Stellenbosch University Solar Resource and Weather Stations

A high-tech solar resource measurement and weather station is installed at Stellenbosch University, located at 33°55' S, 18°51' E, and elevation: 119m (Fig. 1). The system comprises a set of high quality radiometry and meteorological instruments complete with a website that allows free public downloads at http://weather.sun.ac.za/.
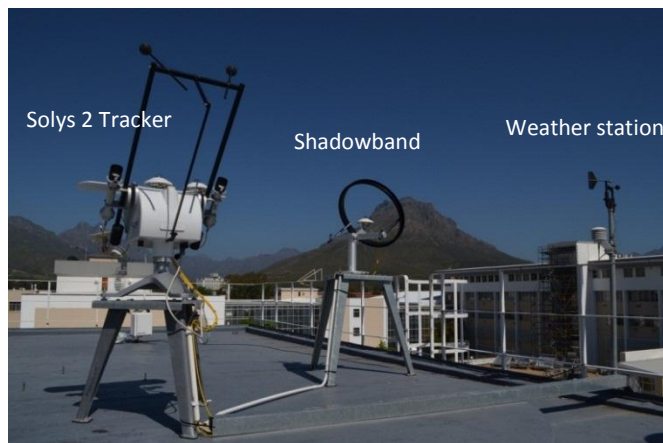

Fig. 1 The collective solar resource and weather station system.

The installation includes a Kipp and Zonen (K&Z) Model Solys 2 dual-axis sun tracker which houses:

- two K&Z CHP1 pyrheliometers for direct normal irradiance (DNI) measurements (last calibrated: 18 Jul 2012),
- a shaded K&Z CMP11 pyranometer for diffuse horizontal irradiance (DHI) measurements (last calibrated: 28 July 2011),
- an un-shaded K&Z CMP11 pyranometer for global horizontal irradiance (GHI) measurements (28 July 2011), and
- a UVS-AB-T radiometer for UVA (315-400nm) and UVB (280-315nm) measurements (last calibrated: 24 Oct 2012).

A K&Z CM 121 shadow ring with CMP6 Pyranometer is installed for comparable DHI measurements (last calibrated: 16 Dec 2012). The weather station houses:

- a Campbell Scientific CS215 probe with 41303-5A radiation shield for temperature and relative humidity measurements,
- RM Young wind sentry, model 03001 for wind speed and direction measurements, and
- RM Young sensor, model 61205V for barometric pressure measurements.

A second weather station is installed on top of an 18m Tower, used for Concentrating Solar Power (CSP) research (Fig. 2). The weather station comprises a Davis Vantage Pro Integrated Sensor Suite which houses:

- an anemometer for wind speed, direction and wind chill measurements,
- a temperature/humidity sensor and radiation shield,
- a rain collector,
- a UV sensor with spectral response 280-360nm,
- a solar radiation sensor with spectral response 300-1100nm, and
- a barometric pressure sensor.

Fig. 2 A Davis weather station system installed on top of the 18m Tower at Stellenbosch University