

Thailand

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Climate and Upper-air Observations in RA II (Asia)**

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METEOROLOGICAL OBSERVATIONS IN THAILAND

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Summary and Purpose of Document

This report reviews the present status of meteorological observing stations in Thailand. A total of 122 weather stations are employed throughout Thailand, mostly surface weather. Some stations are assigned for WMO-RBSN, RBCN, GSN and GUAN stations. Almost all surface stations are operated 8 synoptic times daily. Mixed standard manual and modern automatic weather instruments are used. Coded messages are sent from the observing stations manually. Data quality assurance/control is performed both real-time (on message programming) and non-real-time (by manually audits). Observers are directed to refreshing courses, training or seminar periodically.

1. Observation networks

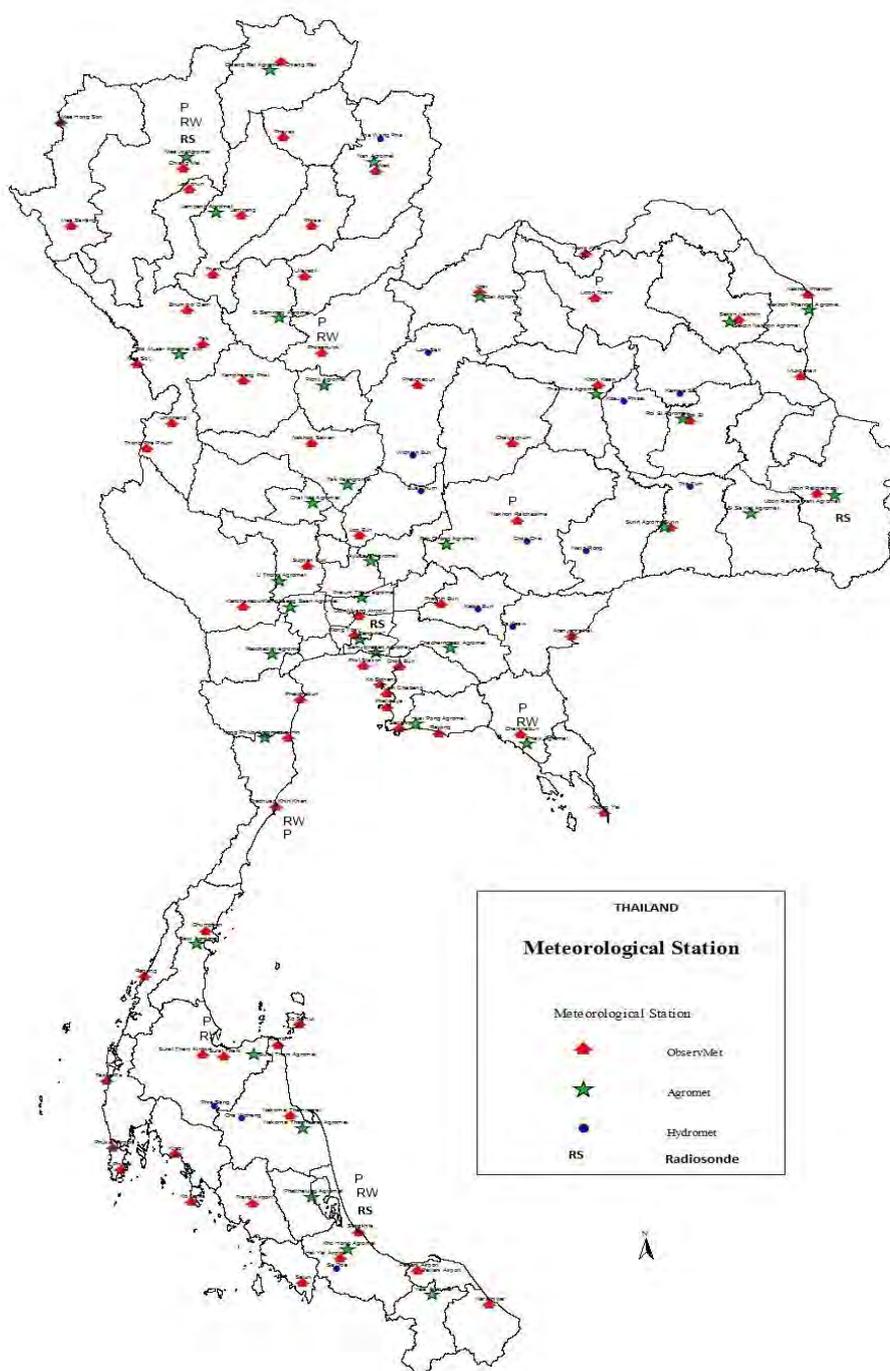
1.1 Surface observations

1.1.1 Number of stations: RBSN, RBCN, GSN, manned stations and AWS

Table 1. Number of stations

	RBSN	GSN	Manned Stations	AWS*
Number	87	6	122	----

1.1.2 Site Map



1.1.3 Time and frequency of observations

8 synoptic times daily: 00UTC, 03UTC, 06UTC, 09UTC, 12UTC, 15UTC, 18UTC, 21UTC

1.1.4 Data flow to users and archives

Data are recorded manually at the station in a log-book and on PC to be sent as WMO-coded messages to the headquarter in Bangkok to further distributed via GTS and kept as archive at the climatological data section. Real-time automatic weather reports are available to the forecasters and public (via web) and separately archived.

1.2 Upper-air observations

1.2.1 Number of stations: RBSN, RBCN, GSN, manned stations and AWS

Table 2. Number of Upper-air stations

	RBCN	GUAN	Manned Stations	Automated System
Number	2(4)	2(4)	2(4)	

1.2.2 Station Map

See 1.1.2

1.2.3 Time and frequency of observations

1.2.4 Data flow to users and archives

The same as 1.1.4

2. Siting and metadata

Most observation stations were sited in rural areas at the beginning. The advance of the development of town moves the stations into the areas now more populated and obstructed by building nearby. The station details now include location and altitude. Work are moving to gather more standardized station information or meta-data. Phetburi (48465) weather station is used as a pilot station to collect the information both spatial and temporal.

3. Instruments, sensors, upgrade, maintenance, instrument intercomparisons and traceability

All stations are equipped with standard meteorological instruments, eg. wet-bulb dry-bulb glass thermometers, wind anemometers, Class-A evaporation pans, rain gauges. Agro-meteorological stations include soil thermometers. The 87 stations are equipped with limited function automatic weather sensors. Data collected at the 87 stations are sent via telecommunication lines to the headquarter in Bangkok for real-time reports for weather forecasters and separate archives. But, the meteorological observers at each stations send out coded messages to the telecommunication hub in Bangkok for GTS distribution. The standard instruments are maintained by in-house technical personnel. The automatic weather stations' maintenance is outsourced to suppliers. In-house calibration are done by the meteorological instrument division. Pressure wind, and temperature can be traced to Regional Instrument Center, Japan. Currently

both standard (manual) and automated measurement data are collected for intercomparisons. Upper-air sondes are calibrated before sending up, according to manufacturer's instruction.

4. Quality assurance/quality control (real-time, non-real-time)

Data quality assurance is first done on a computer program to send the coded messages by observers in real-time. Non-real-time quality control is processed by central officials inspecting the observation reports send monthly and comparing with stored electronic messages from the stations and kept at the central computers.

5. Training

Periodic refreshing training and seminars for the observers are done about 3-4 times a year. Correspondence between stations and the Observation Standard Sections have been continuously done in wake of misunderstanding of observation procedures or the new or changed WMO codes or procedures. New observers have to pass one-year program study of meteorological personnel offered by the department.

6. Statistics and applications

Surface observations are used first-hand by the weather forecasters. They are also shown to the public in the official web-site of the Meteorological Department. Archived data, now computerized, are given out to the public for further applications. Upper-air data are used in the same way as the surface data; fewer upper-air data are requested by the public. Most upper-air data requested are used with environmental applications.

7. Current issues and future plan

This coming fiscal year, the department intends to procure the three more radiosonde ground stations to be used at Phuket Airport (48565), Songkhla (48568) and Ubon Rachatani (48407) replaced the unusable Vailla ground stations that do not work with the newer sondes.

APPENDIX

Country (Area) THAILAND / THAILANDE

GSN

IndexNbr	Station Name	Latitude	Longitude	Elevation (m)
48303	CHIANG RAI	19 58N	99 53E	393
48400	NAKHON SAWAN	15 48N	100 10E	35
48462	ARANYAPRATHET	13 42N	102 35E	49
48500	PRACHUAP KHIRIKHAN	11 50N	99 50E	5
48517	CHUMPHON	10 29N	99 11E	6
48568	SONGKHLA	07 12N	100 36E	7

GUAN

IndexNbr	Station Name	Latitude	Longitude	Elevation (m)
48327	CHIANG MAI	18 47N	98 58E	314
48453	BANGNA AGROMET	13 40N	100 36E	3

*UBON-PHUKET-SONGKHLA MAKE OBSERVATIONS.