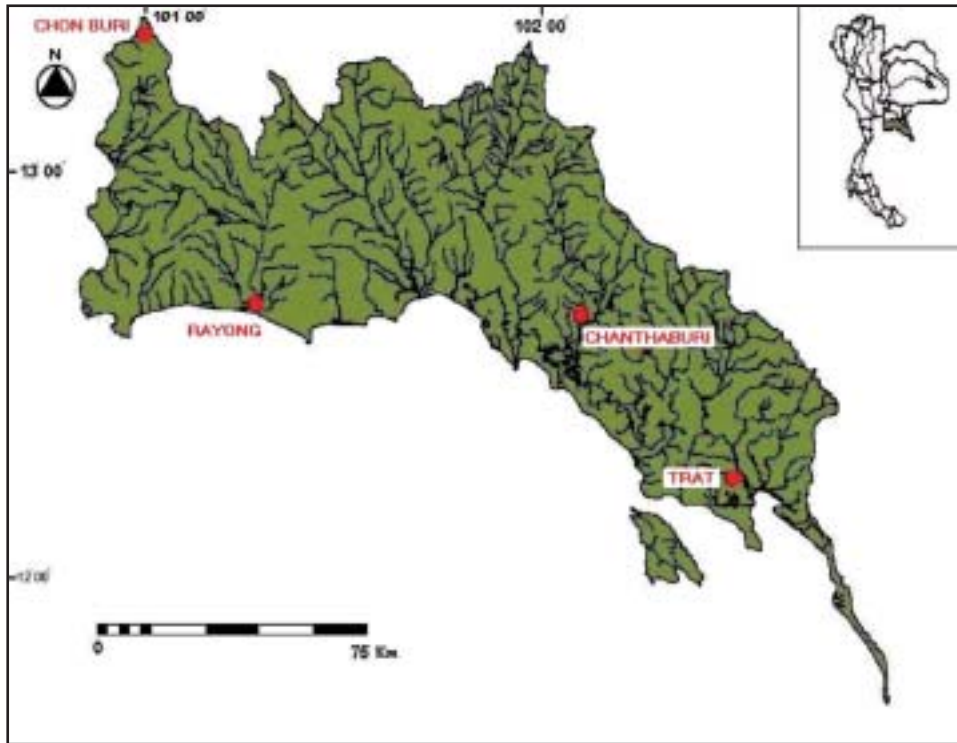


## East Coast Gulf Rivers

### Map of River



## Table of Basic Data

|   |  |
|---|--|
| <b>Name:</b> East Coast Gulf Rivers   | <b>Serial No :</b> Thailand-9                            |
| <b>Location:</b> Eastern sub-region of Thailand   | N 10° 39' - 13° 25' E 100° 50' - 102° 5'                 |
| <b>Area:</b> 13,240 km <sup>2</sup>   | <b>Length of main stream:</b> 579 km (combined)          |
| <b>Origin:</b> Daoseam Mt. (Khong Welu)<br>Kad Mt. (Mueang Trat River)<br>North Soidao Mt. (Chanthaburi River)<br>Chamao Mt. (Khlong Tanot and Prasae Rivers)<br>Chompoo Mt. (Khlong Yai)   | <b>Highest point:</b> 1,369 m (North Soidao Mt.)         |
| <b>Outlet:</b> Gulf of Thailand   | <b>Lowest point:</b> 0 m                                 |
| <b>Main geological formations:</b> Granite, Granodiorite, Gneiss and Schist, Alluvium, Eluvium, Basalt and its equivalents, Kanchanaburi Formation, Phu Phan and Phra Wihan Formation, Ratburi Formation, Mae Moh and Li Formation                                    |  |
| <b>Major tributaries:</b> Klong Welu (1,495 km <sup>2</sup> ), Klong Tanot (1,690 km <sup>2</sup> ), Klong Yai (1,885 km <sup>2</sup> ), Muang Trat River (1,505 km <sup>2</sup> ), Chanthaburi River (1,682 km <sup>2</sup> ), Prasae River (2,112 km <sup>2</sup> ) |  |
| <b>Major reservoirs:</b> Kiretarn Dam (97x10 <sup>6</sup> m <sup>3</sup> , 1986), Nong Plalai reservoir (164.7x10 <sup>6</sup> m <sup>3</sup> , 1993), Bang Phra reservoir (110x10 <sup>6</sup> m <sup>3</sup> , 1973)  |  |
| <b>Mean annual precipitation:</b> 2,396 mm (1952-1996) at station 03180303, A. Makham, Chanthaburi  |  |
| <b>Mean annual runoff:</b> 28.6 m <sup>3</sup> /s (1969-1996) at station 01180303, A. Makham, Chanthaburi   |  |
| <b>Population:</b> 1,645,338 (1998)   | <b>Major cities:</b> Chonburi, Chanthaburi, Rayong, Trat |
| <b>Land uses:</b> Forest 22.3%, Rice paddy 4.2%, Upland crops 18.9%, Orchard 43.7%, Lowland and pasture 5.1%, Urban area 2.1%, Water resources 2.1% (1998)  |  |

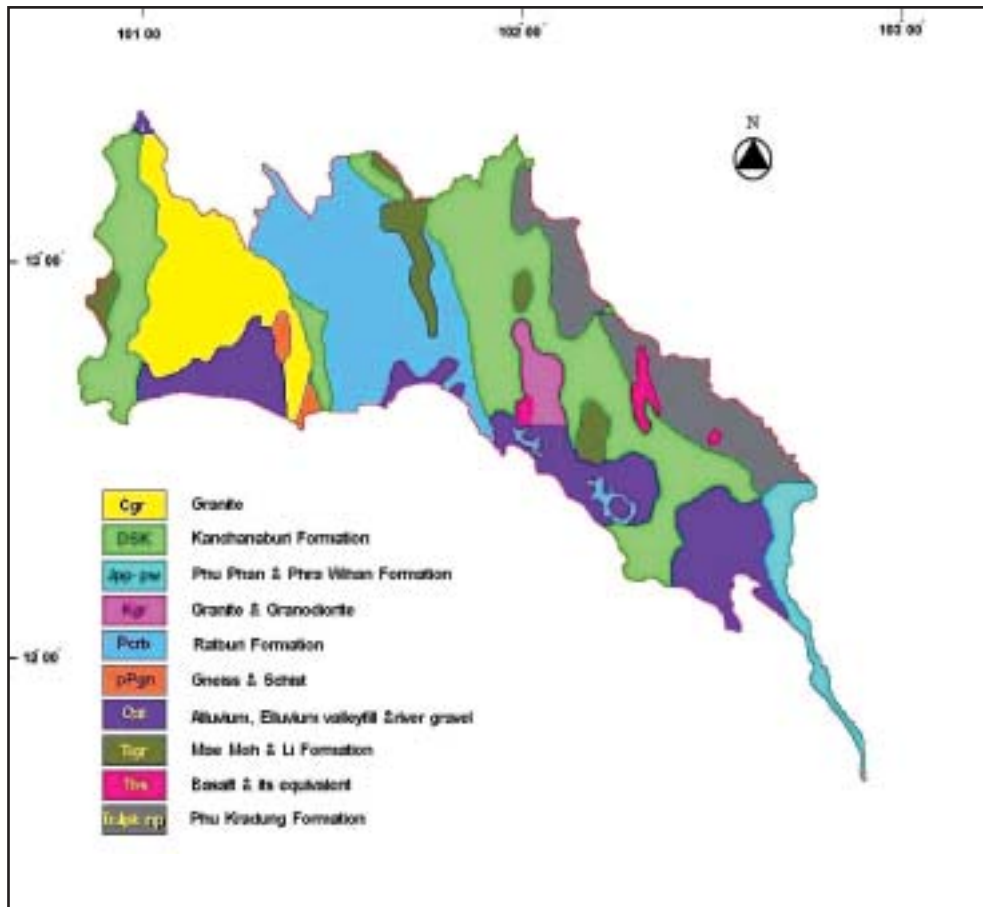
## 1 General Description

The basins of the East Coast Gulf Rivers are located in the eastern region of Thailand and comprise of a number of unconnected river basins that flow into the Gulf of Thailand, i.e.:

- a) The Chonburi sub-basin in the west of Chonburi province comprises of a series of short streams;
- b) The Rayong River sub-basin comprises of short streams in Bankai, Maung, Sattaheep, Banchang and Klang districts;
- c) The Prasae River sub-basin covers the area of Knongyai, Boathong, Wangchan and Klang districts;
- d) The Klong Tanod, which originates from the Sisead Mountains on the border between Chantaburi, Chachongsao and Prachinburi provinces, flows into the Gulf of Thailand in Thamai district;
- e) The Chantaburi River tributary sub-basin that originates from South Soi Dow Mountain in Pongnamron district;
- f) The Chantaburi River that flows through Makham and Leamsingha;
- g) The Weru River sub-basin that originates from the Srabab and Cha-am mountains in Chantaburi and in its lower reaches, forms the downstream border between Chantaburi and Trat provinces prior to discharging into the Gulf of Thailand at Trat; and
- h) The Muang Trat River sub-basin that covers the area of Muang, Laem Ngob, Khaosaming and Klonyai districts in Trat province.

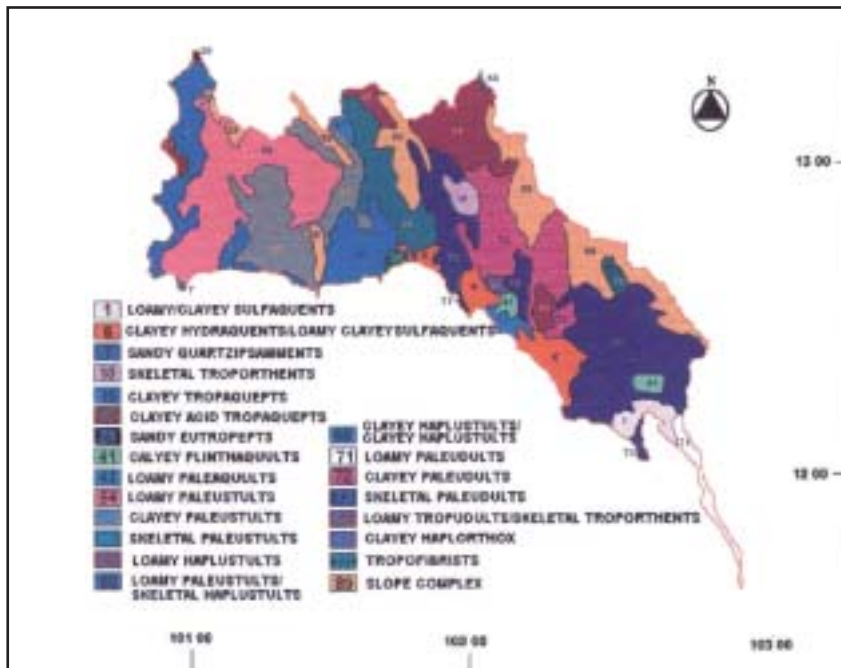
## 2. Geographical Information

### 2.1 Geological Map



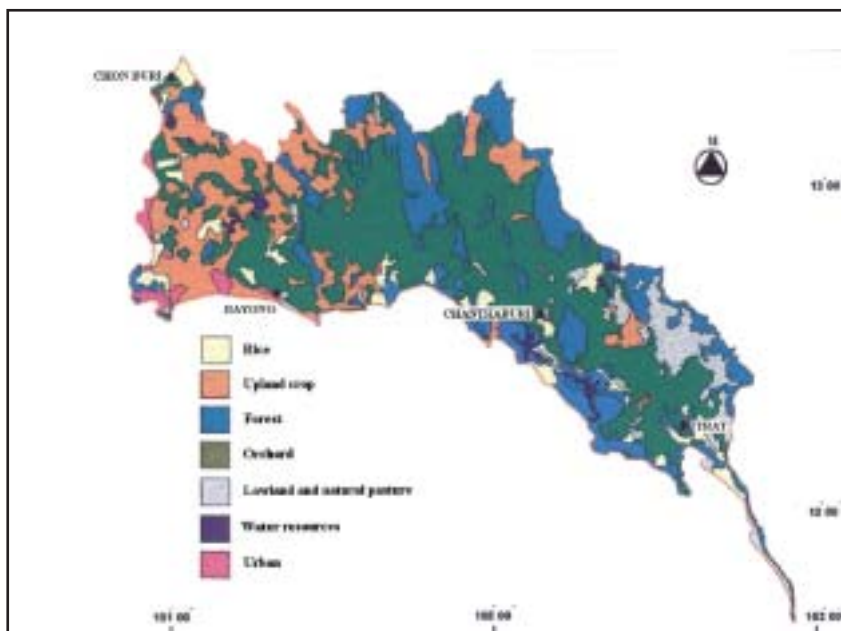
Source: Geological Map of Thailand, Jumchet C. and Javanaphet, 1969, Department of Mineral Resources

### Soil Map



Source: General Soil Map of Thailand, 1972, Soil Survey Division, Department of Land Development

### 2.2 Land Use Map

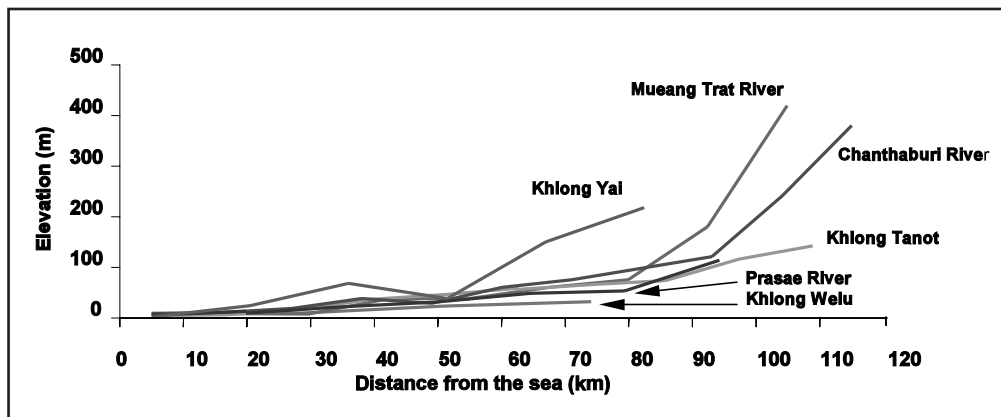


Source: Eastern Sub-region Land Use Map 1998, Land Use Planning Div., Department of Land Development

### 2.3 Characteristics of the River and Major Tributaries

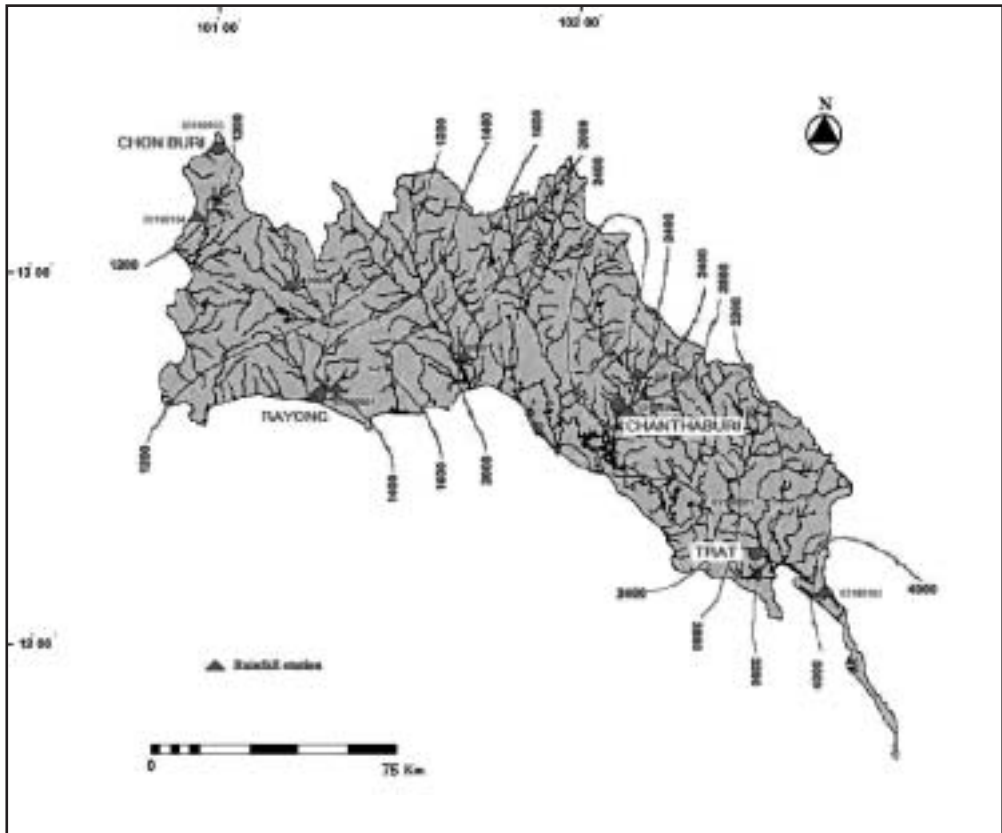
| No. | Name                     | Length [km]<br>Catchment Area [km <sup>2</sup> ] | Highest Peak<br>Elevation [m] | Major cities                                   |
|-----|--------------------------|--|-------------------------------|--|
| 1   | <b>Khlong Welu</b>       | 75<br>1,495                                      | Daoseam Mt.<br>472            | A. Khlung<br>Chanthaburi                       |
| 2   | <b>Mueang Trat river</b> | 105<br>1,505                                     | Kad Mt<br>805                 | A. Laemngop<br>Trat                            |
| 3   | <b>Chanthaburi river</b> | 114<br>1,682                                     | North Soidao<br>1,369         | A. Makham<br>Chanthaburi                       |
| 4   | <b>Khlong Tanot</b>      | 109<br>1,690                                     | Chamao Mt.<br>1,024           | A. Thamai<br>Chanthaburi                       |
| 5   | <b>Prasae river</b>      | 94<br>2,112                                      | Chamao Mt.<br>1,024           | A. Klaeng<br>Rayong                            |
| 6   | <b>Khlong Yai</b>        | 82<br>1,885                                      | Chompoo Mt.<br>732            | A. Mueang, A. Bankhai<br>A. Pluakdaeng, Rayong |

### 2.4 Longitudinal Profiles



### 3 Climatological Information

#### 3.1 Annual Isohyetal Map



Source: Isohyetal Map of Thailand, 1966-1995, Meteorological Department.

### 3.2 List of Meteorological Observation Stations

| Station Code | Station                | Gauge    | Location                       | Period      | Mean annual | Items         |
|--------------|------------------------|----------|--------------------------------|-------------|-------------|---------------|
| 03180102     | A. Mueang, Chonburi    | standard | N13° 21' 15"<br>E 100° 59' 09" | 1952 - 1996 | 1,314.4     | Precipitation |
| 03180104     | A. Siracha, Chonburi   | standard | N13° 10' 36"<br>E 100° 56' 00" | 1952 - 1996 | 1,196.1     | Precipitation |
| 03180301     | A. Mueang, Rayong      | standard | N12° 39' 40"<br>E 101° 17' 00" | 1952 - 1996 | 1,291.2     | Precipitation |
| 03180303     | A. Makham, Chanthaburi | standard | N12° 41' 18"<br>E 102° 12' 00" | 1952 - 1996 | 2,396.6     | Precipitation |
| 03180604     | A. Pluakdaeng, Rayong  | standard | N12° 58' 13"<br>E 101° 13' 07" | 1967 - 1996 | 1,376.9     | Precipitation |
| 03180501     | A. Khlang, Rayong      | standard | N12° 46' 31"<br>E 101° 39' 25" | 1951 - 1996 | 1,910.7     | Precipitation |
| 03180601     | A. Mueang, Chanthaburi | standard | N12° 37' 00"<br>E 102° 06' 48" | 1952 - 1996 | 2,941.8     | Precipitation |
| 03180103     | A. Khlong Yai, Trat    | standard | N12° 39' 25"<br>E 100° 53' 15" | 1952 - 1996 | 4,607.4     | Precipitation |
| 03180201     | A. Khaosaming, Trat    | standard | N12° 21' 08"<br>E 102° 26' 30" | 1952 - 1996 | 2,939.3     | Precipitation |

### 3.3 Monthly Climatic Data

#### Station: A. Mueang, Chonburi (03180102)

| Observation        | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   | Mean | Total   | Period      |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|---------|-------------|
| Temperature [°C]   | 26.2  | 27.5  | 28.8  | 29.8  | 29.5  | 29.2  | 28.8  | 28.5  | 27.9  | 27.4  | 26.8  | 25.9  | 28.0 | -       | 1966 - 1997 |
| Precipitation [mm] | 12.2  | 16.2  | 31.1  | 75.6  | 156.2 | 142.1 | 127.2 | 169.3 | 267.6 | 203.2 | 57.5  | 7.6   | -    | 1,265.8 | 1966 - 1997 |
| Evaporation [mm]   | 140.8 | 139.5 | 177.6 | 180.1 | 161.0 | 153.0 | 155.6 | 151.5 | 133.9 | 129.3 | 136.2 | 148.3 | -    | 1,947.6 | 1966 - 1997 |

#### Station: A. Mueang, Rayong (03180301)

| Observation        | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   | Mean | Total   | Period      |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|---------|-------------|
| Temperature [°C]   | 25.8  | 27.7  | 28.8  | 29.9  | 29.7  | 29.3  | 28.8  | 28.6  | 27.9  | 27.4  | 27.0  | 25.5  | 28.0 | -       | 1966 - 1997 |
| Precipitation [mm] | 21.9  | 37.0  | 63.5  | 63.0  | 188.9 | 162.5 | 148.4 | 127.3 | 259.3 | 200.9 | 67.7  | 5.3   | -    | 1,345.7 | 1966 - 1997 |
| Evaporation [mm]   | 143.5 | 143.3 | 173.7 | 178.3 | 157.6 | 146.5 | 154.3 | 149.0 | 118.6 | 121.7 | 141.2 | 153.2 | -    | 1,780.9 | 1966 - 1997 |

**Station: A. Mueang, Chanthaburi (03180601)**

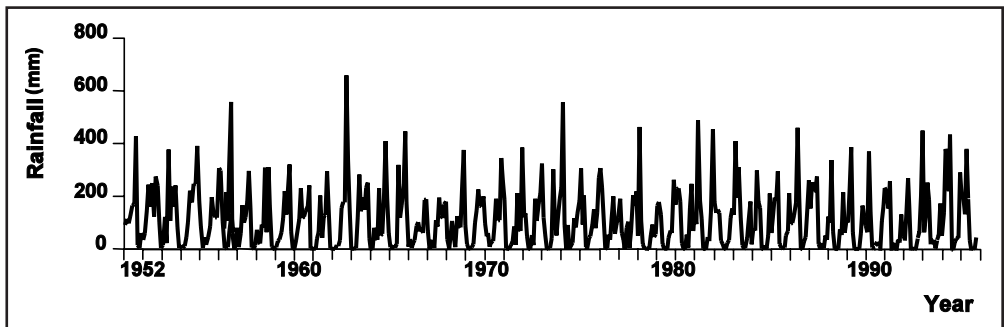
| Observation        | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   | Mean | Total   | Period      |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|---------|-------------|
| Temperature [°C]   | 25.7  | 26.6  | 27.6  | 28.2  | 27.9  | 27.5  | 27.3  | 27.1  | 26.7  | 26.6  | 26.3  | 25.4  | 26.9 | -       | 1966 - 1997 |
| Precipitation [mm] | 13.1  | 38.7  | 62.0  | 105.7 | 331.9 | 515.2 | 446.8 | 531.3 | 500.5 | 272.6 | 47.4  | 11.1  | -    | 2,876.3 | 1966 - 1997 |
| Evaporation [mm]   | 148.6 | 130.1 | 153.7 | 145.2 | 124.8 | 104.4 | 109.0 | 103.1 | 96.4  | 120.1 | 143.1 | 156.0 | -    | 1,534.5 | 1966 - 1997 |

**Station: A. Khlong Yai, Trat (03180103)**

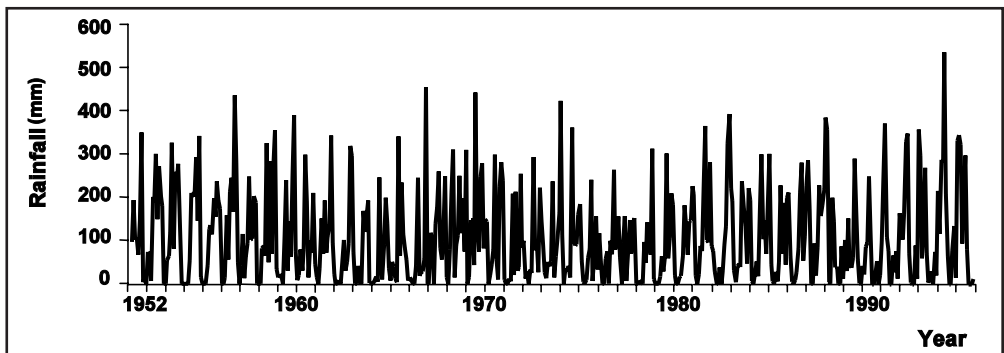
| Observation        | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug     | Sep   | Oct   | Nov   | Dec   | Mean | Total   | Period      |
|--------------------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|------|---------|-------------|
| Temperature [°C]   | 26.4  | 27.2  | 28.1  | 28.7  | 28.3  | 27.3  | 27.0  | 26.8    | 26.8  | 26.8  | 27.2  | 26.7  | 27.3 | -       | 1966 - 1997 |
| Precipitation [mm] | 39.3  | 70.1  | 106.6 | 151.4 | 370.8 | 895.7 | 884.8 | 1,087.0 | 639.2 | 347.3 | 83.0  | 26.4  | -    | 4,701.6 | 1966 - 1997 |
| Evaporation [mm]   | 143.4 | 133.1 | 156.8 | 151.1 | 138.9 | 100.9 | 108.1 | 99.8    | 101.7 | 113.3 | 132.8 | 147.2 | -    | 1,527.1 | 1966 - 1997 |

**3.4 Long-term Variation of Monthly Precipitation Series**

**Station: A. Mueang, Chonburi (03180102)**

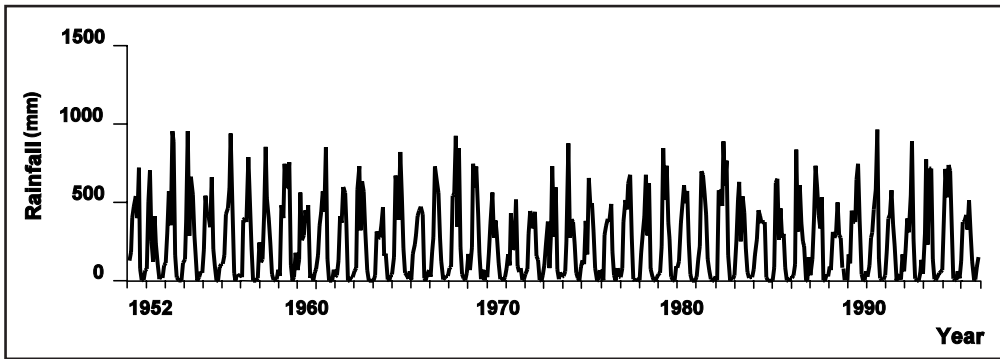


**Station: A. Mueang, Rayong (03180301)**

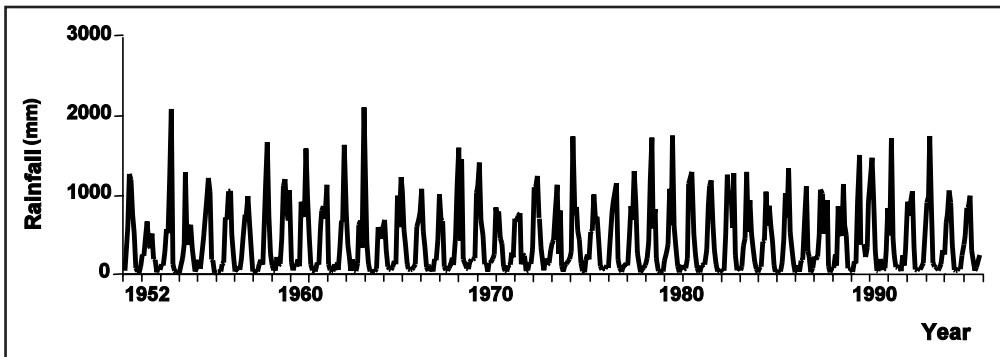




Station: A. Mueang, Chanthaburi (03180601)

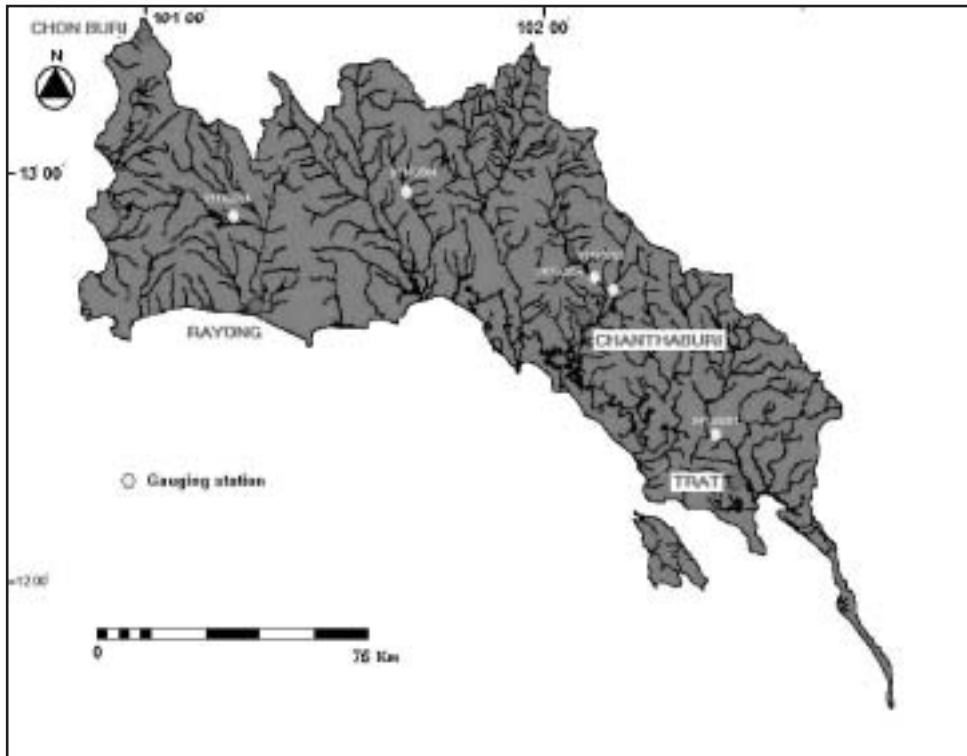


Station: A. Khlong Yai, Trat (03180103)



## 4. Hydrological Information

### 4.1 Map of Streamflow Observation Stations



Source: Chantajitra, Y. et.al., 1994, Location Map of Hydrological and Meteorological Stations in Thailand, Office of National Research Council

### 4.2 List of Hydrological Observation Stations

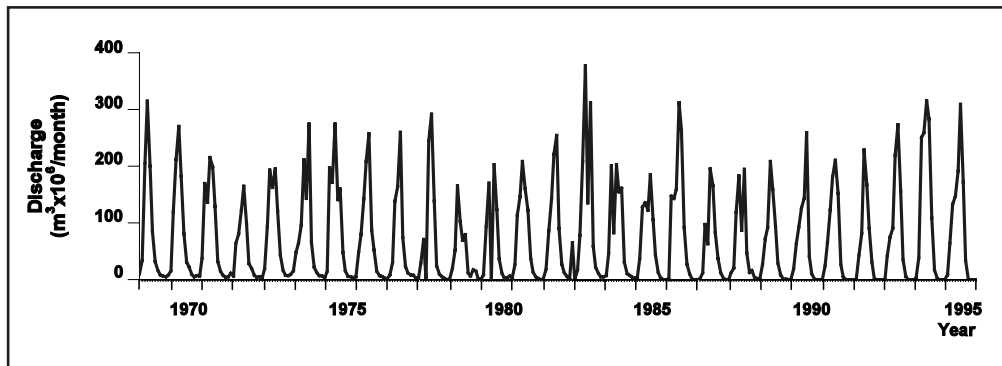
| Station                            | Location                        | Catchment area [km <sup>2</sup> ] | Period      | Mean annual discharge [m <sup>3</sup> /s] | Items      |
|------------------------------------|---------------------------------|-----------------------------------|-------------|---|------------|
| 04180201<br>A. Khlung, Chanthaburi | N 12° 37' 04"<br>E 102° 24' 03" | 190                               | 1970 - 1994 | 9.97                                      | Q, H5d     |
| 01180303<br>A. Makham, Chanthaburi | N 12° 45' 40"<br>E 102° 08' 35" | 671                               | 1969 - 1996 | 28.6                                      | Q, H1, WQ  |
| 01180604<br>A. Pluakdaeng, Rayong  | N 12° 55' 41"<br>E 101° 19' 30" | 244                               | 1977 - 1995 | 1.80                                      | Q, H5d, WQ |
| 01180504<br>A. Klaeng, Rayong      | N 12° 57' 22"<br>E 101° 40' 31" | 167                               | 1983 - 1995 | 4.40                                      | Q, H5d     |
| 04180304<br>A. Makham, Chanthaburi | N 12° 58' 05"<br>E 102° 05' 01" | 72                                | 1979 - 1994 | 35.9                                      | Q, H5d     |

| No.      | $\bar{Q}^{2)}$<br>[m <sup>3</sup> /s] | Qmax <sup>3)</sup><br>[m <sup>3</sup> /s] | $\bar{Q}max^{4)}$<br>[m <sup>3</sup> /s] | $\bar{Q}min^{5)}$<br>[m <sup>3</sup> /s] | $\bar{Q}/A$<br>[m <sup>3</sup> /s/100km <sup>2</sup> ] | Qmax/A<br>[m <sup>3</sup> /s/100km <sup>2</sup> ] | Period of statistics |
|----------|---------------------------------------|---|--|--|--|---|----------------------|
| 04180201 | 9.97                                  | 674                                       | 226                                      | 0.34                                     | 5.25   | 355   | 1970 - 1994          |
| 01180303 | 28.6                                  | 360                                       | 227                                      | 0.29                                     | 4.26   | 53.7  | 1969 - 1995          |
| 01180604 | 1.80                                  | 196                                       | 547                                      | 0.03                                     | 0.74   | 69.3  | 1977 - 1995          |
| 01180504 | 4.40                                  | 125                                       | 61.5                                     | 0.07                                     | 2.63   | 74.9  | 1983 - 1995          |
| 04180304 | 35.9                                  | 355                                       | 141                                      | 0.15                                     | 49.9   | 493   | 1979 - 1994          |

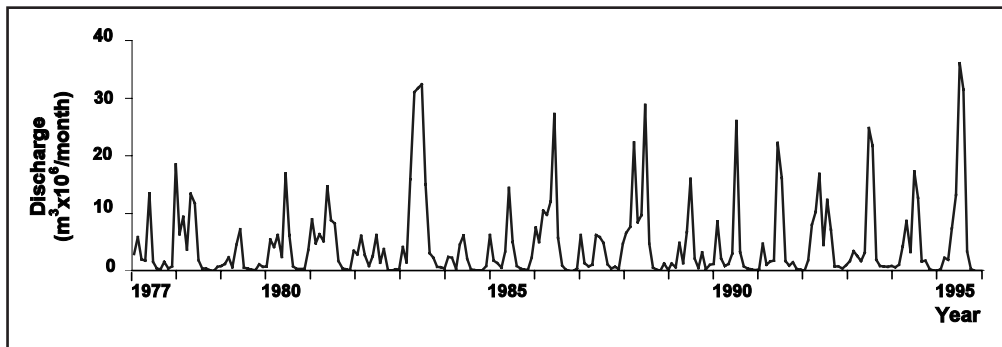
1) Q: Discharge H1: Water level (daily) H5d: Water level (5-day) WQ: Water qualities  
 2) Mean annual discharge 3) Maximum discharge. 4) Mean maximum discharge  
 5) Mean minimum discharge

### 4.3 Long-term Variation of Monthly Discharge Series

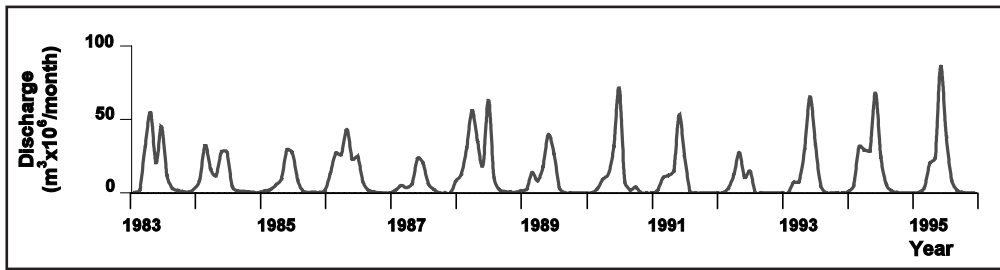
Station: A. Makham, Chanthaburi (01180303)



Station: A. Pluakdaeng, Rayong (01180604)



Station: A. Klaeng, Rayong (01180504)



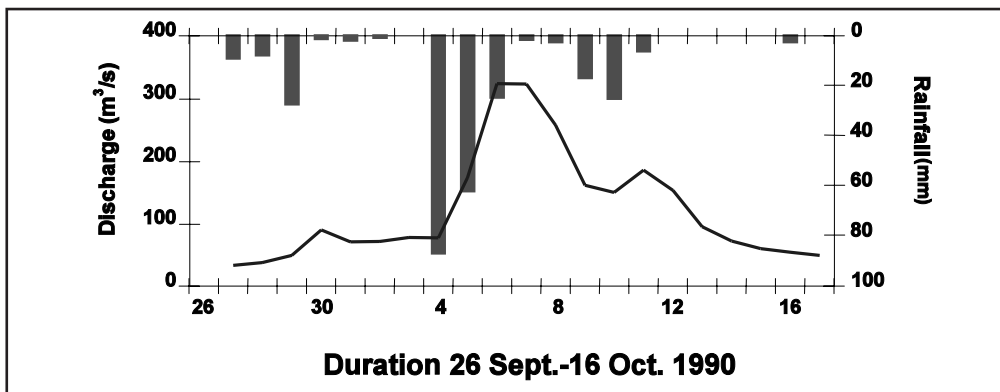
#### 4.6 Annual Maximum and Minimum Discharge

Station: A. Makham, Chanthaburi (01180303) (671 km<sup>2</sup>)

| Year | Maximum |                   | Minimum |                   | Year | Maximum |                   | Minimum |                   |
|------|---------|-------------------|---------|-------------------|------|---------|-------------------|---------|-------------------|
|      | Date    | m <sup>3</sup> /s | Date    | m <sup>3</sup> /s |      | Date    | m <sup>3</sup> /s | Date    | m <sup>3</sup> /s |
| 1969 | 9.05    | 250               | 3.20    | 1.10              | 1982 | 8.22    | 238               | 3.17    | 0.00              |
| 1970 | 8.03    | 229               | 2.18    | 1.70              | 1983 | 8.08    | 279               | 3.21    | 0.00              |
| 1971 | 8.31    | 269               | 3.08    | 0.80              | 1984 | 6.23    | 253               | 3.20    | 0.00              |
| 1972 | 9.07    | 173               | 3.08    | 0.80              | 1985 | 9.21    | 162               | 3.01    | 0.00              |
| 1973 | 7.14    | 218               | 4.17    | 0.90              | 1986 | 9.07    | 269               | 3.22    | 0.00              |
| 1974 | 10.11   | 255               | 3.06    | 1.65              | 1987 | 8.20    | 225               | 4.01    | 0.00              |
| 1975 | 8.16    | 205               | 4.20    | 0.61              | 1988 | 10.18   | 240               | 3.15    | 0.00              |
| 1976 | 9.14    | 192               | 3.30    | 0.00              | 1989 | 8.27    | 143               | 2.16    | 0.00              |
| 1977 | 9.12    | 218               | 4.30    | 0.30              | 1990 | 10.05   | 360               | 3.27    | 0.00              |
| 1978 | 8.02    | 209               | 3.06    | 0.00              | 1991 | 10.01   | 210               | 4.01    | 0.00              |
| 1979 | 7.03    | 155               | 3.20    | 0.00              | 1992 | 8.24    | 177               | 4.01    | 0.00              |
| 1980 | 9.11    | 197               | 5.20    | 0.00              | 1993 | 9.22    | 269               | 12.28   | 0.00              |
| 1981 | 9.23    | 196               | 3.23    | 0.00              | 1994 | 7.02    | 268               | 3.10    | 0.00              |
|      |         |                   |         |                   | 1995 | 6.12    | 278               | 3.28    | 0.00              |

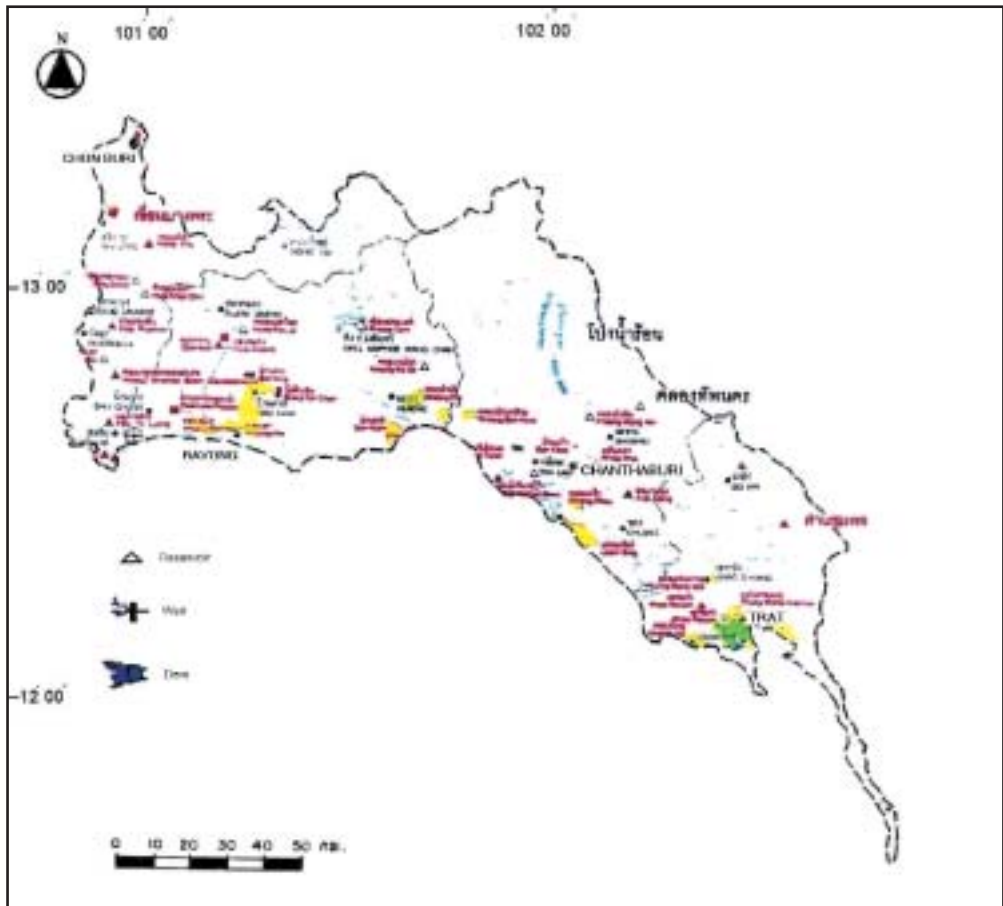
#### 4.7 Hyetograph and Hydrograph of Major Flood

Station: A. Makham, Chanthaburi (01180303)



## 5. Water Resources

### 5.2 Map of Water Resources System



Source: Map of Irrigation Projects in Thailand 1989, Planning and Budget Div., Royal Irrigation Department

### 5.3 List of Major Reservoirs

| Sub-basin   | Name         | Catchment area [km <sup>2</sup> ] | Effective capacity [10 <sup>6</sup> m <sup>3</sup> ] | Purposes | Year of Completion |
|-------------|--------------|-----------------------------------|--|----------|--------------------|
| Chonburi    | Bangphra     | 880.7                             | 110.0  | A, F, W  | 1973               |
| Klong Yai   | Nongplalai   | 429.0                             | 164.7  | A, F, W  | 1993               |
| Mueang Trat | Keritarn Dam | 1,660.8                           | 97.0   | A, F, W  | 1986               |

A: Agriculture F: Flood protection W: Water supply

### 5.4 Major Floods

| Station  | Catchment area [km <sup>2</sup> ] | Peak discharge    |                                   | Date       | Duration    |
|----------|-----------------------------------|-------------------|-----------------------------------|------------|-------------|
|          |                                   | m <sup>3</sup> /s | m <sup>3</sup> /s/km <sup>2</sup> |            |             |
| 01180303 | 671                               | 360               | 0.537                             | 10/5/1990  | 1969 - 1995 |
| 04180201 | 190                               | 674               | 3.547                             | 29/6/1977  | 1970 - 1995 |
| 01180604 | 244                               | 196               | 0.803                             | 18/10/1983 | 1977 - 1995 |
| 01180504 | 167                               | 125               | 0.749                             | 10/4/1990  | 1983 - 1995 |
| 01180304 | 72                                | 355               | 4.931                             | 9/8/1982   | 1979 - 1995 |

### 5.5 Water Qualities

| Location   | Year | pH        | DO [ppm]  | BOD [mg/l] | Coliform [MPN/100ml] |
|--|------|-----------|-----------|------------|----------------------|
| 1) Rayong River                                    | 1997 | -         | 6.8       | 1.1        | 11,000 - 20,000      |
| 2) Prasae River                                    |      | -         | 3.7       | 2.2        | 4,900 - 5,000        |
| 3) Pang พังงา                                      |      | -         | 4.8       | 1.3        | 1,300 - 10,000       |
| 4) Trat River                                      |      | -         | 6.0       | 0.9        | 5,400 - 10,000       |
| 5) Chanthaburi River                               |      | -         | 5.7 - 5.8 | 0.8 - 1.1  | 790 - 4,100          |
| 6) Khlong Welu                                     |      | -         | 5.9       | 1.1        | 170 - 1,100          |
| 7) Khlong พระพุทธ<br>A. Soidao, Chanthaburi        | 1997 | 7.1 - 7.2 | 7.4 - 7.5 | -          | -                    |
| 8) Khlong Pongnamron<br>A. Pongnamron, Chanthaburi |      | 7.1 - 7.2 | 7.5       | -          | -                    |

Source: 1 - 6) Brown Record, Thailand Pollution Status Report 1997, Department of Pollution Control  
7 - 8) Hydrological Data System Report, Land and Water Conservation Div., Dept. of Land Development

## 6. Socio-Cultural Characteristics

The East Coast Gulf Rivers originate from headwater areas that are mountain ranges in the eastern sub-region covering the provinces of Chonburi, Rayong, Chanthaburi, and Trat. The population of this sub-region is similar to that of the Central Plain in terms of culture, language, religion and beliefs. Some provinces have local dialects, e.g. Chanthaburi. The majority of people are involved in agriculture. Water related festivals are the Songkran and the Loy Kratong. There are also other provincial festivals, for example, the Buffalo race in Chonburi. In general, people in this region are diligent, but conservative, and prefer a peaceful life. The long and beautiful coastal area is suitable for tourism, and large numbers of tourists visit the area all year round. In addition there are a number of other natural resources that make the basin a prosperous area.

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