1. Organization(s) owning the data record described below

*Format: Official name in national language (English if available)*
*Example: Deutscher Wetterdienst (German Weather Service)*

National Center for Atmospheric Research State University of New York at Albany

2. Commonly used acronym or short name for the above organisation

*Example: DWD*

NCAR/SUNY Albany

3. G-VAP contact person for the data record described below

*Format: Last name, first name*
*Example: Smith, Jane*

Wang, Junhong (June)

4. E-mail address of the G-VAP contact person

jwang20@albany.edu

5. Reference date for this G-VAP catalogue entry

*Format: DD/MM/YYYY*
*Example: 31/12/2012*

01/10/2007

6. Event used to describe the catalogue entry reference date

Publication

7. Title, i.e. the name usually used to identify the data record

NCAR 2-hrly GPS PW dataset

8. Acronym or short name under which data record is commonly known
9. Processing version of the data record

Format: Specify "no versioning", if no formal versioning scheme has been established

no versioning

10. Purpose of data record within G-VAP

Ancillary data contributing to evaluation

11. Language(s) used within data record

Format: Provide language codes according to ISO 639-2

ENG [english]

12. Reference date for the data record

Format: DD/MM/YYYY
Example: 13/11/2006

01/12/2011

13. Event used to describe the data record reference date

Creation

14. Brief description (=abstract) of the data record’s contents

The abstract should provide a clear and concise statement that enables the reader to understand the content of the data record.

Please respect the following rules:
 a) Aim to be understood by non-experts
 b) Do not include general background information
 c) Avoid jargon and unexplained abbreviations
 d) The abstract should be in English
 e) The abstract should not exceed 1000 characters

Example (taken from the guidelines on WMO core metadata profile):
Products from the METNO Numerical Weather Prediction model. METNO is running the HIRLAM model. Check out http://www.hirlam.org/ for details. The model output has been subsetted, reprojected and reformatted using FIMEX (http://wiki.met.no/fimex/).
Grid resolution [degrees]: 0.216 X 0.216
Contained fields: potential temperature [K], geopotential height [m**2 s**-2], u velocity [m s**-1], v velocity [m s**-1], vertical velocity [Pa s**-1] and relative humidity [%]
Levels [hPa]: 1000, 925, 850, 700, 600, 500, 400, 300, 250, 200, 150, 100, 70, 50, 30 and 10
Forecast offset times [hours]: 0, 3, 6, 9, 12, 15, 18, 21, 24, 30, 36, 42, 48, 54, 60 and 66

NCAR global, 2-hourly GPS precipitable water (PW) data are derived from ground-based GPS measurements of zenith tropospheric delay (ZTD). It is available from January 1995 to December 2012, in 2-hr resolution at 01, 03, 05, ..., 23 UTC and at ~400 stations around the globe. The data are in ascii format.

15. Main geophysical parameter(s) in the data record

Precipitable water (kg/m2)
Total column integrated water vapour (kg/m2)

16. Processing level according to the WMO definition
17. If the data record is of Level-3 type, can underlying Level-2 data be provided?

Keine Beantwortung

18. Ancillary information in the data record of special interest to G-VAP

Keine Beantwortung

19. Satellite instrument(s) used to generate the data record.

*Specify "NONE" (first row) in case no satellite data have been used to produce the data record.*

<table>
<thead>
<tr>
<th>Main instrument(s) (1)</th>
<th>Ancillary instrument(s) (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>X</td>
</tr>
<tr>
<td>AATSR</td>
<td></td>
</tr>
<tr>
<td>AIRS</td>
<td></td>
</tr>
<tr>
<td>AMSR-E</td>
<td></td>
</tr>
<tr>
<td>AMSU-B</td>
<td></td>
</tr>
<tr>
<td>ASTER</td>
<td></td>
</tr>
<tr>
<td>ATMS</td>
<td></td>
</tr>
<tr>
<td>ATOVS</td>
<td></td>
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<td>CERES</td>
<td></td>
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<td>CrIS</td>
<td></td>
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<tr>
<td>ERBE</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>GOME-2</td>
<td></td>
</tr>
<tr>
<td>HIRS</td>
<td></td>
</tr>
<tr>
<td>IASI</td>
<td></td>
</tr>
<tr>
<td>MERIS</td>
<td></td>
</tr>
<tr>
<td>MHS</td>
<td></td>
</tr>
<tr>
<td>MODIS</td>
<td></td>
</tr>
<tr>
<td>MVIRI</td>
<td></td>
</tr>
<tr>
<td>MWR</td>
<td></td>
</tr>
<tr>
<td>POLDER</td>
<td></td>
</tr>
<tr>
<td>SCIAMACHY</td>
<td></td>
</tr>
<tr>
<td>SEVIRI</td>
<td></td>
</tr>
<tr>
<td>SSM/I</td>
<td></td>
</tr>
<tr>
<td>SSM/IS</td>
<td></td>
</tr>
<tr>
<td>TES</td>
<td></td>
</tr>
<tr>
<td>TOVS</td>
<td></td>
</tr>
</tbody>
</table>

*Other instruments not listed above (see EO Handbook). Indicate also whether "other" acts as main or ancillary data source.*

20. In-situ and/or ground-based remote sensing techniques or data used to generate the data record.

*Specify "NONE" (first row) in case such techniques have not been used to produce the data record.*

<table>
<thead>
<tr>
<th>Main instrument(s) (1)</th>
<th>Ancillary instrument(s) (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>Airborne in-situ observations</td>
<td></td>
</tr>
<tr>
<td>Frost-point hygrometer</td>
<td></td>
</tr>
<tr>
<td>Ground-based GNSS atmospheric sounding</td>
<td>X</td>
</tr>
<tr>
<td>GPS radio occultation</td>
<td></td>
</tr>
</tbody>
</table>
### Interferometry (SWIR/TIR)

- Lidar
- Radiative fluxes (pyranometer, etc.)
- Radiometer (microwave)
- Radiometer (SWIR/TIR)
- Radiometer (UV/VIS/NIR)
- Radiosondes

Other instruments not listed above. Indicate also whether "other" acts as main or ancillary data source:

### 21. Re-analysis scheme(s) used to generate the data record.

*Specify "NONE" (first row) if such schemes have not been used to generate the data record.*

<table>
<thead>
<tr>
<th>Main data source (1)</th>
<th>Ancillary data source (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>X</td>
</tr>
<tr>
<td>ERA Interim</td>
<td></td>
</tr>
<tr>
<td>JRA55</td>
<td></td>
</tr>
<tr>
<td>MERRA</td>
<td></td>
</tr>
<tr>
<td>NCEP/DOE R2</td>
<td></td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
</tr>
</tbody>
</table>

### 22. North-south density of the information in data record

*Format: Provided as ground sampling distance (value plus unit, e.g. 0.01 deg). Specify "0.0" in case data represent a single location.*

0.0

### 23. East-west density of the information in data record

*Format: Provided as ground sampling distance (value plus unit, e.g. 10 km). Specify "0.0" in case data represent a single location.*

0.0

### 24. Number of distinct vertical layers within data record

*Specify N=1 for total column products. Provide textual description in case one single number can't be assigned.*

1

### 25. Typical timespan between sequential information in data record

*Other (please specify) - 2-hourly*

### 26. Typical delay between instrumental observation and release of the processed data product

Keine Beantwortung

### 27. Geographical bounding box: Co-ordinates of minimum bounding rectangle fully encompassing the data record.

*In case data record represents one single location, enter identical values for the two corners of the bounding box.*

- Longitudes in deg. between -180° and +180° (east. hemisphere pos.)
- Latitudes in deg. between -90° and +90° (north. hemisphere pos.)

Northernmost latitude - 90
Southernmost latitude - 90
Easternmost longitude - 180
Westernmost longitude - 180

28. Number of geographically distinct sites in data record.

*Specify N=1 for data records from one single station. Data records derived from satellite measurements will typically have N=10000 distinct sites.*

1

29. Vertical extension represented by the data record

*Format: Value plus unit (e.g. 1013 hPa).*

Comment - total column

30. Time span covered by data record

*Format: DD/MM/YYYY*

Earliest date - 1/1/1995
Latest date - 31/12/2012

31. Limitations and known issues affecting the fitness for use of data record

*Format: indicate relevant limitations in short sentences*

Example:
1.) Data quality is poor north of 60°N (known issue)
2.) Product available for clear sky conditions only (limitation)
3.) Data gap between 11/2006 and 01/2008 (limitation)

none

32. Constraints relating to intellectual property

Data records submitted to G-VAP need to adhere to the G-VAP data policy. Otherwise, a data record can not be accepted to the G-VAP activities.

In case you're interested in participating to G-VAP but can't adhere to the data policy, please contact the G-VAP co-chairs.

Unrestricted (data record is in the public domain)

33. Short statement of how the data record was created

*Where possible, include statements on the following:*  
1.) Source data, also list important ancillary data  
2.) Data processing, e.g. retrieval method, resampling  
3.) Method of updating  
4.) Quality control processes  
5.) Other important facts, e.g. product derived from FCDR

As a minimum, a general statement should be made about the provenance of the dataset.

NCAR global, 2-hourly GPS PW data set was derived from ground-based GPS measurements of zenith tropospheric delay (ZTD) using three different resources: the International GNSS (Global Navigation Satellite Systems) Service (IGS) tropospheric products (since year 1995), U.S. SuomiNet (UCAR/COSMIC) products (since year 2002) and Japanese GEONET (GPS Earth Observation Network) data (~1100 stations, 1997-2005). The analysis technique is described in detail in Wang et al. (2007). Surface pressure and water-vapor weighted mean atmospheric temperature used in the derivation of PW are from surface synoptic data and Japanese reanalysis, respectively. The dataset is updated annually in early February.

34. Short statement on the quality of the satellite radiances used to derive the data record
This question only applies to satellite derived data records. State "does not apply" for all other data.

does not apply

35. Short statement on uncertainty estimates and degree of homogeneity/stability

Currently no uncertainty estimates. But working on it. No known, network-wise inhomogeneity.

36. Method used for data record evaluation

DirectExternal: External data have been used for evaluation (e.g. independent observations)

37. Ancillary data fundamental to the evaluation of data record

For each referenced dataset, provide as a minimum the following information:
1.) Title
2.) Acronym (if applies)
3.) Owner
4.) URL to dataset (if available)

NCAR Global, 2-hourly Ground-Based GPS Precipitable Water Junhong (June) Wang http://rda.ucar.edu/datasets/ds721.1#!description

38. Validation/evaluation report(s)

For each referenced document, provide as a minimum the following information:
1.) Authors(s)
2.) Document title
3.) Year of creation
4.) URL to document (if available)

State "not established" in case no validation/evaluation report has been established


39. Targeted user segment(s) for data record

Example: Meteorological services, environmental authorities
State "not established" if user segments have not been analysed

climate research scientists, meteorological services, geodetic community, observational researchers.

40. Thematic application area for the data record

Example: Support to NWP, regional climate modelling
State "not established" if application areas have not been analysed

weather and climate applications

41. Documentation on user requirements

For each referenced document, provide as a minimum the following information:
1.) Authors(s)
2.) Document title
3.) Year of creation
4.) URL to document (if available)

State "not established" in case no user requirements document has been established

Wang, J., and L. Zhang, 2009: Climate applications of a global, 2-hourly atmospheric precipitable water dataset from IGS

42. ATBD(s) describing how data record is generated

For each referenced document, provide as a minimum the following information:
1.) Authors(s)
2.) Document title
3.) Year of creation
4.) URL to document (if available)

State "not established" in case no ATBD has been established


43. User manual to explain how to work with data record

For each referenced document, provide as a minimum the following information:
1.) Authors(s)
2.) Document title
3.) Year of creation
4.) URL to document (if available)

State "not established" in case no user manual has been established


44. Articles in peer-reviewed journals or conference proceedings based on data record

For each referenced document, provide as a minimum the following information:
1.) Authors(s)
2.) Document title
3.) Year of creation
4.) URL to document (if available)

State "not established" in case data record has not yet been described in the scientific literature.


45. Name of the data transfer format(s)

Example: NetCDF

ASCII

46. Version of the format (date, number, etc.)

Example: 3.6.0

none

47. URL(s) to data record (via http, https, ftp, scp, ...)

Fictitious example of an URL: https://www.beautifuldata.org/TCWV/5.0/

State "not available online" in case data record can't be accessed over the internet

http://rda.ucar.edu/datasets/ds721.1/
48. Size of data record in the format specified above, expressed in megabytes

*Example: 566 (for a file size of 566 MB, see e.g. this tool to convert between file size units)*

Transfer size (in MB) - 1110

49. Instructions for users to enable data access (if necessary)

*Example: Data record is password protected, please contact the responsible person to obtain the access credentials*

Keine Beantwortung

50. Additional information of relevance to potential users

Keine Beantwortung

51. Feedback to this G-VAP data record entry form

*Have we missed relevant aspects concerning "your" data record? Are some aspects covered in too much detail? Do you have suggestions for improving this entry form?*

Keine Beantwortung