File Revision Date:
October 11, 2019
This file to be modified as re-analysis or new analysis results are available

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NDACC METAFILE FOR JPL WATER VAPOR RAMAN LIDAR AT Table Mountain, Calif. (TMF)
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- Applies to instrument and data history from 01-Jan-2003 to 11-Oct-2019
- PLEASE READ IMPORTANT 2019 UPDATE AT THE BOTTOM OF THIS FILE
- The above period covers analyzed and (re-)analyzed data sets available at this time
- Applies to TMF water vapor data processed with LidAna version v7.10 or later, and GLASS v1.0 or later
- Does NOT apply to TMF data processed with older program versions
- Does NOT apply to TMF stratopsheric or tropopsheric ozone data (see other meta data files for that)
- Applies to all HDF files cataloged on NDACC database with the following names: groundbased_lidar.h2o_nasa.jpl004_table.mountain.ca*.hdf
- Refer to "Reported Events" section for detailed report of unexpected problems
- This file to be modified as re-analysis or new analysis results are available
- ********** ATTENTION !! **********
  This is the first-ever NDACC archive of these profiles.
  Use with extreme caution for trends.
- **********

- ***** See metafile "TMF_tropo3_ldr_jpl_2019.txt" for tropospheric ozone system and data *****
- ***** See metafile "TMF_aot_ldr_jpl_2019.txt" for stratospheric ozone system and data *****

Data Set Description:

| | |
|---|---|
| PI: | T. Leblanc |
| Instrument: | Lidar |
| Site(s): | Table Mountain Observatory, CA, USA |
| Measurement Quantities: | Ozone |
| | Temperature |
| | (Aerosol) |

Contact Information:


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|---|---|
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Reference Articles:
Please refer to the file named "jpl_publications_2000.txt" for publications list prior to 2000.
Note: A 2019-updated list of publications will be posted here soon

Instrument Description:
- Water vapor Raman lidar, 3 pairs of Ramanchannels at 387/408 nm and later 3 additional Rayleigh and Raman channels for temperature and aerosol
- Water vapor profiles between 3-20 km
- Please refer to the publications list for more details

Description of Algorithms:
I - LidAna 7.1x (2009 - 2018)

Analysis program LidAna v7.xx, by Thierry Leblanc (TL) first released in October 2009.
LidAna data processor is manual or semi-auto processingl, using 20+ keywords tailored for a specific type of science application. The results are quality-checked visually, manually, during analysis.

- Data set from July 2009 to December 2018 analyzed with versions 7.1x.

An analysis overview is described below. Please refer to T. Leblanc for details.
a) Raw signals are corrected for saturation, background noise, and Rayleigh extinction.
b) Water vapor is calibrated using co-located, simultaneous radiosondings (RS92 and RS41). Natural vertical grid is geometric altitude. Signal is smoothed to reduce statistical noise using a Kaiser filter.
c) All results are output in ASCII (native format), and iN HDF using GEOMS standards
d) In HDF files, the measured quantities are provided together with the following derived products: Relative Humidity, calibraiton coefficient, altitde of calibration.
These products. Refer to HDF description" section for more details.

Expected Precision/Accuracy of Instrument:
a) Water vapor overall precision is calculated statistically during analysis and provided at 1-sigma in HDF files. The errors taken into account are the statistical error associated to photon counting, and systematic errors due to various corrections. The overall precision runs from 1-2% in lower troposphere to 20% or higher at the top of the profiles (typically 13-20 km). Detection liimit is 6-7 ppmv.
Accuracy is 5-7%, limited by calibration source (radiosonde)
b) Unexpected - but identified - errors are reported in this metafile in the "Reported Events" section.

HDF File description:
This section provides details on the HDF files content:
- All units are MKSA except pressure (in hPa), and mixing ratio (in ppmv).
***** Due to the novelty of the HDF outputs, this section is still under *****
***** construction. It will be updated as further documentation is available *****

Instrument History:

| | | |
|---|---|---|
| - 2003 | - | Start of program |
| - Oct 2006 | - | MOHAVE-1 campaign |
| - Jul 2007 | - | First system re-design to reduce fluorescence above 10 km |
| - Oct 2007 | - | MOHAVE-2 campaign |
| - Jul 2009 | - | Second system re-design to further remove fluorescence (fiber-free receiver) |
| - Oct 2009 | - | MOHAVE-2009 campaign |
| | | System design unchanged since then |
| - Sep 2012 | - | Lightning strike causeing massive failure of Licel system |
| - Mar 2013 | - | Licel fixed, measurements resumed |
| - Oct 2018 | - | New data acquisiton program allowing remote automated operations |

Details of reported events 2007-Present:

Under construction...

********** CURRENT END OF LOG OF EVENTS, PENDING UPDATES **********