

# 1-5 Tributary Basin Boundary of Northeast Region

**Note:**  
Data Source: RID, DWR

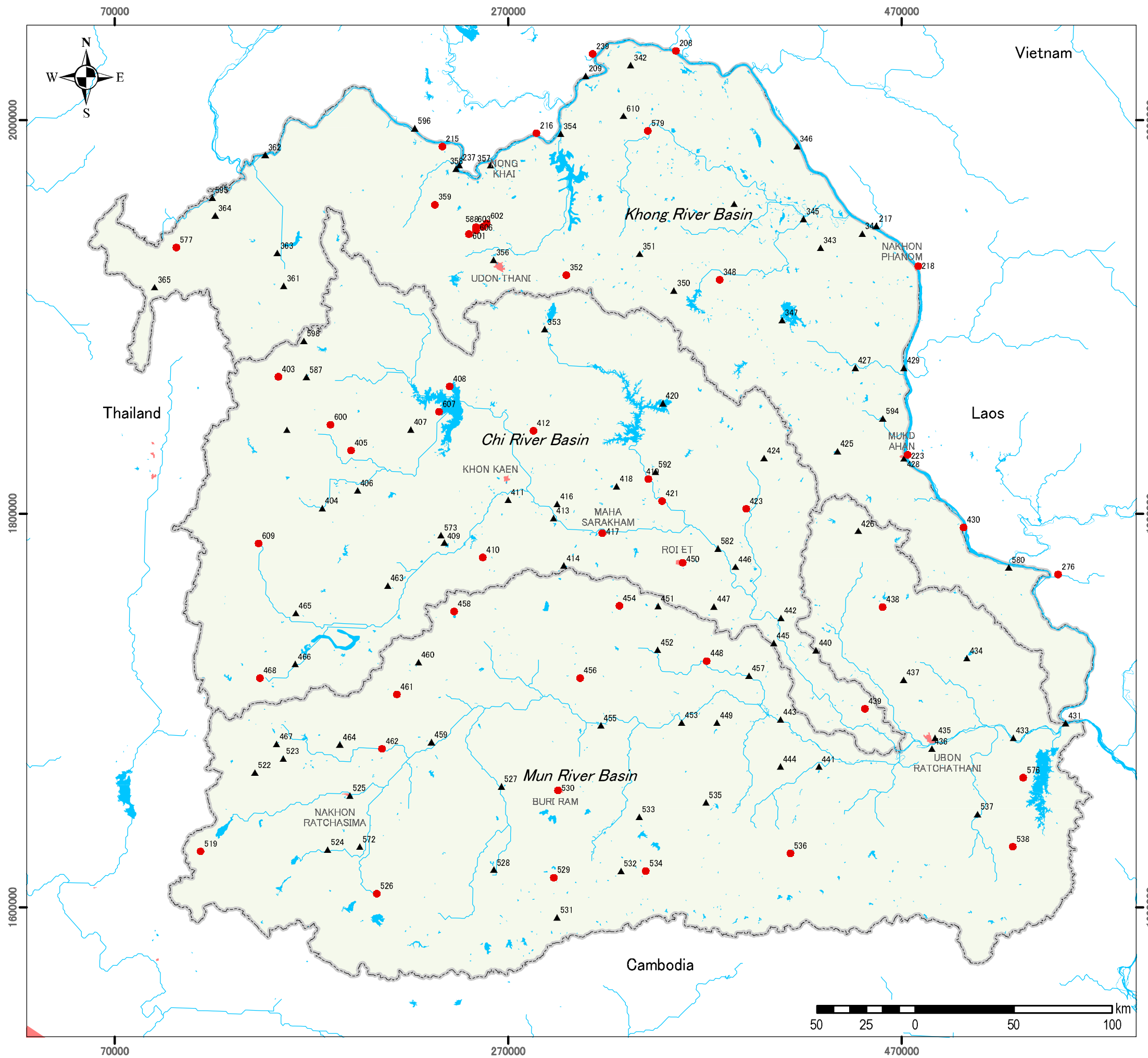
**Date:** September 2010

### LEGEND

- International Boundary
- Khong River Basin
- Chi River Basin
- Mun River Basin
- Tributary Basin Boundary
- Reservoirs/Ponds
- Rivers
- Built Area

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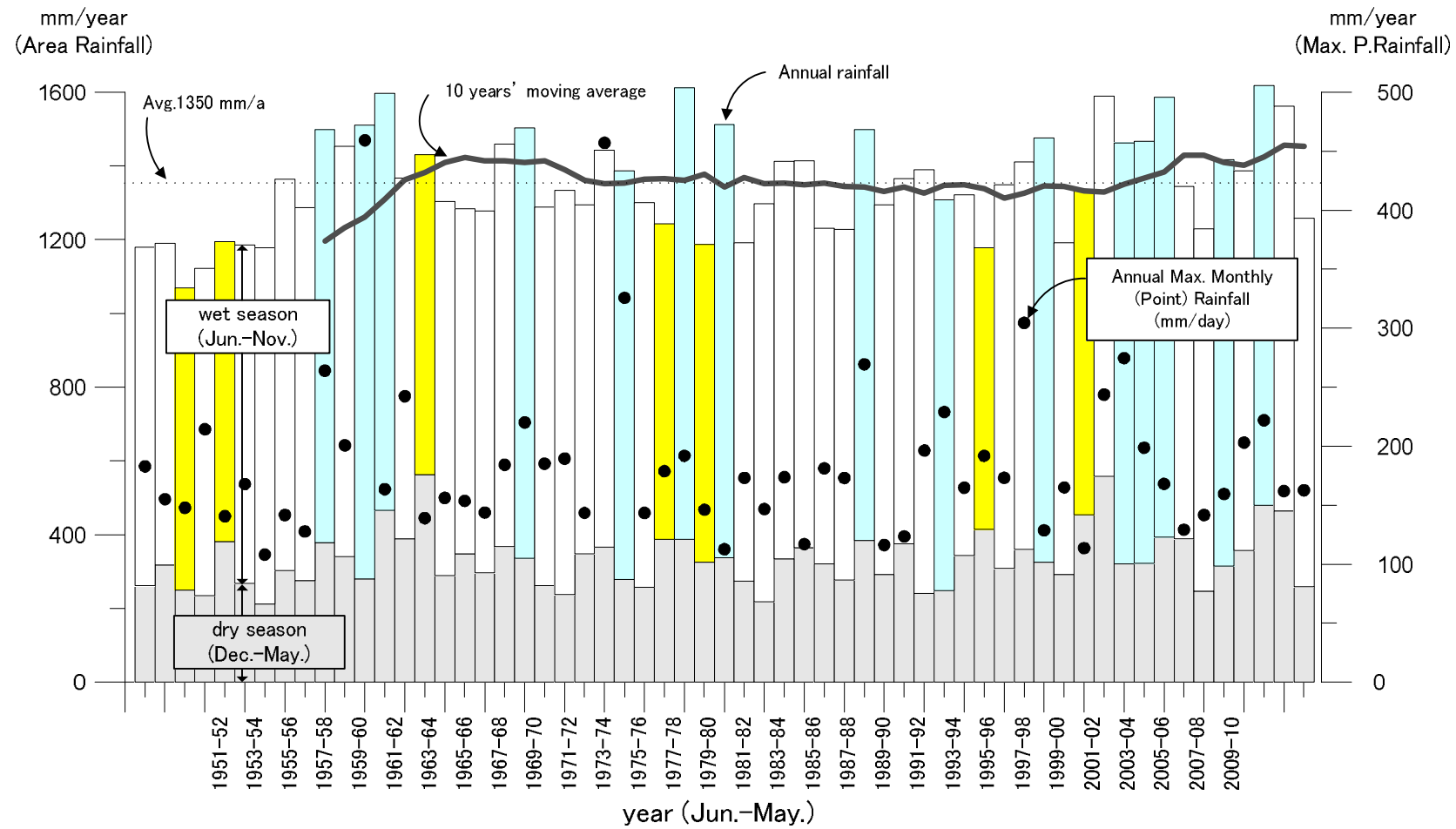
**2-1**  
**Location Map of Meteorological and Rain-gage Station by MRC**

**Note:**  
 1) Data Source: Mekong River Commission  
 2) Station's ID in Figure is 'YBYD'

**Date:** September 2010

**LEGEND**

- Rain-gage Station (MRC data continued by 03)
- ▲ Rain-gage Station (MRC data continued by 03)
- River
- Basin Boundary



Area rainfall of Northeast Thailand (mm/year)



Thiessen polygon and TMD synoptic stations applied for Time-Series (Area Rainfall) Calculation

Wet Season's Rainfall Intensity Having Recurrence Interval of T years			
non-exceedence probability		exceedence probability	
Return Period	Rainfall (Wet Season)	Return Period	Rainfall (Wet Season)
1/2	1,020	1/2	1,020
1/3	972	1/3	1,067
1/4	946	1/4	1,095
1/5	928	1/5	1,113
1/8	894	1/8	1,148
1/10	880	1/10	1,163
1/15	856	1/15	1,187
1/20	841	1/20	1,204
1/25	830	1/25	1,216
1/30	821	1/30	1,225
1/40	807	1/40	1,240
1/50	797	1/50	1,250
1/60	789	1/60	1,259
1/80	777	1/80	1,272
1/100	768	1/100	1,282
1/150	753	1/150	1,299
1/200	742	1/200	1,310
1/250	734	1/250	1,319
1/300	728	1/300	1,326
1/400	718	1/400	1,337
1/500	710	1/500	1,345

Probability Analysis for Wet Season's Rainfall (May-Oct.)

## 2-2 Annual Rainfall (1951/52-2009/10)

### Note:

Data Source: Processed by JICA study Team using TMD observation data

Date: September 2010

### LEGEND

- Rainfall (wet season Jun-Nov)
  - Normal year (return period dry year < 10 years)  
(return period wet year < 5 years)
  - drought year (return period 10 years)
  - wet year (return period 5 years)
- Rainfall (dry season Dec-May)
- Annual Max. Monthly (point) Rainfall







## 2-3 Mean Monthly Temperature (1976-2009)

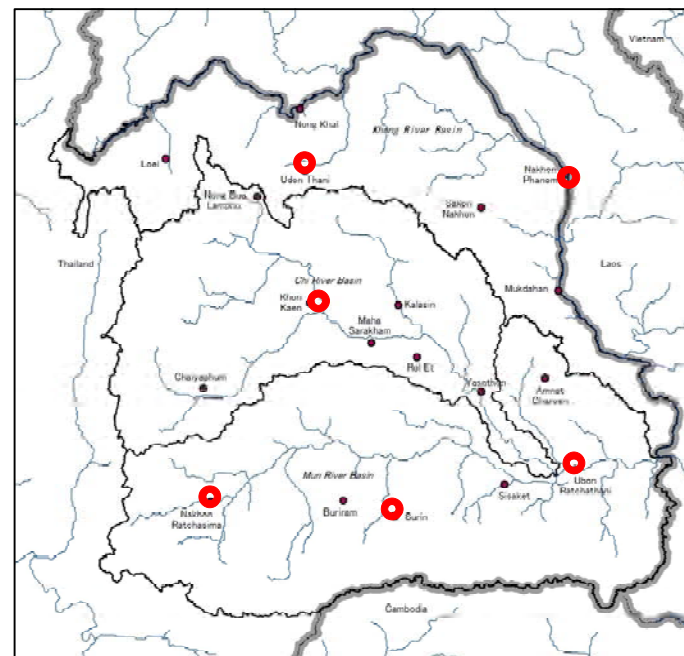
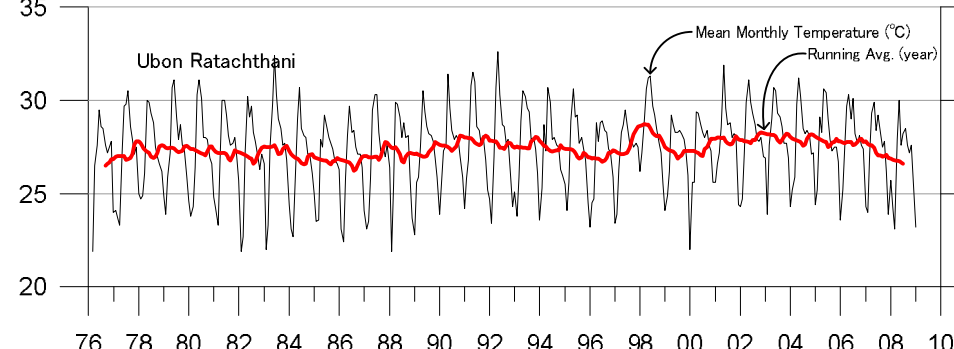
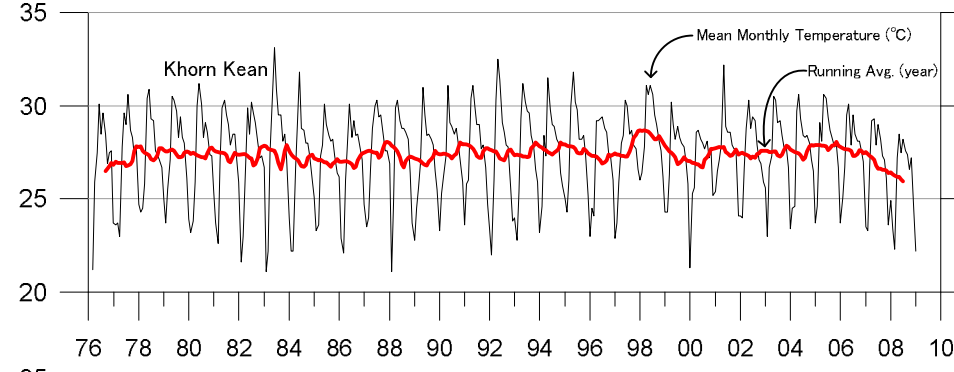
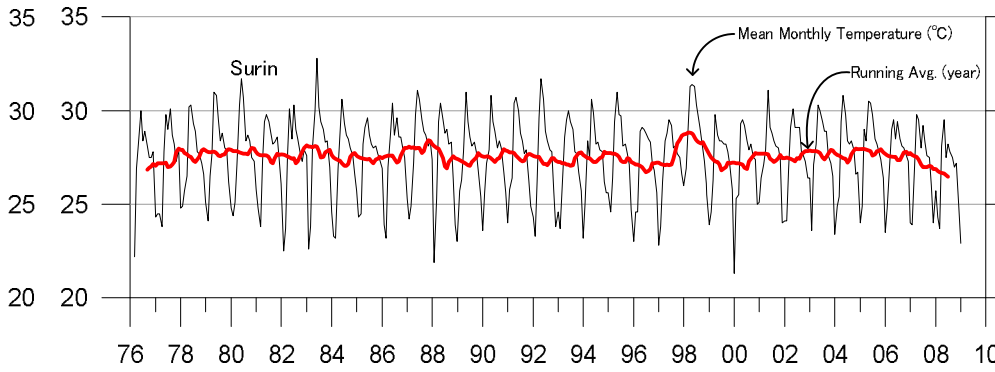
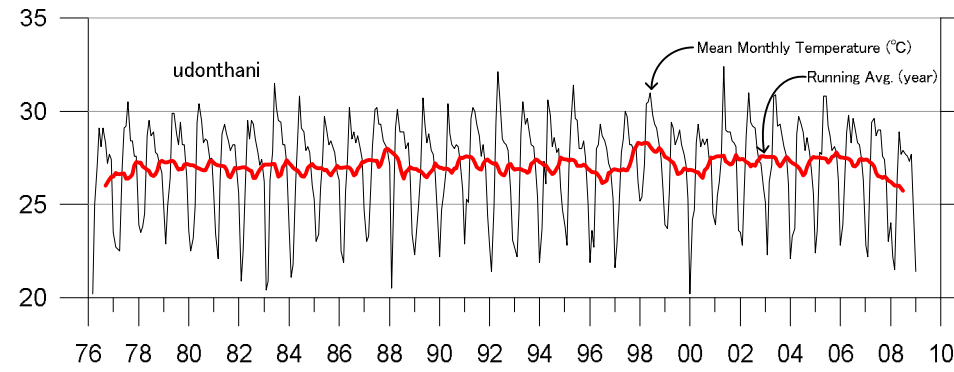
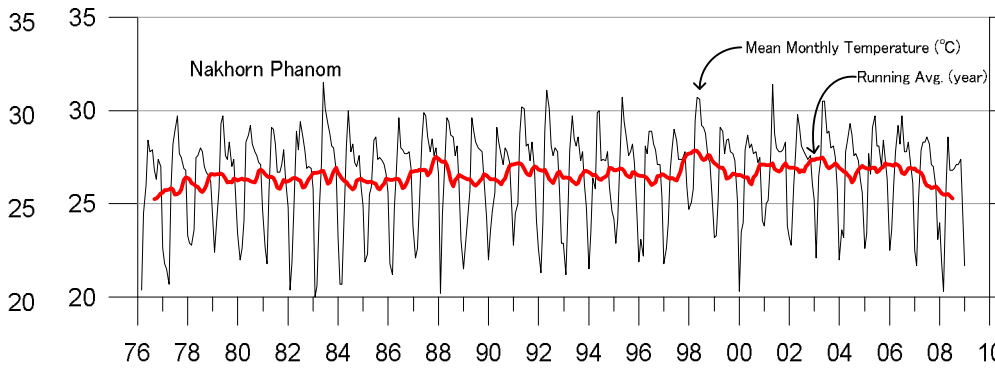
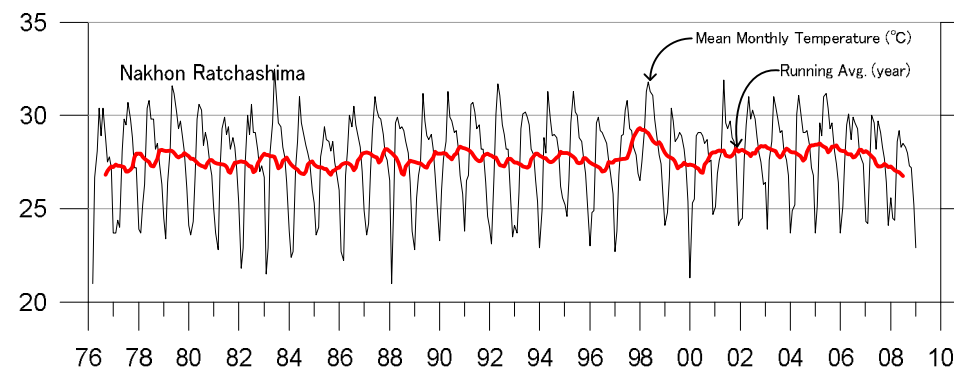
### Note:

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Date: September 2010




### LEGEND

-  Mean Monthly Temperature (°C)
-  Running Average in Year
-  Meteorological Station Applid.
-  Temperature higher than average year
-  Temperature in an average year
-  Temperature lower than average year



Met. Sta.  
Location Map

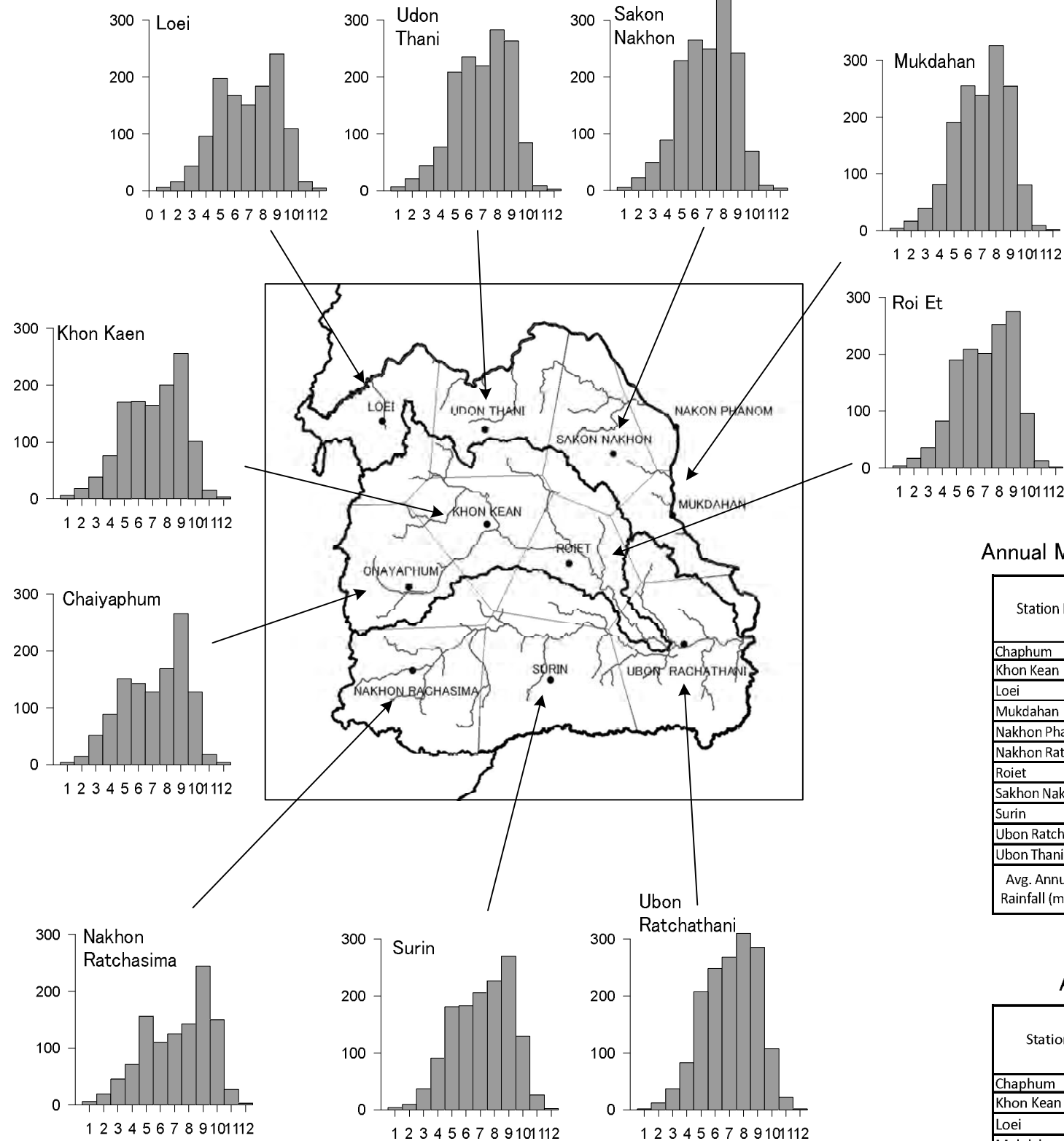
year	Udon Thani	Nakhon Phanom	Khon Kaen	Nakhon Ratchasima	Surin	Ubon Ratchathani	year	Udon Thani	Nakhon Phanom	Khon Kaen	Nakhon Ratchasima	Surin	Ubon Ratchathani	year	Udon Thani	Nakhon Phanom	Khon Kaen	Nakhon Ratchasima	Surin	Ubon Ratchathani						
1976	26.3	25.6	26.7	27.0	27.0	26.7	1987	27.3	26.9	27.5	27.8	28.0	27.1	1998	28.2	27.7	28.5	28.8	28.6	28.4						
1977	26.7	25.8	27.1	27.3	27.2	27.1	1988	27.2	26.8	27.4	27.4	27.5	27.2	1999	26.9	26.6	27.1	27.4	27.1	27.1						
1978	26.8	25.9	27.3	27.6	27.5	27.1	1989	26.8	26.3	27.2	27.6	27.4	27.4	2000	26.9	26.5	27.1	27.4	27.4	27.5						
1979	27.2	26.5	27.5	28.1	27.8	27.5	1990	27.1	26.4	27.5	28.0	27.5	27.6	2001	27.5	27.1	27.6	28.1	27.5	27.9						
1980	27.2	26.5	27.6	27.6	28.0	27.4	1991	26.5	27.0	27.6	27.9	27.6	27.9	2002	27.5	27.6	27.6	28.3	27.8	28.2						
1981	26.8	26.1	27.3	27.3	27.5	27.1	1992	26.9	26.5	27.4	27.6	27.4	27.7	2003	27.4	27.2	27.5	28.0	27.6	27.9						
1982	26.9	26.3	27.2	27.4	27.6	27.0	1993	27.0	26.3	27.5	27.5	27.3	27.6	2004	26.9	26.5	27.4	27.9	27.5	27.9						
1983	27.0	26.6	27.5	27.6	27.9	27.5	1994	27.0	26.7	27.7	27.9	27.6	27.6	2005	27.6	27.0	27.9	28.4	27.9	27.8						
1984	26.9	26.2	27.1	27.2	27.4	26.8	1995	27.4	26.7	27.7	27.7	27.5	27.1	2006	27.4	27.0	27.6	28.1	27.7	27.9						
1985	27.0	26.2	27.1	27.2	27.5	26.9	1996	26.5	26.4	27.2	27.3	27.0	27.0	2007	26.8	26.3	26.9	27.5	27.2	27.3						
1986	26.9	26.2	27.0	27.4	27.5	26.5	1997	27.3	26.6	27.6	28.1	27.5	27.5	2008	25.9	25.4	26.0	26.9	26.5	26.7						
														Avg.	26.9	26.2	27.2	27.4	27.5	27.1						

 Temperature higher than average year  Temperature in an average year  Temperature lower than average year

Annual Mean Temperature

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Average Monthly Rainfall (1951-2010)

Annual Min/Max/Average Point Rainfall (1951-2010)

Station Name	Annual Point Rainfall (mm/year)		
	Min(1951-2009)	Max(1951-2009)	Average(1951-2009)
Chaphum	613	1,724	1,162
Khon Kean	906	1,660	1,220
Loei	833	1,754	1,232
Mukdahan	979	2,073	1,492
Nakhon Phanom	1,558	3,033	2,302
Nakhon Ratcahsima	608	1,473	1,099
Roi et	922	1,832	1,375
Sakhon Nakhon	1,053	2,138	1,571
Surin	938	2,136	1,362
Ubon Ratchathani	1,132	2,090	1,583
Ubon Thani	1,051	2,216	1,452
Avg. Annual Area Rainfall (mm/year)	1,350 mm (225 cu.km)		

Average Rainfall in Season (1951-2010)

Station Name	Rainfall Amount in Wet/Dry Season(mm)		
	Wet Season (Avg. 1951-2009)	Dry Season (Avg. 1951-2009)	Annual (Avg. 1951-2009)
Chaphum	983	179	1,162
Khon Kean	1,063	157	1,220
Loei	1,049	183	1,232
Mukdahan	1,342	150	1,492
Nakhon Phanom	2,109	193	2,302
Nakhon Ratcahsima	925	173	1,099
Roi et	1,224	151	1,375
Sakhon Nakhon	1,391	180	1,571
Surin	1,193	169	1,362
Ubon Ratchathani	1,428	156	1,583
Ubon Thani	1,293	159	1,452

## 2-4

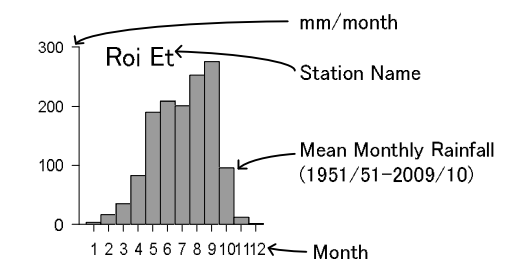
### Mean Monthly Rainfall for Major Station

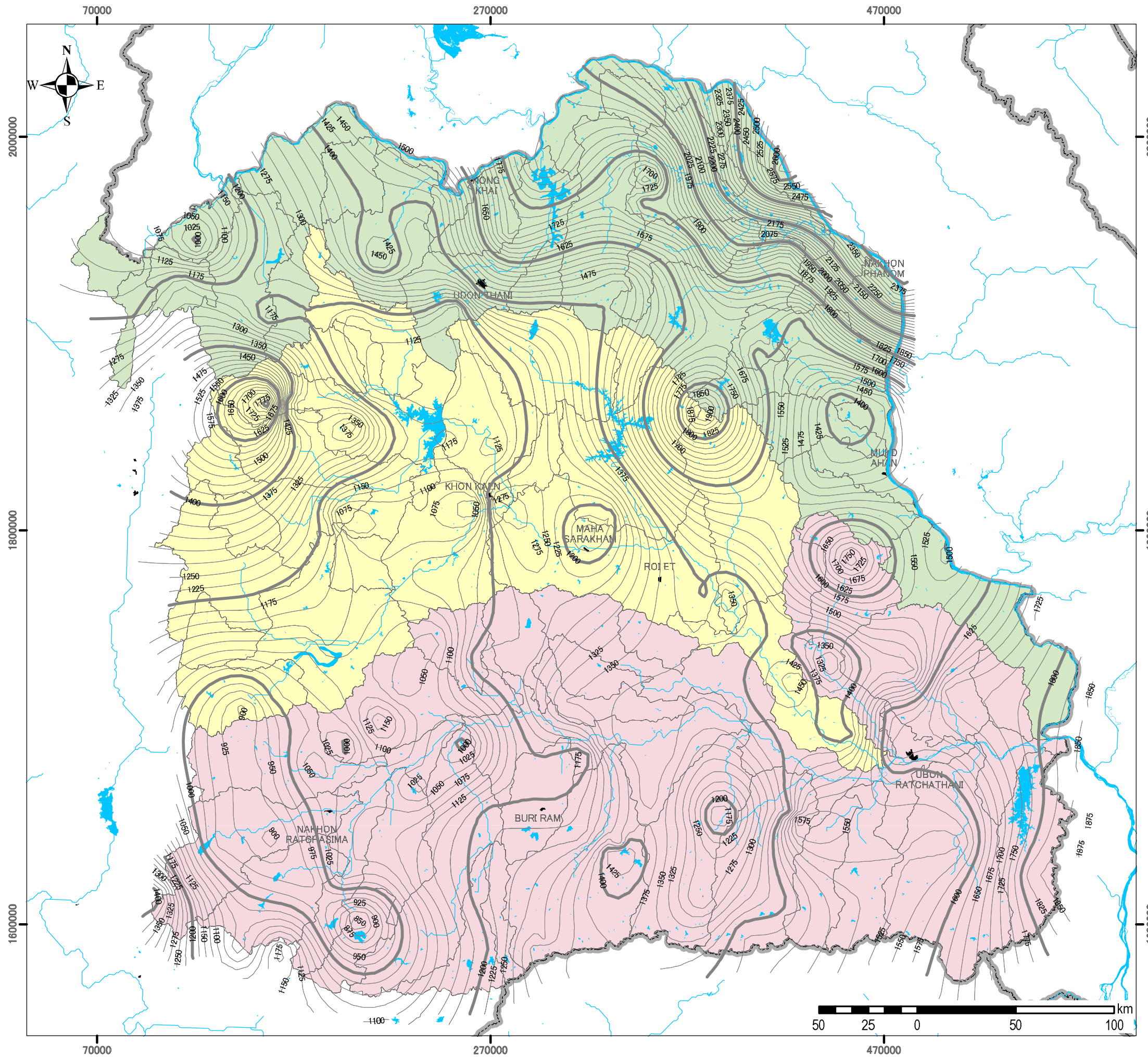
#### Note:

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#### LEGEND





**2-5**  
**Isohyetal Map of Mean Annual Rainfall**  
**(1970 - 2010)**

**Note:**  
 Data Source: RID

**Date:** September 2010

**LEGEND**

- Isolines of Rainfall (mm/year)
- Khong River Basin
- Chi River Basin
- Mun River Basin
- Sub-basins
- Rivers

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