



# **Wind Data Analysis and Verification Report**

**Windy Island  
Island Hill West - ZephIR 300  
February 2018**

*energy<sup>3</sup>*

<b>Client:</b>	Wind Search LTD.
<b>Client Contact:</b>	T. F. Controller
<b>Report Prepared:</b>	April 4, 2018
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## – 1: LiDAR, TOWER AND METEOROLOGICAL DETAILS –

### LiDAR DETAILS

LiDAR Model	ZephIR 300 LiDAR
LiDAR Serial Number	DT 506
Coordinates	Lat 39.226087 S, Long 146.987200 E
Datum/Zone	AGD66/52H
Time Zone	GMT +10
Elevation (m)	44
Install Date	01/06/2017
Measurement Heights (m)	40, 60, 80, 90, 100, 110, 120, 140, 180, 200

### VALIDATION DETAILS

Site Name	West Island Hill
Mast Coordinates	Lat 39.224972 S, Long 146.986752 E
Mast Height (m)	60

### METEOROLOGICAL DETAILS

Sensor	Model	Logger	Serial Number	Install Date
Air Pressure	ZephIR Met	ZephIR	1003716966028	30/07/2017
Air Temperature	ZephIR Met	ZephIR	1003716966028	30/07/2017
Relative Humidity	ZephIR Met	ZephIR	1003716966028	30/07/2017
Solar Radiation	Hukseflux LP02	CR800	43641	30/07/2017
Precipitation	HS TB4-0.2	CR800	12-258	30/07/2017

### Site Maintenance

There was no site maintenance carried out during this reporting period.

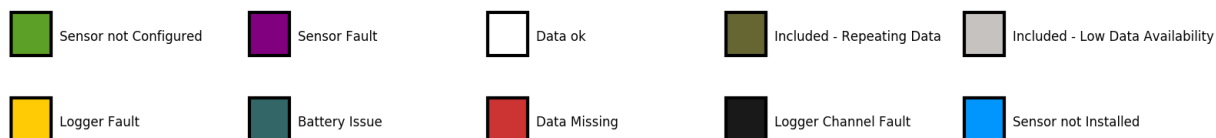
### General Comments

Data availability is excellent this month with all meteorological sensors reporting >99.98%, and all levels of LiDAR measurement >95% Adjusted Recovery Rate. Wind speed and direction measured by the LiDAR again showed a strong correlation to the reference mast. There was a long period of south-easterly wind at the start of this month, and a diurnal component is also evident with higher frequencies of south-easterly winds during some afternoons. Wind speed also shows some diurnal variation with higher wind speeds experienced throughout the LiDAR measurement range in the afternoon and lower speeds and more vertical striation between 18:00 and 8:00. Mean wind speed at hub height (110m) was 8.4 m/s.



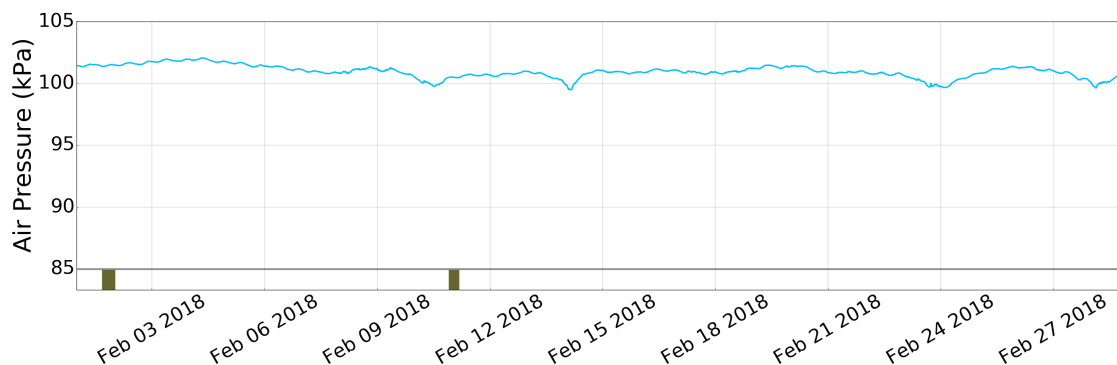
## – 2: TIME SERIES –

### 2.a: DATA FLAGS



\* 'Included - Low Data Availability' is a LiDAR only flag used when the data availability for a 10-minute period is <50% \*

### 2.b: AIR PRESSURE

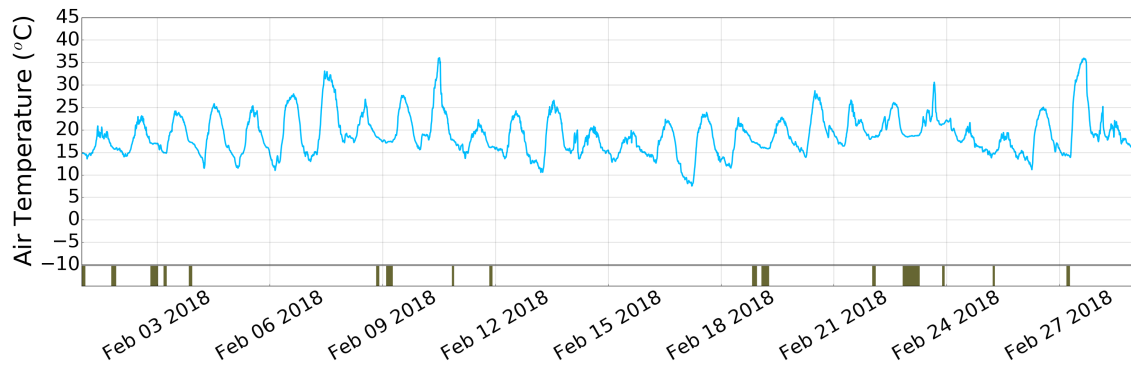


RR (%)	ERR (%)	Avg (kPa)	Std (kPa)	Max (kPa)	Min (kPa)
99.98	99.98	100.95	0.50	102.06	99.48

\* **RR:** Recovery Rate; **ERR:** Extended Recovery Rate; **AVG:** Average Air Pressure \*

\* **STD:** Standard Deviation; **MAX:** Maximum Air Pressure per 10-Minute Interval; **MIN:** Minimum Air Pressure per 10-Minute Interval \*

**Comments:** The Air Pressure trace has been checked and appears normal. One 10-minute period of data is missing on the 18/02 at 18:50h, reducing the recovery rate for this sensor to 99.98%. Repeating values have been detected but these do not appear to indicate a sensor fault.

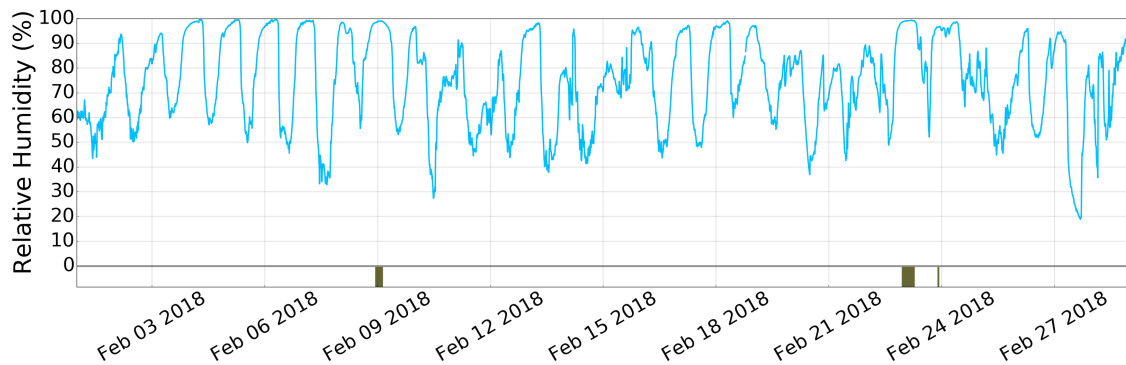
**2.c: AIR TEMPERATURE**

RR (%)	ERR (%)	Avg (°C)	Std (°C)	Max (°C)	Min (°C)
99.98	99.98	18.87	4.48	36.02	7.53

\* **RR:** Recovery Rate; **ERR:** Extended Recovery Rate; **AVG:** Average Air Temperature \*

\* **STD:** Standard Deviation; **MAX:** Maximum Air Temperature per 10-Minute Interval; **MIN:** Minimum Air Temperature per 10-Minute Interval \*

**Comments:** The Air Temperature trace has been checked and appears normal. One 10-minute period of data is missing on the 18/02 at 18:50h, reducing the recovery rate for this sensor to 99.98%. Repeating values have been detected but these do not appear to indicate a sensor fault.

**2.d: RELATIVE HUMIDITY**

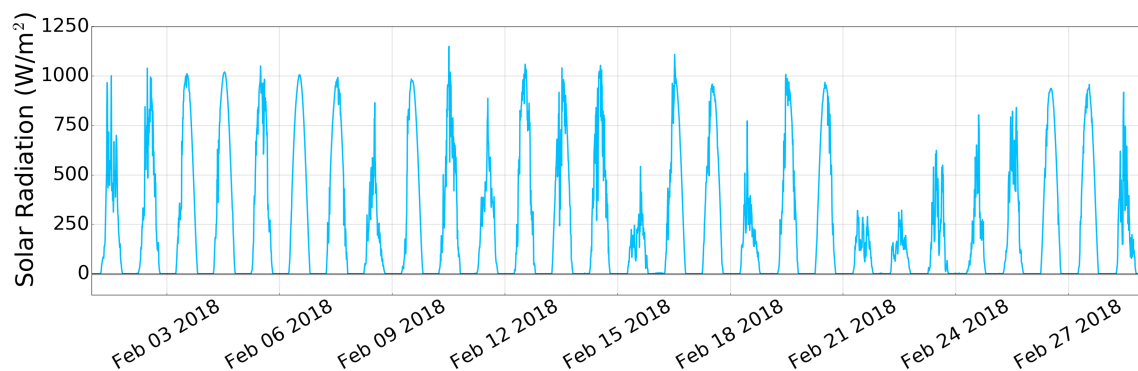
RR (%)	ERR (%)	Avg (%)	Std (%)	Max (%)	Min (%)
99.98	99.98	74.42	18.07	99.97	18.79

\* **RR:** Recovery Rate; **ERR:** Extended Recovery Rate; **AVG:** Average Relative Humidity \*

\* **STD:** Standard Deviation; **MAX:** Maximum Relative Humidity per 10-Minute Interval; **MIN:** Minimum Relative Humidity per 10-Minute Interval \*

**Comments:** The Relative Humidity trace has been checked and appears normal. One 10-minute period of data is missing on the 18/02 at 18:50h, reducing the recovery rate for this sensor to 99.98%. Repeating values have been detected but these do not appear to indicate a sensor fault.



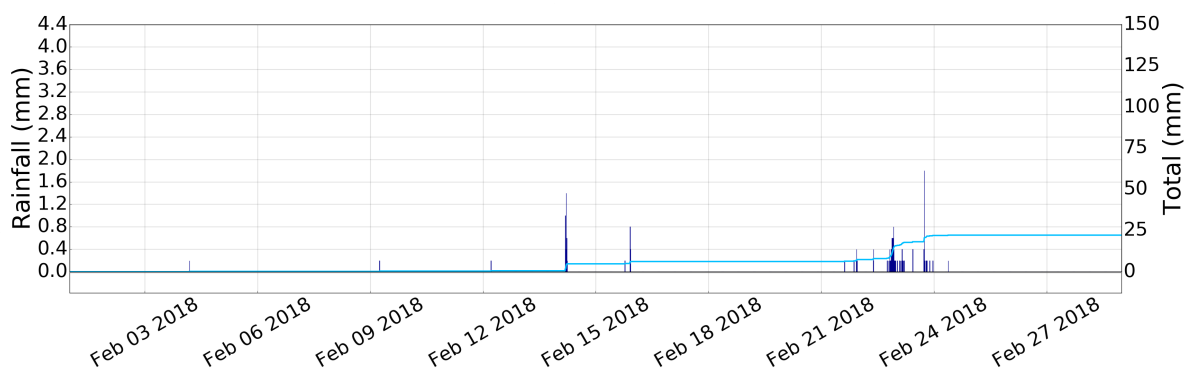
**2.e: SOLAR RADIATION**

RR (%)	ERR (%)	Avg (Wm <sup>-2</sup> )	Tot (kWm <sup>-2</sup> )	Max (Wm <sup>-2</sup> )	Min (Wm <sup>-2</sup> )
100.00	100.00	236.69	954.32	1149.00	0.00

\* **RR:** Recovery Rate; **ERR:** Extended Recovery Rate; **AVG:** Average Solar Radiation \*

\* **TOT:** Total Solar Radiation; **MAX:** Maximum Total Solar Radiation per 10-Minute Interval; **MIN:** Minimum Solar Radiation per 10-Minute Interval \*

**Comments:** The Solar Radiation trace has been checked and appears normal.

**2.f: PRECIPITATION**

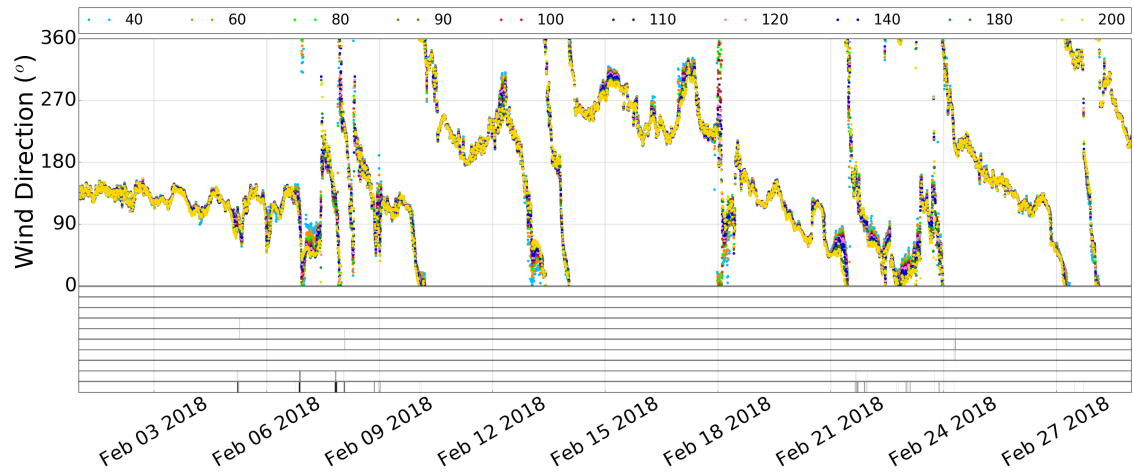
RR (%)	ERR (%)	Avg (mm)	Tot (mm)	Max (mm)	Min (mm)
100.00	100.00	0.01	22.20	1.80	0.00

\* **RR:** Recovery Rate; **ERR:** Extended Recovery Rate; **AVG:** Average Precipitation \*

\* **TOT:** Total Precipitation; **MAX:** Maximum Precipitation per 10-Minute Interval; **MIN:** Minimum Precipitation per 10-Minute Interval \*

**Comments:** The Precipitation trace has been checked and appears normal.

## 2.g: WIND DIRECTION



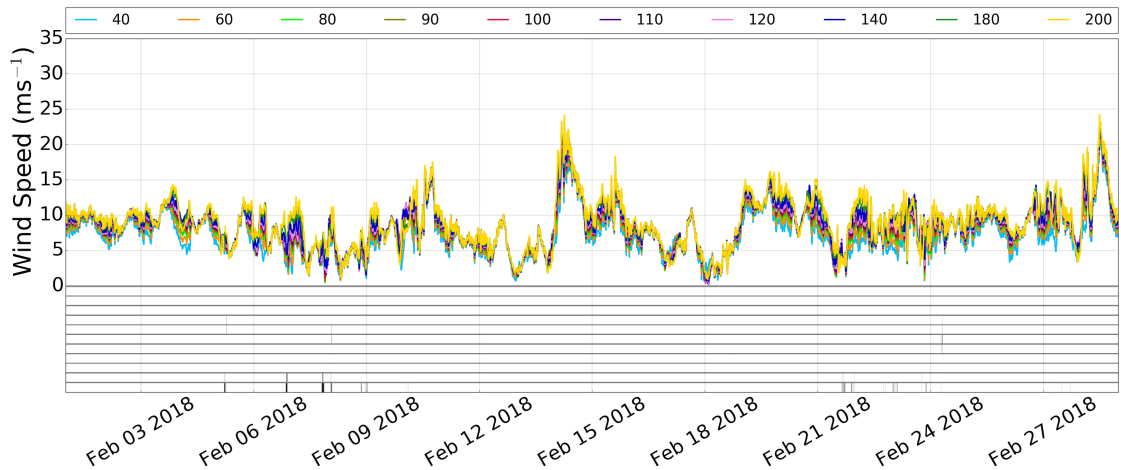
Height (m)	RR (%)	ERR (%)	ARR (%)
40.00	99.98	99.98	99.98
60.00	99.98	99.98	99.98
80.00	99.98	99.98	99.88
90.00	99.98	99.95	99.75
100.00	99.98	99.95	99.65
110.00	99.98	99.95	99.55
120.00	99.98	99.98	99.68
140.00	99.98	99.98	99.93
180.00	99.98	99.73	98.54
200.00	99.98	99.13	95.98

\* RR: Recovery Rate; ERR: Extended Recovery Rate; ARR: Adjusted Recovery Rate\*

**Comments:** The Wind Direction trace was checked and appears normal. One 10-minute period of data is missing on the 18/02 at 18:50h affecting all levels of LiDAR measurement. The Adjusted Recovery Rate is excellent at all levels (>95%).



## 2.h: WIND SPEED



Height (m)	RR (%)	ERR (%)	ARR (%)	Avg ( $\text{ms}^{-1}$ )	Std ( $\text{ms}^{-1}$ )	Max ( $\text{ms}^{-1}$ )	Min ( $\text{ms}^{-1}$ )	Gust ( $\text{ms}^{-1}$ )	Avg TI (%)	IEC 15 (%)	WPD ( $\text{W m}^{-2}$ )
40.00	99.98	99.98	99.98	7.23	0.82	21.65	0.68	30.29	11.59	11.48	356.91
60.00	99.98	99.98	99.98	7.70	0.82	22.61	0.67	32.01	11.05	11.48	416.38
80.00	99.98	99.98	99.88	8.04	0.82	23.01	0.27	30.12	10.79	11.26	463.88
90.00	99.98	99.95	99.75	8.17	0.82	23.10	0.25	30.49	10.70	10.53	484.43
100.00	99.98	99.95	99.65	8.28	0.82	23.16	0.25	33.71	10.59	10.34	503.62
110.00	99.98	99.95	99.55	8.40	0.83	23.23	0.24	35.27	10.51	9.78	523.57
120.00	99.98	99.98	99.68	8.51	0.83	23.27	0.31	35.47	10.43	9.91	542.94
140.00	99.98	99.98	99.93	8.70	0.83	23.51	0.64	33.51	10.31	9.10	579.33
180.00	99.98	99.73	98.54	8.99	0.85	23.99	0.84	30.69	10.34	8.63	644.02
200.00	99.98	99.13	95.98	9.10	0.86	24.23	0.88	30.70	10.45	6.99	673.10

\* RR: Recovery Rate; ERR: Extended Recovery Rate; ARR: Adjusted Recovery Rate; Avg: Average Wind Speed; Std: Standard Deviation \*

\* Max: Maximum Wind Speed per 10-Minute Interval; Min: Minimum Wind Speed per 10-Minute Interval; Gust: Maximum Wind Speed \*

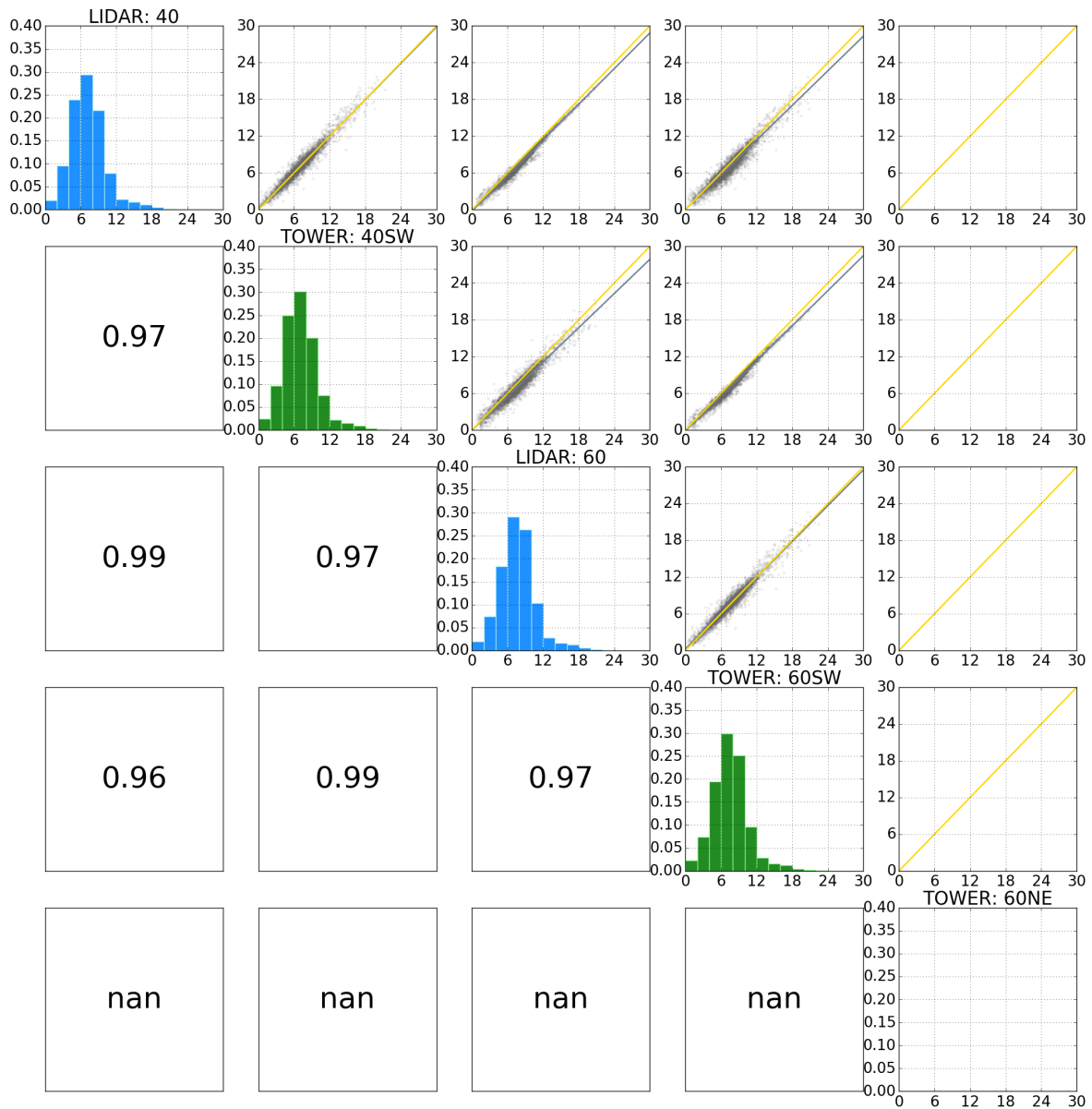
\* AvgTI: Average Turbulence Intensity; IEC.15: Turbulence Intensity at  $15 \text{ ms}^{-1}$ ; WPD: Wind Power Density \*

\* Air density calculated using average air temperature at site:  $1.20 \text{ kg m}^{-3}$  \*

**Comments:** The Wind Speed trace was checked and appears normal. One 10-minute period of data is missing on the 18/02 at 18:50h affecting all levels of LiDAR measurement. The Adjusted Recovery Rate is excellent at all levels (>95%).

## – 3: LIDAR VALIDATION –

### 3.a: WIND SPEED

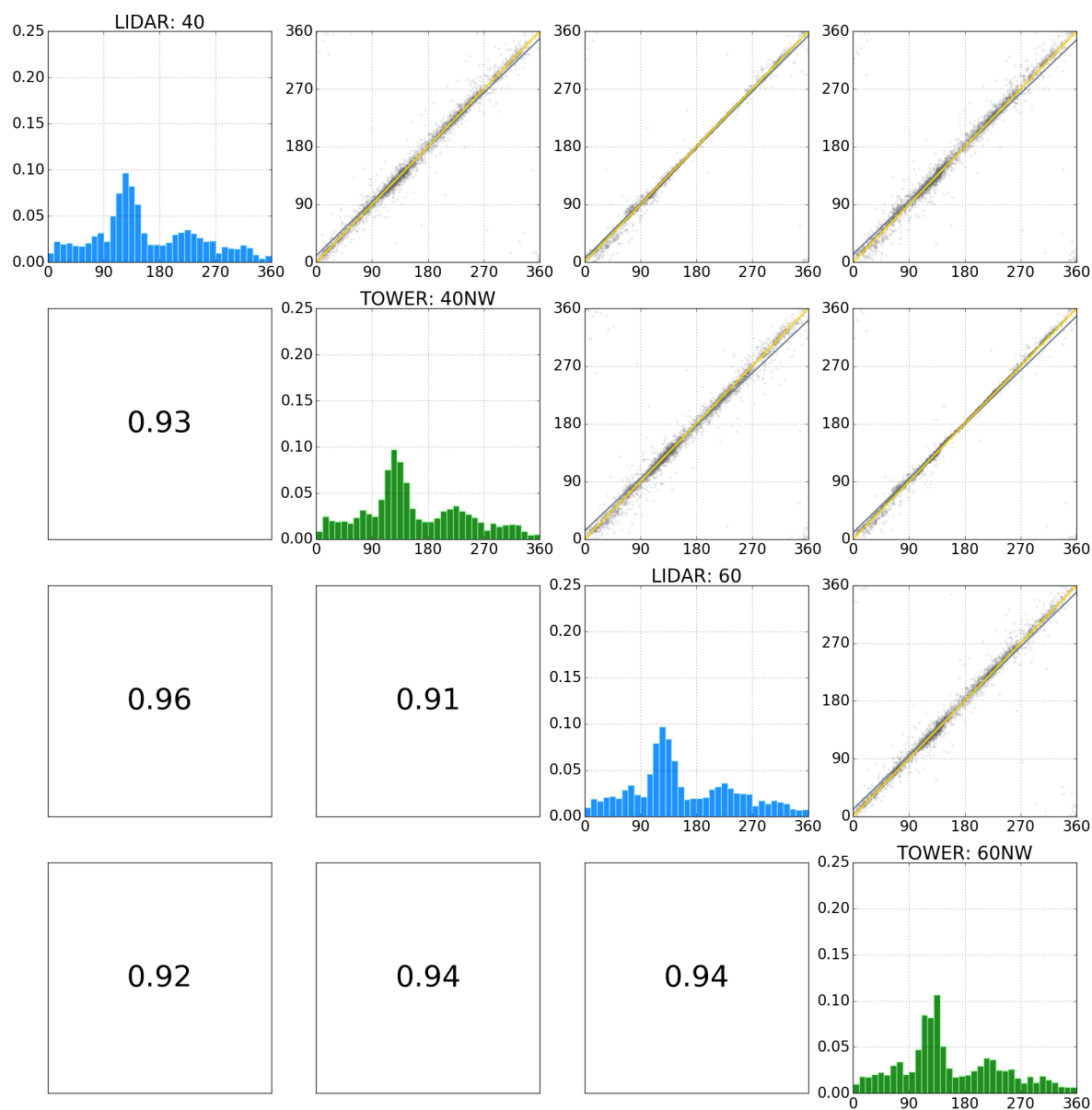


\* 1:1 line (yellow) - linear regression (grey) \*

**Comments:** The Wind Speed correlation plots have been checked and appear normal. There are excellent correlations (0.97, 0.97) between both the 60m and 40m, LiDAR and reference mast measurements. The 60NE anemometer on the reference mast is experiencing an ongoing fault.



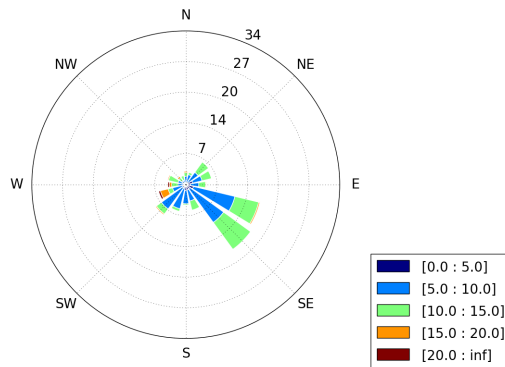
## 3.b: WIND DIRECTION



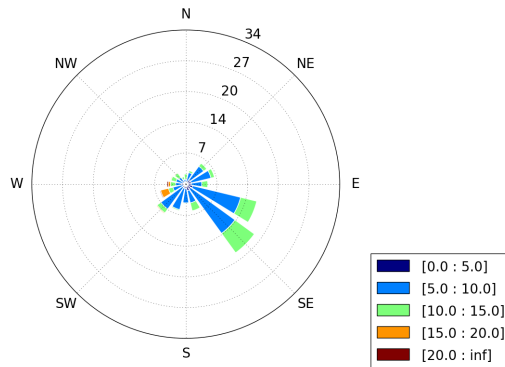
**Comments:** The Wind Direction correlation plots have been checked and appear normal. There are excellent correlations (0.93, 0.94) between both the 60m and 40m, LiDAR and reference mast measurements.

## – 4: WIND ROSES –

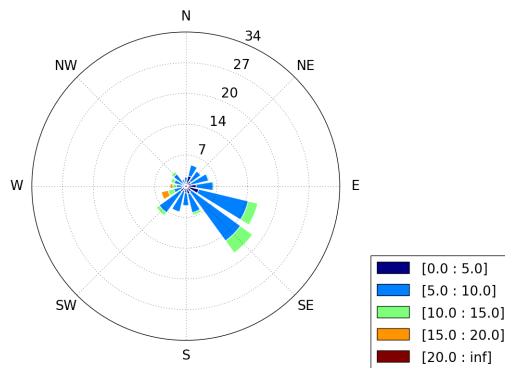
BLADE TOP: 180 (m)



HUB HEIGHT: 110 (m)



BLADE BOTTOM: 40 (m)

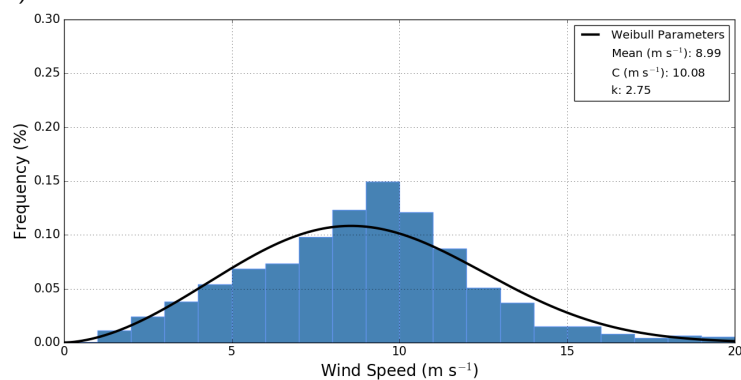


**Comments:** The Wind Rose plots have been checked and appear normal. These show a large component of the wind coming from the south-east, which reflects the wind direction recorded between the 01/02 and the 07/02.

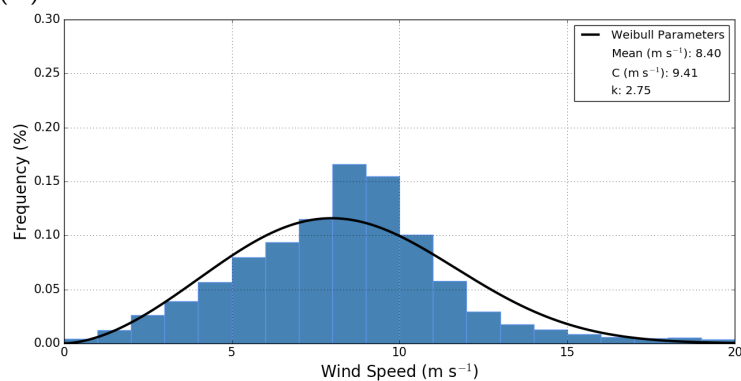


## – 5: WEIBULL DISTRIBUTIONS –

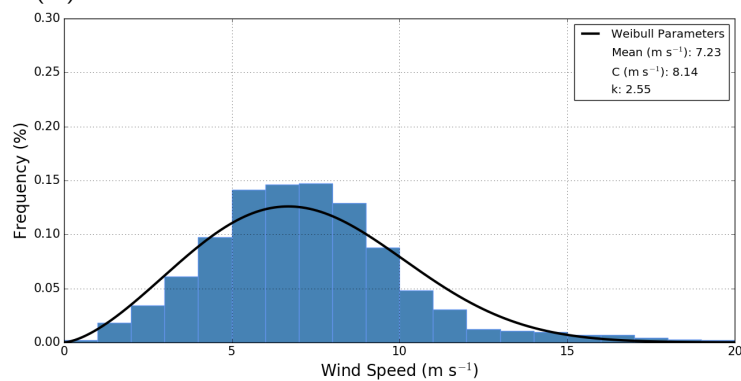
BLADE TOP: 180 (m)



HUB HEIGHT: 110 (m)



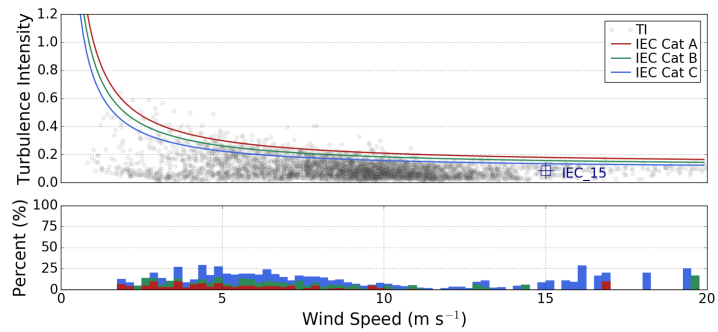
BLADE BOTTOM: 40 (m)



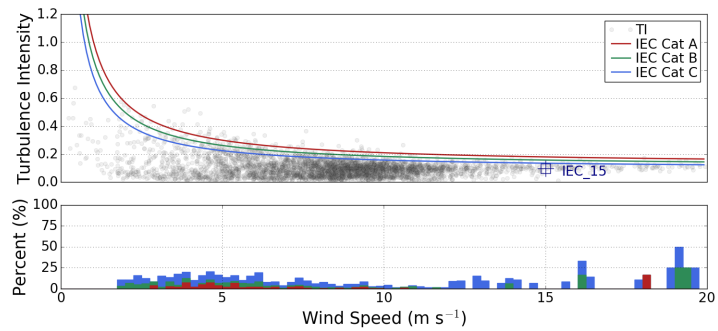
**Comments:** The Wind Speed Distribution plots have been checked and appear normal

## – 6: TURBULENCE INTENSITY –

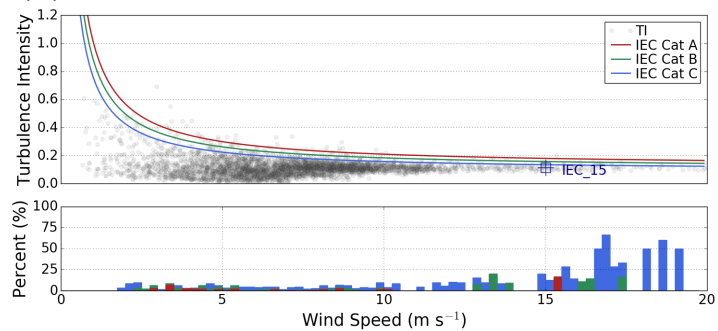
BLADE TOP: 180 (m)



HUB HEIGHT: 110 (m)

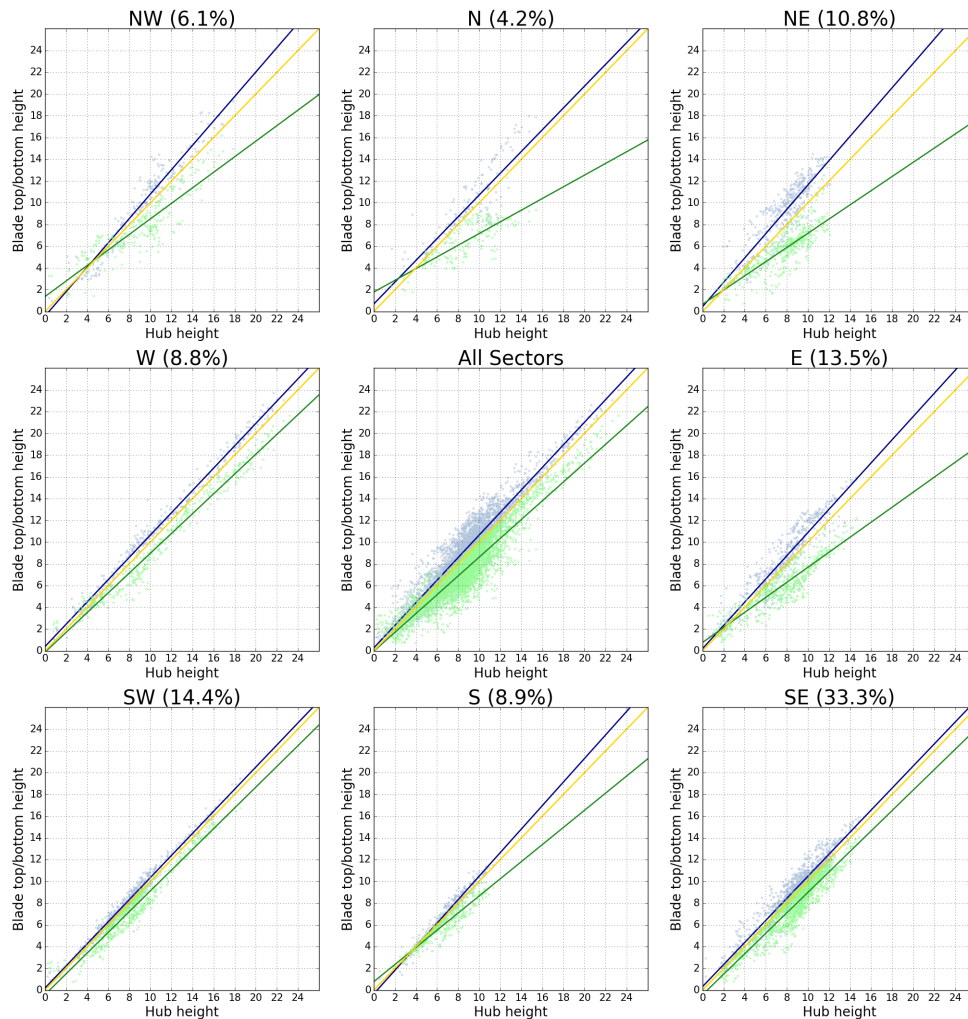


BLADE BOTTOM: 40 (m)



**Comments:** The Turbulence Intensity plots have been checked and appear normal.

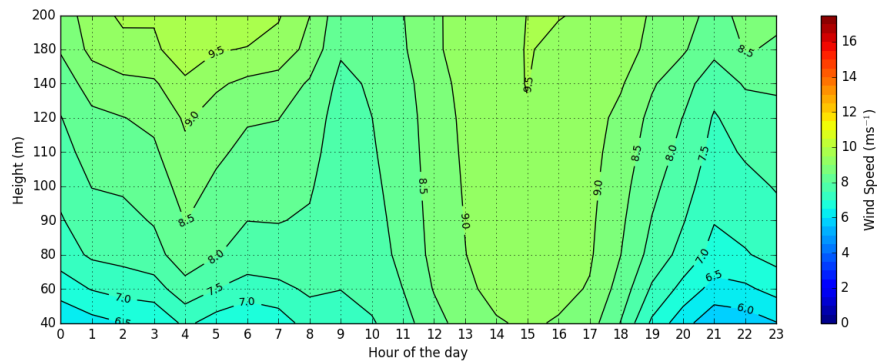
## – 7: WIND SPEED CORRELATION WITH DIRECTION –



\* 1:1 line (yellow) - Hub to blade top (blue) - Hub to blade bottom (green) \*

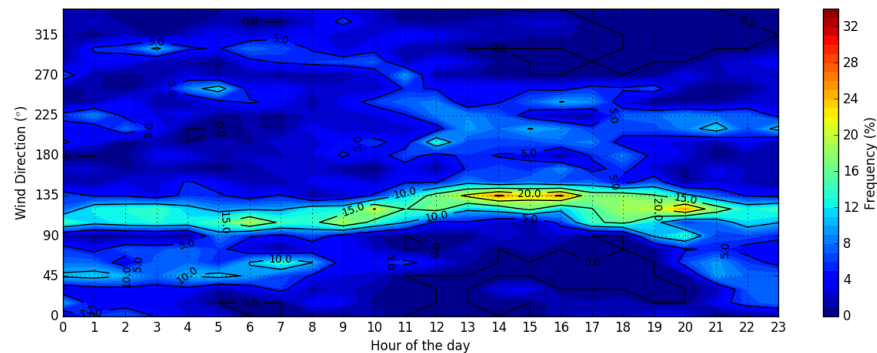
**Comments:** The Wind Speed Correlation with Direction plots appear normal. These show that the relationship between the wind speed at blade top (180m) and hub height (110m) are closer to 1:1 than between hub height and blade bottom (40m), especially in the northern and eastern sectors.

## – 8: DIURNAL WIND SPEED –



**Comments:** The Diurnal Wind Speed trace has been checked and appears normal. On average, higher wind speeds were experienced at all measurements levels between 12:00 and 18:00, while outside of these times wind speed at the lower measurement heights was 3 m/s lower than at the upper elevations.

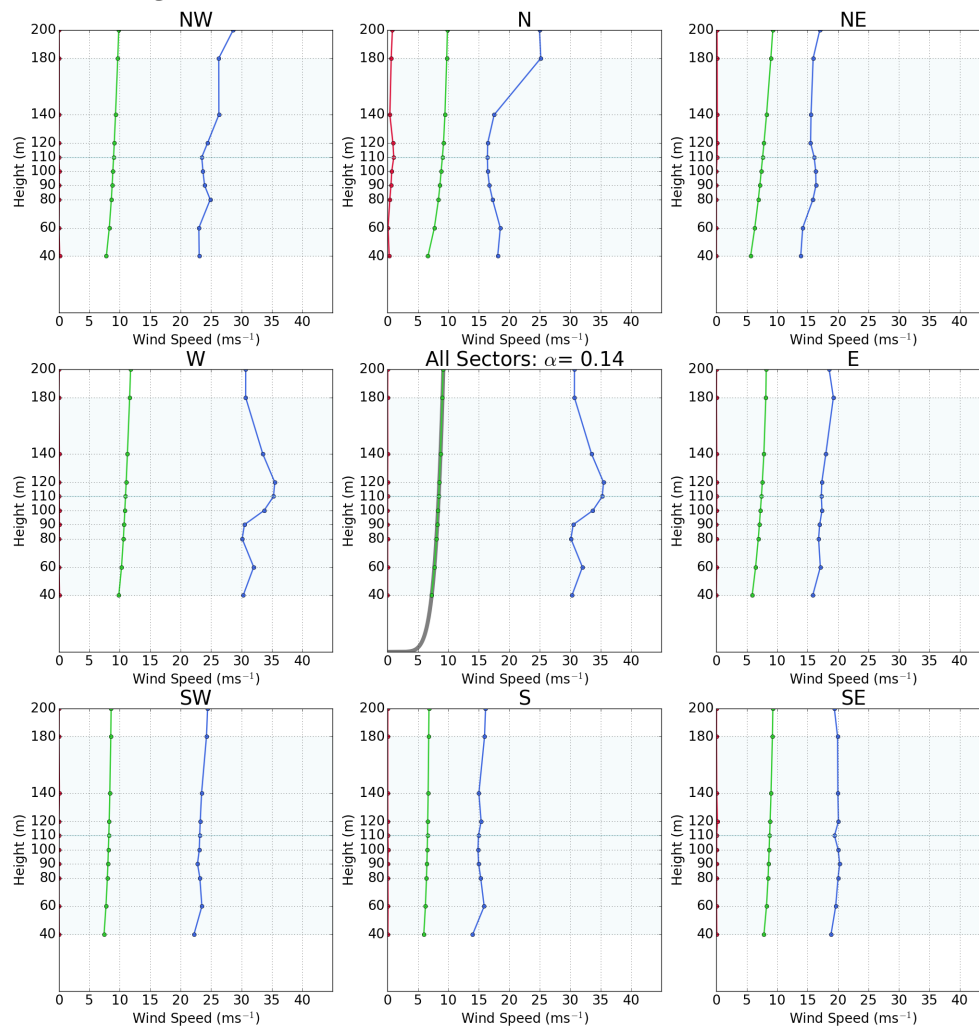
## – 9: DIURNAL WIND DIRECTION –



**Comments:** The Diurnal Wind Direction trace, generated using data from 110m, has been checked and appears normal. More frequent winds from the south-east (90 - 135 deg) through the day probably reflects the wind direction recorded between the 01/02 and the 07/02. A higher frequency of southeasterly winds between 11:00 and 20:00 may indicate a diurnal component present on some days.

## – 10: WIND SHEAR –

### Wind Shear with Height



\* Minimum (Red) - Average (Green) - Maximum (Blue) \*

\* All Sectors - Exponential fitted curve for mean wind shear (Grey) \*

**Comments:** The Wind Shear plots have been checked and appear normal.

## – 11: DATA QUALITY –

### Air Pressure

#### 1003716966028

Included - Repeating Data: (101.377 kPa)  
Included - Repeating Data: (100.467 kPa)  
Data Missing:

2018-02-01 15:50:00 → 2018-02-02 00:40:00  
2018-02-10 21:30:00 → 2018-02-11 04:30:00  
2018-02-18 18:50:00

**Comments:** Data is missing for one 10-minute period on the 18/02 at 18:50h. There are some repeating values flagged on the barometric pressure data; however, these are most likely caused by periods of consistent air pressure and not a sensor fault. The repeat tolerance was set to +/- 0.01 kPa, and 40 repeating rows. There are no other issues detected with any of the data obtained from the barometric pressure sensor this report period.

### Air Temperature

#### 1003716966028

Included - Repeating Data: (14.86 °C)  
Included - Repeating Data: (16.43 °C)  
Included - Repeating Data: (17.12 °C)  
Included - Repeating Data: (15.01 °C)  
Included - Repeating Data: (17.63 °C)  
Included - Repeating Data: (18.6 °C)  
Included - Repeating Data: (17.1 °C)  
Included - Repeating Data: (17.77 °C)  
Included - Repeating Data: (16.28 °C)  
Data Missing:  
Included - Repeating Data: (17.36 °C)  
Included - Repeating Data: (16.04 °C)  
Included - Repeating Data: (18.29 °C)  
Included - Repeating Data: (19.28 °C)  
Included - Repeating Data: (21.2 °C)  
Included - Repeating Data: (14.48 °C)  
Included - Repeating Data: (14.54 °C)

2018-02-01 00:00:00 → 2018-02-01 02:10:00  
2018-02-01 18:30:00 → 2018-02-01 21:50:00  
2018-02-02 19:30:00 → 2018-02-03 00:30:00  
2018-02-03 03:50:00 → 2018-02-03 06:00:00  
2018-02-03 20:00:00 → 2018-02-03 22:30:00  
2018-02-08 19:40:00 → 2018-02-08 21:50:00  
2018-02-09 02:00:00 → 2018-02-09 06:20:00  
2018-02-10 20:00:00 → 2018-02-10 21:30:00  
2018-02-11 19:50:00 → 2018-02-11 22:10:00  
2018-02-18 18:50:00  
2018-02-18 19:40:00 → 2018-02-18 23:00:00  
2018-02-19 01:30:00 → 2018-02-19 06:40:00  
2018-02-22 00:10:00 → 2018-02-22 02:40:00  
2018-02-22 19:40:00 → 2018-02-23 06:50:00  
2018-02-23 21:00:00 → 2018-02-23 22:40:00  
2018-02-25 05:10:00 → 2018-02-25 06:50:00  
2018-02-27 04:10:00 → 2018-02-27 06:40:00

**Comments:** Data is missing for one 10-minute period on the 18/02 at 18:50h. There are some repeating values flagged on the air temperature sensor data; however, these are most likely caused by periods of consistent air temperature and not a sensor fault. The repeat tolerance was set to +/- 0.1 degrees C, and 10 repeating rows. There are no other issues with any of the data obtained from the air temperature sensor this report period.

### Relative Humidity

#### 1003716966028

Included - Repeating Data: (98.25 %)  
Data Missing:  
Included - Repeating Data: (98.3 %)  
Included - Repeating Data: (96.6 %)

2018-02-08 22:20:00 → 2018-02-09 03:30:00  
2018-02-18 18:50:00  
2018-02-22 22:30:00 → 2018-02-23 06:50:00  
2018-02-23 21:10:00 → 2018-02-23 22:40:00

**Comments:** Data is missing for one 10-minute period on the 18/02 at 18:50h. There are some repeating values flagged on the humidity sensor data; however, these are most likely caused by periods of consistent humidity and not a sensor fault. The repeat tolerance was set to +/- 0.1 %, and 10 repeating rows. There are no other issues with any of the data obtained from the air temperature sensor this report period.

### Solar Radiation

#### 43641

No apparent issues or missing data

**Comments:** There are no issues detected with any of the data obtained from the pyranometer this report period.

### Precipitation

#### 12-258

No apparent issues or missing data

**Comments:** There are no issues detected with any of the data obtained from the rain gauge this report period.





**LiDAR****40m Height**

Data Missing: 2018-02-18 18:50:00

**60m Height**

Data Missing: 2018-02-18 18:50:00

**80m Height**

Included - Low Data Availability: 2018-02-05 06:20:00 → 2018-02-05 06:30:00

Included - Low Data Availability: 2018-02-08 01:10:00

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-24 07:30:00

**90m Height**

Included - Low Data Availability: 2018-02-05 06:20:00 → 2018-02-05 06:40:00

Included - Low Data Availability: 2018-02-08 01:10:00 → 2018-02-08 01:20:00

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-24 06:40:00

Included - Low Data Availability: 2018-02-24 07:20:00

Logger Channel Fault: 2018-02-24 07:30:00

Included - Low Data Availability: 2018-02-24 07:40:00

**100m Height**

Included - Low Data Availability: 2018-02-05 06:20:00 → 2018-02-05 06:40:00

Included - Low Data Availability: 2018-02-08 01:20:00 → 2018-02-08 01:50:00

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-24 06:30:00

Included - Low Data Availability: 2018-02-24 06:50:00

Included - Low Data Availability: 2018-02-24 07:10:00 → 2018-02-24 07:20:00

Logger Channel Fault: 2018-02-24 07:30:00

Included - Low Data Availability: 2018-02-24 07:40:00

**110m Height**

Included - Low Data Availability: 2018-02-05 06:10:00

Included - Low Data Availability: 2018-02-05 06:40:00

Included - Low Data Availability: 2018-02-06 04:30:00

Included - Low Data Availability: 2018-02-08 01:20:00 → 2018-02-08 02:00:00

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-24 06:20:00 → 2018-02-24 06:30:00

Included - Low Data Availability: 2018-02-24 06:50:00 → 2018-02-24 07:00:00

Logger Channel Fault: 2018-02-24 07:10:00

Included - Low Data Availability: 2018-02-24 07:20:00 → 2018-02-24 07:50:00

**120m Height**

Included - Low Data Availability: 2018-02-05 06:10:00

Included - Low Data Availability: 2018-02-08 01:50:00 → 2018-02-08 02:00:00

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-24 06:10:00 → 2018-02-24 06:20:00

Included - Low Data Availability: 2018-02-24 06:50:00 → 2018-02-24 07:20:00

Included - Low Data Availability: 2018-02-24 07:40:00 → 2018-02-24 08:00:00

**140m Height**

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-24 08:00:00 → 2018-02-24 08:10:00

**160m Height**

Included - Low Data Availability: 2018-02-05 05:00:00

Included - Low Data Availability: 2018-02-06 20:50:00

Included - Low Data Availability: 2018-02-08 00:50:00 → 2018-02-08 01:00:00

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-21 23:00:00

Included - Low Data Availability: 2018-02-23 21:40:00

**180m Height**

Included - Low Data Availability: 2018-02-05 04:50:00

Logger Channel Fault: 2018-02-05 05:00:00

Included - Low Data Availability: 2018-02-05 05:10:00

Included - Low Data Availability: 2018-02-05 05:30:00 → 2018-02-05 05:40:00

Included - Low Data Availability: 2018-02-06 20:10:00

Included - Low Data Availability: 2018-02-06 20:30:00

Logger Channel Fault: 2018-02-06 20:40:00 → 2018-02-06 21:20:00

Included - Low Data Availability: 2018-02-06 21:30:00

Included - Low Data Availability: 2018-02-07 19:10:00 → 2018-02-07 19:20:00

Logger Channel Fault: 2018-02-07 19:30:00

Included - Low Data Availability: 2018-02-07 19:40:00 → 2018-02-07 20:20:00

Included - Low Data Availability: 2018-02-08 00:50:00

Logger Channel Fault: 2018-02-08 01:00:00

Included - Low Data Availability: 2018-02-08 01:10:00 → 2018-02-08 01:20:00

Included - Low Data Availability: 2018-02-08 01:40:00

Included - Low Data Availability: 2018-02-09 00:20:00

Data Missing: 2018-02-18 18:50:00

Included - Low Data Availability: 2018-02-21 15:30:00 → 2018-02-21 15:50:00

Included - Low Data Availability: 2018-02-21 16:20:00 → 2018-02-21 16:40:00

Included - Low Data Availability: 2018-02-21 17:00:00 → 2018-02-21 17:10:00

Included - Low Data Availability: 2018-02-21 17:40:00

Included - Low Data Availability: 2018-02-21 21:10:00 → 2018-02-21 21:20:00

Included - Low Data Availability: 2018-02-21 22:30:00

## Island Hill West - February 2018

Included - Low Data Availability:	2018-02-21 23:00:00 → 2018-02-21 23:20:00
Included - Low Data Availability:	2018-02-22 09:50:00
Included - Low Data Availability:	2018-02-22 19:50:00
Included - Low Data Availability:	2018-02-22 23:00:00
Included - Low Data Availability:	2018-02-22 23:40:00 → 2018-02-22 23:50:00
Included - Low Data Availability:	2018-02-23 00:20:00
Included - Low Data Availability:	2018-02-23 01:30:00 → 2018-02-23 01:40:00
Included - Low Data Availability:	2018-02-23 02:20:00
Included - Low Data Availability:	2018-02-23 18:10:00
Logger Channel Fault:	2018-02-23 18:20:00
Included - Low Data Availability:	2018-02-23 20:30:00
Included - Low Data Availability:	2018-02-23 21:20:00
Logger Channel Fault:	2018-02-23 21:40:00
Included - Low Data Availability:	2018-02-24 06:30:00 → 2018-02-24 06:40:00

### 200m Height

Included - Low Data Availability:	2018-02-02 02:20:00
Included - Low Data Availability:	2018-02-05 04:50:00
Logger Channel Fault:	2018-02-05 05:00:00 → 2018-02-05 05:40:00
Included - Low Data Availability:	2018-02-05 05:50:00
Included - Low Data Availability:	2018-02-05 06:20:00 → 2018-02-05 06:30:00
Included - Low Data Availability:	2018-02-06 18:20:00 → 2018-02-06 18:30:00
Included - Low Data Availability:	2018-02-06 20:00:00
Logger Channel Fault:	2018-02-06 20:10:00 → 2018-02-06 21:20:00
Included - Low Data Availability:	2018-02-06 21:30:00
Included - Low Data Availability:	2018-02-07 18:50:00 → 2018-02-07 19:10:00
Logger Channel Fault:	2018-02-07 19:20:00 → 2018-02-07 20:30:00
Included - Low Data Availability:	2018-02-07 20:40:00 → 2018-02-07 21:00:00
Included - Low Data Availability:	2018-02-08 00:20:00
Logger Channel Fault:	2018-02-08 00:50:00 → 2018-02-08 01:20:00
Included - Low Data Availability:	2018-02-08 01:30:00 → 2018-02-08 02:00:00
Included - Low Data Availability:	2018-02-08 20:00:00 → 2018-02-08 20:10:00
Logger Channel Fault:	2018-02-08 20:20:00
Included - Low Data Availability:	2018-02-08 20:30:00 → 2018-02-08 21:00:00
Included - Low Data Availability:	2018-02-08 23:00:00 → 2018-02-08 23:20:00
Included - Low Data Availability:	2018-02-08 23:50:00 → 2018-02-09 00:50:00
Included - Low Data Availability:	2018-02-10 01:30:00 → 2018-02-10 01:40:00
Included - Low Data Availability:	2018-02-10 02:20:00 → 2018-02-10 02:30:00
Included - Low Data Availability:	2018-02-10 03:10:00
Included - Low Data Availability:	2018-02-10 05:40:00
Included - Low Data Availability:	2018-02-10 06:00:00
Included - Low Data Availability:	2018-02-13 10:40:00
Included - Low Data Availability:	2018-02-13 11:10:00 → 2018-02-13 11:20:00
Included - Low Data Availability:	2018-02-15 18:30:00
Data Missing:	2018-02-18 18:50:00
Included - Low Data Availability:	2018-02-21 15:10:00 → 2018-02-21 16:30:00
Logger Channel Fault:	2018-02-21 16:40:00
Included - Low Data Availability:	2018-02-21 16:50:00 → 2018-02-21 17:50:00
Included - Low Data Availability:	2018-02-21 21:00:00 → 2018-02-21 21:10:00
Logger Channel Fault:	2018-02-21 21:20:00 → 2018-02-21 21:30:00
Included - Low Data Availability:	2018-02-21 21:40:00 → 2018-02-21 21:50:00
Included - Low Data Availability:	2018-02-21 22:20:00 → 2018-02-21 22:30:00
Included - Low Data Availability:	2018-02-21 22:50:00
Logger Channel Fault:	2018-02-21 23:00:00
Included - Low Data Availability:	2018-02-21 23:10:00 → 2018-02-21 23:20:00
Included - Low Data Availability:	2018-02-22 09:30:00
Included - Low Data Availability:	2018-02-22 09:50:00
Included - Low Data Availability:	2018-02-22 17:50:00 → 2018-02-22 18:00:00
Included - Low Data Availability:	2018-02-22 19:10:00 → 2018-02-22 19:20:00
Included - Low Data Availability:	2018-02-22 19:50:00
Included - Low Data Availability:	2018-02-22 20:50:00
Included - Low Data Availability:	2018-02-22 23:00:00
Included - Low Data Availability:	2018-02-22 23:30:00 → 2018-02-23 00:50:00
Included - Low Data Availability:	2018-02-23 01:20:00 → 2018-02-23 01:30:00
Logger Channel Fault:	2018-02-23 01:40:00
Included - Low Data Availability:	2018-02-23 02:10:00 → 2018-02-23 03:00:00
Included - Low Data Availability:	2018-02-23 03:50:00
Included - Low Data Availability:	2018-02-23 04:30:00 → 2018-02-23 04:40:00
Included - Low Data Availability:	2018-02-23 05:10:00 → 2018-02-23 05:20:00
Included - Low Data Availability:	2018-02-23 05:50:00
Included - Low Data Availability:	2018-02-23 06:40:00
Included - Low Data Availability:	2018-02-23 17:40:00
Included - Low Data Availability:	2018-02-23 18:10:00
Logger Channel Fault:	2018-02-23 18:20:00
Included - Low Data Availability:	2018-02-23 20:30:00 → 2018-02-23 21:10:00
Logger Channel Fault:	2018-02-23 21:20:00
Included - Low Data Availability:	2018-02-23 21:30:00
Logger Channel Fault:	2018-02-23 21:40:00
Included - Low Data Availability:	2018-02-23 22:40:00
Included - Low Data Availability:	2018-02-23 23:50:00
Included - Low Data Availability:	2018-02-24 00:40:00 → 2018-02-24 00:50:00
Included - Low Data Availability:	2018-02-24 01:20:00
Included - Low Data Availability:	2018-02-24 06:30:00 → 2018-02-24 06:50:00
Included - Low Data Availability:	2018-02-24 07:30:00
Included - Low Data Availability:	2018-02-27 11:20:00 → 2018-02-27 11:40:00
Included - Low Data Availability:	2018-02-27 17:00:00 → 2018-02-27 17:10:00

**Comments:** The LiDAR is missing one 10-minute period on 18/02 at 18:50h, which affected all levels of LiDAR measurement. There are extended periods of data where the data availability was <50%. These data have been marked as 'Included - Low Data Availability', and 'Logger Channel Fault' when data availability was 0%. Data availability decreases with height, which is typical of LiDAR measurement.



