



Climate Change Analysis in the Lower Mekong Basin

Review of Availability of Observed Meteorological Data

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CONTENTS

Figures and Tables	iii
Acronyms and Abbreviations	v
Acknowledgements	vii
1. Background	1
2. Objective	2
3. Scope of the review	2
4. Observed meteorological parameters	3
5. Summary of meteorological stations in the Lower Mekong Basin	4
5.1 National line agency	4
5.2 MRC datasets	5
5.3 Global datasets	5
6. Period of meteorological data availability	12
7. Conclusions and recommendations	27
7.1 Conclusions	27
7.2 Recommendations	28
References	28
Annex I: Inventory of meteorological data of the national dataset (review in 2001)	31
Annex II: Inventory of meteorological data of the MRC dataset	35
Annex III: Inventory of meteorological data of the GSOD dataset to evaluation criteria key questions	61
	59



FIGURES & TABLES

- Figure 1:** Location of the meteorological stations in the LMB (different datasets)
- Figure 2:** Location of the rainfall stations in the MRC data portal and the FMMP flood forecasting system
- Figure 3:** Location of the meteorological stations used in the MRC SWAT model compared with station inventory by CCAI
- Figure 4:** Location of the rainfall stations used in the MRC SWAT model compared station inventory in the MRC data portal
- Figure 5:** Location of the meteorological stations in the UMB (GSOD dataset)
- Figure 6:** No. of years of rainfall data recorded in the LMB (MRC data portal)
- Figure 7:** No. of years of maximum temperature data recorded in the LMB (MRC data portal)
- Figure 8:** No. of years of minimum temperature data recorded in the LMB in the MRC data portal
- Figure 9:** No. of years of average temperature data recorded in the LMB (MRC data portal)
- Figure 10:** No. of years of evaporation data recorded in the LMB (MRC data portal)
- Figure 11:** No. of years of relative humidity data recorded in the LMB (MRC data portal)
- Figure 12:** No. of years of data on sunshine duration recorded in the LMB (MRC data portal)
- Figure 13:** No. of years of solar radiation data recorded in the LMB (MRC data portal)
- Figure 14:** No. of years of wind speed data recorded in the LMB (MRC data portal)
- Figure 15:** Location of stations in the IKMP list of meteorological and rainfall stations that was requested from the Member Countries in order to update data up to 2012 and to prepare the hydrological yearbooks

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- Table 1:** No. of meteorological stations and observed parameters in the Lower Mekong Basin, 2001 (national dataset)
- Table 2:** No. of meteorological stations and observed parameters in the LMB (MRC dataset)
- Table 3:** No. of meteorological stations and observed parameters in the LMB (GSOD dataset)
- Table 4:** No. of years of meteorological data recorded (national dataset)
- Table 5:** No. of years of meteorological data recorded (MRC dataset)
- Table 6:** No. of years of meteorological data recorded (GSOD dataset)



ACRONYMS & ABBREVIATIONS

BDP	Basin Development Plan Programme
CCAI	Climate Change and Adaptation Initiative
DMH	Department of Meteorology and Hydrology
DOM	Department of Meteorology
DWR	Department of Water Resources
EP	Environment Programme
FMMP	Flood Management and Mitigation Programme
GCMs	General Circulation Models
GSOD	Global Surface Summary of Day
HRHMC	Highland Regional Hydro-Meteorological Centre
IKMP	Information and Knowledge Management Programme
IWRM	Integrated Water Resources Management
JICA	Japan International Cooperation Agency
LMB	Lower Mekong Basin
MC	Master Catalogue
MRC	Mekong River Commission
NOAA	National Oceanic and Atmospheric Administration
PIP	Programme Implementation Plan
SRHMC	Southern Regional Hydro-Meteorological Centre
TMD	Thai Meteorological Department
UMB	Upper Mekong Basin
WMO	World Meteorological Organization



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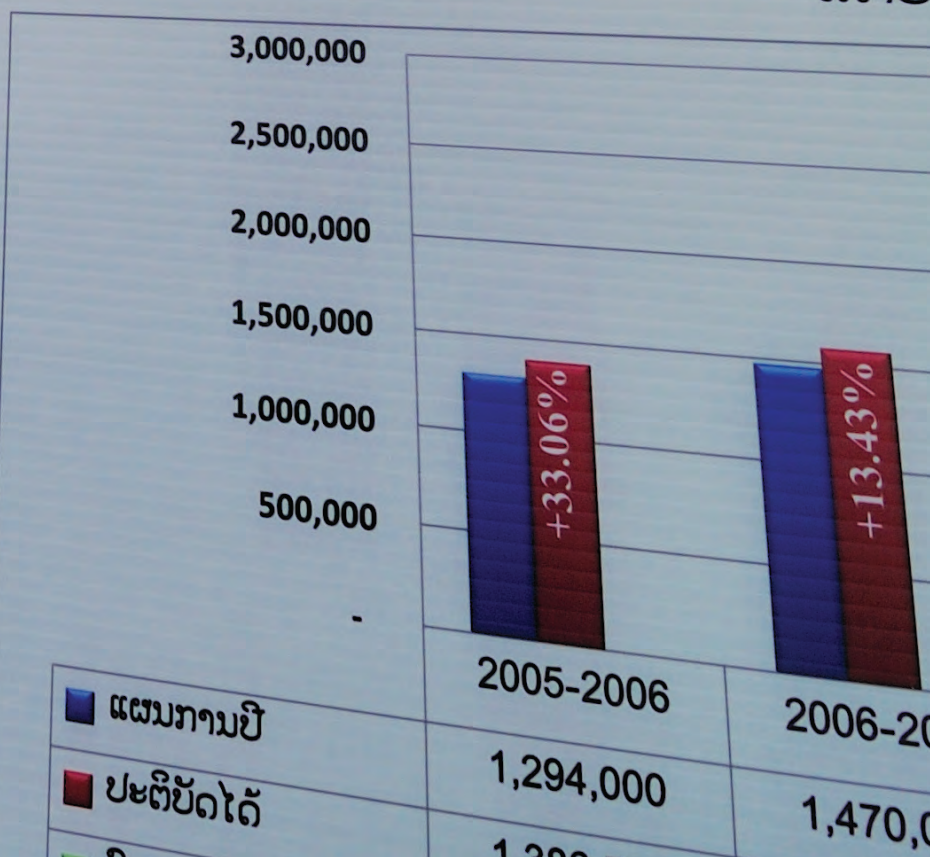
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1. BACKGROUND

The Climate Change and Adaptation Initiative (CCAI) of the Mekong River Commission (MRC) was established in August 2009 as a regional collaborative initiative to support the Lower Mekong Basin (LMB) countries in adapting to the impacts and new challenges of climate change. Adopting a basin-wide integrated approach consistent with Integrated Water Resources Management (IWRM) principles and the MRC 1995 Agreement, the CCAI focuses on: (i) climate change impact and vulnerability assessment, adaptation planning and implementation in priority locations within the LMB; (ii) knowledge and capacity building at different levels (institutional, technical and managerial capacity); (iii) regional adaptation strategy supporting national frameworks; and (iv) regional partnership and collaboration for sustainability of adaptation actions.

Through the consultation process during January to August 2012, the Programme Implementation Plan (PIP) of the CCAI was agreed with the Member Countries. Development of the CCAI database (Activity 1.1.1) and a basin-wide monitoring and reporting system on climate change and adaptation (Activity 3.2.1) were identified as prioritized activities for implementation during 2011-15 to build knowledge on climate change and adaptation in the LMB and provide information to other activities of the CCAI as well as other MRC programmes such as Basin Development Plan Programme (BDP), Environment Programme (EP), Flood Management and Mitigation Programme (FMMP), and Information and Knowledge Management Programme (IKMP).

Meteorological data (precipitation,

temperature, evaporation, etc.) are very important basic data for climate monitoring and historical climate change analysis such as trend analysis as well as analysis of trends of extreme weather events. It is also necessary for future climate change projections, particularly for downscaling results of General Circulation Models (GCMs). Since the establishment of the Mekong Committee in 1957, the riparian countries have shared a significant amount of meteorological and hydrological data for project development, design and operation. The major products are the Lower Mekong Hydrological Yearbook, which begun in 1962 and was published up to 2004 (MRC, 2004), and the hydro-met database. The hydro-met database was developed and updated under the MRC information system to support sustainable water resources development and management in the LMB according to the 1995 Mekong Agreement. However, the current Hydrological Yearbook (2004) and hydro-met database in the MRC Secretariat (MRCS) primarily stores data on flow and rainfall data, while other meteorological data (temperature, evaporation, humidity, etc.) still have limited record and coverage.

To analyse climate change and its impacts, long-term meteorological data are required to detect changes. Therefore, the aim of this review on the availability of meteorological data in the riparian countries from the MRCS and from global sources is to build knowledge on the current status and gaps of meteorological data in the LMB for supporting climate change adaptation planning at different levels. The review also aims to help MRC identify additional data requirements from its Member Countries.

2. OBJECTIVES

The main aim of this review is to build a common understanding on all of the available meteorological data in the LMB from different sources and to answer the following frequently asked questions:

- What national line agencies are responsible for meteorological

observations?

- What meteorological parameters are observed?
- Where are the meteorological stations?
- How long is the record available for each meteorological parameter?

3. SCOPE OF THE REVIEW

The review is based on available information from three data sources below. The location of each meteorological station is shown on the GIS maps, thus indicating their spatial coverage. The detailed inventory of data availability is provided in Annexes I-III.

- national line agencies through national consultation, working session and literature reviews;
- the MRC data portal;
- global public data sources, such as Global Surface Summary of Day (GSOD).

The review focuses on the inventory of meteorological stations because this is a critical knowledge gap in the MRC that is highly relevant to the CCAI works on climate change analysis and future climate change projection. There are also a number of stand-alone rainfall stations in the riparian countries that are separate from the meteorological stations. Furthermore, more records from the rainfall stations are available in the MRC data portal.

National line agencies related to meteorological observation

The key line agencies for meteorological observation and data in the riparian countries are as follows.

Cambodia: Department of Meteorology (DOM), Ministry of Water Resources and Meteorology

Lao PDR: Department of Meteorology and Hydrology (DMH), Ministry of Natural Resources and Environment

Thailand: Thai Metrological Department (TMD), Ministry of Information and Communication Technology

Department of Water Resources (DWR), Ministry of Natural Resources and Environment

Viet Nam: Highland Regional Hydro-Meteorological Centre (HRHMC) and Southern Regional Hydro-

Meteorological Centre (SRHMC), Hydro-Meteorological Service.

4. OBSERVED METEOROLOGICAL PARAMETRES

The key observed parameters at the meteorological stations in the riparian countries that are related to climate change analysis are described below.

Rainfall: For a daily rain gauge, the amount of rainfall that is measured is recorded on the proceeding day, usually at 7.00 am.

Air temperature: The air temperature measured by thermometer is usually recorded at 7:00 am, 9:00 am, 12:00 pm, 3:00 pm and 18:00 pm. The average, maximum and minimum air temperature is determined from these record periods.

Evaporation: Evaporation measured by the class A evaporation pan of the U.S. Weather Bureau is recorded on the proceeding day, usually at 7.00 am. The rate of evaporation from the evaporation pan is usually higher than the natural lakes or reservoirs; therefore, a coefficient (such as 0.7) is normally used to obtain the potential reference evaporative demand.

Relative humidity: This is the ratio of the partial pressure of water vapour in an air-water mixture to the saturated vapour pressure of water at a prescribed temperature. Air humidity can be

measured by a hygrometer or can be estimated by calculating the difference between measurements taken by a wet- and a dry-bulb thermometer; these measurements are usually taken at 7.00 am.

Sunshine duration: The number of hours of sunshine measured by a sunshine recorder is recorded on the proceeding day, usually at 7.00 am. The sunshine recorder is the instrument for recording bright sunshine where sun rays are focused by means of a glass sphere on a printed cardboard strip.

Solar radiation: The average daily solar radiation that obtained by the Pyranometre is recorded on the proceeding day, usually at 7.00 am.

Wind movement: The wind movement is measured by the anemometer, which may be installed at a standard height. The WMO standard is for wind movement to be observed at a height of 10 m, although other anemometers may be installed at some stations, for example at a level about 15 cm higher than the rim of the evaporation pan. The daily average and maximum wind speeds and directions are recorded on the proceeding day, usually at 7.00am.

5. SUMMARY OF METEOROLOGICAL STATIONS IN THE LOWER MEKONG BASIN

5.1 National line agency dataset

Japan International Cooperation Agency (JICA)/MRC comprehensively reviewed the inventory of the meteorological network in the LMB in 2001 with the national line agencies in the study *Strategic Master Scheme for Hydro-Meteorological Network in the Mekong River Basin* (MRC, 2011). The objective of this study was to improve the hydro-meteorological network in the LMB in order to provide timely, sufficient and reliable data and information for water resources management.

Table 1 shows the number of meteorological stations and observed parameters in the riparian countries. There were 118 meteorological stations operating in 2001 across the basin, as presented in Figure 1. Basin-wide results show that rainfall is measured at all of the

meteorological stations. In 81 percent of the meteorological stations, air temperature, wind speed, wind direction and relative humidity were observed. Sunshine duration and solar radiation were installed at only 46 percent and 7 percent of total meteorological stations, respectively.

Since rainfall has a much greater variation than other meteorological parameters, and more rainfall gauges are needed to obtain representative monitoring, many individual rainfall stations were installed over the basin to measure the amount of rainfall in the sub-basins. The total number of rainfall stations in the LMB in 2001 was 449 stations (Cambodia 157 stations, Lao PDR 109 stations, Thailand 110 stations, and Viet Nam 73 stations), both at meteorological stations and individual stations; around 413 stations were operating and the remainder were not.

Table 1 | No. of meteorological stations and observed parameters in the Lower Mekong Basin, 2001 (national dataset)

Observed parameters	Number of stations				
	Cambodia	Lao PDR	Thailand	Viet Nam	LMB
Rainfall	13	34	41	30	118
Mean temperature	13	34	20	30	97
Max. temperature	13	34	20	30	97
Min. temperature	13	34	20	30	97
Wind speed	13	34	20	30	97
Wind direction	13	34	20	30	97
Relative humidity	13	34	20	30	97
Evaporation	13	18	40	14	85
Sunshine duration	1	6	20	29	56
Solar radiation	1		6	2	9
Total no. of stations	13	34	41	30	118

5.2 MRC datasets

The meteorological data obtained from the riparian countries are stored in a Master Catalogue (MC) as a time series database. They are available on the MRC data portal as part of MRC Information Systems, which is maintained by the Information and Knowledge Management Programme (IKMP) as a data centre for storing, managing and sharing data and information. Table 2 shows the number of meteorological stations and observed parameters in the MRC data portal. There are 92 meteorological stations registered in the data portal, as presented in Figure 1. Rainfall and evaporation data are available at most stations. Other meteorological parameters are available in only half of the stations. Only 16 stations have solar radiation data. The number of meteorological stations in the MRC dataset (92 stations) is lower than that found in the JICA/MRC inventory review in 2001 (118 stations). Moreover, the location of 21 meteorological stations in the MC is different from the 2001 inventory, thus requiring further investigation (Figure 1).

The current MRC data portal stores rainfall data of the meteorological stations as well as rainfall data of the stand-alone stations. The records of some stations date as far back as 1919, while the records of others are much more recent. A total of 487 rainfall stations contained rainfall data in the MRC data portal: 435 stations were in the LMB (Cambodia 184 stations, Lao PDR 65 stations, Thailand 140 stations and Viet Nam 46 stations); the remaining 52 stations were outside the basin (Figure 2). Since 2006, the Flood Management and Mitigation Programme (FMMP) has also regularly collected daily rainfall data from the riparian countries through the SMS-based HYDMET system to be inputted into the flood forecasting system

in the LMB. There are a total of 137 rainfall stations used in the current flood forecasting system (Figure 2). Moreover, the historical meteorological data (1985–2000) have been used in the SWAT hydrological model, which is a part of modelling tool of MRC-Decision Support Framework for basin planning and management. The total number of rainfall and meteorological stations used in the model are 225 and 39 stations, respectively (Figures 3 and 4). However, there are no subdaily rainfall data in the MRC hydrometric database, which is important for extreme rainfall intensity analysis.

5.3 Global datasets

The global surface summary of day (GSOD) dataset is produced by the National Climatic Data Center, National Oceanic and Atmospheric Administration (NOAA, 2013) under the World Meteorological Organization's (WMO) World Weather Watch Programme as per WMO Resolution 40 (Cg-XII). This allows WMO member countries to place restrictions on the use or re-export of their data for commercial purposes outside of the receiving country. Data from over 9,000 stations around the world are typically available. The latest daily summary data are normally available 1-2 days after the date/time of the observations used in the daily summaries. This dataset is widely used in the climate change analysis and modelling at the global scale.

Table 2 | No. of meteorological stations and observed parameters in the LMB (MRC dataset)

Observed parameters	Number of stations				
	Cambodia	Lao PDR	Thailand	Viet Nam	LMB
Rainfall	24	9	47	12	92
Mean temperature		7			7
Max. temperature	13	7	19	11	50
Min. temperature	13	7	19	8	38
Wind speed	14	7	8	11	40
Relative humidity	13	7	34	11	65
Evaporation	24	8	44	11	89
Sunshine duration	9	7	14	10	45
Solar radiation	8	7			16
Total no. of stations	24	8	49	12	92

Table 3 shows the number of meteorological stations and observed parameters in the GSOD dataset in the LMB. There are 100 meteorological stations in this dataset, whose locations are presented in Figure 1. The data in this dataset at many stations, particularly in Lao PDR and Cambodia, are not up-to-date and their records cover a very short time period of time. Around 64 stations have up-to-date data till 2012. The sunshine duration and solar radiation parameters do not include in this dataset.

MRC also can obtain daily meteorological data in the Upper Mekong Basin (UMB) from the GSOD dataset. Around 20 meteorological stations have long-term data available, particularly on rainfall and temperature. The location of these meteorological stations in the Upper Mekong Basin (UMB) and the surrounding area is presented in Figure 5.

Table 3 | No. of meteorological stations and observed parameters in the LMB (GSOD dataset)

Observed parameters	Number of stations				
	Cambodia	Lao PDR	Thailand	Viet Nam	LMB
Rainfall	6	41	38	15	100
Mean air temperature	6	41	38	15	100
Max. air temperature	6	41	38	15	100
Min. air temperature	6	41	38	15	100
Mean dew point	6	41	38	15	100
Mean wind speed	6	41	38	15	100
Max. wind speed	6	41	38	15	100
Total no. of stations	6	42	38	15	100

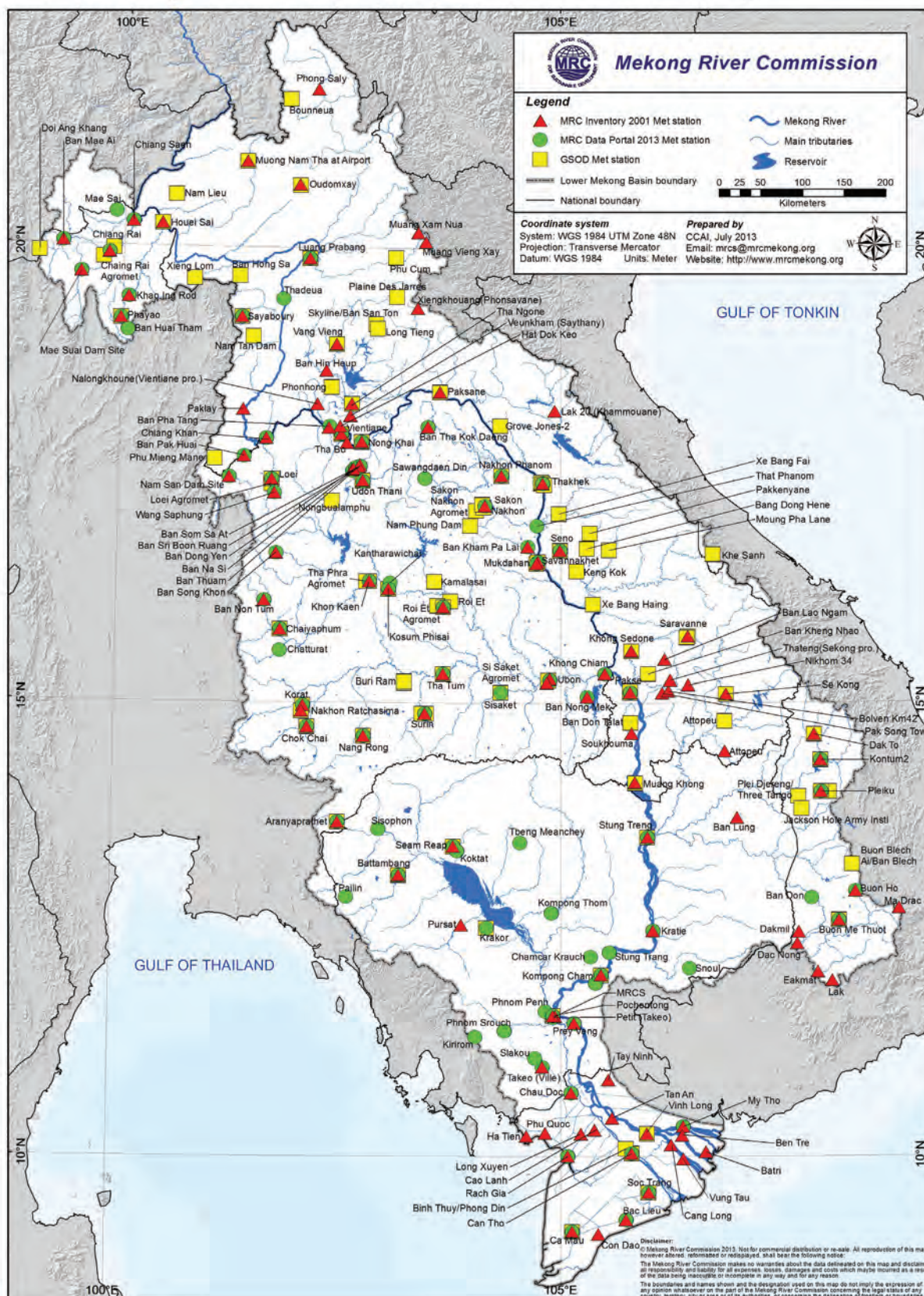


Figure 1. Location of the meteorological stations in the LMB (different datasets)

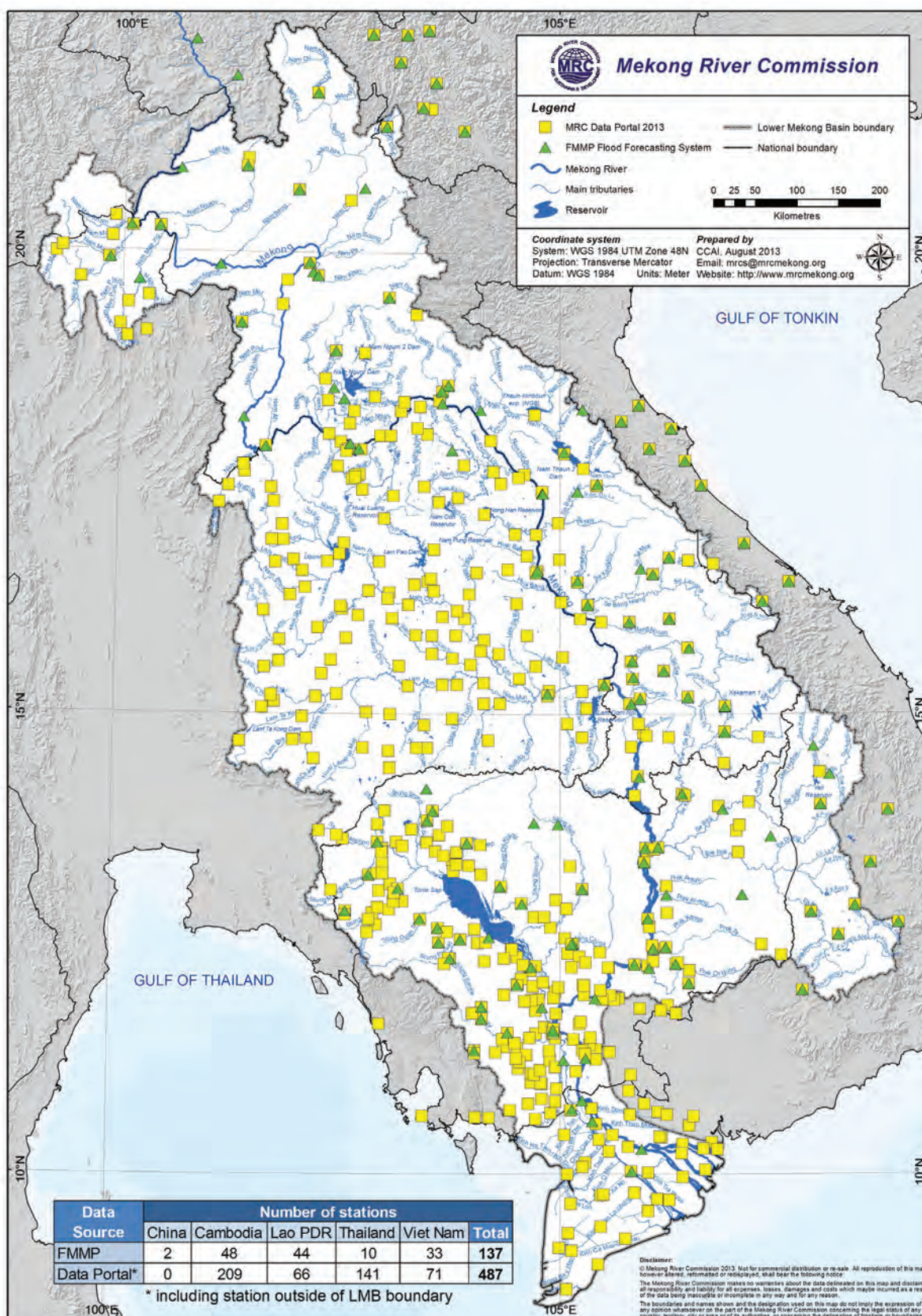


Figure 2. Location of the rainfall stations in the MRC data portal and the FMMP flood forecasting system

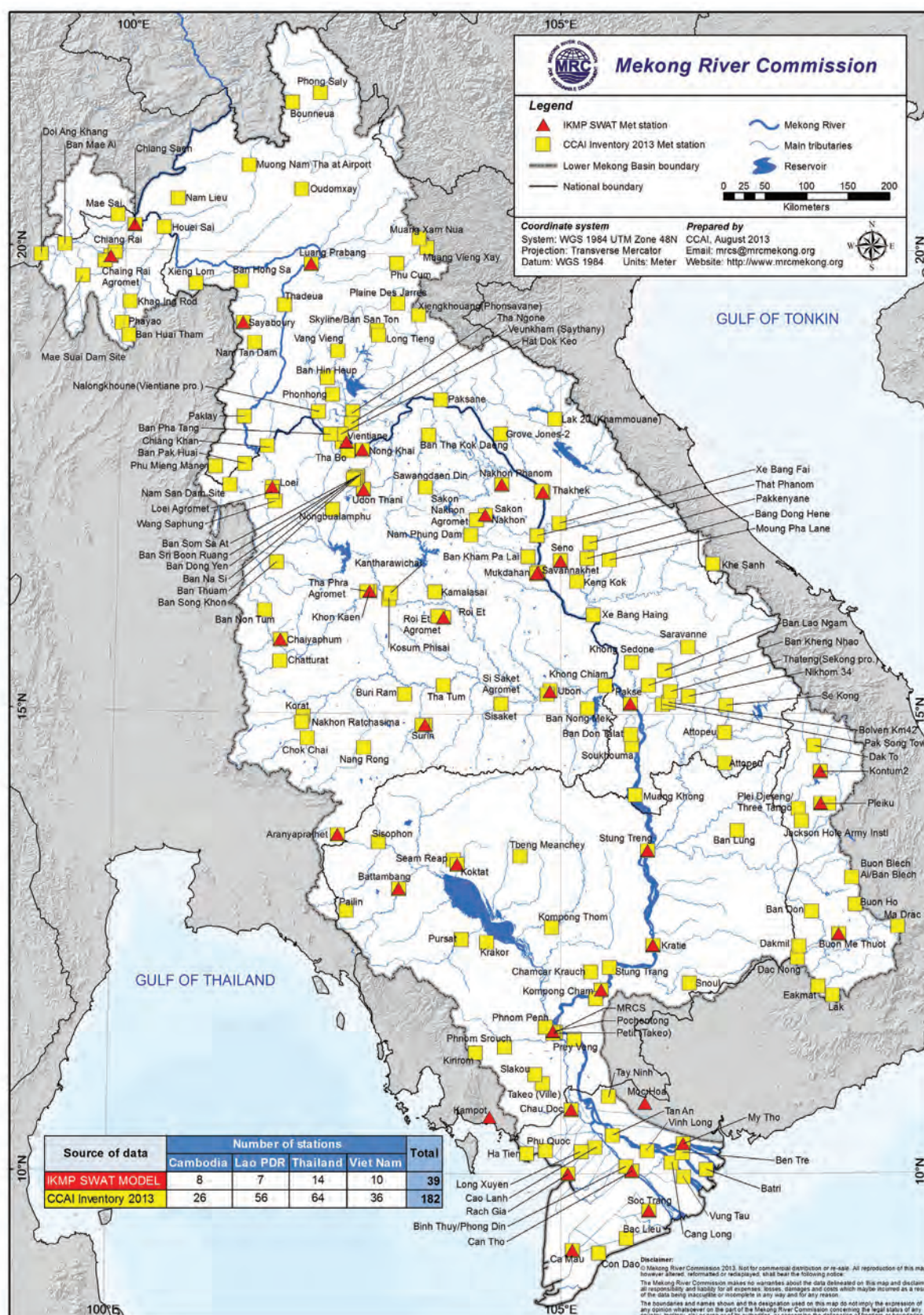


Figure 3. Location of the meteorological stations used in the MRC SWAT model compared with station inventory by CCAI

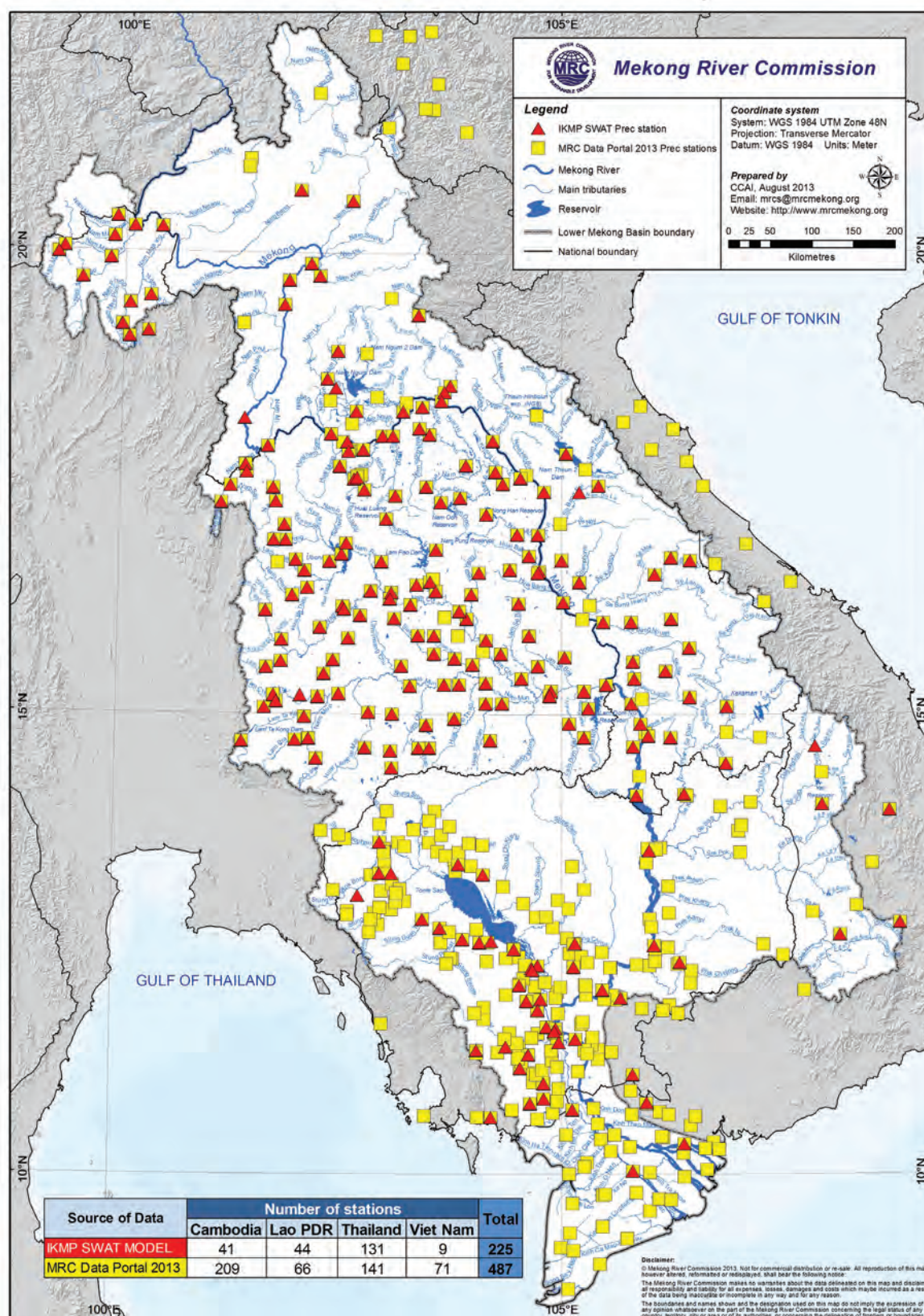


Figure 4. Location of the rainfall stations used in the MRC SWAT model compared station inventory in the MRC data portal

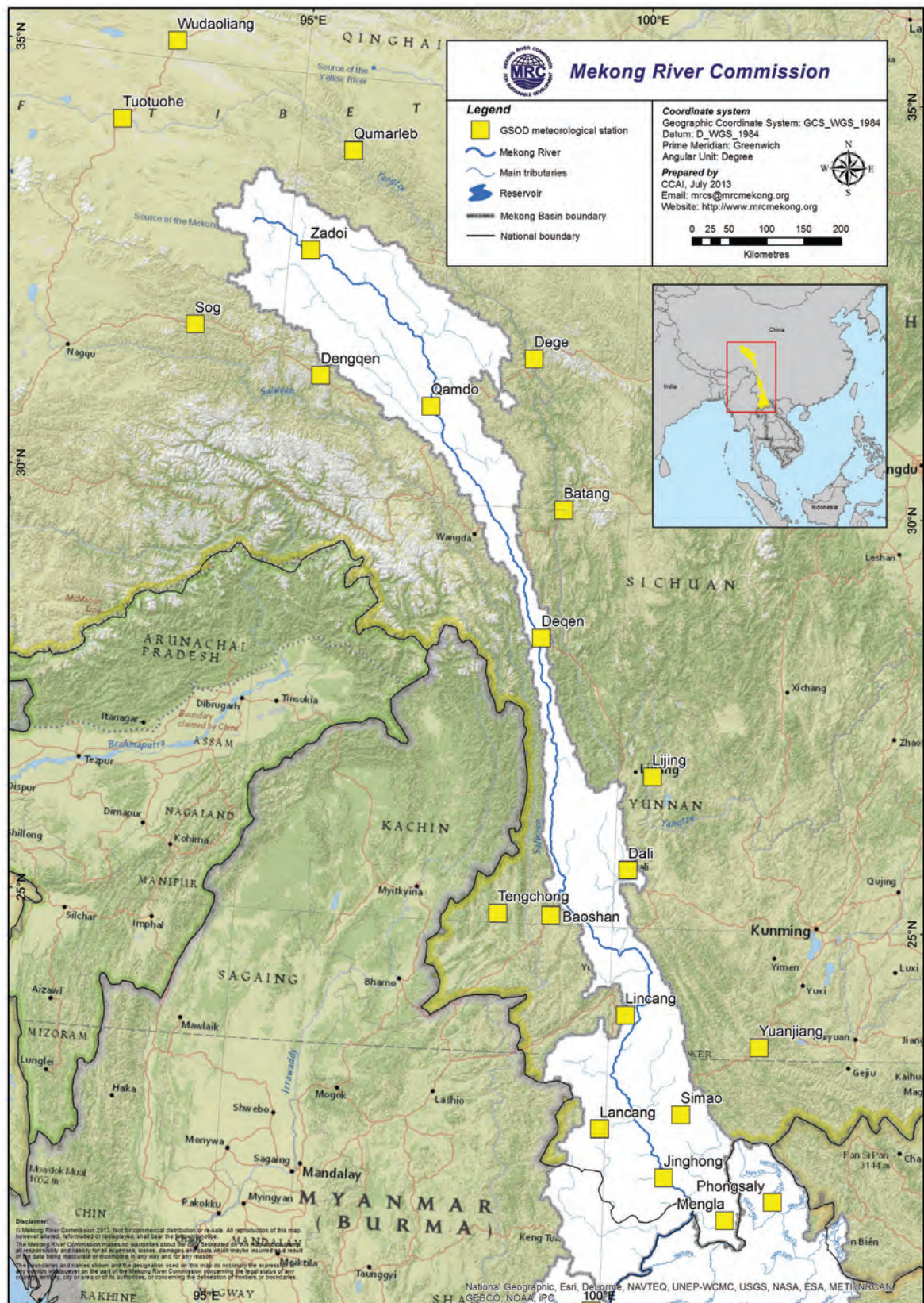


Figure 5. Location of the meteorological stations in the UMB (GSOD dataset)

6. PERIOD OF METEOROLOGICAL DATA AVAILABILITY

The period of data availability varies from station to station, and with respect to parameters and sources of dataset. The number of years of available meteorological data from different datasets are given in Annex I-III. The data from national line agencies are available ever since they were first available to today, whereas data from other sources, such as the MRC data portal and the GSOD, are part of the national dataset. The period over which the meteorological data was recorded is based on three datasets, which is summarised in Tables 4 to 6.

Most of the meteorological data in the riparian countries have been available for over 30 years (Annex I). In more than 30 stations, the data have been available for over 50 years, particularly data on rainfall, temperature, wind speed and direction, and relative humidity. The sunshine duration and solar radiation data are mostly available in Thailand and Viet Nam, while Lao PDR and Cambodia still have limited instruments and data record. The data from some meteorological stations in Lao PDR and Cambodia have been discontinuously recorded. In Cambodia, most stations have data gaps in 1970-1980 or 1975-1980 due to the civil war.

Most meteorological data in the MRC data portal except rainfall and evaporation data were recorded over a brief period of time (less than 20 years) compared to that of the actual data available in the riparian countries (Annex II). Most rain stations have recorded data over a 10-20-year period. Around 93 rainfall stations have data recorded longer than 20 years and only 34 rainfall stations have data recorded over 50 years. Most meteorological and rainfall data in the MRC portal were updated as at 2006 for Thailand, 2007 for Viet Nam and 2008 for Cambodia and Lao PDR. Time periods of meteorological data recorded from each station and respective parameters in the MRC data portal are summarised in Figures 6-14. Presently, IKMP is updating hydro-met data from 2008 up to 2012 with the riparian countries in order to prepare the Hydrological Yearbook. The list of requested stations is presented in Figure 15.

Around half of the meteorological stations in the LMB (53 stations) in the GSOD dataset have data records that cover less than ten years and that are not up-to-date (Annex III). Only 17 stations, most of which are in Thailand, have recorded data over a period of over 30 years. Nevertheless, the meteorological data in the UMB based on the GSOD dataset are available for more than 40 years and are up-to-date.

Table 4 | No. of years of meteorological data recorded (national dataset)

Parameters	No. of stations				
No. of years	Cambodia	Lao PDR	Thailand	Viet Nam	Total
Rainfall					
< 10	1	0	0	1	2
10-30	7	5	1	3	16
30-50	4	18	23	18	63
> 50	1	10	17	8	36
Air temperature (mean, max. min.)					
< 10	1	0	0	1	2
10-30	7	5	1	3	16
30-50	4	18	5	18	45
> 50	1	10	14	8	33
Wind speed					
< 10	1	0	0	1	2
10-30	7	5	1	3	16
30-50	4	18	5	18	45
> 50	1	10	14	8	33
Wind direction					
< 10	1	0	0	1	2
10-30	7	5	1	3	16
30-50	4	18	5	18	45
> 50	1	10	14	8	33
Relative humidity					
< 10	1	0	0	1	2
10-30	7	5	1	3	16
30-50	4	18	5	18	45
> 50	1	10	14	8	33
Evaporation					
< 10	1	0	0	0	1
10-30	7	2	1	1	11
30-50	4	8	23	11	46
> 50	1	8	16	2	27
Sunshine duration					
< 10	0	0	0	0	0
10-30	1	0	1	3	5
30-50	0	2	5	18	25
> 50	0	4	14	8	26
Solar radiation					
< 10	0	0	0	0	0
10-30	1	0	0	0	1
30-50	0	0	0	1	1
> 50	0	0	6	1	7

Table 5 | No. of years of meteorological data recorded (MRC dataset)

Parameters		No. of stations			
No. of years	Cambodia	Lao PDR	Thailand	Viet Nam	Total
Rainfall (including individual stations)					
< 10	133	8	3	36	180
10-30	61	34	90	29	214
30-50	8	18	32	1	59
> 50	7	6	16	5	34
Mean temperature					
< 10	0	0	0	0	0
10-30	6	0	0	0	6
30-50	0	0	0	0	0
> 50	0	0	0	0	0
Max. temperature					
< 10	8	0	3	0	11
10-30	5	7	16	8	36
30-50	0	0	0	3	3
> 50	0	0	0	0	0
Min. temperature					
< 10	8	0	3	0	11
10-30	5	7	15	5	32
30-50	0	0	0	3	3
> 50	0	0	0	0	0
Wind speed					
< 10	7	0	5	0	12
10-30	7	7	3	8	25
30-50	0	0	0	3	3
> 50	0	0	0	0	0
Relative humidity					
< 10	9	5	15	0	29
10-30	4	2	18	8	32
30-50	0	0	1	3	4
> 50	0	0	0	0	0
Evaporation					
< 10	21	0	4	2	27
10-30	4	4	15	11	34
30-50	0	4	25	0	29
> 50	0	0	0	0	0

Parameters	No. of stations				
No. of years	Cambodia	Lao PDR	Thailand	Viet Nam	Total
<i>Sunshine duration</i>					
< 10	1	1	7	0	9
10-30	8	6	7	9	30
30-50	0	0	0	1	1
> 50	0	0	0	0	0
<i>Solar radiation</i>					
< 10	0	0	0	0	0
10-30	13	1	0	0	14
30-50	0	0	0	0	0
> 50	0	0	0	0	0

Table 6 | No. of years of meteorological data recorded (GSOD dataset)

Parameters	No. of stations				
No. of years	Cambodia	Lao PDR	Thailand	Viet Nam	Total
<i>Rainfall</i>					
< 10	1	29	15	8	53
10-30	4	9	5	3	21
30-50	1	2	5	1	9
> 50	0	1	13	3	17
<i>Mean temperature</i>					
< 10	1	29	15	8	53
10-30	4	9	5	3	21
30-50	1	2	5	1	9
> 50	0	1	13	3	17
<i>Max. temperature</i>					
< 10	1	29	15	8	53
10-30	4	9	5	3	21
30-50	1	2	5	1	9
> 50	0	1	13	3	17
<i>Min. temperature</i>					
< 10	1	29	15	8	53
10-30	4	9	5	3	21
30-50	1	2	5	1	9
> 50	0	1	13	3	17

Parameters		No. of stations			
No. of years	Cambodia	Lao PDR	Thailand	Viet Nam	Total
Mean dew point					
< 10	1	29	15	8	53
10-30	4	9	5	3	21
30-50	1	2	5	1	9
> 50	0	1	13	3	17
Mean wind speed					
< 10	1	29	15	8	53
10-30	4	9	5	3	21
30-50	1	2	5	1	9
> 50	0	1	13	3	17
Max. wind speed					
< 10	1	29	15	8	53
10-30	4	9	5	3	21
30-50	1	2	5	1	9
> 50	0	1	13	3	17

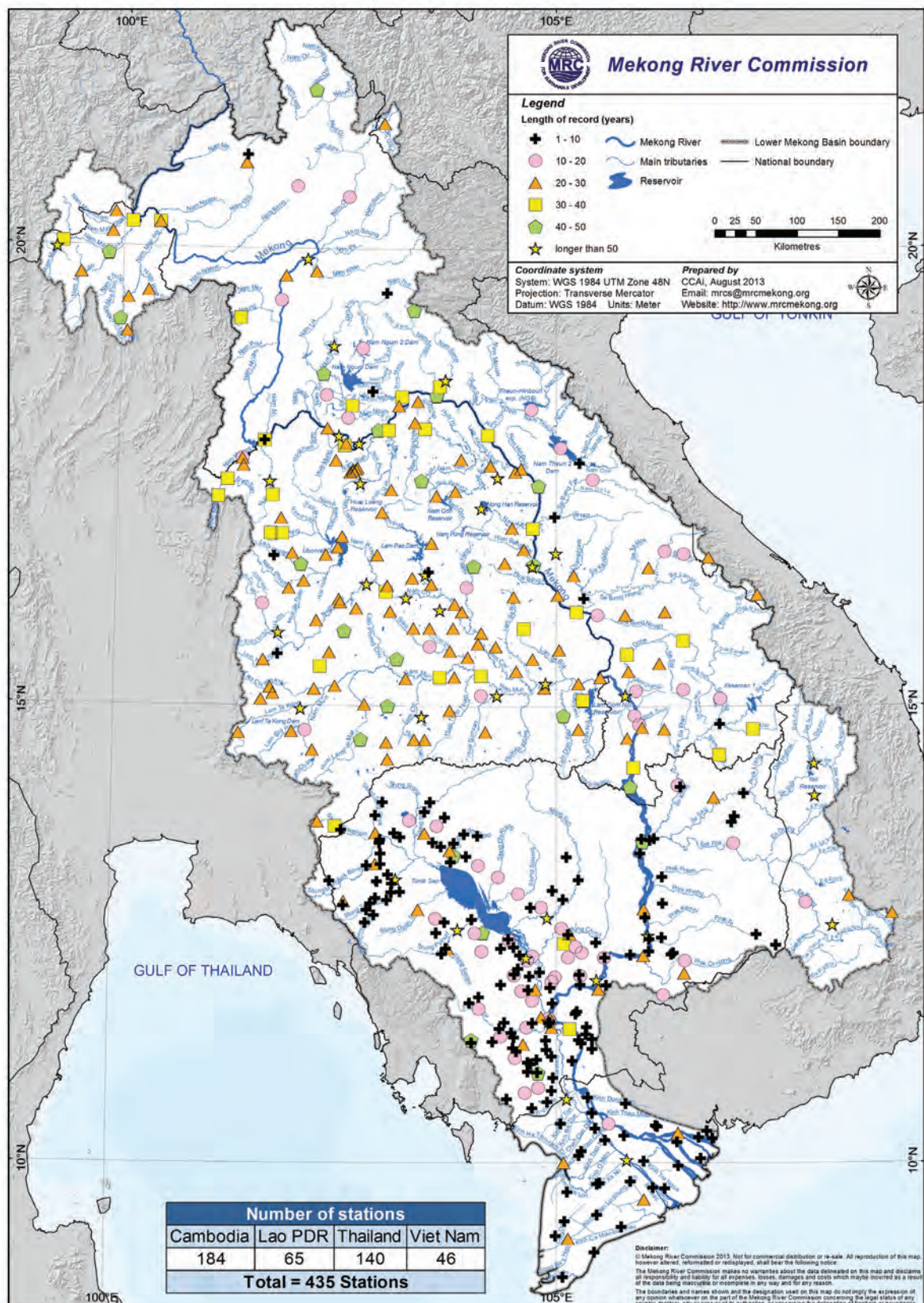


Figure 6. No. of years of rainfall data recorded in the LMB (MRC data portal)

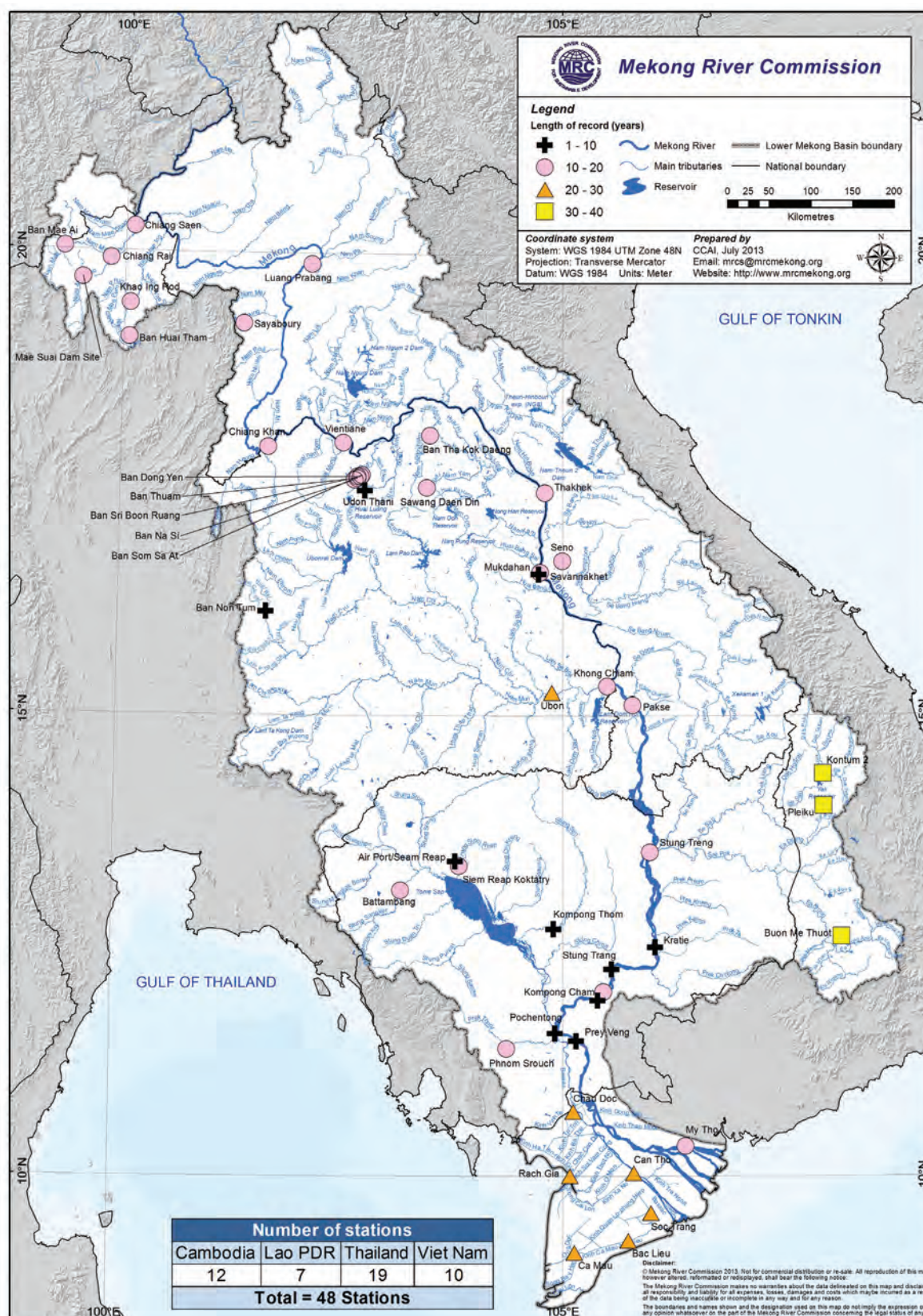


Figure 7. No. of years of maximum temperature data recorded in the LMB (MRC data portal)

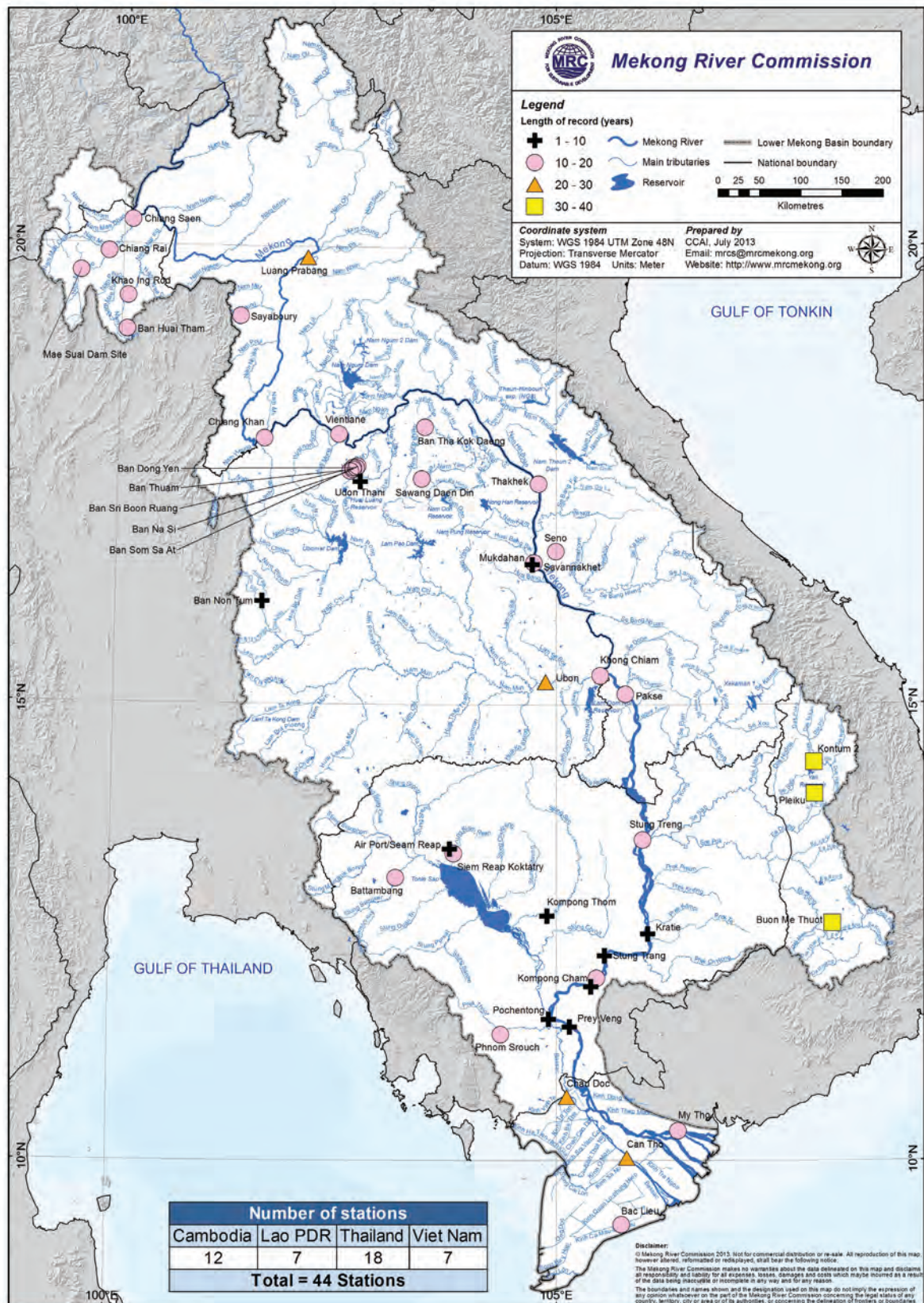


Figure 8. No. of years of minimum temperature data recorded in the LMB in the MRC data portal

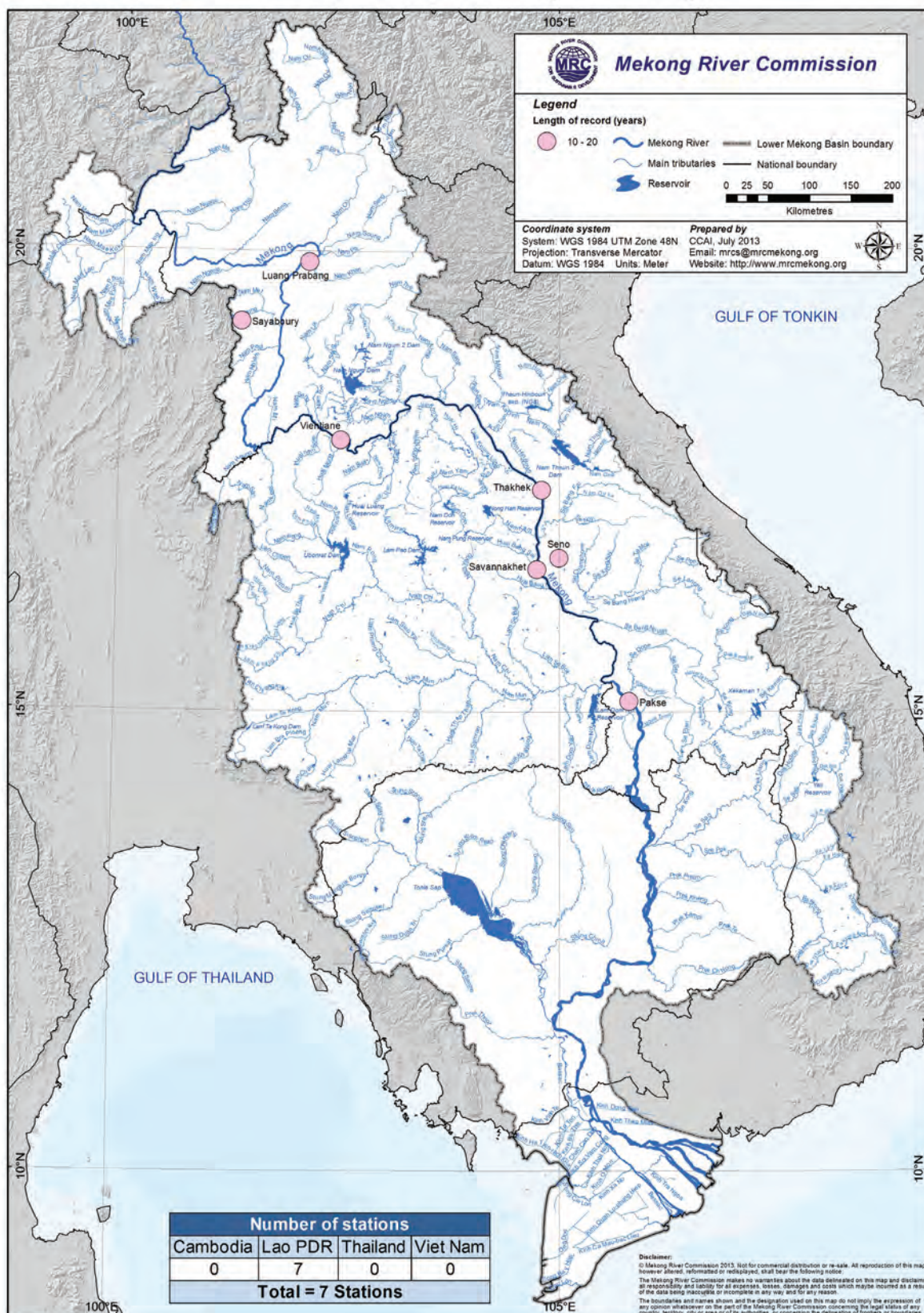


Figure 9. No. of years of average temperature data recorded in the LMB (MRC data portal)

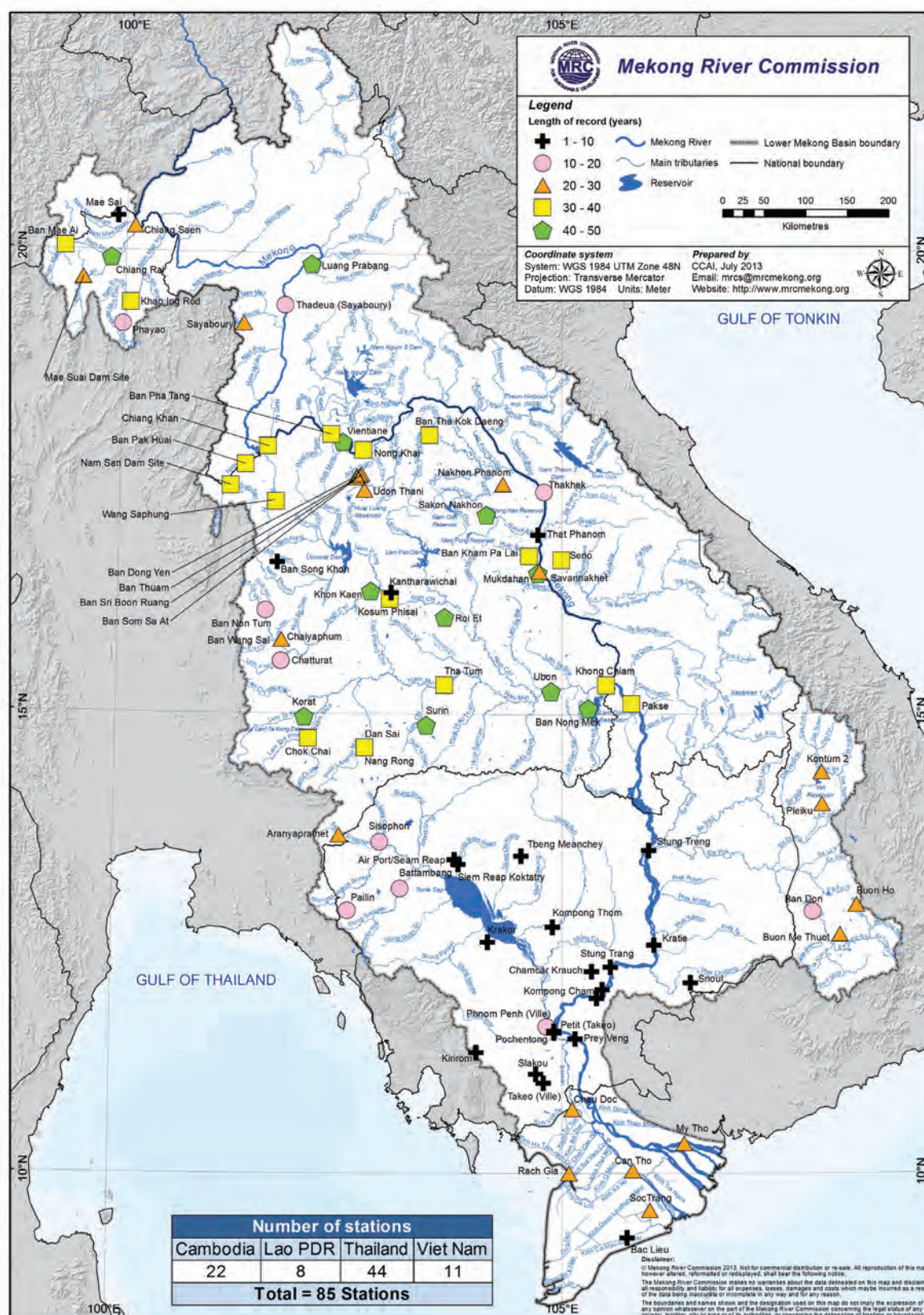


Figure 10. No. of years of evaporation data recorded in the LMB (MRC data portal)

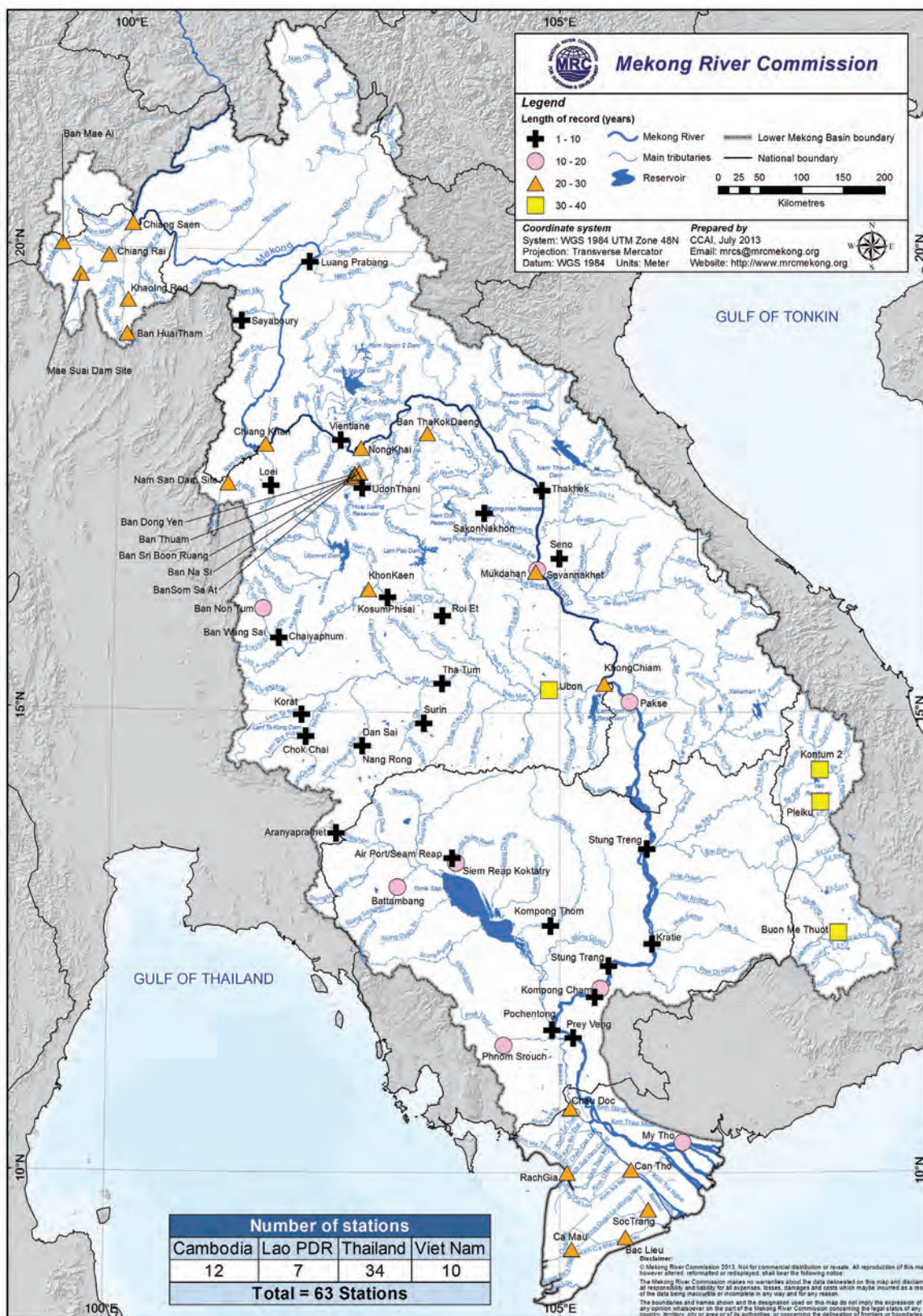


Figure 11. No. of years of relative humidity data recorded in the LMB (MRC data portal)

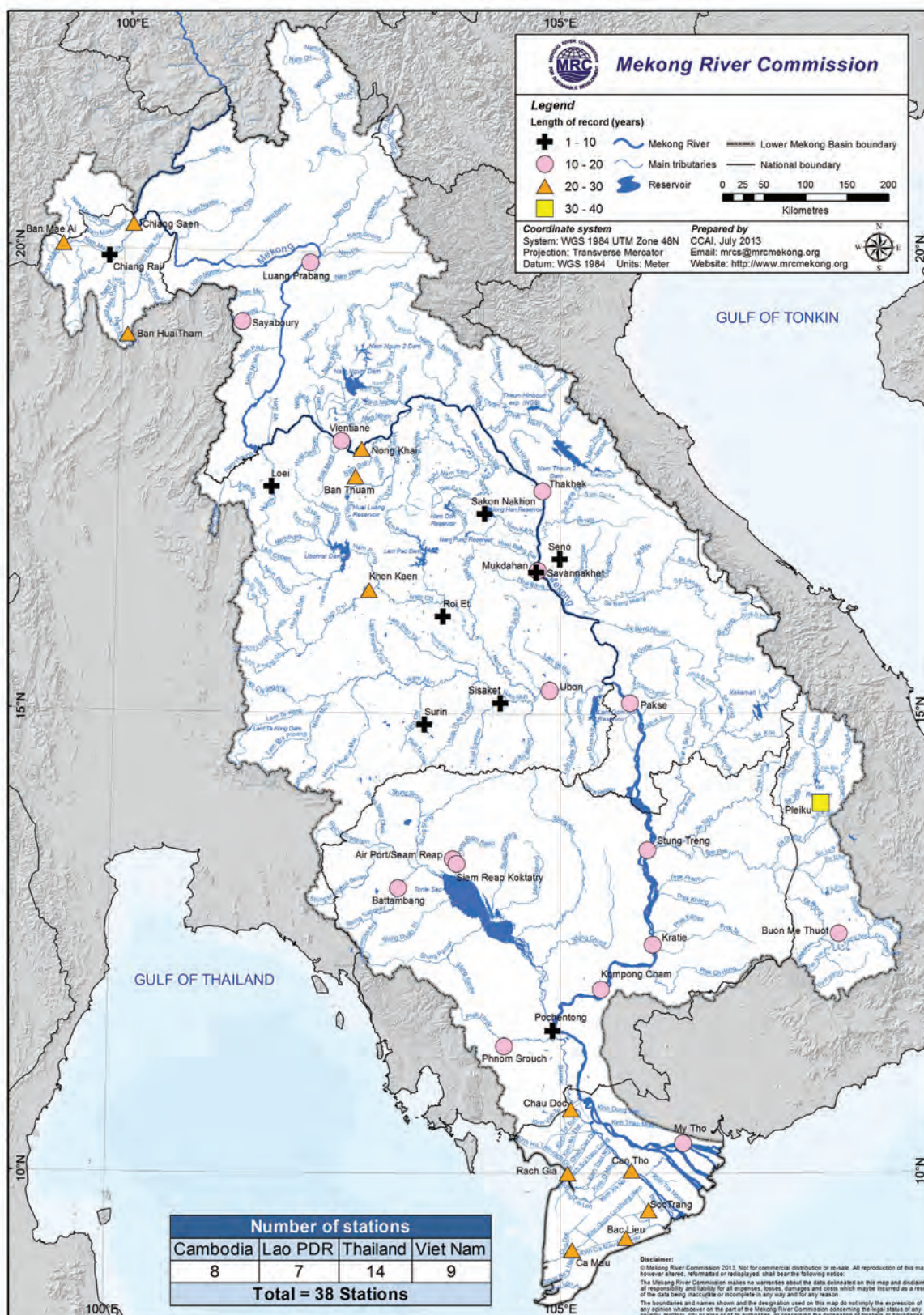


Figure 12. No. of years of data on sunshine duration recorded in the LMB (MRC data portal)

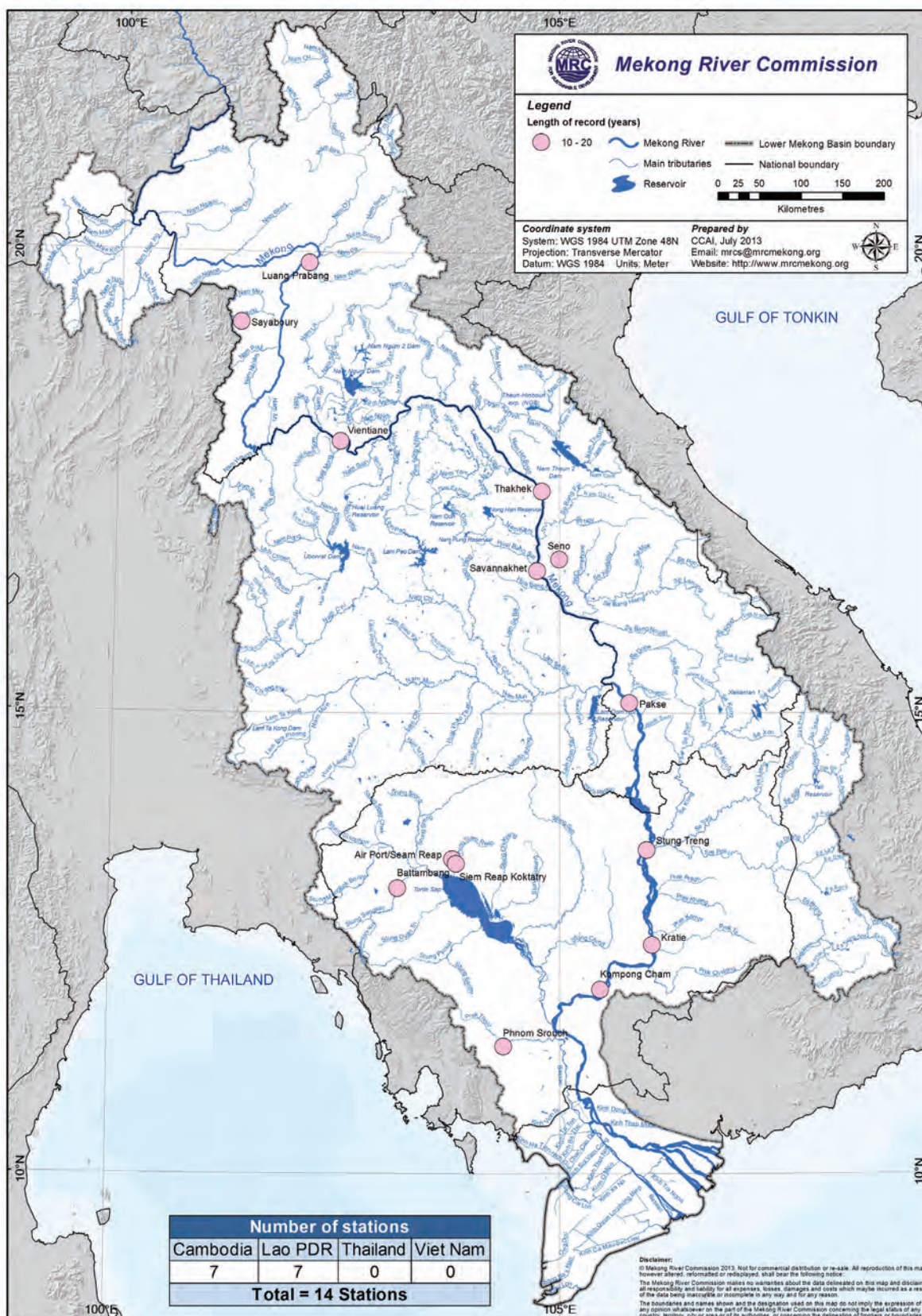


Figure 13. No. of years of solar radiation data recorded in the LMB (MRC data portal)

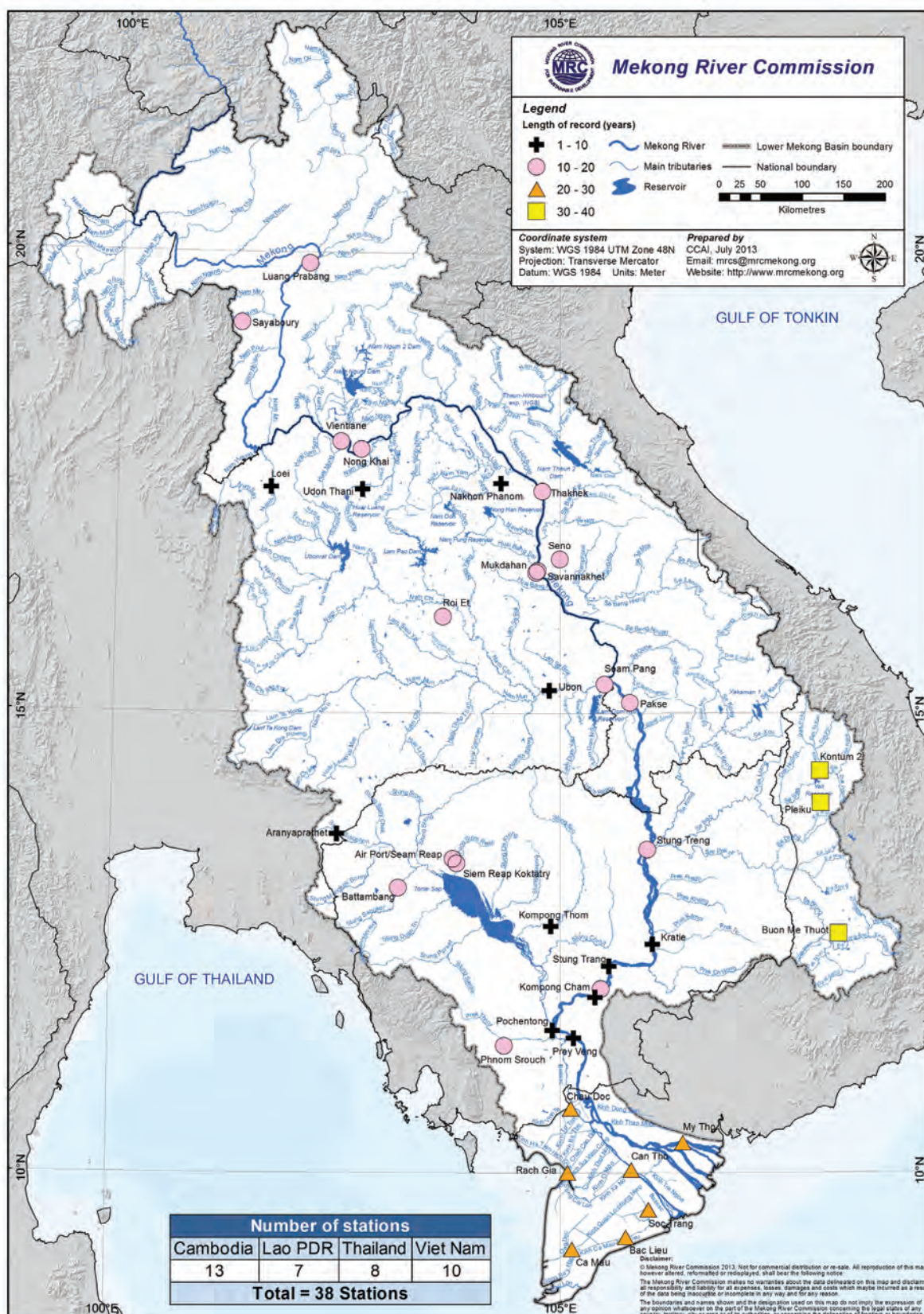


Figure 14. No. of years of wind speed data recorded in the LMB (MRC data portal)

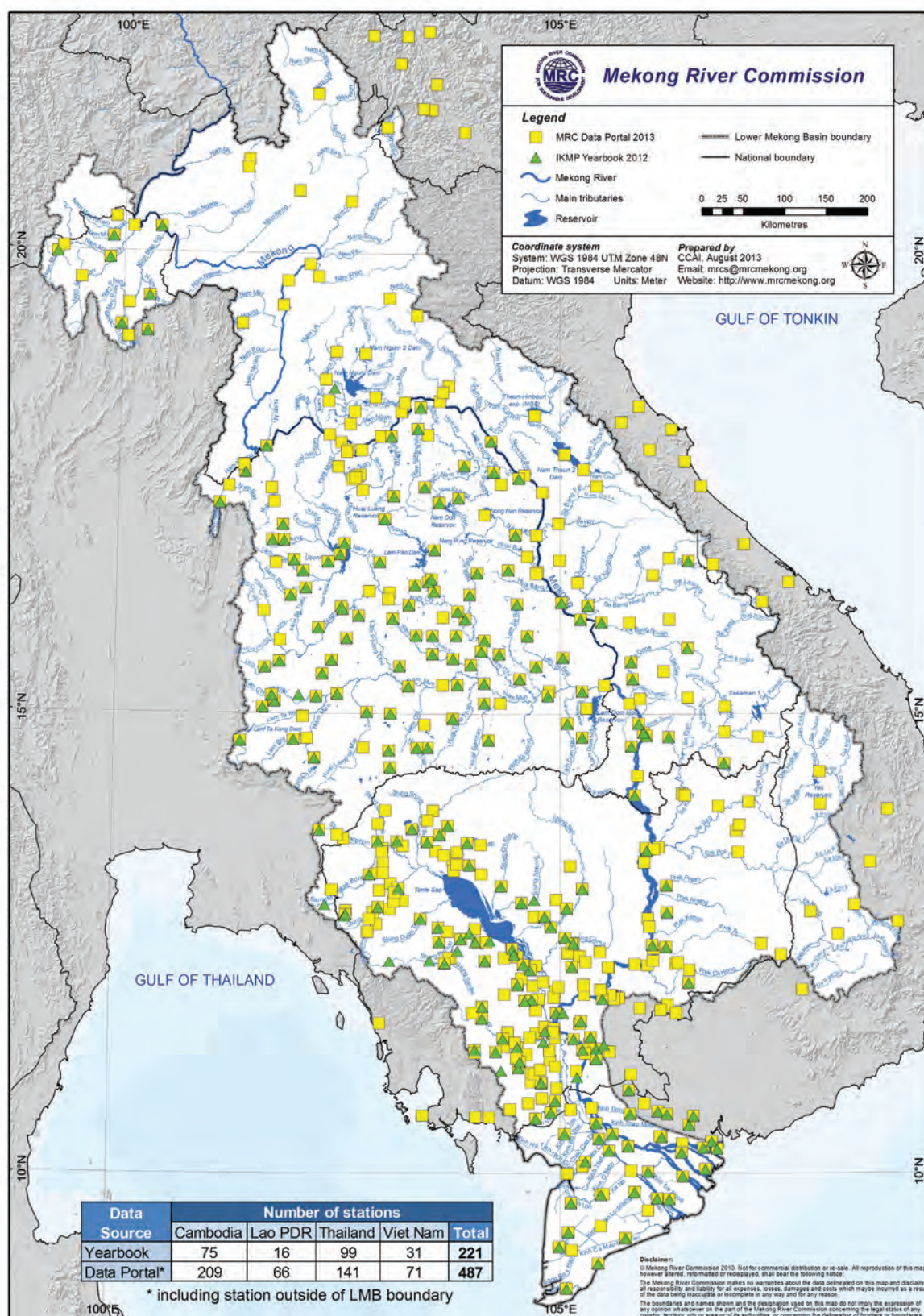


Figure 15. Location of stations in the IKMP list of meteorological and rainfall stations that was requested from the Member Countries in order to update data up to 2012 and to prepare the hydrological yearbooks

7. CONCLUSIONS & RECOMMENDATIONS

7.1 Conclusions

- 182 meteorological stations (Cambodia 26 stations, Lao PDR 56 stations, Thailand 64 stations and Viet Nam 36 stations) were installed in the LMB based on our analysis of three datasets (MC, KB and FMMP data). However, some stations are not operating and many have data records that cover a recent period of time, which is insufficient to obtain a meaningful climate change analysis for the detection of climate change. The main observed parameters at the meteorological station include rainfall, temperature, wind movement, relative humidity and evaporation. Around half of the meteorological stations measure sunshine duration. Only a few stations in Thailand and Viet Nam observe solar radiation.
- Most stations in Thailand and some in Viet Nam have a continuous data record of more than 50 years and 40 years, respectively. However, most stations in Lao PDR and Cambodia have continuous data records of about 30 years or less. However, there are a few stations that have records covering period of over 80 years, such as Vientiane and Luang Prabang (Lao PDR) and Can Tho (Viet Nam).
- The meteorological data in the MRC dataset, particularly on temperature (average, maximum and minimum), relative humidity, evaporation, wind movement (speed and direction), sunshine duration and solar radiation, cover a very short period of time (less than 20 years). Further, there is a limited number of stations compared to those in the riparian countries, hence a more limited availability of actual data. Long-term climate change analysis such as trends and variation, and analysis on extreme weather events as well as future climate change modelling require at least 30 years of continuously recorded data. Thus, the availability of above meteorological parameters in the MRC dataset is not sufficient for long-term climate change analysis and future climate change projection.
- Rainfall stations (487 stations) in the MRC dataset cover the whole LMB and surrounding areas, but only 93 rainfall stations have long-term records (over 30 years). Also, the data were recorded up to 2005 for Thailand, 2007 for Viet Nam and 2008 for Lao PDR and Cambodia. Rainfall data still need to be updated for climate change studies since significant, extreme events have taken place in last ten years, possibly due to climate change such as drought in 2010 and flood in 2011. IKMP is working with the riparian countries to update hydro-met data from 2008 to 2012 for Lao PDR, Cambodia and Viet Nam and from 2006-12 for Thailand.
- The meteorological data in the GSOD dataset, particularly in Thailand and UMB, have long and up-to-date data records, which can be used for long-term climate change analysis and future

climate change modelling. However, in other riparian countries, the spatial and temporal coverage is still too limited for analysis.

- The rainfall datasets available in the Member Countries, those used in basin modelling (SWAT model) and those used by FMMP differ significantly. In addition, the proposed updating of data to 2012 by IKMP does not seem to be up to the task with the stations used, especially Lao PDR. Possibly, more stations could be used in future modelling in some areas (such as the Great Lake area).

7.2 Recommendations

- The inventory of meteorological data has not been comprehensively reviewed since 2001; therefore, updating it in the riparian countries is crucial to understand current status and availability of meteorological data in the LMB.
- Updating and improving the meteorological data in the MRC data portal with national line agencies should be a high priority activity because this dataset will be used in the first step of analysis to understand climate change and its impacts in the basin, and will support climate change adaptation planning.

- For climate change detection and analysis, and for generating predictions of future climate required under the CCAI agreed work plan, it is necessary to have a 30-year baseline. For climate change detection, a longer baseline is needed. The updating of rainfall and meteorological data at MRC should therefore include historic records (of both rainfall and meteorological parameters) where the line agencies have data preceding that currently available at MRC.
- To fill in inevitable gaps, gridded datasets and reanalysis data should be examined and compared with the station records at MRC.

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Annex I

Inventory of meteorological data of the national dataset (review in 2001)

No	Station	Country	Meteorological Parameters	Year	No. of years
1	Pursat	Cambodia	R,T,WS,WD,RH,EV	1912-42; 1952-54;1973; 1981-89; 1992-2012	65
2	Pochentong	Cambodia	R,T,WS,WD,RH,EV	1980-2012	33
3	Sihanouk Ville	Cambodia	R,T,WS,WD,RH,EV	1981-2012	32
4	Kompong Cham	Cambodia	R,T,WS,WD,RH,EV	1982-2012	31
5	Siem Reap	Cambodia	R,T,WS,WD,RH,EV	1982-2012	31
6	Stung Treng	Cambodia	R,T,WS,WD,RH,EV	1983-2012	30
7	Kampot	Cambodia	R,T,WS,WD,RH,EV	1986-2012	27
8	Kratie	Cambodia	R,T,WS,WD,RH,EV	1988-2012	25
9	Prey Veng	Cambodia	R,T,WS,WD,RH,EV	1989-2012	24
10	Takeo (Ville)	Cambodia	R,T,WS,WD,RH,EV	1994-1996	3
11	Battambang	Cambodia	R,T,WS,WD,RH,EV	1994-2012	19
12	Ratanakiri	Cambodia	R,T,WS,WD,RH,EV	1994-2012	19
13	MRCs	Cambodia	R,T,WS,WD,RH,EV,SD,SR	1999-2012	14
14	Houei Sai at Airport	Lao PDR	R,T,WS,RH,WD,EV,AP	1912-25,27-45,74,96-2012	51
15	Vientiane at DMH	Lao PDR	R,T,WS,RH,WD,EV,AP,SD	1920-2012	93
16	Luang Prabang at Airport	Lao PDR	R,T,WS,RH,WD,EV,AP,SD	1920-25; 1927-43; 1950- 2012	86
17	Paksane	Lao PDR	R,T,WS,RH,WD,EV,AP	1924-2012	89
18	Pak Song Town	Lao PDR	R,T,WS,RH,WD	1929-2012	84
19	Attapeu	Lao PDR	R,T,WS,RH,WD,EV,AP	1929-30,32-33,35-38,43- 44,91-2012	32
20	Saravanne	Lao PDR	R,T,WS,RH,WD,EV,AP	1929-33,35- 39,42,64,70,87-2012	39
21	Pakse	Lao PDR	R,T,WS,RH,WD,EV,AP	1929-39; 1950-2012	74
22	Muang Xam Nua	Lao PDR	R,T,WS,RH,WD,EV,AP	1930-44; 1997-2012	31
23	Seno	Lao PDR	R,T,WS,RH,WD,EV,AP,SD	1950-2012	63
24	Khong Sedone	Lao PDR	R,T,WS,RH,WD	1963-70; 1972; 1979; 1983; 1988-2012	36
25	Hat Dok Keo	Lao PDR	R,T,WS,RH,WD	1968-80; 1982; 1987-89; 1993-2012	37
26	Sayaboury	Lao PDR	R,T,WS,RH,WD,EV,AP,SD	1969-2012	44
27	Nalongkhoun (Vientiane province)	Lao PDR	R,T,WS,RH,WD	1970-2012	43
28	Tha Ngone	Lao PDR	R,T,WS,RH,WD	1970-2012	43
29	Muang Vieng Xay	Lao PDR	R,T,WS,RH,WD,EV,AP	1976-2012	37
30	Bolven Km42	Lao PDR	R,T,WS,WD,RH	1982-2012	31
31	Nikhom 34	Lao PDR	R,T,WS,RH,WD	1983-94; 1996-2012	29
32	Se Kong	Lao PDR	R,T,WS,RH,WD,EV,AP	1990; 1992-93; 1995-2012	21
33	Veunkham (Saythany)	Lao PDR	R,T,WS,RH,WD	1990-2012	23
34	Lak 20 (Khammouane)	Lao PDR	R,T,WS,RH,WD	1990-2012	23

No	Station	Country	Meteorological Parameters	Year	No. of years
35	Phong Saly	Lao PDR	R,T,WS,RH,WD,EV,AP	1922-25; 1927-44; 1977-80; 1991-2012	48
36	Savannakhet	Lao PDR	R,T,WS,RH,WD,EV,AP,SD	1927-29; 1931-40; 1956; 1965-92; 1994-2012	61
37	Thakhek	Lao PDR	R,T,WS,RH,WD,EV,AP,SD	1929-32; 1935-39; 1942; 1956; 1961-64; 1980-82; 1984-92; 1994-2012	46
38	Vang Vieng	Lao PDR	R,T,WS,RH,WD	1929-33; 1936-39; 1941-43; 1968-70; 1974-76; 1978-80; 1991-2012	43
39	Muong Nam Tha at Airport	Lao PDR	R,T,WS,RH,WD,EV,AP	1929-33,36-39,41-43,92-95,97-2012	32
40	Paklay	Lao PDR	R,T,WS,RH,WD	1929-40; 1965-76; 1980; 1982; 1987-2012	52
41	Xiengkhouang (Phonsavane)	Lao PDR	R,T,WS,RH,WD,EV,AP	1929-44; 1950-59; 1987-92; 1994-2012	51
42	Ban Lao Ngam	Lao PDR	R,T,WS,RH,WD	1930-33; 1935-39; 1989-2012	33
43	Muang Khong	Lao PDR	R,T,WS,RH,WD	1932; 1935; 1937-38; 1964-74; 1979-83; 1985-89; 1991-2012	47
44	Ban Hin Heup	Lao PDR	R,T,WS,RH,WD	1968-76; 1990-2012	32
45	Soukhouma	Lao PDR	R,T,WS,RH,WD	1979-92; 1995-2012	32
46	Oudomxay	Lao PDR	R,T,WS,RH,WD,EV,AP	1991; 1993-2012	21
47	Thateng (Sekong prov.)	Lao PDR	R,T,WS,RH,WD		
48	Udon Thani	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1950-2012	63
49	Korat	Thailand	R,EV	1950-2012	63
50	Surin	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1950-2012	63
51	Ubon	Thailand	R,SR	1950-2012	63
52	Khon Kaen	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1950-2012	63
53	Mukdahan	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1950-2012	63
54	Roi Et	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1951-2012	62
55	Nong Khai	Thailand	R,T,WS,WD,RH,EV,AP,SD, SR,CL,V	1952-2012	61
56	Loei	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1953-2012	60
57	Nakhon Phanom	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1953-2012	60

No	Station	Country	Meteorological Parameters	Year	No. of years
58	Sakon Nakhon	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1953-2012	60
59	Chaiyaphum	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1953-2012	60
60	Phayao	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1953-72; 1981-2012	52
61	Nang Rong	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1961-77; 1989-2012	40
62	Chiang Rai	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1962-2012	51
63	Ban Song Khon	Thailand	R,EV	1962-2012	51
64	Nakhon Ratchasima	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1962-2012	51
65	Ubon Ratchathani	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1962-2012	51
66	Ban Nong Mek	Thailand	R,EV	1963-2012	50
67	Nam San Dam Site	Thailand	R,EV	1964-2012	49
68	Wang Saphung	Thailand	R,EV	1966-2012	47
69	Ban Tha Kok Daeng	Thailand	R,EV	1966-2012	47
70	Tha Bo	Thailand	R,EV	1966-2012	47
71	Khong Chiam	Thailand	R,EV	1966-2012	47
72	Chiang Khan	Thailand	R,SR	1967-2012	46
73	Ban Pak Huai	Thailand	R,EV	1967-2012	46
74	Chiang Saen	Thailand	R,EV	1968-2012	45
75	Ban Kham Pa Lai	Thailand	R,EV	1968-2012	45
76	Khao Ing Rod	Thailand	R,EV	1969-2012	44
77	Ban Mae Ai	Thailand	R,EV	1970-2012	43
78	Ban Tha Tang	Thailand	R,EV	1970-2012	43
79	Aranyaprathet	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1970-2012	43
80	Tha Tum	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1971-2012	42
81	Kosum Phisai	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1971-2012	42
82	Ban Dong Yen	Thailand	R,EV	1973-2012	40
83	Ban Som Sa At	Thailand	R,EV	1973-2012	40
84	Ban Sri Boon Ruang	Thailand	R,EV	1973-2012	40
85	Ban Thuam	Thailand	R,EV	1973-2012	40
86	Mae Suai Dam Site	Thailand	R,EV	1974-2012	39
87	Ban Non Tum	Thailand	R,EV	1978-2012	35
88	Chok Chai	Thailand	R,T,WS,WD,RH,EV,AP,SD, CL,V	1995-2012	18
89	Can Tho	Viet Nam	R,RQ,Ta,Tg,WS,WD,RH,EV, AP,SD,SR,CL	1912; 1918-24; 1926-33; 1937-45; 1948-2012	90
90	Con Dao (ConSon)	Viet Nam	R,Ta,WS,WD,RH,AP, SD,CL	1931-2012	82

No	Station	Country	Meteorological Parameters	Year	No. of years
91	Vung Tau	Viet Nam	R,RQ,Ta,WS,WD,RH,AP,SD,CL	1934-39; 1948-54,56-2012	70
92	Soc Trang	Viet Nam	R,Ta,Tg,WS,WD,RH,AP,SD,CL	1949-53; 1956-2012	62
93	Rach Gia	Viet Nam	R,Ta,WS,WD,RH,AP,SD,CL	1956-2012	57
94	Phu Quoc	Viet Nam	R,Ta,WS,WD,RH,AP,SD,CL	1957-2012	56
95	Ca Mau	Viet Nam	R,RQ,Ta,Tg,WS,WD,RH,EV,AP,SD,CL	1957-2012	56
96	Ha Tien	Viet Nam	R,Ta,RH	1958-65	8
97	My Tho	Viet Nam	R,RQ,Ta,Tg,WS,WD,RH,SD,CL	1961-2012	52
98	Long Xuyen	Viet Nam	R,Ta,RH	1961-72	12
99	Tay Ninh	Viet Nam	R,RQ,Ta,Tg,WS,WD,RH,SD,CL	1976-2012	37
100	Tan An	Viet Nam	R,Ta,WS,WD,RH,SD,CL	1976-2012	37
101	Vinh Long	Viet Nam	R,Ta,WS,WD,RH,CL	1976-2012	37
102	Cao Lanh	Viet Nam	R,Ta,Tg,WS,WD,RH,SD,CL	1976-2012	37
103	Chau Doc	Viet Nam	R,Ta,Tg,WS,WD,RH,SD,CL	1976-2012	37
104	Ben Tre	Viet Nam	R,Ta,WS,WD,RH,SD,CL	1976-2012	37
105	Bac Lieu	Viet Nam	R,Ta,Tg,WS,WD,RH,SD,CL	1976-2012	37
106	Kon Tum	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,SR,CL	1976-2012	37
107	Pleiku	Viet Nam	R,RQ,Ta,Tg,WS,WD,RH,EV,AP,SD,CL	1976-2012	37
108	Buon Me Thuat	Viet Nam	R,RQ,Ta,Tg,WS,WD,RH,EV,AP,SD,CL	1977-2012	36
109	Jun Pa	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1978-2012	35
110	Ma Drac	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1978-2012	35
111	Dac Nong	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1978-2012	35
112	Lak	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1978-2012	35
113	Eakmat	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1978-2012	35
114	An Khe	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1980-2012	33
115	Dak To	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1981-2012	32
116	Buon Ho	Viet Nam	R,Ta,Tg,WS,WD,RH,EV,SD,CL	1982-2012	31
117	Cang Long	Viet Nam	R,Ta,Tg,WS,WD,RH,SD,CL	1986-2012	27
118	Ba Tri	Viet Nam	R,Ta,Tg,WS,WD,RH,SD,CL	1994-2012	19

Annex II Inventory of meteorological data of the MRC dataset

1. Precipitation

No.	Station ID	Name	Country	Year	No. of years
1	33401	Bassac Chaktomouk	Cambodia	1980-1994; 1996-1997; 2006-2008	20
2	100303	Sihanouk Ville	Cambodia	1971-1974; 1982-1988; 1992-1994	14
3	100401	Kampot	Cambodia	1965; 1971-1973; 1982-1994; 1996; 2000-2008	27
4	100403	Kirivong	Cambodia	2001-2007	7
5	100404	Bokor/Ferme	Cambodia	1963-1964	2
6	100406	Angtassom	Cambodia	1939-1942; 1961-1964; 2002	9
7	100408	Takeo (Ville)	Cambodia	1920-1930; 1939; 1953-1956; 1958-1966; 1968; 1982-2000; 2005	46
8	100409	Chikhmar	Cambodia	1981-2000	20
9	100412	Tani	Cambodia	1938; 1961-1964; 1988; 1992; 1996-2000; 2003	13
10	100416	Bontey Meas	Cambodia	2001-2007	7
11	100417	Chumkiri	Cambodia	2001-2007	7
12	100418	Dorng Tong	Cambodia	2001-2007	7
13	100419	Angkor Borey	Cambodia	2001-2004; 2006-2007	6
14	100420	Doun Keo	Cambodia	2001-2007	7
15	100421	Koh Andet	Cambodia	2001-2007	7
16	110303	Koh Kong (Ville)	Cambodia	1972; 1974; 2004	3
17	110401	Chhouk	Cambodia	2001-2002; 2004-2007	6
18	110402	Kompong Kantout	Cambodia	1997	1
19	110403	Tonle Baty	Cambodia	2001; 2004; 2007	3
20	110404	Kompong Speu	Cambodia	1920-1930; 1939; 1957-1964; 1972; 1982-1997; 2000-2008	46
21	110405	Kompong Tralach	Cambodia	1920-1925; 1927-1928; 1930; 1961-1964; 1988; 1992; 1994; 1996-2002; 2006-2007	25
22	110406	Prek Leap	Cambodia	1950-1956; 1958-1964	14
23	110407	Slakou	Cambodia	1939-1942; 1962-1965; 1967	9
24	110408	Petit (Takeo)	Cambodia	1968	1
25	110409	Takhmao	Cambodia	1954-1956; 1958-1964; 1984-1994; 1996; 2000-2002; 2005; 2007	27
26	110410	Bat Rocar	Cambodia	1939-1942; 1961-1964	8
27	110411	Phnom Penh (Ville)	Cambodia	1963-1967; 1980-1994, 1996-1997	22

No.	Station ID	Name	Country	Year	No. of years
28	110413	Phnom Srouch	Cambodia	1987-1988; 1990-1994; 1996-2007	19
29	110414	Tuol Khpos	Cambodia	2000-2001	2
30	110415	Tuol Khpos	Cambodia	1988; 1992; 1996-2006	13
31	110416	Sre Khlong	Cambodia	2001-2005; 2007	6
32	110419	Kraing Ampil	Cambodia	2002; 2004; 2007	3
33	110421	Kirirom	Cambodia	2001-2002; 2004-2005	4
34	110423	Thnal Tetung	Cambodia	1996-2002; 2004-2007	11
35	110425	Pochentong	Cambodia	1920-1921; 1923-1938; 1940-1943; 1946-1954; 1957-1964; 1970-1974; 1981-2008	67
36	110426	Chruy Changvar	Cambodia	1951-1952; 1954-1956; 1958-1959; 1981-1988; 1991-1997; 2000	23
37	110427	Batheay	Cambodia	1951-1956; 1958-1961; 2000-2002	13
38	110428	Tbong Khmum	Cambodia	1988; 1991-1996; 1998-2002	12
39	110429	Boeung Leach	Cambodia	2000-2004; 2007	6
40	110430	Samaki Meanchey	Cambodia	1988; 1992; 1996-2008	15
41	110431	Baset	Cambodia	1988; 1992; 1996-2005	12
42	110432	Kong Pisey	Cambodia	1981-1988; 1992; 1995-2002; 2004-2007	21
43	110433	Oral	Cambodia	1997-2007	11
44	110434	O Taroat	Cambodia	2001-2002; 2004-2005; 2007	5
45	110435	Prey Pdoa	Cambodia	1997; 1999-2002; 2004-2007	9
46	110436	Prey Dop	Cambodia	2001-2002; 2004-2005; 2007	5
47	110437	Sdock	Cambodia	2001-2002; 2004-2007	6
48	110438	Kampong Toul	Cambodia	2001-2003; 2005	4
49	110439	Prek Anchagn	Cambodia	2001-2006	6
50	110441	Samroung	Cambodia	1998-2004; 2007	8
51	110445	Trapeang Chor	Cambodia	2001-2002; 2004-2005; 2007	5
52	110446	Prey Lvear	Cambodia	2001-2002	2
53	110448	Chambak	Cambodia	2001-2002	2
54	110449	Cholear	Cambodia	2000-2002	3
55	110450	MRCS (Phnom Penh)	Cambodia	2000-2004	5
56	110503	Svay Rieng	Cambodia	1962-1974; 1980-1989; 1991-2008	41
57	110504	Chup	Cambodia	1938; 1948-1950; 1958-1964	11
58	110505	Snail Pol	Cambodia	1939-1942; 1964	5
59	110511	Prek Tameak	Cambodia	2001-2007	7
60	110512	Kamchay Mea	Cambodia	2001-2007	7
61	110513	Kanchreach	Cambodia	2001-2007	7

No.	Station ID	Name	Country	Year	No. of years
62	110514	Prey Veng	Cambodia	1920; 1922-1925; 1927-1928; 1939-1942; 1961; 1969-1970; 1984-2008	39
63	110515	Pongnear Krek	Cambodia	2000-2002	3
64	110517	Sre Seam	Cambodia	2000-2002	3
65	110518	Peam Raing (Leuk Dek)	Cambodia	2001-2003	3
66	110519	Saang	Cambodia	2001-2002; 2004	3
67	110520	Bar Phnom	Cambodia	2001-2007	7
68	110521	Kampong Leav	Cambodia	2002; 2004-2005	3
69	110522	Kompong Trabek	Cambodia	1922; 1927; 1939-1942; 2001-2007	13
70	110523	Mesaing	Cambodia	2001-2007	7
71	110524	Peam Ror	Cambodia	2001-2007	7
72	110525	Pear Raing	Cambodia	2001-2002; 2004-2007	6
73	110526	Chroy Thmar	Cambodia	1981-1994; 1996-2000; 2002-2003	21
74	110605	Mimot	Cambodia	1930; 1938-1939; 1949-1956; 1959-1964; 2000-2002	20
75	110606	Chalang	Cambodia	1938-1939; 1948-1956; 1958-1964	18
76	110607	Kantroy	Cambodia	1938-1939; 1948-1956; 1958-1964	18
77	110608	Peam Chikang	Cambodia	2000-2002	3
78	120202	Pailin	Cambodia	1960-1974; 2000-2008	24
79	120205	Chamlong Kuoy	Cambodia	2000-2002	3
80	120206	Treng	Cambodia	2000-2002	3
81	120213	Rattanak Mondol	Cambodia	2000-2002, 2007-2008	5
82	120301	Tuol Krous	Cambodia	1961-1965; 2001-2002	7
83	120302	Pursat	Cambodia	1920-1923; 1926; 1928; 1930; 1934-1935; 1939-1942; 1952-1964; 1973; 1981-2008	55
84	120303	Maung Russey	Cambodia	1935-1940; 1951-1953; 1961-1964, 1988; 1992-2002; 2004; 2006-2008	29
85	120304	Dap Bat	Cambodia	1952-1968; 2000-2002; 2004-2007	24
86	120305	Raing Kesey	Cambodia	1939-1940; 1960-1964	7
87	120306	Leach	Cambodia	1940-1942; 1961; 1963-1964	6
88	120309	Talo	Cambodia	1999-2007	9
89	120311	Cheang Meanchey	Cambodia	2000-2002	3
90	120312	Kravanh	Cambodia	1988; 1992; 1994-1996; 1998-2007	15
91	120313	Peam	Cambodia	2000-2002; 2004-2007	7
92	120314	Ptas ROUNG	Cambodia	2000-2002	3

No.	Station ID	Name	Country	Year	No. of years
93	120320	Beoung Kantot	Cambodia	1988; 1992; 1994-1996; 1999-2007	14
94	120401	Kompong Chhnang	Cambodia	1920; 1922-1925; 1927; 1929-1939; 1952-1953; 1961-1974; 1982-1994; 1996-2008	59
95	120402	Staung	Cambodia	1925; 1939-1941; 1961-1964; 1997-2007	19
96	120403	Krakor	Cambodia	1930; 1939-1943; 1946-1953; 1960-1972; 1988; 1992; 1994-1996; 1999-2007	41
97	120404	Kompong Thom	Cambodia	1920; 1922-1925; 1927-1943; 1953-1956; 1960-1967; 1969-1970; 1981-2008	64
98	120406	Bamnak	Cambodia	1939-1942; 1961-1964; 1993; 1999-2007	18
99	120407	Sdoc Ach Romeas	Cambodia	1961-1964	4
100	120408	Pha Ao	Cambodia	1952-1956; 1958-1964	12
101	120410	Baribo	Cambodia	1961-1964; 2003-2004	6
102	120411	Boeung Por	Cambodia	2000-2002; 2004; 2007	5
103	120414	Doun Pean	Cambodia	2000-2002	3
104	120415	Kompong Leang	Cambodia	1988; 1992; 1994; 1996- 2004; 2007	13
105	120416	Rolear Phear	Cambodia	1988; 1992; 1994; 1996-2007	15
106	120417	Ponley	Cambodia	1930; 1988; 1992; 1994; 1996-1998; 2000-2007	15
107	120418	Pong Ro	Cambodia	2000-2004; 2007	6
108	120419	Krang Tamoung	Cambodia	2000-2003	4
109	120420	Tuk Phos	Cambodia	1988; 1992; 1994; 1996-2007	15
110	120421	Prey Chhor	Cambodia	2000-2002	3
111	120422	Prasat Balang	Cambodia	2000-2002; 2007	4
112	120423	Stung Chinit	Cambodia	1985 -2007	23
113	120424	Kondal Chrass	Cambodia	2000-2005	6
114	120425	Prey Prous	Cambodia	1997-2007	11
115	120426	Beoung Khnar	Cambodia	1994-1996; 2001-2007	10
116	120427	Tpaung	Cambodia	2001-2002; 2004-2007	6
117	120502	Stung Trang	Cambodia	1985-1987; 1992; 2001-2002	6
118	120503	Baray	Cambodia	1920; 1922; 1924-1942; 1952; 1962-1964; 1997-2007	36
119	120504	Kompong Cham	Cambodia	1920; 1922; 1925; 1927- 1933; 1936; 1938-1939; 1941-1943; 1947; 1961-1972; 1980-1994; 1996-2002; 2005	52

No.	Station ID	Name	Country	Year	No. of years
120	120505	Sambor	Cambodia	1920; 1922-1925; 1927-1928; 1930; 1938-1939; 1961-1964; 2000-2003; 2006-2008	21
121	120506	Prek Kak	Cambodia	1938-1939; 1942; 1948-1954; 1956; 1958-1960; 1962-1964	17
122	120507	Chamcar Andong	Cambodia	1930;1939-1941; 1948-1956; 1958-1964	20
123	120508	Chhlong	Cambodia	1938-1939; 1950-1956; 1958-1964; 1999-2003; 2006-2007	23
124	120509	Chamcar Leur	Cambodia	1938; 1954-1956; 1958-1964; 2000-2002	14
125	120511	Prey Totung	Cambodia	1952-1955; 1958-1964	11
126	120513	Prek Prasap	Cambodia	2000-2003; 2006-2007	6
127	120514	Skoun	Cambodia	1925; 1927-1928; 1930; 1938-1939	6
128	120515	Kompong Seam	Cambodia	1997; 2000-2002	4
129	120516	Prasat Sambo	Cambodia	2000-2007	8
130	120517	Taing Kok	Cambodia	1985-1986; 1988; 1992-1994; 1996-2007	18
131	120518	Taing Krasaing	Cambodia	1997-2007	11
132	120519	Krouch Chmar	Cambodia	2000-2002	3
133	120520	Cham Bac	Cambodia	2000-2003; 2006-2007	6
134	120551	Wattanak	Cambodia	2000-2003; 2006	5
135	120602	Peam Te	Cambodia	1997; 2000-2003; 2006-2007	7
136	120603	Kratie	Cambodia	1920; 1922-1925; 1928; 1930-1935; 1937-1943; 1960-1969; 1980-1986; 1988; 1992-2008	54
137	120604	Prek Chhlong	Cambodia	1938-1939; 1949-1956; 1958-1964	17
138	120606	Snoul	Cambodia	1930; 1938-1939; 1954; 1956; 1958-1970; 1997; 2000-2002; 2006-2007	24
139	120607	Svay Chras	Cambodia	2002-2003; 2006-2007	4
140	120608	Kbal Domrey	Cambodia	2001-2002	2
141	120610	Tomproong	Cambodia	2000-2002	3
142	120611	Kantout	Cambodia	2001-2003; 2006-2007	5
143	120612	Svay Chek	Cambodia	2001; 2003-2005	4
144	120702	Sen Monorom	Cambodia	1966	1
145	120703	O Raing	Cambodia	1958-1965; 1967	9
146	130202	Sisophon	Cambodia	1961-1972; 1987-1996; 2000-2003; 2005-2006	28
147	130205	Svay Chek	Cambodia	2000-2005	6

No.	Station ID	Name	Country	Year	No. of years
148	130208	Bovel	Cambodia	2000-2002; 2006	4
149	130209	O Chrov	Cambodia	2001-2003	3
150	130210	Komrieng	Cambodia	2000-2002	3
151	130211	Komping Pouy	Cambodia	2000-2002	3
152	130212	Roung Chrey	Cambodia	1981-2002	22
153	130215	Samlot	Cambodia	2000-2002	3
154	130301	Banan	Cambodia	2000-2002	3
155	130302	Kralanh (Khum)	Cambodia	2002; 2005-2006	3
156	130304	O Taky	Cambodia	2000-2002	3
157	130305	Battambang	Cambodia	1920; 1922-1940; 1951-1956; 1958; 1960-1974; 1981-1997; 2000-2002; 2004; 2007	64
158	130306	Airport/Siem Reap	Cambodia	1981-2008	28
159	130307	Kralanh (Kealanh)	Cambodia	1920; 1922; 1924-1925; 1927-1928; 1939, 1961-1964; 1988; 1992; 1996-2007	25
160	130308	Phnom Srok	Cambodia	1938-1940; 1961-1964; 1999-2005	14
161	130309	Chong Kal	Cambodia	1998; 2000	2
162	130310	Angkor Wat	Cambodia	2001-2002	2
163	130311	Sasar Sdam	Cambodia	2001-2002; 2005-2006	4
164	130313	Tuol Samraung	Cambodia	1934; 1936-1940; 2000-2002	9
165	130314	Bac Prea	Cambodia	1933-1940	8
166	130315	Mongkol Borey	Cambodia	1939-1940; 2001-2005	7
167	130316	Pranat Preah	Cambodia	2001-2005	5
168	130317	Thmar Pouk	Cambodia	2001-2005	5
169	130318	Boeung Raing	Cambodia	2000-2002	3
170	130319	Thmar Kol	Cambodia	1988; 1992; 1994-1996; 1998-2002	10
171	130320	Angkor Chum	Cambodia	1997-2003; 2005-2008	11
172	130321	Prasat Bakong	Cambodia	1997-2003; 2005-2007	10
173	130322	Banteay Srey	Cambodia	1998-2007	10
174	130323	Khum Lvear	Cambodia	2001-2002; 2006	3
175	130324	Phnom Krom	Cambodia	2001-2002; 2005-2006	4
176	130325	Siem Reap Koktatry	Cambodia	1920; 1922-1925; 1927-1928; 1930; 1939; 1950-1957; 1961-1964; 1969; 1981-1987; 1989-1999; 2005	41
177	130326	Srey Snam	Cambodia	2001-2002; 2004-2007	6
178	130327	Svay Leu	Cambodia	2001-2002; 2005-2006	4
179	130328	Varin	Cambodia	2001-2007	7
180	130329	Srok Pouk	Cambodia	1998-1999	2
181	130403	Phnom Koulén	Cambodia	2001-2002; 2005-2008	6
182	130404	Dam Dek	Cambodia	1988; 1990-1992; 1996-2002	11

No.	Station ID	Name	Country	Year	No. of years
183	130405	Kompong Kdei	Cambodia	1961-1970; 1992; 1996-2002; 2004	19
184	130406	Tbeng (Sdau)	Cambodia	2002	1
185	130501	Stung Treng	Cambodia	1920; 1922-1923; 1925; 1928; 1930; 1938-1939; 1943; 1951; 1953-1959; 1961-1969, 1986-1987; 1990-1992; 1994; 1999-2008	42
186	130503	Rovieng	Cambodia	1961-1962; 1969	3
187	130505	Sondan	Cambodia	1997-2002; 2004-2007	10
188	130506	Seam Bork	Cambodia	2001-2002; 2004; 2006-2007	5
189	130507	Tala Borivat	Cambodia	2001-2002; 2004-2007	6
190	130528	Stung Treoung	Cambodia	2000	1
191	130602	Ban Lung	Cambodia	2000-2002; 2004-2007	7
192	130603	Lumphat	Cambodia	1961-1965; 1967; 2000-2002; 2004-2005	11
193	130604	O Krieng	Cambodia	1963; 1969; 2000-2003; 2006-2007	8
194	130605	Sesan	Cambodia	2001-2002; 2004-2007	6
195	130704	Bor Keo	Cambodia	1961; 2000-2002; 2004	5
196	130705	O Chum	Cambodia	2000-2002; 2004-2005; 2007	6
197	140305	Samroong Chongkal	Cambodia	1922-1925; 1927-1928; 1939; 1961-1962; 1964	10
198	140602	Voeun Sai	Cambodia	1920; 1922-1925; 1927-1928; 1930; 1936-1937; 1954; 1961-1968; 2000-2002; 2005	23
199	140603	Seam Pang	Cambodia	1925; 1935; 1998-2002; 2004-2007	11
200	160308	Seam Pang	Cambodia	1982-2005	24
201	430102	Siem Pang	Cambodia	1988; 1992; 1996; 1998-2001	7
202	440101	Ban Kamphun	Cambodia	1998-2000	3
203	440103	Andaung Meas	Cambodia	2000-2002; 2004-2005	5
204	520101	Mongkol Borey	Cambodia	1989-1992; 1994; 1998-2000	8
205	580101	Pursat	Cambodia	2001	1
206	581102	Campang	Cambodia	1999-2007	9
207	590101	Boribo	Cambodia	2007-2008	2
208	620101	Kompong Thmar	Cambodia	1998-2000; 2006	4
209	640103	Peam Khley (dam site)	Cambodia	2001-2002; 2004-2005	4
210	80101	Muong Namtha	Lao PDR	2007-2008	2
211	140501	Muong Khong	Lao PDR	1932; 1935; 1937-1938; 1964-1974; 1979-2003; 2005; 2008	42
212	140503	Phiafay	Lao PDR	1930; 1935-1939; 1964-1971; 1991	15

No.	Station ID	Name	Country	Year	No. of years
213	140504	Mounlapamok	Lao PDR	1965-1970; 1979-1987; 1989-2001; 2003-2008	34
214	140505	Pathoumphone	Lao PDR	1979-1984; 1986; 1990; 1993-2005; 2007-2008	23
215	140506	Soukhouma	Lao PDR	1979-1992; 1994-2008	29
216	140507	Muang Champasack	Lao PDR	1994-2008	15
217	140705	Attapeu	Lao PDR	1929-1930; 1932-1933; 1935-1938; 1943-1944; 1988-2008	31
218	150504	Pakse	Lao PDR	1929-1939; 1950-2008	70
219	150506	Khongsedone	Lao PDR	1963-1970; 1972; 1979; 1983; 1988-2008	32
220	150507	Khongsedone	Lao PDR	1964-1968; 1970-1995; 1997-2008	43
221	150508	Selabam	Lao PDR	1972-1976; 1978-1991; 1993-2000; 2006-2008	30
222	150602	Saravane	Lao PDR	1929-1933; 1935-1939; 1942; 1964; 1970; 1987-2008	35
223	150604	Laongam	Lao PDR	1930-1933; 1935-1939; 1989-2008	29
224	150605	Nonghine	Lao PDR	1979-2007	29
225	150607	Nikhom Km 34	Lao PDR	1991-1994; 1996-2008	17
226	150609	Sekong	Lao PDR	1992-1993; 1995-2008	16
227	160405	Savannakhet	Lao PDR	1927-1929; 1931-1940; 1956; 1965-1996; 2008	47
228	160502	Seno	Lao PDR	1950-1990; 1995; 1999-2008	52
229	160504	Donghen	Lao PDR	1965-1970; 1978-1979; 1986; 1988-2008	30
230	160505	Kengkok	Lao PDR	1931; 1935-1939; 1965-1967; 1989-2008	29
231	160506	Phalan	Lao PDR	1991-1994; 1997; 2001-2008	13
232	160507	Ban Keng Done	Lao PDR	1992; 1994-1995; 1997; 2000-2004; 2006	10
233	160508	Sebangnuane	Lao PDR	1991-1994; 1997-2006	14
234	160601	Muong Sepon	Lao PDR	1923-1925; 1927; 1930-1932; 1935-1938; 1990-2008	30
235	160602	Muong Nong	Lao PDR	1993-2001; 2004-2006	12
236	160603	Ban Dong	Lao PDR	1991-2005	15
237	160605	Muong Phine	Lao PDR	1929-1933; 1935-1939; 1991-2008	28
238	170109	Sanakham	Lao PDR	2001-2008	8
239	170203	Vientiane	Lao PDR	1920-1925; 1927-1943; 1949-2008	83
240	170207	Hatdockeyo	Lao PDR	1968-1996; 1999	30

No.	Station ID	Name	Country	Year	No. of years
241	170404	Thakhek	Lao PDR	1929-1932; 1935-1939; 1942; 1956; 1961-1964; 1980-1992; 1994-2008	43
242	170407	Pak Hinboun	Lao PDR	1924; 1930-1932; 1935-1938; 1941-1943; 1965-1969; 1971; 1990; 1995-1996; 2002	21
243	170501	Ban Signo	Lao PDR	1987; 1989-2006	19
244	170502	Mahaxai	Lao PDR	1929; 1931-1933; 1935; 1937-1939; 1941; 1963; 1985-2008	33
245	170503	Nakai	Lao PDR	1995-1996; 2007-2008	4
246	170505	Ban Kouanpho	Lao PDR	1995; 1997-2006	11
247	180203	Ban Nasone	Lao PDR	1963-2008	46
248	180205	Ban Hinheup	Lao PDR	1967-2008	42
249	180206	Kasy	Lao PDR	1990-2008	19
250	180207	Vang Vieng	Lao PDR	1929-1984; 1987-2008	78
251	180213	Veunkham	Lao PDR	1987-1995; 2000; 2003-2006	14
252	180221	Tadleuk	Lao PDR	1994-2000	7
253	180303	Paksane	Lao PDR	1924; 1930-1931; 1933; 1936-1939; 1941-1943; 1965-1980; 1983; 1987-1991; 1993-2008	49
254	180304	Thabok	Lao PDR	1965-1973; 1989-1995; 2002; 2004-2008	22
255	180306	Ban Pak Thouei	Lao PDR	1972-1992; 1994-2008	36
256	180307	Meuang Kao	Lao PDR	1929-2008	80
257	180308	Meuang Mai	Lao PDR	1978-2008	31
258	180405	Khamkeut (Kengkuan)	Lao PDR	1992-1995; 2000-2006	11
259	180501	Ban Nape	Lao PDR	1922-1924; 1927-1932; 1934-1945; 1993-1994; 1996-2006	34
260	180505	Ban Nape	Lao PDR	1980-1995; 2001-2006	22
261	190101	Sengkhalok	Lao PDR	1966; 1968; 1971-1975; 1988-2007	27
262	190103	Sayaboury	Lao PDR	1964-1975; 1978-1989; 1991-2006	40
263	190108	Thadeua (Sayaboury)	Lao PDR	1992-2001; 2007-2008	12
264	190202	Luang Prabang	Lao PDR	1920-1925; 1927-1943; 1950-2008	82
265	190205	Xieng Ngeun	Lao PDR	1975; 1988-2008	22
266	190301	Naluang	Lao PDR	1991-2008	18
267	190302	Xiengkhouang	Lao PDR	1929-1944; 1950-1959; 1987-1992; 1994-2008	47

No.	Station ID	Name	Country	Year	No. of years
268	190303	Ban Phiengluang	Lao PDR	1988; 1990; 1992-1993; 1997; 2002-2006	10
269	200003	Houei Sai	Lao PDR	1920-1925; 1927-1940; 1942-1945; 1974; 2006	26
270	200101	Muong Namtha	Lao PDR	1929-1933; 1936-1938; 1940-1943; 1991-2006	28
271	200201	Muong Ngoy	Lao PDR	1996-2008	13
272	200204	Oudomxay	Lao PDR	1991-2008	18
273	210201	Phongsaly	Lao PDR	1922-1925; 1927-1944; 1988; 1990-2008	42
274	320101	Se Bang Fai	Lao PDR	2004-2006	3
275	430105	Attapeu	Lao PDR	2007-2008	2
276	130201	Watthana Nakhon	Thailand	1982-2005	24
277	130204	Aranyaprathet	Thailand	1970-2005	36
278	140101	Ban Pak Huai	Thailand	1981-1991	11
279	140105	Pak Chong	Thailand	1982-1989; 1991-2005	23
280	140201	Nang Rong	Thailand	1861-2005	45
281	140202	Chok Chai	Thailand	1994-2005	12
282	140203	Pak Thong Chai	Thailand	1982-2005	24
283	140204	Khon Buri	Thailand	1982-1987; 1989-2005	23
284	140205	Korat	Thailand	1950-2005	56
285	140301	Sangkha	Thailand	1982-1987; 1989,1991;1993- 2005	29
286	140302	Surin	Thailand	1950-2005	56
287	140303	Prakhon Chai	Thailand	1980; 1982-2005	25
288	140304	Sikhoraphum	Thailand	1982-2005	24
289	140306	Prasat	Thailand	1980-1998; 2000-2003	23
290	140307	Ban Kruat	Thailand	1982-2005	24
291	140402	Khukhan	Thailand	1982-1989; 1991-2005	23
292	140502	Buntharik	Thailand	1980; 1982-2005	25
293	140601	Det Udom	Thailand	1964-2005	42
294	150101	Chatturat	Thailand	1996-2005	10
295	150102	Chaiyaphum	Thailand	1953-2005	53
296	150103	Sung Noen	Thailand	1982-2005	24
297	150104	Sikhiu	Thailand	1982-2005	24
298	150105	Dan Khun Thot	Thailand	1982-2005	24
299	150107	Bamnet Narong	Thailand	1982-1987; 1989-2005	30
300	150201	Phimai	Thailand	1982-2003	22
301	150202	Phon	Thailand	1960-1980; 1982-2005	45
302	150203	Bua Yai	Thailand	1982-2005	24
303	150205	Lamj Plai Mat	Thailand	1982-2005	24
304	150206	Khong	Thailand	1982-1994; 1996-2005	36
305	150207	Khon Sawan	Thailand	1982-2005	24
306	150208	Non Sung	Thailand	1982-1987; 1989-2005	23

No.	Station ID	Name	Country	Year	No. of years
307	150301	Buri Rum	Thailand	1952-1973; 1975-1976; 1980; 1983-1997; 1999-2005	47
308	150302	Phutthaisong	Thailand	1983-2005	23
309	150303	Rattanaaburi	Thailand	1980-2005	26
310	150304	Suwannaphum	Thailand	1980; 1982-2005	25
311	150305	Kaset Wisai	Thailand	1982-2001	20
312	150306	Phayakkaphumphisai	Thailand	1961-1989; 1991-2005	44
313	150307	Wapi Pathum	Thailand	1980-1982; 1984-1989; 1991-2005	24
314	150308	Tha Tum	Thailand	1971-2005	35
315	150309	Chaturaphakphiman	Thailand	1982-2005	24
316	150310	At Samat	Thailand	1980-2005	26
317	150311	Satuk	Thailand	1982-2005	24
318	150401	Ubon	Thailand	1950-2005	56
319	150402	Yasothon	Thailand	1966-1975; 1987-2001; 2003-2005	28
320	150403	Amnat Chareon	Thailand	1966-73; 1975; 1982-2005	32
321	150404	Sisaket	Thailand	1952-2005	54
322	150405	Phanom Phrai	Thailand	1981-2005	25
323	150406	Uthumphon Phisai	Thailand	1980-1987; 1989-90; 1992- 1994; 1999	14
324	150407	Rasi Salai	Thailand	1968-2005	38
325	150408	Kham Keut Kaeo	Thailand	1977-2005	29
326	150409	Khuang Nai	Thailand	1971-1974; 1980; 1982-2005	29
327	150410	Muang Samsip	Thailand	1981-2003	22
328	150411	Warin Chamrap	Thailand	1982; 1984-2001; 2003-2005	22
329	150501	Phibun Mangsahan	Thailand	1980-2005	26
330	150502	Trakan Phutphon	Thailand	1981-2005	25
331	150503	Khong Chiam	Thailand	1977-2005	28
332	150507	Ban Nong Mek	Thailand	1964-1968; 1970-1995; 1997-2005	40
333	160103	Kaset Sombun	Thailand	1982-2005	24
334	160104	Ban Song Khon	Thailand	2000-05	6
335	160105	Ban Si Than	Thailand	1975-2005	31
336	160106	Phu Kradung	Thailand	1971-1980; 1982-2005	34
337	160111	Ban Non Tum	Thailand	1985-1994; 1997-2005	19
338	160201	Phu Wiang	Thailand	1980-2005	26
339	160202	Khon Kaen	Thailand	1950-2005	56
340	160203	Ban Phai	Thailand	1980; 1982-2005	25
341	160204	Ubolratana Dam	Thailand	1966-1967; 1980-1985, 1987-2005	27
342	160205	Phu Khieo	Thailand	1982-2005	24
343	160206	Mancha Khiri	Thailand	1982-2005	24
344	160207	Chum Phae	Thailand	1960-1976; 1982-2005	41
345	160208	Non Sang	Thailand	1982-1989; 1991-2005	23

No.	Station ID	Name	Country	Year	No. of years
346	160209	Chonnabot	Thailand	1982-2001; 2003	21
347	160210	Ban Na Nong Thum	Thailand	1982-1995; 1997-2005	23
348	160211	Ban Nong Rua	Thailand	1980-1994; 1997-2005	24
349	160301	Roi Et	Thailand	1951-1994; 1996-1998; 2000-2005	53
350	160302	Kalasin	Thailand	1951-1976; 1978-1982; 1984-2005	53
351	160303	Maha Sarakham	Thailand	1952-1982; 1984-2005	53
352	160304	Selaphum	Thailand	1980-2005	26
353	160305	Phon Thong	Thailand	1982-1983; 1985-1995; 1997-98; 2000-2003	19
354	160306	Sahatsakhan	Thailand	1981-1998; 2000-2003; 2005	23
355	160307	Yang Talat	Thailand	1981-2005	25
356	160308	Kantharawichai	Thailand	1982-2005	24
357	160309	Kosum Phisai	Thailand	1971-2005	35
358	160310	Kamalasai	Thailand	1980-1997; 2001-2005	23
359	160312	Borabu	Thailand	1981-2005	25
360	160313	Thawat Chaburi	Thailand	1971-1974; 1980-1981; 1983-2001; 2003-2005	28
361	160315	Kalasin Farm	Thailand	1975; 1989; 1991	3
362	160401	Mukdahan	Thailand	1950-2005	56
363	160402	Na Kae	Thailand	1978-2005	28
364	160403	That Phanom	Thailand	1966-2005	40
365	160404	Loeng Nok Tha	Thailand	1980-2005	26
366	160406	Kham Cha-i	Thailand	1980-2005	26
367	160407	Kuchinarai	Thailand	1962-2005	44
368	160408	Ban Kham Pa Lai	Thailand	1976-2005	30
369	160501	Chanuman	Thailand	1976-1989; 1991-2005	29
370	160503	Khemarat	Thailand	1966-2005	40
371	170101	Loei	Thailand	1953-2005	53
372	170102	Wang Saphung	Thailand	1966-2005	40
373	170103	Tha Li	Thailand	1982-2003	22
374	170104	Dan Sai	Thailand	1966-2005	40
375	170105	Chiang Khan	Thailand	1966-2005	40
376	170107	Nam San (dam site)	Thailand	1966-1968; 1970-2005	39
377	170108	Ban Rai Phuai	Thailand	1982-2005	24
378	170110	Ban Pak Huai	Thailand	1976-2005	30
379	170201	Tha Bo	Thailand	1966-2005	40
380	170202	Udon Thani	Thailand	1950-2005	56
381	170205	Ban Phu	Thailand	1978; 1981-2005	26
382	170206	Nong Khai	Thailand	1952-2005	54
383	170209	Ban Sri Boon Ruang	Thailand	1978-1995; 1997-2005	27
384	170210	Ban Som Sa At	Thailand	1978-1995; 1997-2005	27
385	170211	Ban Na Si	Thailand	1978-1995; 1997-2005	27

No.	Station ID	Name	Country	Year	No. of years
386	170212	Ban Dong Yen	Thailand	1975-1976; 1978-2005	30
387	170213	Ban Thuam	Thailand	1980-1995; 1997-2005	25
388	170301	Kumphawapi	Thailand	1980-2005	26
389	170302	Nong Han	Thailand	1980-1982; 1984-85; 1987-2005	24
390	170304	Phanna Nikhom	Thailand	1980-1982; 1984-2005	25
391	170305	Sawang Daen Din	Thailand	1961-2005	45
392	170306	Phen	Thailand	1981-2005	25
393	170307	Waritchaphum	Thailand	1982-2005	24
394	170401	Sakon Nakhon	Thailand	1953-2005	53
395	170402	Tha Uthen	Thailand	1980-2005	26
396	170403	Nakhon Phanom	Thailand	1953-2005	53
397	170405	Sisongkhram	Thailand	1980-1998; 2000-2003	23
398	170406	Ban Phaeng	Thailand	1966-2005	40
399	180208	Ban Pha Tang	Thailand	1976-2005	30
400	180301	Phon Phisai	Thailand	1966-2005	40
401	180302	Bung Kan	Thailand	1979-2005	27
402	180305	Ban Tha Kok Daeng	Thailand	1966-1968 1970-2005	39
403	180310	So Phisai	Thailand	1985-2005	21
404	190002	Chiang Kham	Thailand	1983-1985; 1987-2005	22
405	190003	Pong	Thailand	1983-1984; 1986; 1988-1994; 1996-2005	20
406	190008	Khao Ing Rod	Thailand	1976-2001	26
407	190009	Ban Huai Tham	Thailand	1980-2005	26
408	199901	Fang	Thailand	1953-1972; 1975-2008	54
409	199904	Phayao	Thailand	1953-1972; 1981-2005	45
410	199907	Chiang Rai	Thailand	1963-2005	42
411	199913	Mae Suai Dam Site	Thailand	1980-2001	22
412	200001	Chiang Khong	Thailand	1966-2005	40
413	200002	Chiang Saen	Thailand	1966-2005	40
414	209901	Mae Chan	Thailand	1982-1998; 2000-2004	22
415	209902	Ban Mae Ai	Thailand	1970-2005	36
416	209903	Mae Sai	Thailand	1983-1989; 1991; 1993-2005	21
417	80501	Nam Can	Viet Nam	1998; 2001-2006	6
418	90401	U Minh	Viet Nam	1998; 2001-2006	6
419	90501	Soc Trang	Viet Nam	1978-2007	30
420	90503	Ca Mau	Viet Nam	1985-2007	23
421	90504	Vi Thanh	Viet Nam	1998 2000-2006	7
422	90505	Kien Luong	Viet Nam	1998; 2001-2006	6
423	90506	Anbien	Viet Nam	1998; 2001-2006	6
424	90507	Bac Lieu	Viet Nam	1998; 2001-2006	6
425	90508	Ganh Hao	Viet Nam	1998; 2000-2006	6
426	90509	Phung Hiep	Viet Nam	1998; 2000-2006	6
427	90510	Phuoc Long	Viet Nam	1998; 2000-2006	6
428	90511	Thoi Binh	Viet Nam	1998; 2001-2006	6

No.	Station ID	Name	Country	Year	No. of years
429	90601	Tra Vinh	Viet Nam	1998; 2000-2006	6
430	90602	Dai Ngai	Viet Nam	1998; 2000-2006	6
431	90603	Tra Cu	Viet Nam	1998; 2001-2006	6
432	100502	Cao Lanh	Viet Nam	1995-2007	13
433	100503	Sa Dec	Viet Nam	1998; 2001-2006	6
434	100504	Rach Gia	Viet Nam	1985-2007	23
435	100505	Chau Doc	Viet Nam	1920-1930; 1957-2007	62
436	100507	Long Xuyen	Viet Nam	1998; 2000-2006	7
437	100509	Can Tho	Viet Nam	1920-1930; 1939; 1949-2007	70
438	100511	Moc Hoa	Viet Nam	1985-2007	23
439	100513	Tan Chau	Viet Nam	1998; 2000-2006	7
440	100514	Cho Moi	Viet Nam	1998; 2000-2006	7
441	100515	Hung Thanh	Viet Nam	1998; 2000-2006	7
442	100516	Nui Sap	Viet Nam	1998; 2001-2006	6
443	100517	O Mon	Viet Nam	1998; 2001-2006	6
444	100518	Tam Binh	Viet Nam	1998; 2001-2006	6
445	100519	Tan Hiep	Viet Nam	1998; 2000-2006	6
446	100520	Tri Ton	Viet Nam	1998; 2000-2006	6
447	100521	Vinh Hung	Viet Nam	1998; 2001-2006	6
448	100604	Go Cong	Viet Nam	1998; 2001-2006	6
449	100605	My Tho	Viet Nam	1985-2006	22
450	100609	Cai Lay	Viet Nam	1998; 2000-2006	7
451	100611	Tan An	Viet Nam	1998; 2001-2006	6
452	100612	Batri	Viet Nam	1998; 2001-2006	6
453	100613	Ben Luc	Viet Nam	1998; 2000-2006	6
454	100614	Cai Be	Viet Nam	1998; 2001-2006	6
455	100615	Hoa Binh	Viet Nam	1998; 2000-2006	6
456	100616	Huong My	Viet Nam	1998; 2001-2006	6
457	100617	Kien Binh	Viet Nam	1998; 2000-2006	7
458	100618	Tuyen Nhon	Viet Nam	1998; 2000-2006	7
459	100619	Vam Kinh	Viet Nam	1998; 2000-2006	7
460	120712	Dak Nong	Viet Nam	1980-1995; 2001-2006	22
461	120801	Buon Me Thuot	Viet Nam	1927-1930; 1951-2007	60
462	120805	Buon Ho	Viet Nam	1985-2006	22
463	120806	Mdrak	Viet Nam	1980-2006	22
464	130803	An Khe	Viet Nam	1980-1995; 2001-2006	22
465	130804	Ayun Pa	Viet Nam	1980-1995; 2001-2006	22
466	140703	Pleiku	Viet Nam	1927; 1930-1939; 1956-2006	62
467	140704	Kontum 2 (Lasan)	Viet Nam	1923-1942; 1961-2007	67
468	160611	Khe Sanh	Viet Nam	1980-2006	27
469	160704	Hue	Viet Nam	1980-2006	27
470	160705	A-Luoi	Viet Nam	1980-1995; 2001-2006	22
471	160706	Dong Ha	Viet Nam	1980-1995; 2001-2006	22
472	170601	Ba Don	Viet Nam	2001-2006	5
473	170602	Dong Hoi	Viet Nam	1980-1995; 2001-2006	22

No.	Station ID	Name	Country	Year	No. of years
474	170603	Tuyen Hoa	Viet Nam	1980-1995; 2001-2006	22
475	180504	Ha Tinh	Viet Nam	1980-1995; 2001-2006	22
476	180505	Huong Khe	Viet Nam	1980-1995; 2001-2006	22

2. Maximum air temperature

No.	Station ID	Name	Country	Year	No. of years
1	19802	Kompong Cham	Cambodia	2006-2008	3
2	100401	Kamptot	Cambodia	2002-2008	7
3	110413	Phnom Srouch	Cambodia	1984-2001	17
4	110425	Pochentong	Cambodia	2002-2008	7
5	110514	Prey Veng	Cambodia	2002-2008	7
6	120404	Kompong Thom	Cambodia	2003-2008	8
7	120502	Stung Trang	Cambodia	2006-2008	3
8	120504	Kompong Cham	Cambodia	1984-2001	8
9	120603	Kratie	Cambodia	2002-2008	7
10	130305	Battambang	Cambodia	1985-2001	7
11	130306	Airport/Siem Reap	Cambodia	2002-2008	7
12	130325	Siem Reap Koktatry	Cambodia	1984-2001	8
13	130501	Stung Treng	Cambodia	1984-2001	8
14	150504	Pakse	Lao PDR	1997-2008	12
15	160405	Savannakhet	Lao PDR	1998-2008	11
16	160502	Seno	Lao PDR	1998-2008	11
17	170203	Vientiane	Lao PDR	1998-2008	11
18	170404	Thakhek	Lao PDR	1998-2008	11
19	190103	Sayaboury	Lao PDR	1998-2008	11
20	190202	Luang Prabang	Lao PDR	1989-2008	20
21	150401	Ubon	Thailand	1977-1999	23
22	150503	Khong Chiam	Thailand	1977-1993	17
23	160111	Ban Non Tum	Thailand	1985-1993	9
24	160401	Mukdahan	Thailand	1977-1979	3
25	170105	Chiang Khan	Thailand	1981-1994	14
26	170202	Udon Thani	Thailand	1983-1984	2
27	170209	Ban Sri Boon Ruang	Thailand	1977-1993	17
28	170210	Ban Som Sa At	Thailand	1977-1994	18
29	170211	Ban Na Si	Thailand	1977-1993	17
30	170212	Ban Dong Yen	Thailand	1977-1992	16
31	170213	Ban Thuam	Thailand	1977-1993	17
32	170305	Sawang Daen Din	Thailand	1977-1994	18
33	180305	Ban Tha Kok Daeng	Thailand	1977-1993	17
34	190008	Khao Ing Rod	Thailand	1977-1994	18
35	190009	Ban Huai Tham	Thailand	1978-1994	17
36	199907	Chiang Rai	Thailand	1977-1994	18
37	199913	Mae Suai (dam site)	Thailand	1977-1994	18

No.	Station ID	Name	Country	Year	No. of years
38	200002	Chiang Saen	Thailand	1977-1994	18
39	209902	Ban Mae Ai	Thailand	1977-1994	18
40	90501	Soc Trang	Viet Nam	1978-2007	30
41	90503	Ca Mau	Viet Nam	1978-2007	30
42	90507	Bac Lieu	Viet Nam	1980-2007	28
43	100504	Rach Gia	Viet Nam	1979-2007	29
44	100505	Chau Doc	Viet Nam	1980-2007	28
45	100509	Can Tho	Viet Nam	1978-2007	30
46	100511	Moc Hoa	Viet Nam	1978-2007	30
47	100605	My Tho	Viet Nam	1985-2001	17
48	120801	Buon Me Thuot	Viet Nam	1977-2007	31
49	140703	Pleiku	Viet Nam	1976-2007	32
50	140704	Kontum 2 (Lasan)	Viet Nam	1976-2007	32

3. Minimum air temperature

No	Station ID	Name	Country	Year	No. of years
1	19802	Kompong Cham	Cambodia	2006-2008	3
2	100401	Kampot	Cambodia	2002-2008	7
3	110413	Phnom Srouch	Cambodia	1984-2002	19
4	110425	Pochentong	Cambodia	2002-2008	7
5	110514	Prey Veng	Cambodia	2002-2008	7
6	120404	Kompong Thom	Cambodia	2003-2008	6
7	120502	Stung Trang	Cambodia	2006-2008	3
8	120504	Kompong Cham	Cambodia	1984-2002	19
9	120603	Kratie	Cambodia	2002-2008	7
10	130305	Battambang	Cambodia	1984-2002	19
11	130306	Airport/Siem Reap	Cambodia	2002-2008	7
12	130325	Siem Reap Koktaty	Cambodia	1984-2002	19
13	130501	Stung Treng	Cambodia	1984-2002	19
14	150504	Pakse	Lao PDR	1997-2008	12
15	160405	Savannakhet	Lao PDR	1998-2008	11
16	160502	Seno	Lao PDR	1998-2008	11
17	170203	Vientiane	Lao PDR	1998-2008	11
18	170404	Thakhek	Lao PDR	1998-2008	11
19	190103	Sayaboury	Lao PDR	1998-2008	11
20	190202	Luang Prabang	Lao PDR	1988-2008	21
21	150401	Ubon	Thailand	1977-1999	23
22	150503	Khong Chiam	Thailand	1977-1993	17
23	160111	Ban Non Tum	Thailand	1985-1993	9
24	160401	Mukdahan	Thailand	1977-1979	3
25	170105	Chiang Khan	Thailand	1981-1994	14
26	170202	Udon Thani	Thailand	1983-1984	2
27	170209	Ban Sri Boon Ruang	Thailand	1977-1993	17
28	170210	Ban Som Sa At	Thailand	1977-1994	18
29	170211	Ban Na Si	Thailand	1977-1993	17

No	Station ID	Name	Country	Year	No. of years
30	170212	Ban Dong Yen	Thailand	1977-1993	17
31	170213	Ban Thuam	Thailand	1977-1993	17
32	170305	Sawang Daen Din	Thailand	1977-1994	18
33	180305	Ban Tha Kok Daeng	Thailand	1977-1993	17
34	190008	Khao Ing Rod	Thailand	1977-1994	18
35	190009	Ban Huai Tham	Thailand	1978-1994	17
36	199907	Chiang Rai	Thailand	1977-1994	18
37	199913	Mae Suai (dam site)	Thailand	1977-1994	18
38	200002	Chiang Saen	Thailand	1977-1994	18
39	90507	Bac Lieu	Viet Nam	1980-1994	15
40	100505	Chau Doc	Viet Nam	1978-2007	30
41	100509	Can Tho	Viet Nam	1978-2007	30
42	100511	Moc Hoa	Viet Nam	1978-2007	30
43	100605	My Tho	Viet Nam	1985-2001	17
44	120801	Buon Me Thuot	Viet Nam	1977-2007	31
45	140703	Pleiku	Viet Nam	1976-2007	32
46	140704	Kontum2 (Lasan)	Viet Nam	1976-2007	32

4. Average air temperature

No	Station ID	Name	Country	Year	No. of years
1	150504	Pakse	Lao PDR	1998-2008	11
2	160405	Savannakhet	Lao PDR	1998-2008	11
3	160502	Seno	Lao PDR	1998-2008	11
4	170203	Vientiane	Lao PDR	1998-2008	11
5	170404	Thakhek	Lao PDR	1998-2008	11
6	190103	Sayaboury	Lao PDR	1998-2008	11
7	190202	Luang Prabang	Lao PDR	1998-2008	11

5. Relative humidity

No	Station ID	Name	Country	Year	No. of years
1	19802	Kompong Cham	Cambodia	2007-2008	2
2	100401	Kamptot	Cambodia	2007-2008	2
3	110413	Phnom Srouch	Cambodia	1985-2002	18
4	110425	Pochentong	Cambodia	2003-2008	6
5	110514	Prey Veng	Cambodia	2003-2008	6
6	120404	Kompong Thom	Cambodia	2007-2008	2
7	120502	Stung Trang	Cambodia	2007-2008	2
8	120504	Kompong Cham	Cambodia	1985-2001	17
9	120603	Kratie	Cambodia	2007-2008	2
10	130305	Battambang	Cambodia	1985-2001	17
11	130306	Airport/Siem Reap	Cambodia	2002-2007	6
12	130325	Siem Reap Koktatry	Cambodia	1984-2001	18
13	130501	Stung Treng	Cambodia	2002-2007	6

No	Station ID	Name	Country	Year	No. of years
14	150504	Pakse	Lao PDR	1985-2001	17
15	160405	Savannakhet	Lao PDR	1984-2001	16
16	160502	Seno	Lao PDR	2004-2008	5
17	170203	Vientiane	Lao PDR	2004-2008	5
18	170404	Thakhek	Lao PDR	2004-2008	5
19	190103	Sayaboury	Lao PDR	2004-2008	5
20	190202	Luang Prabang	Lao PDR	2004-2008	5
21	130204	Aranyaprathet	Thailand	2004-2005	2
22	140201	Nang Rong	Thailand	2004-2005	2
23	140201	Dan Sai	Thailand	2004-2005	2
24	140202	Chok Chai	Thailand	2004-2005	2
25	140205	Korat	Thailand	2004-2005	2
26	140302	Surin	Thailand	2004-2005	2
27	150102	Chaiyaphum	Thailand	2004-2005	2
28	150102	Ban Wang Sai	Thailand	2004-2005	2
29	150308	Tha Tum	Thailand	2004-2005	2
30	150401	Ubon	Thailand	1977-2007	31
31	150503	Khong Chiam	Thailand	1978-2005	28
32	160111	Ban Non Tum	Thailand	1981-1993	13
33	160202	Khon Kaen	Thailand	1977-2005	29
34	160301	Roi Et	Thailand	2004-2005	2
35	160309	Kosum Phisai	Thailand	2004-2005	2
36	160401	Mukdahan	Thailand	1977-2005	29
37	170101	Loei	Thailand	2004-2005	2
38	170105	Chiang Khan	Thailand	1977-2005	29
39	170107	Nam San (dam site)	Thailand	1977-2005	29
40	170202	Udon Thani	Thailand	2004-2005	2
41	170206	Nong Khai	Thailand	1977-2005	29
42	170209	Ban Sri Boon Ruang	Thailand	1977-1998	12
43	170210	Ban Som Sa At	Thailand	1977-2005	29
44	170211	Ban Na Si	Thailand	1977-1998	12
45	170212	Ban Dong Yen	Thailand	1977-2005	29
46	170213	Ban Thuam	Thailand	1977-2005	29
48	170401	Sakon Nakhon	Thailand	2004-2005	2
49	180305	Ban Tha Kok Daeng	Thailand	1977-2005	29
50	190008	Khaolng Rod	Thailand	1977-1998	12
51	190009	Ban Huai Tham	Thailand	1977-1998	12
52	199907	Chiang Rai	Thailand	1977-2005	29
53	199913	Mae Suai (dam site)	Thailand	1977-1998	12
54	200002	Chiang Saen	Thailand	1977-1998	12
55	209902	Ban Mae Ai	Thailand	1977-2005	29
56	90501	Soc Trang	Viet Nam	1978-2007	30
57	90503	Ca Mau	Viet Nam	1978-2007	30
58	90507	Bac Lieu	Viet Nam	1980-2007	28
59	100504	Rach Gia	Viet Nam	1979-2007	29

No	Station ID	Name	Country	Year	No. of years
60	100505	Chau Doc	Viet Nam	1978-2007	28
61	100509	Can Tho	Viet Nam	1978-2007	28
62	100511	Moc Hoa	Viet Nam	1978-2007	28
63	100605	My Tho	Viet Nam	1985-2001	17
64	120801	Buon Me Thuot	Viet Nam	1977-2007	31
65	140703	Pleiku	Viet Nam	1976-2007	32
66	140704	Kontum 2 (Lasan)	Viet Nam	1976-2007	32

6. Wind speed

No.	Station ID	Name	Country	Year	No. of years
1	19802	Kompong Cham	Cambodia	2006-2008	3
2	100401	Kampot	Cambodia	2006-2008	3
3	110413	Phnom Srouch	Cambodia	1984-2002	19
4	110425	Pochentong	Cambodia	2006-2008	3
5	110514	Prey Veng	Cambodia	2006-2008	3
6	120404	Kompong Thom	Cambodia	2006-2008	3
7	120502	Stung Trang	Cambodia	2006-2008	3
8	120504	Kompong Cham	Cambodia	1984-2002	19
9	120603	Kratie	Cambodia	2006-2008	3
10	130305	Battambang	Cambodia	1984-2002	19
11	130306	Airport/Siem Reap	Cambodia	1984-2002	19
12	130325	Siem Reap Kaktatry	Cambodia	1984-2002	19
13	130501	Stung Treng	Cambodia	1984-2002	19
14	150503	Seam Pang	Cambodia	1984-2002	19
15	150504	Pakse	Lao PDR	1984-2002	19
16	160405	Savannakhet	Lao PDR	1984-2002	19
17	160502	Seno	Lao PDR	1984-2002	19
18	170203	Vientiane	Lao PDR	1984-2002	19
19	170404	Thakhek	Lao PDR	1984-2002	19
20	190103	Sayaboury	Lao PDR	1984-2002	19
21	190202	Luang Prabang	Lao PDR	1984-2002	19
22	130204	Aranyaprathet	Thailand	1983-1987	5
23	150401	Ubon	Thailand	1985-1994	10
24	160301	Roi Et	Thailand	1985-1997	13
25	160401	Mukdahan	Thailand	1985-1997	13
26	170101	Loei	Thailand	1985-1993	9
27	170202	Udon Thani	Thailand	1985-1994	10
28	170206	Nong Khai	Thailand	1985-1996	12
29	170403	Nakhon Phanom	Thailand	1985-1993	9
30	90501	Soc Trang	Viet Nam	1978-2007	30
31	90503	Ca Mau	Viet Nam	1978-2007	30
32	90507	Bac Lieu	Viet Nam	1980-2007	28
33	100504	Rach Gia	Viet Nam	1979-2007	29
34	100505	Chau Doc	Viet Nam	1978-2007	30

No.	Station ID	Name	Country	Year	No. of years
35	100509	Can Tho	Viet Nam	1978-2007	30
36	100511	Moc Hoa	Viet Nam	1978-2007	30
37	100605	My Tho	Viet Nam	1985-2001	17
38	120801	Buon Me Thuot	Viet Nam	1977-2007	31
39	140703	Pleiku	Viet Nam	1976-2007	32
40	140704	Kontum2 (Lasan)	Viet Nam	1976-2007	32

7. Evaporation

No	Station ID	Name	Country	Year	No. of years
1	19802	Kompong Cham	Cambodia	2006-2008	3
2	100303	Sihanouk Ville	Cambodia	1967-1970; 1971-1972	6
3	100401	Kampot	Cambodia	2006-2008; 1967-1969	6
4	100408	Takeo (Ville)	Cambodia	1960-1961; 1962-1965	6
5	110407	Slakou	Cambodia	1963-1964; 1965-1969	7
6	110408	Petit (Takeo)	Cambodia	1967-1970	4
7	110411	Phnom Penh (Ville)	Cambodia	1962-1970; 1971-1974	13
8	110421	Kirirom	Cambodia	1967-1969	3
9	110425	Pochentong	Cambodia	2002-2008	7
10	110503	Svay Rieng	Cambodia	1967-1969; 1969-1972	7
11	110514	Prey Veng	Cambodia	2002-2008; 1967-1969	10
12	120202	Pailin	Cambodia	1967-1970; 1971-1971; 1971-1971	6
13	120403	Krakor	Cambodia	1968-1970; 1970-1970	4
14	120404	Kompong Thom	Cambodia	2006-2008	3
15	120502	Stung Trang	Cambodia	2006-2008	3
16	120504	Kompong Cham	Cambodia	1967-1972	6
17	120510	Chamcar Krauch	Cambodia	1967-1969	3
18	120603	Kratie	Cambodia	2006-2008	3
19	120606	Snoul	Cambodia	1960-1961; 1967-1969	4
20	130202	Sisophon	Cambodia	1967-1979	4
21	130305	Battambang	Cambodia	1960-1961; 1961-1970; 1971-1973	15
22	130306	Airport/Siem Reap	Cambodia	1967-1968; 1968-1969; 1974-1974	5
23	130325	Siem Reap Koktetry	Cambodia	1967-1968; 1968-1969; 1974-1974	5
24	130407	Tbeng Meanchey	Cambodia	1968-1969	2
25	130501	Stung Treng	Cambodia	1960-1969	10
26	150504	Pakse	Lao PDR	1975-1978; 1980-1981; 1983-1986; 1986-1990; 1991-1993; 1994-2008; 1961-1964; 1964-1964; 1972-1974; 1974-1974	32
27	160405	Savannakhet	Lao PDR	1980-1981; 1983-1988; 1988- 1993; 1994-2008	29
28	160502	Seno	Lao PDR	1980-1981; 1983-1985; 1985-1988; 1989-1991; 1991-1991; 1991-1993; 1994-2008; 1961-1966	27

No	Station ID	Name	Country	Year	No. of years
29	170203	Vientiane	Lao PDR	1975-1975; 1975-1976; 1976-1979; 1980-1981; 1983-1993; 1994-2008; 1961-1965; 1971-1974	26
30	170404	Thakhek	Lao PDR	1990-1991; 1992-2008	10
31	190103	Sayaboury	Lao PDR	1980-1981; 1983-1990; 1990- 1991; 1991-1993; 1994-2008	30
32	190108	Thadeua (Sayaboury)	Lao PDR	1980-1998	19
33	190202	Luang Prabang	Lao PDR	1975-1975; 1975-1975; 1975-1978; 1978-1979; 1979-1979; 1980-1981; 1983-1985; 1985-1992; 1992-1993; 1994-2008; 1961-1963; 1966-1966; 1971-1973; 1973-1974	47
34	130204	Aranyaprathet	Thailand	1982-2005	24
35	140201	Nang Rong	Thailand	1975-2005	31
36	140201	Dan Sai	Thailand	1975-2005	31
37	140202	Chok Chai	Thailand	1975-2005	31
38	140205	Korat	Thailand	1962-2005	44
39	140302	Surin	Thailand	1962-2005	44
40	150101	Chatturat	Thailand	1979-1998	20
41	150101	Wang Saphung	Thailand	1979-1998	20
42	150102	Chaiyaphum	Thailand	1979-2005	27
43	150102	Ban Wang Sai	Thailand	1979-2005	27
44	150308	Tha Tum	Thailand	1972-2005	34
45	150401	Ubon	Thailand	1962-2005	44
46	150503	Khong Chiam	Thailand	1972-2005	34
47	150507	Ban Nong Mek	Thailand	1963-2005	43
48	160104	Ban Song Khon	Thailand	2000-2005	6
49	160111	Ban Non Tum	Thailand	1986-2005	20
50	160202	Khon Kaen	Thailand	1962-2005	44
51	160301	Roi Et	Thailand	1962-2005	44
52	160308	Kantharawichai	Thailand	1997	1
53	160309	Kosum Phisai	Thailand	1972-2005	34
54	160401	Mukdahan	Thailand	1965-2005	41
55	160403	That Phanom	Thailand	1995-1998	4
56	160408	Ban Kham Pa Lai	Thailand	1971-2005	35
57	170102	Wang Saphung	Thailand	1972-2005	34
58	170105	Chiang Khan	Thailand	1972-2005	34
59	170107	Nam San (dam site)	Thailand	1966-2005	40
60	170110	Ban Pak Huai	Thailand	1971-2005	35
61	170202	Udon Thani	Thailand	1985-2005	21
62	170206	Nong Khai	Thailand	1972-2005	34
63	170209	Ban Sri Boon Ruang	Thailand	1978-2005	28
64	170210	Ban Som Sa At	Thailand	1978-2005	28

No	Station ID	Name	Country	Year	No. of years
65	170212	Ban Dong Yen	Thailand	1977-2005	29
66	170213	Ban Thuam	Thailand	1981-2005	25
67	170401	Sakon Nakhon	Thailand	1962-2005	44
68	170403	Nakhon Phanom	Thailand	1981-2005	25
69	180208	Ban Pha Tang	Thailand	1971-2005	35
70	180305	Ban Tha Kok Daeng	Thailand	1971-2005	35
71	190008	Khao Ing Rod	Thailand	1971-2001	31
72	199904	Phayao	Thailand	1988-2005	18
73	199907	Chiang Rai	Thailand	1962-2005	44
74	199913	Mae Suai (dam site)	Thailand	1981-2001	21
75	200002	Chiang Saen	Thailand	1976-2005	30
76	209902	Ban Mae Ai	Thailand	1971-2005	35
77	209903	Mae Sai	Thailand	1994	1
78	451305	Ban Don	Viet Nam	1980-1995	16
79	90501	Soc Trang	Viet Nam	1985-2007	23
80	90507	Bac Lieu	Viet Nam	2001-2007	7
81	100504	Rach Gia	Viet Nam	1985-2007	23
82	100505	Chau Doc	Viet Nam	1985-2007	23
83	100509	Can Tho	Viet Nam	1985-2007	23
84	100511	Moc Hoa	Viet Nam	1985-2007	23
85	100605	My Tho	Viet Nam	1985-2006	22
86	120801	Buon Me Thuot	Viet Nam	1985-2007	23
87	120805	Buon Ho	Viet Nam	1982-2006	25
88	140703	Pleiku	Viet Nam	1985-2006	22
89	140704	Kontum 2 (Lasan)	Viet Nam	1980-2007	28
90	180601	Ky Anh	Viet Nam	2006	1

8. Sunshine duration

No.	Station ID	Name	Country	Year	No. of years
1	100401	Kamptot	Cambodia	1984-2001	18
2	110413	Phnom Srouch	Cambodia	1984-2001	18
3	110425	Pochentong	Cambodia	2006-2008	3
4	120504	Kompong Cham	Cambodia	1984-2001	18
5	120603	Kratie	Cambodia	1984-2001	18
6	130305	Battambang	Cambodia	1984-2001	18
7	130306	Airport/Seam Reap	Cambodia	1984-2001	18
8	130325	Siem Reap Koktatry	Cambodia	1984-2001	18
9	130501	Stung Treng	Cambodia	1984-2001	18
10	150504	Pakse	Lao PDR	1998-2008	11
11	160405	Savannakhet	Lao PDR	1998-2008	11
12	160502	Seno	Lao PDR	2001-2008	8
13	170203	Vientiane	Lao PDR	1998-2008	11
14	170404	Thakhek	Lao PDR	1998-2008	11
15	190103	Sayaboury	Lao PDR	1998-2008	11

No	Station ID	Name	Country	Year	No. of years
16	190202	Luang Prabang	Lao PDR	1998-2008	11
17	140302	Surin	Thailand	1990-1998	9
18	150401	Ubon	Thailand	1981-1999	19
19	150404	Sisaket	Thailand	1990-1998	9
20	160202	Khon Kaen	Thailand	1977-1999	23
21	160301	Roi Et	Thailand	1990-1998	9
22	160401	Mukdahan	Thailand	1998	1
23	170101	Loei	Thailand	1990-1999	10
24	170206	Nong Khai	Thailand	1977-1999	23
25	170213	Ban Thuam	Thailand	1977-1999	23
26	170401	Sakon Nakhon	Thailand	1990-1999	10
27	190009	Ban Huai Tham	Thailand	1977-1998	22
28	199907	Chiang Rai	Thailand	1978	1
29	200002	Chiang Saen	Thailand	1977-1999	23
30	209902	Ban Mae Ai	Thailand	1977-1998	22
31	90501	Soc Trang	Viet Nam	1978-2007	30
32	90503	Ca Mau	Viet Nam	1979-2007	29
33	90507	Bac Lieu	Viet Nam	1979-2007	29
34	100504	Rach Gia	Viet Nam	1979-2007	29
35	100505	Chau Doc	Viet Nam	1979-2007	29
36	100509	Can Tho	Viet Nam	1978-2007	30
37	100511	Moc Hoa	Viet Nam	1978-2007	30
38	100605	My Tho	Viet Nam	1985-2000	16
39	120801	Buon Me Thuot	Viet Nam	1982-2000	19
40	140703	Pleiku	Viet Nam	1976-2007	32

9. Solar radiation

No	Station ID	Name	Country	Year	No. of years
1	100401	Kampt	Cambodia	1984-2001	18
2	110413	Phnom Srouch	Cambodia	1984-2001	18
3	120504	Kompong Cham	Cambodia	1984-2001	18
4	120603	Kratie	Cambodia	1984-2001	18
5	130305	Battambang	Cambodia	1984-2001	18
6	130306	Airport/Seam Reap	Cambodia	1984-2001	18
7	130325	Siem Reap Koktatry	Cambodia	1984-2001	18
8	130501	Stung Treng	Cambodia	1984-2001	18
9	150504	Pakse	Lao PDR	1984-2001	18
10	160405	Savannakhet	Lao PDR	1984-2001	18
11	160502	Seno	Lao PDR	1984-2001	18
12	170203	Vientiane	Lao PDR	1984-2001	18
13	170404	Thakhek	Lao PDR	1984-2001	18
14	190103	Sayaboury	Lao PDR	1984-2001	18
15	190202	Luang Prabang	Lao PDR	1984-2001	18



Annex III Inventory of meteorological data of the GSOD dataset

Observed parameters in each station include rainfall, mean temperature, maximum temperature, minimum temperature, mean dew point, mean wind speed and maximum wind gust.

No.	Station ID	Name	Country	Year	No. of years
1	489620	Battambang	Cambodia	1952-1963; 1994	13
2	489660	Siem Reap	Cambodia	1950-1965; 1973; 1993-1994; 2006-2012	25
3	489680	Krakor	Cambodia	1952-1955; 1958-1965; 1994	14
4	489720	Stung Treng	Cambodia	1950-1957; 1963-1965	10
5	489910	Phnom Penh/Pochentong	Cambodia	1950-1965; 1973-1975; 1993- 2012	39
6	489950	Kampong Cham	Cambodia	1950-1965; 1993	17
7	489210	Bounneua	Lao PDR	2003-2012	10
8	489235	Ban Houay Xay	Lao PDR	1968-1974	6
9	489236	Nam Lieu	Lao PDR	1973	1
10	489240	Luang Namtha/M. Sin	Lao PDR	2003-2012	10
11	489245	Xieng Lom	Lao PDR	1973	1
12	489250	Oudomxay	Lao PDR	2002-2012	11
13	489260	Houei-Sai	Lao PDR	2004-2012	10
14	489286	Nam Tan Dam	Lao PDR	1973	1
15	489300	Luang Prabang	Lao PDR	1952-1974; 1977-1984; 1895- 1998; 2002-2012	47
16	489305	Vang Vieng	Lao PDR	1973	1
17	489306	Phu Cum	Lao PDR	1967-1968	2
18	489326	Ban Hong Sa	Lao PDR	1973	1
19	489350	Plaine Des Jarres	Lao PDR	1951-1960; 1979-1984; 2002- 2012	27
20	489365	Skyline/Ban San Ton	Lao PDR	1968-1970	3
21	489366	Long Tieng	Lao PDR	1973	1
22	489380	Sayaboury	Lao PDR	1973-1974; 1978-1984; 2002- 2012	20
23	489400	Vientiane	Lao PDR	1950-2012	62
24	489410	Phonhong	Lao PDR	2002-2012	11
25	489425	Phu Mieng Mane	Lao PDR	1973	1
26	489436	Pakkenyane	Lao PDR	1973	1
27	489440	Thangone	Lao PDR	2006-2012	8
28	489445	Grove Jones-2	Lao PDR	1973	1
29	489450	Paksane	Lao PDR	2009-2012	4
30	489460	Thakhek	Lao PDR	1981-1984; 2002-2012	15
31	489470	Savannakhet	Lao PDR	1968-1974; 1977-1984; 1995- 1998; 2002-2012	29
32	489475	Thakhet West	Lao PDR	1973	1

No.	Station ID	Name	Country	Year	No. of years
33	489480	Seno	Lao PDR	1950-1966; 2002-2012	28
34	489485	Bang Dong Hene	Lao PDR	1973	1
35	489486	Miung Pha Lane	Lao PDR	1966-1967; 1973	3
36	489488	Keng Kok	Lao PDR	1973	1
37	489489	Xe Bang Fai	Lao PDR	1973	1
38	489506	Xe Bang Haing	Lao PDR	1973	1
39	489520	Saravane	Lao PDR	1980-1984; 2002-2012	17
40	489525	Khong Xedone	Lao PDR	1973	1
41	489530	Sekong	Lao PDR	2009-2012	4
42	489550	Pakse	Lao PDR	1950-1962; 1964-1984; 1995-1998; 2002-2012	49
43	489555	Opakse (back-up)	Lao PDR	1973	1
44	489558	Ban Kheng Nhao	Lao PDR	1973	1
45	489559	Ban Don Talat	Lao PDR	1973	1
46	489570	Attopeu	Lao PDR	1966-1968; 1981-1984; 2002-2012	18
47	489595	Khong Island	Lao PDR	1973	1
48	483020	Doi Ang Khang	Thailand	2006-2013	7
49	483030	Chiang Rai	Thailand	1956-2012	57
50	483031	Chiang Rai International Airport	Thailand	2005-2012	8
51	483033	Nakhon Phanom	Thailand	2005-2012	8
52	483034	Roi Et	Thailand	2005-2012	8
53	483040	Chiang Rai Agromet	Thailand	2009-2012	4
54	483100	Pha Yao	Thailand	1985-2012	28
55	483500	Leoi Agromet	Thailand	2007-2012	6
56	483520	Nong Khai	Thailand	1973-2012	40
57	483530	Loei	Thailand	1954-2012	59
58	483540	Udon Thani	Thailand	1943-2012	70
59	483550	Sakon Nakhon Agromet	Thailand	2007-2012	6
60	483560	Sakon Nakhon	Thailand	1954-2012	59
61	483565	Sakhon Nakhon	Thailand	2003-2012	10
62	483570	Nakhon Phanom	Thailand	1954-2012	59
63	483580	Nakhon Phanom Agromet	Thailand	2007-2012	6
64	483600	Nongbualamphu	Thailand	2009-2012	4
65	483810	Khon Kaen	Thailand	1954-2012	59
66	483815	Nam Phung Dam (S)	Thailand	1973-2012	40
67	483830	Mukdahan	Thailand	1954-2012	59
68	483840	Tha Phra Agromet	Thailand	2007-2012	6
69	483900	Kamalasai	Thailand	2001-2012	12
70	484030	Chaiyaphum	Thailand	1956-2012	57
71	484040	Roiet Et Agromet	Thailand	2007-2012	6
72	484050	Roi Et	Thailand	1954-2012	59
73	484070	Ubon Ratchathani	Thailand	1954-2012	59

No.	Station ID	Name	Country	Year	No. of years
74	484075	Buri Ram	Thailand	1973-2012	40
75	484090	Si Saket Agromet	Thailand	2007-2012	6
76	484160	Tha Tum	Thailand	1974-2012	39
77	484310	Nakhon Ratchasima	Thailand	1954-2012	59
78	484315	Nakhon Ratchasima	Thailand	1973-2011	39
79	483820	Kosumphisai	Thailand	1987-2012	26
80	484320	Surin	Thailand	1954-2012	59
81	484330	Surin Agromet	Thailand	2007-2012	6
82	484340	Chok Chai	Thailand	1985-2012	28
83	484360	Nang Rong	Thailand	1985-2012	28
84	484370	Buri Ram	Thailand	2005-2012	8
85	484620	Aranyaprathet	Thailand	1954-2012	59
86	488505	Khe Sanh	Viet Nam	1967-1971	5
87	488580	Pleiku AB/CU Hanh	Viet Nam	1973-1975	3
88	488660	Pleiku City	Viet Nam	1958-2012	56
89	488695	Kontum	Viet Nam	1968-1970	3
90	488750	Banmethuot	Viet Nam	1957-2012	57
91	489100	Vinh Long	Viet Nam	1963-1992	30
92	489110	Can Tho	Viet Nam	1963-1964	2
93	489111	Phong Dinh/Can Tho	Viet Nam	1963-1975	13
94	489125	Binh Thuy/Phong Din	Viet Nam	1965-1975	11
95	489130	Ba-Xuyen/Soc Trang	Viet Nam	1951-1992	42
96	489140	Ca Mau	Viet Nam	1957-2012	57
97	749310	Piet Djereng/Three Tango	Viet Nam	1966-1967	2
98	749311	Jackson Hole Army Instl	Viet Nam	1966-1967	1
99	749312	Buon Blech Ai/Ban Blech	Viet Nam	1966-1967	1
100	749313	Dak To Viet Nam Ai	Viet Nam	1967-1969	3



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