



Radiometric Profiler (TP/WVP-3000)



The Radiometrics TP/WVP-3000 provides continuous temperature and humidity profiles to 10 km height, and a one-layer cloud liquid profile. The radiometer has been designed for ease of use, accuracy, reliability, portability, and operation on a minimum of power. The radiometer is passive and does not emit radiation. Profiles are obtained at 20 sec intervals during clear, cloudy and precipitating conditions.

The radiometer includes two separate systems in the same cabinet that share the antenna and pointing system. The water vapor profiling (WVP) and temperature profiling (TP) systems observe at selected frequencies between 22 and 30 GHz and 51 and 59 GHz. The radiometer also measures cloud base temperature and surface pressure, temperature, and humidity.

Statistical comparisons of co-temporal radiometric and radiosonde soundings demonstrate that the two methods are roughly equivalent in accuracy when used for numerical weather analysis. However, current radiometric upper air measurements can be an order of magnitude more accurate than radiosonde soundings with 12 hr latency.

A Rain Effect Mitigation system is included that minimizes water film on the radiometer radome, providing for operations during nearly all weather conditions. An easily transportable aluminum telescoping tripod is included. Elevation scanning is also included, and optional azimuthal pointing capability is offered. Specifications are listed below.

Sample Time	20 sec
Accuracy	0.5° C
Resolution	0.25° C
<u>Surface Measurement Accuracy</u>	
Temperature	0.5° C
Relative Humidity	2%
Barometric Pressure	0.3 mb
Operating Temperature	-50° C to +50° C
Power	200 watts maximum
Voltage	115 to 230 V (50 to 440 Hz)
Dimensions	50 x 28 x 76 cm
Weight	32 kg
Angular Coverage	All sky with optional azimuth scanner

A laptop computer with Neural Network retrieval software for customer selected sites is included with the TP/WVP-3000. Reusable shipping containers are also included.

VizMet software that displays real time radiometric observations is provided with the TP/WVP-3000. This easy to use Windows software provides flexible temperature, humidity and liquid contour displays, and comparisons with radiosonde soundings. Example VizMet displays are shown in Figures 1 and 2.

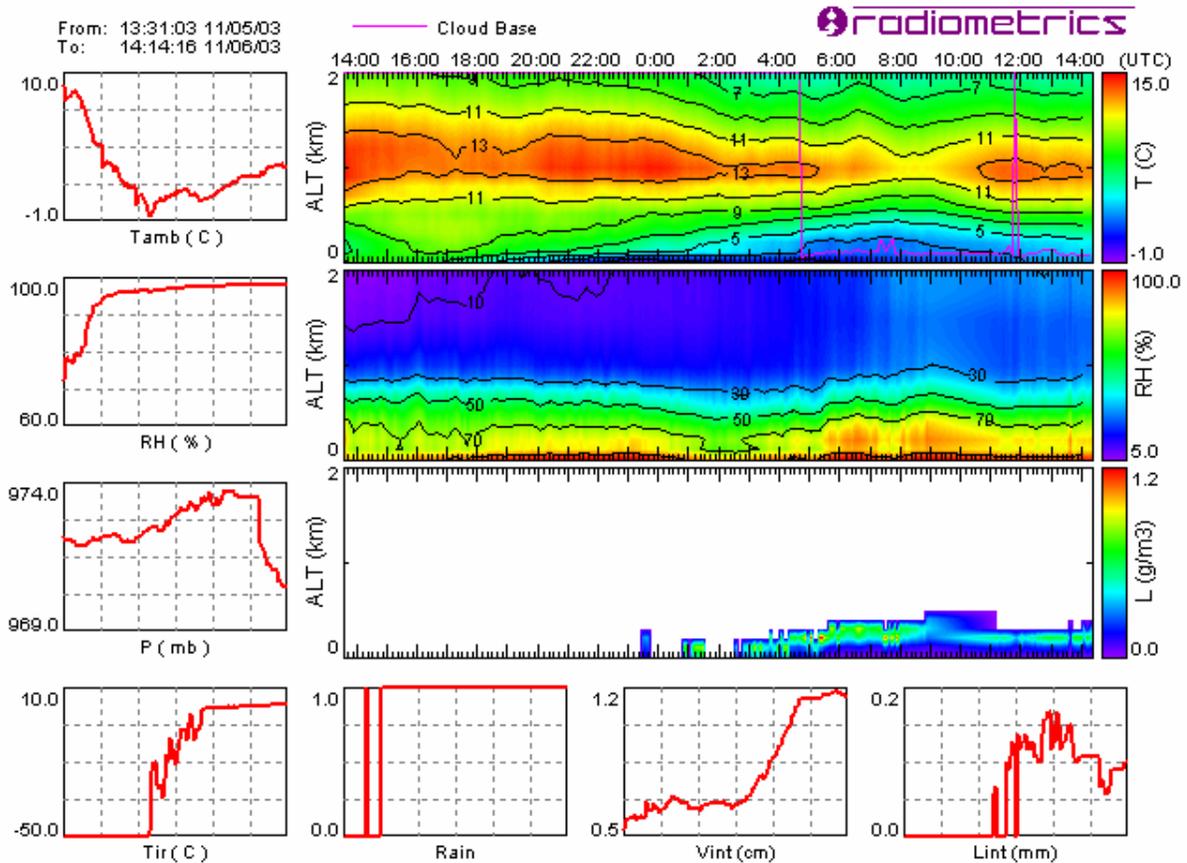


Figure 1. VizMet display of TP/WVP-3000 observations on 5-6 November 2003 during the [COST 720 International Temperature, Humidity and Cloud Profiling Experiment](#) at Payerne, Switzerland. Radiometer data were provided by the U.K. Met Office.

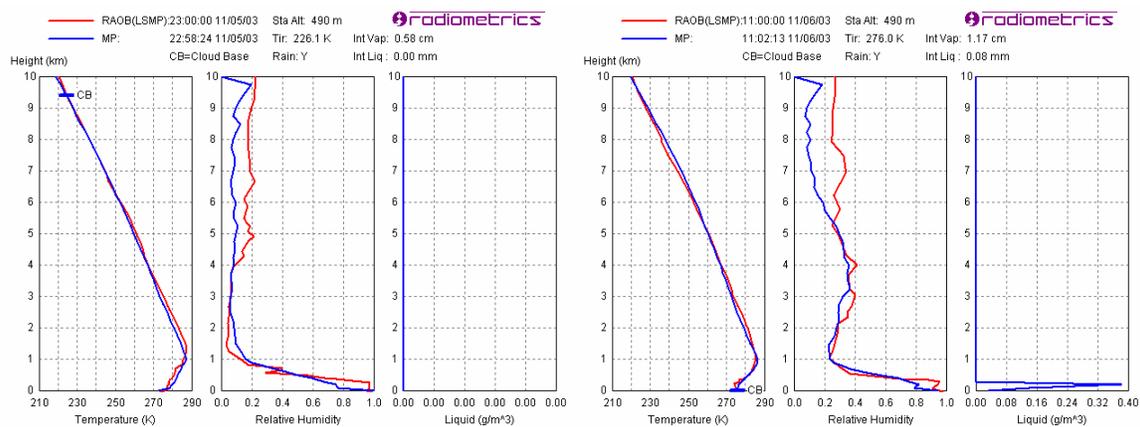


Figure 2. VizMet display of co-temporal radiometer and radiosonde profiles at 2300 UTC 5 Nov and 1100 UTC 6 Nov 2003. A temperature inversion near 1 km height, relative humidity saturation below 400 m height, and fog after 2300 UTC 5 Nov are seen.