala Digicora software. This includes corrections for the standard known biases of the instrument. Furthermore, each sounding was manually inspected

to identify any significant errors. At this time, no correction/adjustment has been made to these data to reconcile them with other instruments and processing software used by other groups during RELAMPAGO.

Notes taken by the system operators, which include comments about the ongoing weather conditions during sonde release and other operational considerations, are included as an attachment to this document. Some soundings were allowed to ascend until the balloon burst, but most soundings were terminated prior to the balloon bursting. In most cases when this occurred, it was to maintain temporal consistency with other sounding groups or for other operational reasons (i.e., to allow sufficient time to prepare a new sonde for release at a specified time or to attempt to release the sonde into an updraft), but in a few cases it was a result of lost communication with the radiosonde, or possibly the sonde being struck by lightning. Data are included for all portions of the soundings that were collected, as long as the data do not appear to be erroneous.

A MetOne Automet 580 all-in-one surface station was used to obtain representative surface conditions (temperature, humidity, winds, and pressure) at the time of launch.

4.0 Data Format

For each sounding, two files are provided. The first was produced by the Vaisala software, the second by an R program.

- "EDT": Edited data from the Vaisala software at pressure levels, with corrections for the standard known biases of the instrument. Column delimited ASCII format, with the column headings and units given in the files. Other metadata including the launch location, ascent rate, termination altitude, etc., as well as the surface conditions from the Automet surface station, are also included in the files.
- "PNG": Portable network graphics files showing Skew-T log-p diagrams of the soundings, along with standard convective parameters (CAPE, shear, etc.). Lifted parcel paths are shown for a parcel with the mean properties of the lowest 500 m of the sounding.

5.0 Data Remarks

As indicated above, notes taken by the system operators in the field are included as an attachment to this document.

6.0 References