

# Vaisala HydroMet System MAWS301 - Automating Synoptic Networks in Brazil

## *SYSTEM DESCRIPTION*

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## CHAPTER 1

# SYNOPTIC AUTOMATION

Synoptic observations form the basis of weather observations and forecasting for every national weather service. Vaisala's Hydromet Systems MAWS301 are the key components in the Surface Observation Network Automation Project - SONABRA in Brazil. This project automates the synoptic network of the National Meteorological Institute of Brazil (INMET). SONABRA has been a joint project between the Finnish Meteorological Institute (FMI) and INMET since 1998. FMI has supported INMET throughout all project phases from planning, delivery and installation as well as training for the operation of the network. One hundred Vaisala automatic weather stations have been delivered and the next phase of the project (SONABRA 3) is already planned and ready to be implemented, pending financing decisions. The target is to exceed the level of requirements for the World Meteorological Organization (WMO) synoptic network.



**MAWS301 station near Rio de Janeiro**

The MAWS systems that were delivered to the project SIVAM (System for the Vigilance of the Amazon) together with the systems installed for DIRETORIA DE HIDROGRAFIA E NAVEGAÇÃO DHN, currently number close to 200 MAWS301 installations in Brazil.





## CHAPTER 2

# MAWS301 SYSTEM

Vaisala delivered its standard Vaisala HydroMet Systems MAWS301 to this project configured according to specifications. The automatic weather stations send hourly data messages via the AutoTrac satellite service.

## Sensors

The following sensors are included in the project:

Air temperature:	QMH102
Relative Humidity:	QMH102
Pressure:	PMT16A
Wind speed:	WAA151
Wind direction:	WAV151
Precipitation:	QMR102
Global solar radiation:	CM6B

The description and specifications of the standard Vaisala sensors can be found at the Vaisala web-site ([www.vaisala.com](http://www.vaisala.com)) and on the MAWS-CD.



**MAWS301 system installed for the Brazilian Navy (DHN)**

## Telemetry

Data transmission is via the commercial satellite service AutoTrac, which is based on QUALCOMM's OmniTRACS technology. This service offers real-time and two-way connections to the MAWS stations. Data are typically sent once an hour at the top of the hour. However, the service also supports random alarm messaging and irregular data transmissions as configured by the user. The data messages can also be polled using the email link. Data are received via the standard email system or a dedicated link from the service provider as in the INMET case.



**AutoTrac satellite offers two-way real-time access to the stations**

## CHAPTER 4

# INSTALLATIONS AND DATA

The installations are located all over Brazil including more than 70 climatological systems in the Amazon region. The most remote site is on the island of São Pedro:



The following graphs are example of how data are shown at the INMET's web-site:

