

NOAA GMD/OZVW Water Vapor Balloon BEDI File Readme

PI: Dale Hurst dale.hurst@noaa.gov 303-497-7003

Data Use

These data files were produced by the Global Monitoring Division of NOAA's Earth System Research Laboratory. The data have undergone quality control but are subject to change during future reprocessing. These files are made available to the scientific community with the understanding that authors of potential publications or presentations obtain permission from the PI during the early stages of their analysis. Manuscripts employing these data should be reviewed by the PI before submission to ensure that the quality and/or limitations of the data are accurately represented.

Summary

Frost Point Hygrometers (FPH) are in situ water vapor instruments launched on weather balloons by the Ozone and Water Vapor group at NOAA's Earth System Research Laboratory. They are capable of accurately measuring frost point temperatures over a range of +20°C to -100°C, from the surface to altitudes near 30 km. Water vapor mixing ratios, calculated from the frost point temperatures and simultaneous measurements of atmospheric pressure, can range from >30,000 ppmv near the surface to <2 ppmv near the tropopause. NOAA FPHs are launched monthly (approximately) from the following stations:

Boulder, CO, USA
Hilo, Hawaii, USA
Lauder, New Zealand

For more information, visit the NOAA OZVW Water Vapor website:

<https://www.esrl.noaa.gov/gmd/ozv/wvap/>

The water vapor balloon BEDI files are in the NetCDF format conforming to the CF conventions and the NOAA NCEI BEDI requirements. They have the following metadata and variables:

Metadata Descriptions

Metadata Field Name	Description
time_coverage_start	The UTC date/time stamp of the balloon launch
time_coverage_end	The UTC date/time stamp of the last received balloon data point

geospatial_lat_min	The latitude of the balloon launch station [deg]
geospatial_lon_min	The longitude of the balloon launch station [deg]
title	The title of the dataset
summary	A descriptive summary of the dataset
keywords	Keywords/tags describing the dataset
doi	A digital object identifier (DOI) number for this dataset
time_coverage_resolution	The time spacing between data values
Conventions	The file format conventions followed
institution	The scientific institution that recorded the data
publisher_address	The mailing address of the publishing institution
publisher_email	The email of the publisher
publisher_institution	The institution of the publisher
publisher_name	The name of the publisher
source	The instrument/platform that recorded the data
references	A published paper/article describing the data/instrumentation
history	A history of changes to the file

Variable Descriptions

Variable Name	Description
geopotential_height	The geopotential altitude of the balloon [masl]
air_pressure	The air pressure [Pa]
air_temperature	The air temperature [K]
air_potential_temperature	The air potential temperature (theta) [K]
relative_humidity	The relative humidity (unitless ratio between 0 and 1) [1]
mole_fraction_of_water_vapor_in_air	The water vapor mixing ratio (ppmv) [1e-6]
altitude	The GPS geometric altitude [masl]
latitude	The GPS latitude [deg]
longitude	The GPS longitude [deg]
wind_speed	The GPS wind speed [m/s]
wind_from_direction	The GPS wind from direction [deg]