Data Set Documentation/Readme:

Title: fle_201001-201402

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1.0 Data Set Overview:

The Soundings of Ozone and Water in the Equatorial Region (SOWER) Pacific Mission (http://sower.ees.hokudai.ac.jp) has been running on a campaign basis since 1998 at various sites in the tropical eastern, central, and western Pacific. Balloon-borne ozone and water vapor instruments are the primary tool to improve our knowledge on the distribution and variability of ozone and water vapor in the tropical troposphere and stratosphere. The motivations in the beginning were to establish the climatology and zonal and temporal variability in ozone and water vapor and to collect correlative data for satellite data validation in the tropical Pacific region. Recent scientific focus is placed on the water vapor controlling processes in the Tropical Tropopause Layer (TTL) particularly over the tropical western Pacific in northern winter season

The data set “fle_201001-201402” includes data taken during the following period at the following locations:
Time period: During one week to one month in January 2010, January 2011, January and February 2012, January 2013, and February 2014.
Location: Biak, Indonesia (136.06E, 1.17S) for the February 2014 campaign; Research Vessel Hakuho-Maru (100-115W, 0N) for the Equatorial Pacific Ocean and Stratospheric/Tropospheric Atmosphere Study (EqPOS) campaign;
Biak, Tarawa, Kiribati (172.92E, 1.35N), Hanoi, Vietnam (105.80E, 21.01N) for other campaigns
Platform: Meteorological balloons

2.0 Instrument Description:

Profiles of air pressure, temperature, and relative humidity are measured with Meisei RS-06G GPS radiosondes (for 2012 – 2014 campaigns) or Vaisala RS80 radiosondes (for 2010 and 2011 campaigns). Water vapor pressure/mixing ratio from the surface to the lower stratosphere is measured with Cryogenic Frostpoint Hygrometer (CFH) chilled-mirror instruments. Ozone is measured by electrochemical concentration cells (ECC) ozonesonde.

3.0 Data Collection and Processing:

All profiles have been checked and re-processed by Dr. Holger Voemel (DWD or NCAR/EOL). See below for some specific comments.

Pressure: Stored pressure data are collected by putting a constant offset value for the whole height range for some profiles in which it is found that the original pressure data obtained from RS80 radiosondes have a non-negligible bias. In such case, the offset value is itemized as “Vaisala pressure offset” in the header of each file.
CFH water vapor mixing ratio (“H2O Mr”) or CFH dewpoint/frostpoint temperature (“TFp Hyg”): A data quality flag is assigned at column "Fl" which is either 1 (good) or 0 (not good). See the following paper for further details about the CFH instruments:
Vömel, H., D. E. David, and K. Smith (2007), Accuracy of tropospheric and stratospheric water vapor measurements by the cryogenic frost point hygrometer: Instrumental details and observations, J. Geophys. Res., 112, D08305, doi:10.1029/2006JD007224.

4.0 Data Format:
Dataset is in ASCII format.
Data layout is as follows (see the header of each data file).

Time, Frame, Press, Alt, Temp, Theta, RH, TFp V, TVaisI, Wind, Wind Dir, GPS lat, GPS lon, O3 P, O3 Mr, O3ICell, T Pump, I Pump, O3Bat, TFp Hyg, H2O Mr, Fl, RH FP, Co, Batt, TP2, TOptic
[Min], [], [hPa], [km], [deg C], [K], [%], [deg C], [deg C], [m/s], [deg], [deg], [deg], [mPa], [ppmv], [uA], [deg C], [mA], [V], [deg C], [ppmv], [], [%], , [V], [V], [deg C]
0.02, 3776, 1002.10, 0.048, 29.30, 302.3, 69.0, 23.04, 26.06, 0.0, 0.0, -1.1757, 136.1012, 0.383, 3.93E-03, 0.120, 35.2, 0.0, 0.0, 24.10, 3.09E+04, 1, 73.6, 1, 10.342, 2.50852, 53.2

5.0 Data Remarks:
There is no specific remark.

6.0 References:
See a publication list in http://sower.ees.hokudai.ac.jp/pub.html