**Title:**CPOC-2017 radiosonde data

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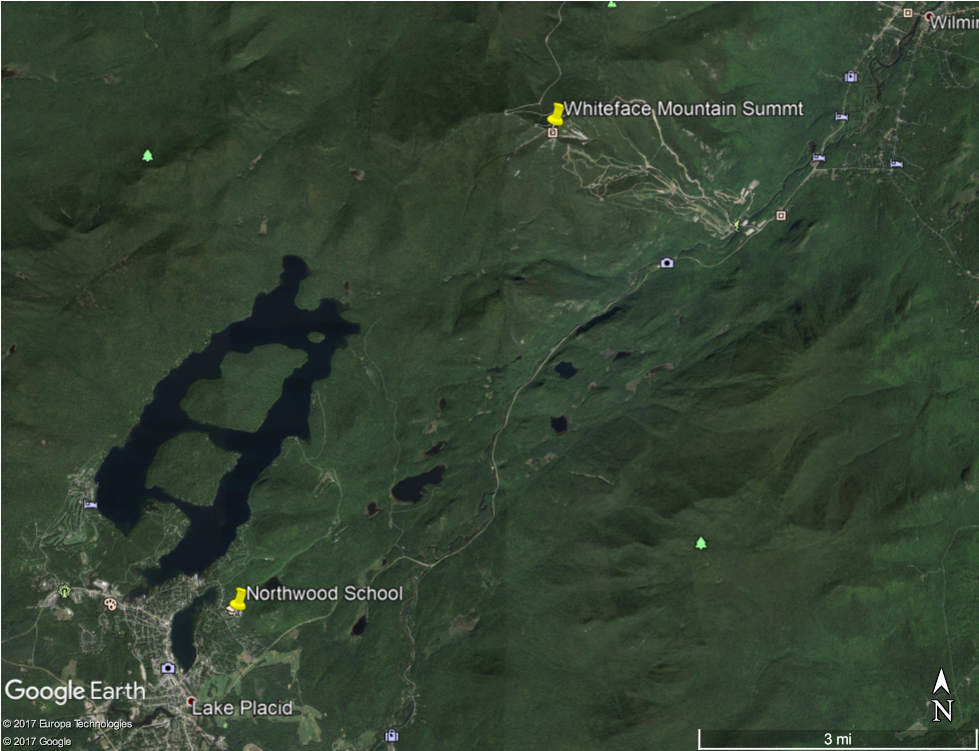
**1.0 Data Set Overview:**

This dataset contains data from radiosondes launched during Chemical Processing of Organics within Clouds (CPOC) 2017 pilot study. All soundings were launched from the Northwood School (NWS) in Lake Placid New York. NWS is located roughly 10km SSW of the summit of Whiteface Mountain(WFM). The location of the NWS is provided in Table 1 and Figure 1 below.

Time period covered: 11 August 2017 – 25 August 2017

*Table 1: Summary of location of radiosonde launches*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Abbreviated name** | **Full name** | **Latitude**  **[deg.]** | **Longitude**  **[deg.]** | **Elevation [m, MSL]** | **Observation period** |
| NWS | Northwood School | 43.291 | -73.971 | 583 | 11 August 2017 – 25 August 2017 |



*Figure 1: Locations of Northwood School (NWS) sounding launch location and the summit of WFM.*

Sondes were launched during CPOC intensive observing periods (IOPs), focusing on events where the summit of WFM was in cloud with no precipitation. During the 2 week field campaign we had 7 days of interest. 18 sondes were launched during the 7 IOPs. A listing of IOPs and launch times is provided in Table 2.

*Table 2: IOP #, launch site, and launch time for CCOPE soundings*

|  |  |  |
| --- | --- | --- |
| **IOP #** | **Launch site** | **UTC launch time (yyyy-mm-dd\_HHMM)** |
| 1 | NWS | 2017-08-13\_1358 |
| 1 | NWS | 2017-08-13\_1502 |
| 2 | NWS | 2017-08-15\_1231 |
| 2 | NWS | 2017-08-15\_1429 |
| 2 | NWS | 2017-08-15\_1553 |
| 3 | NWS | 2017-08-18\_1338 |
| 3 | NWS | 2017-08-18\_1527 |
| 3 | NWS | 2017-08-18\_1734 |
| 4 | NWS | 2017-08-19\_1210 |
| 4 | NWS | 2017-08-19\_1403 |
| 4 | NWS | 2017-08-19\_1608 |
| 4 | NWS | 2017-08-19\_1836 |
| 4 | NWS | 2017-08-19\_2007 |
| 5 | NWS | 2017-08-20\_1320 |
| 5 | NWS | 2017-08-20\_1505 |
| 6 | NWS | 2017-08-22\_1928 |
| 7 | NWS | 2017-08-23\_1318 |
| 7 | NWS | 2017-08-23\_1507 |

**2.0 Instrument Description:**

All soundings are InterMet iMet-1 Balloon Radiosondes (<http://www.intermetsystems.com/products/imet-1>) using a iMet-3150 403MHz GPS ground system (<http://www.intermetsystems.com/products/imet-3150>) and the iMetOS-II software (InterMet, 2014). The attributes of the sensors on the iMet-1 radiosonde are summarized in Table 3.

*Table 3: Sensor attributes for iMet-1 radiosonde (based on:* [*http://www.intermetsystems.com/ee/pdf/202060\_iMet-1-ABxn\_Data\_161006.pdf*](http://www.intermetsystems.com/ee/pdf/202060_iMet-1-ABxn_Data_161006.pdf)*)*

|  |  |
| --- | --- |
| **Pressure** |  |
| Type | Piezoresistive |
| Range | 2 to 1070 hPa |
| Accuracy | 0.5 hPa |
| Resolution | < 0.01 hPa |
| Response Time | < 1.0 Sec |
| **Temperature** |  |
| Type | Bead Thermistor |
| Range | -95 to +50 deg. C |
| Accuracy | 0.2 deg. C |
| Resolution | < 0.01 deg. C |
| Response Time | 2.0 sec @ 1000hPa |
| **Humidity** |  |
| Type | Capacitive |
| Range | 0 to 100% RH |
| Accuracy | 5% RH |
| Resolution | < 0.1% RH |
| Response Time | 2 sec @ 25 deg. C; 60 sec @ -35 deg. C |
| **GPS** |  |
| Type | C/A code, 12 Channel |
| Tracking | Continuous |
| Update Rate | 1 Hz |
| Position accuracy | 10 m |
| Wind velocity accuracy | 1.0 m/s |
| Altitude accuracy | 15 m |

**3.0 Data Collection and Processing:**

All launches used 100 g balloons. Data was collected until loss of radio signal.

Data were collected at 1Hz sampling rate. Raw data were post-processed using interMet’s iMetOS-I (InterMet, 2015) default processing. No other post-processing was applied.

**4.0 Data Format:**

The raw data files are named with the following format:

*iMetSounding\_NWS\_YYYYMMDD\_HHMMUTC*

Text files used to plot sounding as well as create other plot are named with the following format:

iMetSounding\_NWS\_YYYYMMDD\_HHMMUTC\_reform.txt

Data files are in fixed-width ASCII text. The first three lines are a header that label the names and units of the columns of data. The columns correspond to the following:

|  |  |  |
| --- | --- | --- |
| **Variable** | **Abbreviated name in header** | **Units** |
| Date | UTC\_Date | UTC (d/m/yyyy) |
| Time | UTC\_Time | UTC +4 hours (HH:MM:SS AM/PM) |
| Time since launch | Time | Seconds |
| Longitude | Long/E | Degrees-East |
| Latitude | Lat/N | Degrees-North |
| Altitude above sea level | Alt\_MSL | Meters |
| Geopotential height above ground level | GPM\_AGL | Meters |
| Pressure | Press | hPa |
| Temperature | Temp | Degrees Celsius |
| Dew point | DP | Degrees Celsius |
| Relative Humidity | RelHum | Percentage |
| Wind speed | WSpeed | m/s |
| Wind direction | WDirn | Degrees |

**5.0 Data Remarks:**

Several soundings experienced loss of signal at low range, sometimes due to problems with the radio receiver. As a result soundings from IOPs 4 and 5, only collected data through the lower-to-mid troposphere. Soundings on IOP 1 had issues with radio signal loss however signal was recovered. Data between the loss in signal and recover yields unrealistic lapse rates and extremely high winds.

The UTC Time in the data is off by plus 4 hours from actual UTC time. The UTC time in the file name is the correct UTC time corresponding to the time of launch.

**6.0 References***:*

InterMet, 2014: Software reference manual for the iMetOS-II Meteorological Operating Software, Document No. 200,850, Revision 3.34.0.