

**SoWMEX/ TiMREX**  
**The surface station data**

**Title: Surface station data during TiMREX/SoWMEX**

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**1.0 Data Set Overview**

During the TiMREX/SoWMEX experiment, the National Central University collected surface meteorological data on mobile 10-m towers in southwest Taiwan. These mobile towers were located in Shiwei, Fenhua and the supersite (ISS). The Central Weather Bureau of Taiwan also collected data at the Kaohsiung (Kao) surface weather station. This dataset was collected from 1 June to 28 June, 2008 with a 1-minute interval.

**2.0 Instrument Description**

The 10-m towers obtain measurements of temperature, relative humidity, wind speed, wind direction, pressure and precipitation. The detailed information on the instruments and observational biases are listed in the table below.

For Shiwei, Fenhua, ISS:

Variables	Instruments	Resolution	Observational bias	Height above the ground
Temperature Relative humidity	HMP45A	0.01°C, 0.01%	0.2°C with 20°C 2%, 0-90%RH 3%, 90-100%RH	2m
Wind speed	Young 05103	0.1m/s	0.3m/s or 1%	10m
Wind direction	Young 05103	0.1°	3°	10m
Pressure	PTB101	0.1hPa	0.5hPa	2m
Rainfall	TK-3	0.1mm	<20mm/h, <0.5mm >20mm/h, <6%	2m

**3.0 Data collection and Processing**

Some additional variables related to the refractivity (see data set <https://data.eol.ucar.edu/dataset/119.005>) were calculated based on the basic atmospheric state measurement.

#### 4.0 Data format

The data is in text format. The data includes variables in order as:  
Year, Julian day, Time (minutes, in UTC), Pressure (hPa), Temperature (K), Relative humidity (%), Water vapor pressure (hPa), precipitation rate (mm/min), Wind direction (in degree), Wind speed (m/s), refractivity (N),  
the change of the refractivity due to the change of the temperature,  
the change of the refractivity due to the change of the water vapor pressure,  
the change of the refractivity due to the change of the pressure.

#### 5.0 Data Remarks

The location for each surface station:

Kaohsiung	: 120.3168 E	22.5676 N	2.3m AMSL
supersite (ISS)	: 120.6205 E	22.7394 N	95 m AMSL
Fenhua	: 120.5723 E	22.7022 N	64 m AMSL
ShiWei	: 120.4896 E	22.5951 N	17 m AMSL

#### 6.0 References

Description related to each instrument:

Temperature, Humidity:

<https://www.vaisala.com/sites/default/files/documents/HMP45AD-User-Guide-U274EN.pdf>

Wind:

<http://www.youngusa.com/Brochures/05103%280106%29.pdf>

Pressure:

<https://www.campbellsci.com/cs105>

Rainfall:

<http://www.takeda-keiki.co.jp/products.html#tk3>