

# Hukseflux sensors for meteo networks

Pyranometers, net radiometers, pyr heliometers and pyrgeometers in meteorological observation networks

*Sensors made by Hukseflux passed validation and acceptance testing for an increasing number of national meteorological networks. Hukseflux is ISO 9001 certified and has a worldwide calibration and servicing organisation.*

## Introduction

Hukseflux offers a range of sensors for use in meteorological networks. Here are our references \* from 2013 to 2024.

## Reference networks

- India: National Institute of Wind Energy (NIWE) solar resource assessment network
- USA: National Ecological Observatory Network (NEON), observation network
- UK: Centre for Ecology & Hydrology (CEH), measurement / monitoring network
- India: India Meteorological Department (IMD), national measurement network
- Japan: Japan Meteorological Agency (JMA), national measurement network
- China: China Meteorological Administration (CMA), national measurement network, through a technology transfer project.
- Ecuador: National Meteorological and Hydrological Institute (INAMHI), national measurement network
- USA: The Atmospheric Radiation Measurement (ARM) multi-laboratory network of the U.S. Department of Energy (DOE)
- India: Defence Geo-Informatics Research Establishment (DGRE) climate observation network in the Indian Himalayas



**Figure 1** SR30 spectrally flat Class A pyranometer; also employed for sunshine duration measurement.



**Figure 2** Typical reference measurement station with a solar tracker, pyr heliometers model DR02 and pyranometers model SR20.

## Solar radiation

Most national meteorological networks employ **pyranometers** to measure solar radiation or global horizontal irradiance (GHI). The latest trend is the combined use of pyranometers for solar radiation as well as sunshine duration measurement; this has been approved by WMO. To improve measurement accuracy, many networks use ventilation which promotes thermal equilibrium between all components of radiometers, and thereby reduces zero offsets, combined with heating which mitigates dew and frost. Look for example at model **SR30** heated pyranometer, or model SR20 with optional model **VU01** ventilator with heater.

View our [pyranometer selection guide](#).

\*NOTE: the fact that a sensor is used in a network does not constitute a formal endorsement by the network owner.

### More sensors for reference stations

All of the above networks use pyranometers, but some employ more specialised sensors, such as:

- net radiometers **NR01**, in NEON and CEH
- pyrgeometers **IR20**, in NIWE
- pyrhemometers **DR20**, in NIWE and ARM



**Figure 3** VU01 ventilation unit with SR20 pyranometer.

### Sunshine duration

WMO has approved the “pyranometric method” to calculate sunshine duration from pyranometer measurements in WMO-No. 8, Guide to Meteorological Instruments and Methods of Observation. This implies that pyranometers may not only be used to measure GHI, but serve a dual purpose. In combination with appropriate software, they also measure sunshine duration. The method involves an algorithm, which estimates sunshine hours by comparing the 10-minute GHI with the solar radiation outside the earth’s atmosphere on a horizontal surface at that time and location ( $G_0$ ).

### Spectrally flat

Last but not least, for compliance with WMO and for the reflected solar radiation measurement, it is essential to employ spectrally flat pyranometers; the reflected solar radiation has a different spectrum compared to the global solar radiation. Hukseflux sensors are spectrally flat. They can measure global and reflected solar radiation using the same instrument with the same calibration.



**Figure 4** Hukseflux sensors are subjected to rigorous quality assurance as part of the manufacturing process.

### Local support and calibration

Hukseflux has support sites available around the globe, with local representatives that operate their own calibration facilities in:

- EU
- USA
- India
- China
- Japan
- Brazil
- SEA Singapore, Australia

### About Hukseflux

Hukseflux is the leading expert in measurement of energy transfer. We design and manufacture sensors and measuring systems that support the energy transition. We are market leaders in solar radiation and heat flux measurement. Customers are served through our headquarters in the Netherlands, and locally owned representative sales offices in the USA, Brazil, India, China, Southeast Asia and Japan.

Would you like more information?  
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