**README FILE (Observation Sites)**

**Updated:** 20180926

Each observation site may contain the following files:

**Summary File**

Each observation site folder contains a summary file that contains plots which characterize the measured wind speed data for the location, as well as a table that gives recovery information for each data stream.

The summary file is named per the following convention:

**SITE NAME Summary Report MONITORING START DATE – MONITORING END DATE .pdf**

**Installation Report**

Each observation site folder contains an installation report that contains specifications of installed measurement devices and photos of the observation site.

The installation report is named per the following convention:

**SITE NAME \_Installation\_Report\_ INSTALL DATE .pdf**

SODAR sites (Inani, Rajshahi, Rangpur) will have two installation reports.

**QC’d Data**

This file contains the quality controlled “QCd” data for each measurement location. The final report summarizes the met tower layout and provides an explanation of the quality control process. The met tower commissioning reports provide detailed information on each met tower installation.

There is one file per site with the exception of Rajshahi, which has one SODAR file and one met tower file. The naming convention is:

 **SITE NAME\_MONITORING START DATE-MONITORING END DATE .txt**

Files from the SODAR sites have “(QF90)” and “local\_time” in the file name as well. The files are plain text files.

The time step interval is 10 minutes

Table QC1 summarizes the data streams in the data files from the met tower sites.

Table QC2 summarizes the data streams from the SODAR sites.

|  |
| --- |
| **TABLE QC1. Data Channel Summary (Tower)** |
| **Data Channel1,2** | **Units** | **Nominal Height3 (m)** |  | **Measurement****Stream** | **Units** | **Nominal Height (m)** |
| Wind Speed - west | m/s | 80 |  | RTD Temp | °C | 80 |
| Wind Speed - east | m/s | 80 |  | RTD Temp | °C | 4 |
| Wind Speed - west | m/s | 60 |  | HMP155 Temp | °C | 80 |
| Wind Speed - east | m/s | 60 |  | HMP155 Temp | °C | 4 |
| Wind Speed - west | m/s | 40 |  | HMP 155 RH | % | 80 |
| Wind Speed - east | m/s | 40 |  | HMP 155 RH | % | 4 |
| Wind Direction | ° | 80 |  | Barometric Pressure | mbar | 80 |
| Wind Direction | ° | 60 |  | Barometric Pressure | mbar | 4 |
| Wind Direction | ° | 40 |  |  |  |  |
| Notes1 Data files may have the data streams in slightly different order2 Each data stream (except direction) includes average, max, min, standard deviation. Data stream for direction includes average and standard deviation.3 The tower at Chandpur was 60m high. Nominal sensor heights for that tower are 60m, 40m, 20m |

|  |
| --- |
| **TABLE QC2. Data Channel Summary (SODAR)** |
| **Data Channel** | **Units** | **Height (m)** |
| Wind Direction | ° | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Wind Speed | m/s | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Wind Speed (vertical) | m/s | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Quality | % | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Turbulence | m/s | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Turbulence Quality | m/s | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Temperature | °C | ground level |
| Barometric Pressure | mbar | ground level |
| Humidity | % | ground level |
| Notes |

**Modeling Data Text File**

This file contains the data transferred to the modeling team. Note that the modeling team did additional quality control after receiving the data, so these sets aren’t exactly the data sets used in the modeling. The final report summarizes the process used to create these data sets.

There is one file per site. The naming convention is:

**SITE NAME(MOD)\_MONITORING START DATE-MONITORING END DATE .csv**

Files from the SODAR sites have “(QF90)” and “local\_time” in the file name as well. The files are plain text files.

The time step interval is 10 minutes

Table MOD11 lists the file names of the data files.

Table MOD2 summarizes the data streams in the data files from the met tower sites.

Table MOD3 summarizes the data streams from the SODAR sites.

|  |
| --- |
| **TABLE MOD11. Data Files for Modeling** |
| **SITE** | **FILE NAME – for Modeling** |
| Chandpur | Chandpur /Chandpur(MOD)\_20140611-20171204.csv |
| Mirzapur | Mirzapur /Mirzapur(MOD)\_20151019-20171122.csv |
| Mongla | Mongla /Mongla(MOD)\_20151031-20171225.csv |
| Mymensingh | Mymensingh /Mymensingh(MOD)\_20150813-20171213.csv |
| Parkay Beach | ParkayBeach /Parkay\_Beach(MOD)\_20141221-20170714.csv |
| Rajshahi | Rajshahi /Rajshahi(MOD)\_20140611-20171220.csv |
| Sitakunda | Sitakunda/Sitakunda(MOD)\_20141218-20161220.csv |
| Inani (SODAR) | Inani /Inani(QF90)(MOD)\_local\_time\_20140725-20150802.csv |
| Rangpur (SODAR) | Rangpur/Rangpur(QF90)(MOD)\_local\_time\_20150804-20170418.csv |

|  |
| --- |
| **TABLE MOD2. Data Channel Summary (Tower)** |
| **Data Channel** | **Units** | **Nominal Height1 (m)** |  | **Measurement****Stream** | **Units** | **Nominal Height (m)** |
| Wind Speed | m/s | 80 |  | RTD Temp | °C | 80 |
| Wind Speed | m/s | 60 |  | RTD Temp | °C | 4 |
| Wind Speed - west | m/s | 40 |  | HMP155 Temp | °C | 80 |
| Wind Direction | ° | 80 |  | HMP155 Temp | °C | 4 |
| Wind Direction | ° | 60 |  | HMP 155 RH | % | 80 |
| Wind Direction | ° | 40 |  | HMP 155 RH | % | 4 |
|  |  |  |  | Barometric Pressure | mbar | 80 |
|  |  |  |  | Barometric Pressure | mbar | 4 |
|  |  |  |  |  |  |  |
| Notes1 The tower at Chandpur was 60m high. Nominal sensor heights for that tower are 60m, 40m, 20m |

|  |
| --- |
| **TABLE MOD3. Data Channel Summary (SODAR)** |
| **Data Channel** | **Units** | **Height (m)** |
| Wind Direction | ° | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Wind Speed | m/s | 40, 50, 60, 80, 100, 120, 140, 160, 180, 200 |
| Temperature | °C | ground level |
| Barometric Pressure | mbar | ground level |
| Humidity | % | ground level |
| Notes |

**Raw Tower Data**

The raw data files from the towers, while all text files, are available in varying types and time-step intervals in a zipped folders. The daily files are the data packets pushed daily from the datalogger to the server; these files typically contain a day’s worth of data. Occasionally a daily file is less than a full day’s data, either due to collection/transmission errors or because the file is from the first or last day of monitoring. Daily data files are available with either one-minute or ten-minute time steps. The files with the one-minute time step contain solar insolation data. The ten-minute files contain all the other data.

To make identification easier, the daily files are named using the follow convention:

**four-character site code then time step (oneMin or tenMin), then eight-digit date, and then a letter (if more than one file is available for a given date) .dat**

For example, the file from Chandpur for the date September 2, 2015, has the filename CHND\_tenMin\_2015\_09\_02.dat.

The other type of raw files from the towers are the “logger” files. These files are data that was downloaded from the dataloggers during site visits by Harness personal. These files each generally contain several months of data each. The data in these logger files has a time steps of either one-minute, ten-minutes, or hourly. The one-minute and ten-minute files have the same data streams as the respective daily files. The hourly files contain sensor and data logger status data. These files are named using the following convention: Site name-(time step)-start date-end date. An example is “Mongla(Ten Min)-20160313-20160806.” Finally, it should be noted that the logger files for a given site may have data from overlapping time periods.

Unfortunately for a given tower neither the daily files as a whole, nor the logger files as a whole contain all the data for that site. Those wanting all the data available for a given site must use both the daily files and the logger files.

Table R1 summarizes the raw data files available for each tower.

**Correction to barometric pressure readings from Rajshahi met tower**

The pressure sensors used on the tower at Rajshahi were a different model than those used at the other tower sites and thus an incorrect transfer function was entered into the logger. To correct for this incorrect transfer function, a corrective transfer function of y = 0.5x + 300 should be applied to barometric pressure readings from the tower at this site. Do not apply the correction to the barometric pressure for the SODAR data from this site.

|  |
| --- |
| **TABLE R1. Raw Data Files-Tower** |
| **SITE** | **TEN MINUTE FILES** | **HOUR AND ONE MINUTE FILES** |
| Chandpur | **Raw Data Logger(TenMin).zip**:  Chandpur(TenMin)-20140715-20141009 Chandpur(TenMin)-20140930-20150517 Chandpur(TenMin)-20170918-20171204**Chandpur Daily-TenMin.zip**: 513 files | **Raw Data Logger(Hour).zip**:  Chandpur(Hour)-20140905-20141121 Chandpur(Hour)-20150601-20150817**Raw Data Logger(OneMin).zip**:  Chandpur(OneMin)-20140715-20141009 Chandpur(OneMin)-20141001-20150817**Chandpur Daily-OneMin.zip**: 449 files |
| Mirzapur | **Raw Data Logger(TenMin).zip**:  Mirzapur(TenMin)-20151019-20151205 Mirzapur(TenMin)-20151225-20160728 Mirzapur(TenMin)-20170315-20170608 Mirzapur(TenMin)-20170829-20171122**Mirzapur Daily-TenMin.zip**: 178 files | **Raw Data Logger(Hour).zip**:  Mirzapur(Hour)-20151019-20151205 Mirzapur(Hour)-20160507-20160728 Mirzapur(Hour)-20170315-20170608**Raw Data Logger(OneMin).zip**:  Mirzapur(OneMin)-20151019-20151205 Mirzapur(OneMin)-20151225-20160728 Mirzapur(OneMin)-20170315-20170608**Mirzapur Daily-OneMin.zip** 161 files |
| Mongla | **Raw Data Logger(TenMin).zip**:  Monga(TenMin)-20151031-20151222 Monga(TenMin)-20160313-20171225**Monlga Daily-TenMin.zip**: 555 files | **Raw Data Logger(Hour).zip**: Monga(Hour)-20160516-20160806 Monga(Hour)-20170430-20170624**Raw Data Logger(OneMin).zip**:  Monga(OneMin)-20160313-20160806**Mongla Daily-OneMin.zip:** 547 files |
| Mymensingh | **Raw Data Logger(TenMin).zip**:  Mymensingh(TenMin)-20151220-20170607**Mymensingh Daily-TenMin.zip**: 594 files | **Raw Data Logger(Hour).zip**:  Mymensingh(Hour)-20160528-20160729 Mymensingh(Hour)-20160609-20160830 Mymensingh(Hour)-20161219-20170311**Raw Data Logger(OneMin).zip**:  Mymensingh(OneMin)-20151220-20170607**Mymensingh Daily-OneMin.zi**p: 532 files |
| Parkay Beach | **Raw Data Logger(TenMin).zip**:  Parkay(TenMin)-20151228-20160315 Parkay(TenMin)-20160503-20160827 Parkay(TenMin)-20160727-20170313 Parkay(TenMin)-20161204-20170611 Parkay(TenMin)-20170123-20170421**ParkayBeach-Daily-TenMin.zip** 250 files | **Raw Data Logger(Hour).zip**:  Parkay(Hour)-20160229-20160315 Parkay(Hour)-20160403-20160627 Parkay(Hour)-20160429-20160723 Parkay(Hour)-20160603-20160827 Parkay(Hour)-20160802-20161026 Parkay(Hour)-20161219-20170313 Parkay(Hour)-20170423-20170611**Raw Data Logger(OneMin).zip**:  Parkay(OneMin)-20151228-20160315 Parkay(OneMin)-20160504-20160827 Parkay(OneMin)-20160728-20170313 Parkay(OneMin)-20161204-20170611**ParkayBeach-Daily-OneMin.zip:** 250 files |

|  |  |  |
| --- | --- | --- |
| **SITE** | **TEN MINUTE FILES** | **HOUR AND ONE MINUTE FILES** |
| Rajshahi | **Raw Data Logger(TenMin).zip**:  Rajshahi(TenMin)-20140611-20140712 Rajshahi(TenMin)-20140712-20140713 Rajshahi(TenMin)-20140717-20150823 Rajshahi(TenMin)-20160303-20160823 Rajshahi(TenMin)-20160606-20170605 Rajshahi(TenMin)-20171002-20171220**Rajshahi-Daily-TenMin.zip**: 790 files | **Raw Data Logger(Hour).zip**:  Rajshahi(Hour)-20140611-20140712 Rajshahi(Hour)-20140712-20140713 Rajshahi(Hour)-20150529-20150823 Rajshahi(Hour)-20160604-20160823**Raw Data Logger(OneMin).zip**:  Rajshahi(OneMin)-20140712-20140713 Rajshahi(OneMin)-20140714-20150823 Rajshahi(OneMin)-20150529-20150823 Rajshahi(OneMin)-20160318-20160804 Rajshahi(OneMin)-20160606-20170605**Rajshahi-Daily-OneMin.zip**: 697 files |
| Sitakunda | **Raw Data Logger(TenMin).zip**:  Sitakunda(TenMin)-20160604-20160725**Sitakunda-Daily-TenMin.zip**: 566 files | **Raw Data Logger(Hour).zip**: \ Sitakunda(Hour)-20160404-20160628 Sitakunda(Hour)-20160501-20160725**Raw Data Logger(OneMin).zip**:  Sitakunda(OneMin)-20160604-20160725**Sitakunda-Daily-OneMin.zip:**: 530 files |

**SODAR Data**

There are two raw data files for each SODAR site. One file has the wind speed, wind direction, vertical wind speed, and turbulence measurements. The other file, dubbed the “operational” file, contains additional measurements, such as for temperature, as well as data streams regarding the status of the SODAR unit.

The file name convention is:

**SITE NAME(UTC)-monitoring start date-monitoring end date**

 The operational files have “operational” in the file name.

NOTE: The times listed in the raw SODAR files are UTM, not local. (As indicated by “UTM” in the file names.

Table S1 lists the raw data files from the SODAR units.

|  |
| --- |
| **TABLE S1. Raw Data Files-SODAR** |
| **SITE** | **Zip File** | **WIND DATA FILE** | **OPERATIONAL FILE** |
| Inani | **Raw Data (SODAR).zip** | Inani(UTC)-20140725-20150804 | Inani(Operational)(UTC)-20140725-20150804 |
| Rajshahi | **Raw Data (SODAR).zip** | Rajshahi(UTC)-20150528-20140722 | Rajshahi(Operational)(UTC)-20150528-20140722 |
| Rangpur | **Raw Data (SODAR).zip** | Rangpur(UTC)-20150804-20170417 | Rangpur(Operational)(UTC)-20150804-20170417 |