

Data Format of Levels 3-4 for Radiosonde data

December 30, 2023

<< Basic Information >>

Radiosonde type : Lockheed Martin LMS6
Processor : LMG
Original data archive : ASCII files are archived every 1 second.

<< Processing Level >>

Level-0 Original
Level-1 Same as original except for their format
Level-2 Only apparent erroneous data have been removed.
Level-3 Additional corrections have been made. Methods of correction are provided in the header.
Level-4 Same as Level-3 except for their format (5 hPa interval from 1000 hPa to 80 hPa in addition to the surface value, etc.).

<< Data Format >>

Level-3

Header	Line-01	Project ID
	Line-02	Launch site/ID
	Line-03	Location in deg-E, deg-N, height in meter
	Line-04	Actual Launch Time in UTC
	Line-05	Nominal Launch Time in UTC
	Line-06	Serial Number / Radiosonde Type
	Line-07	Ground station software
	Line-08-11	Remarks

Data

Following parameters are archived every 1 second as (f7.1, 2f8.2, 2x, 7f7.1, f8.0)

Time in second
Longitude in degree East
Latitude in degree North
Pressure in hPa
Temperature in degree C
Dewpoint temperature in degree C
Relative Humidity with respect to water in %
Zonal wind component in m/sec
Meridional wind component in m/sec
Mixing ratio in g/kg
Height in meters

Level-4

Data

Following parameters are stored every 5hPa from 1000hPa to 80hPa in addition to the surface as (2f8.2, 2x, 11f7.1, f8.0)

Longitude in degree East

Latitude in degree North

Pressure in hPa

Temperature in degree C

Dewpoint temperature in degree C

Relative Humidity with respect to water in %

Zonal wind component in m/sec

Meridional wind component in m/sec

Mixing ratio in g/kg

Specific Humidity ratio in g/kg

Potential temperature in K

Equivalent potential temperature in K

Saturated equivalent potential temperature in K

Height in meters

<< Remarks >>

Quality Control: Relative humidity data have been adjusted to that obtained by Vaisala RS41. This procedure was developed based on the intercomparison with Vaisala RS41 and GNSS-derived precipitable water. Data, whose heating/cooling profiles near ground surface in daytime/nighttime have not been removed, are stored in Level-3.2/4.2, while ones with correction are stored in Level-3.3/4.3, respectively.

Detailed procedures can be found in Yoneyama et al. (2002) for ground surface correction and in Yoneyama et al. (2021) for intercomparison-based correction.

Note that the data archived here are the same as that in [YMC-BSM 2018 IOP data](#).

References:

Yoneyama, K., M. Hanyu, S. Sueyoshi, F. Yoshiura, and M. Katsumata 2002: Radiosonde observation from the ship in the tropical region. *JAMSTECR*, **45**, 31-39.

https://www.godac.jamstec.go.jp/doc_catalog/external/metadata/shiken45_04/file/shiken45_04.pdf

Yoneyama, K., M. Fujita, A. Seiki, R. Shirooka, S. Yokoi, E. O. Cayan, C. O. Iglesia, and O. C. Cabrera, 2021: Evaluation of LMS6 and RS41 radiosonde humidity data obtained during YMC-Boreal Summer Monsoon study in 2018 and 2020. *J. Meteor. Soc. Japan*, **99**, 1115-1125. <https://doi.org/10.2151/jmsj.2021-054>

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