

KINGDOM OF CAMBODIA

Training Workshop on calibration and maintenance of Meteorological instruments in RA II (ASIAN) on 19-22 February 2013



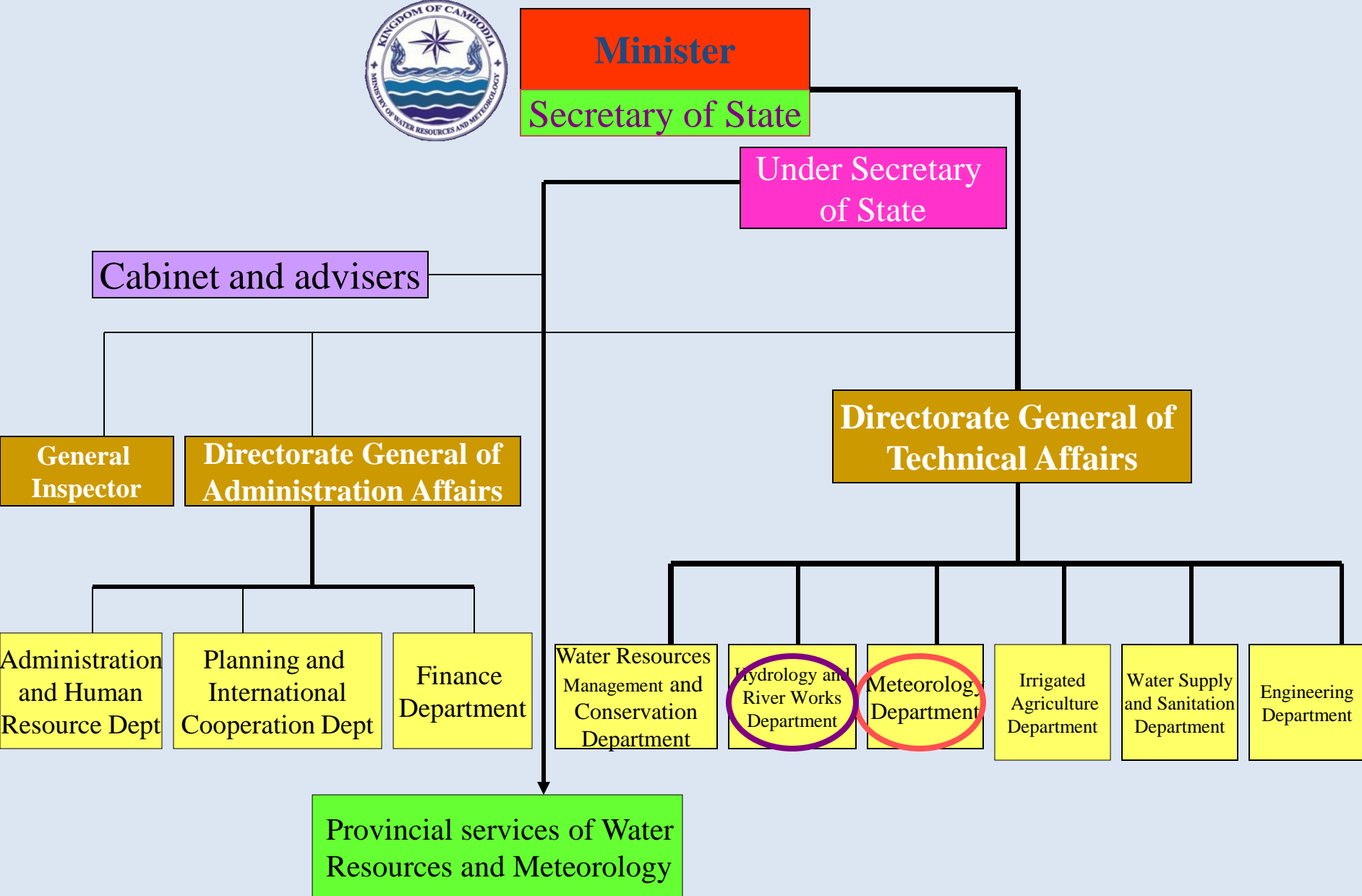
**Training Workshop on calibration and maintenance of
Meteorological instruments in RA II (ASIAN)
on 19-22 February 2013**

The analysis of Climate Condition Cambodia

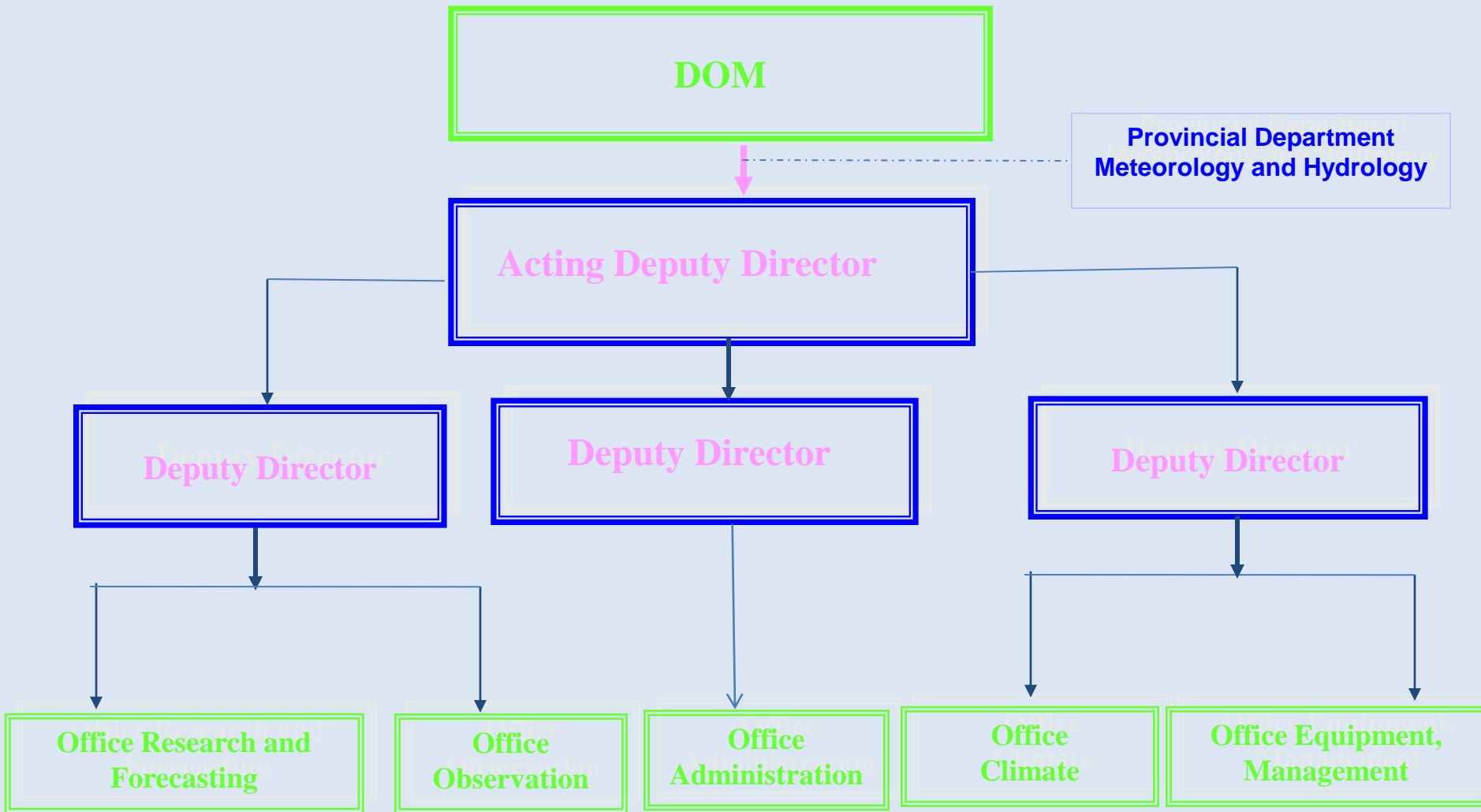
Prepared by :

Mr. Sophy Phan

Organization Chart of the Ministry of Water Resources and Meteorology (MOWRAM)



1. Organization of DOM:



Content

- 1- Introduction
- 2- Climate Conditions
- 3- Observation Network
- 4- Weather Forecasting Products
- 5- Data flow to users and archives
- 6- Problem to face
- 7- Current issues and future plan

2. Climate Conditions

- Tropical climate, warm and humid.
- Dominated by two monsoons:
 - Northeast monsoon or dry season (November to April).
 - Southwest monsoon or rainy season (May to October), warm moisture wind blows on shore from India ocean bringing rain to the whole area of the country.
 - Hottest month of the year: April or May.
 - Coldest month of the year: December or January.
- Temperature regime is consistently high with a little daily or seasonal variation. The annual average is about 32⁰c.
- Precipitation pattern is abandoned with heavy rainstorm

and it is frequently interrupted that called “small dry season” or “dry spells” which occur usually in the middle season between June and August and normally lasts one or two weeks or occasionally last for a month.

- Annual average rainfall is 1,400 mm more than 70% of the annual precipitation fall during the months of May to November while the average rainfall from December to March is very low, e.g. Less than 10 mm.
- Some of the precipitation in Cambodia for the year. We can see that there is a little precipitation around the lake Tonle Sap and over the lower part of Mekong River, Basac River, mainly between these rivers and Kravanh Mountains.
- Number of days with rain changes from 60 days-90 days where is the precipitation less 1500mm, to 100-220 where is precipitation more 2000mm.

- Data of Phnom Penh for many years show that precipitation significantly varies from one year to other one. Mean monthly data show from May to November there is precipitation more than evaporation. But sometimes each of these months, besides September and October, has twice less precipitation. Other years there is precipitation twice more than mean one and an excess of water, especially in September and October.
- Number of days with rain for each month of dry season, intermediate months and wet season.
There is little precipitation everywhere in December, January and February. In March (The end) precipitation is significant only to Southwest from Kravanh Mountains.

In intermediate months (November and April) precipitation is significant only in Southwest and South part of the country.

- In May there is significant precipitation everywhere, but often precipitation is insufficient. In June there is much water in mountains and its rivers but low regions have insufficient precipitation and breaks of rain during 15-20 days July and August have almost the same, but rivers and soil have sufficient water usually and insufficient or excessive water in some years.
- In the end of August, in September and October there is sufficient water everywhere usually, but often there is excessive water.
- There is monsoon wet climate and absolute minimum

precipitation from 1000mm to 1500mm. The very wet climate in the high and west part of mountains has absolute minimum precipitation more 1750mm per year and mean many years precipitation more 3000mm.

- In the warmest month the most part of Cambodia has maximum temperature 35° - 36° c (April). The coldest month has daytime temperature 30° - 31° c (maximum) and morning (minimum) temperature 19° c in the north and 22° c in the south. These are mean many years data for 2 extreme months.

3. Observation Network

Cambodia observes only on the Surface and we are not yet to observe on upper air.

Surface Observation:

Climate Observation Network in Cambodia consists of:

- 23 synoptic stations including of 9 automatic stations (AWS) was broken and 23 synoptic stations are operational with manual observational equipment.
- 200 manual rainfall stations.

Map of Observation station in Cambodia

Synoptic Station in Cambodia



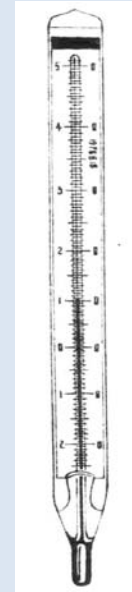


Rainfall

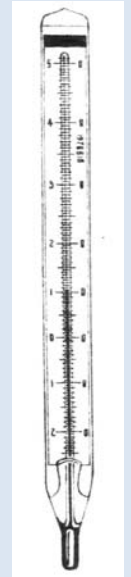




(Shelter put Thermometer)



(Dry thermometer)

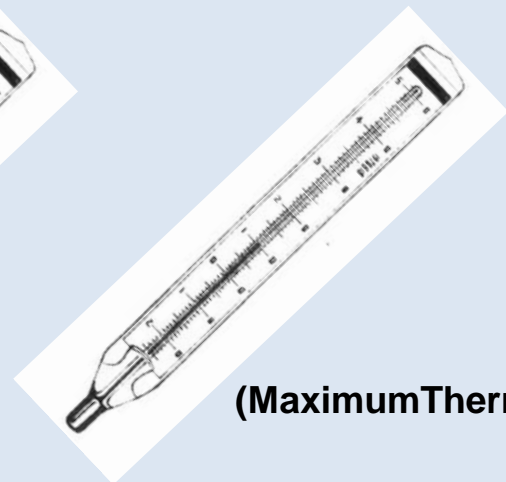


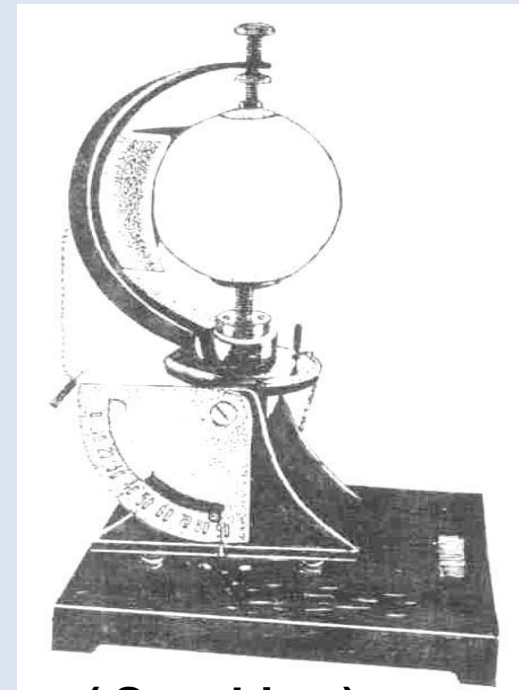
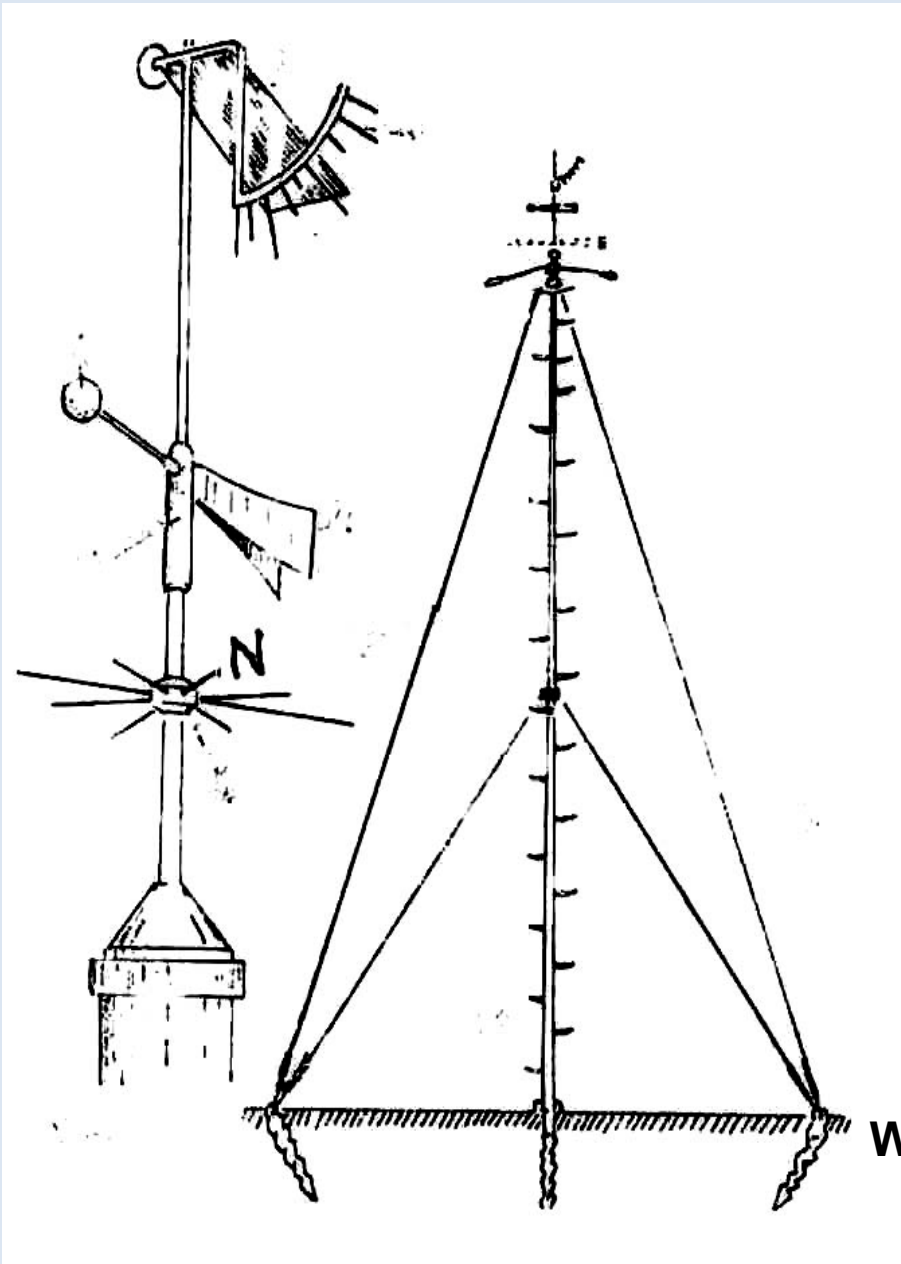
(Wet thermometer)

(MaximumThermometer)



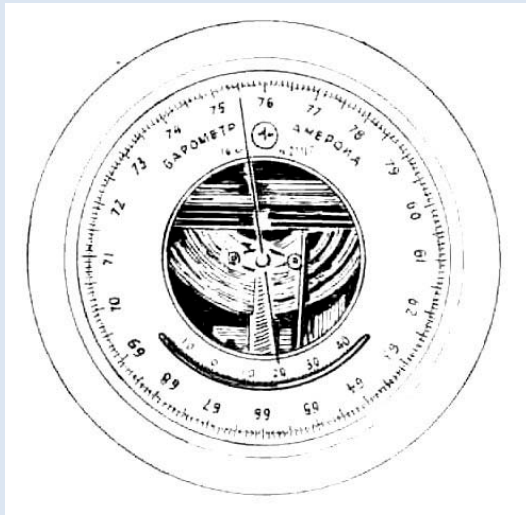
(MaximumThermometer)



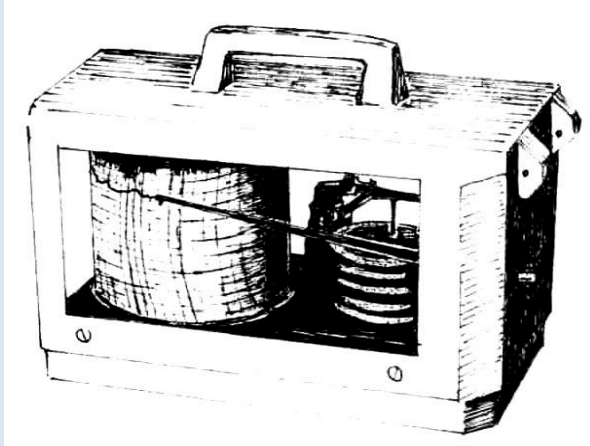


(Sunshine)

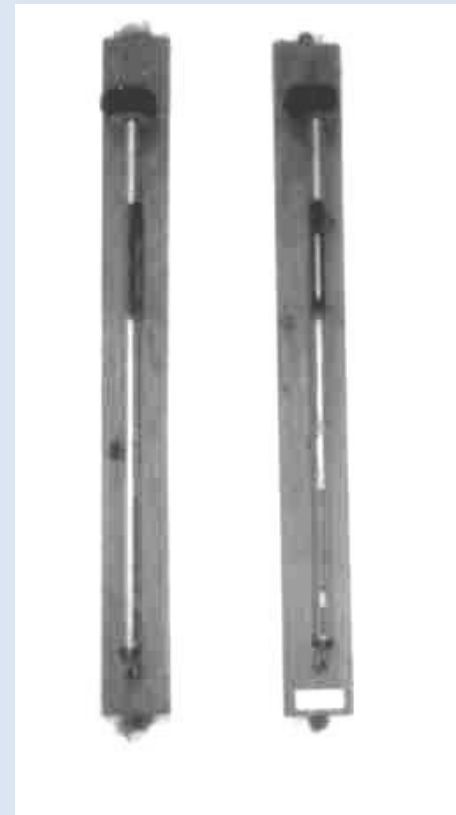
Wind Speed & Direction



(Barrometer Anaroid)



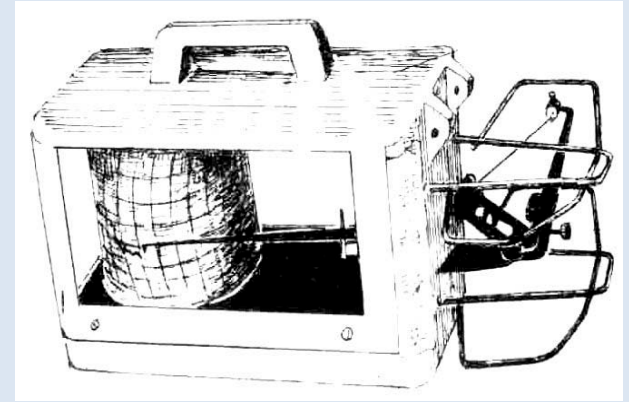
(Barrograph)



(Barrometer Tonelok)

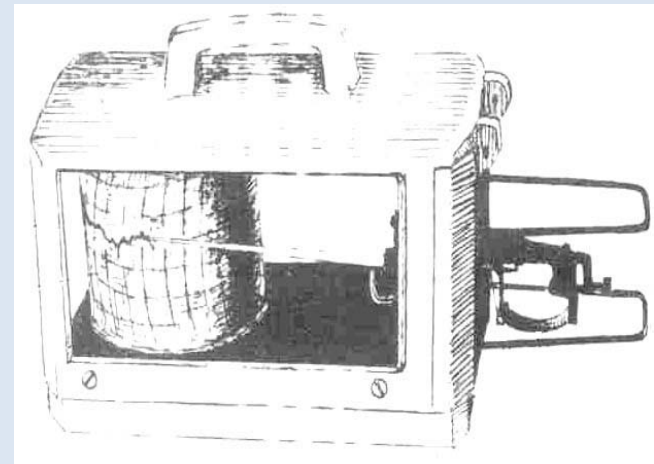
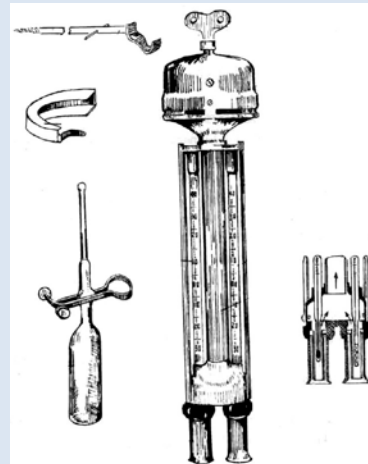


(Evaporation Pan)



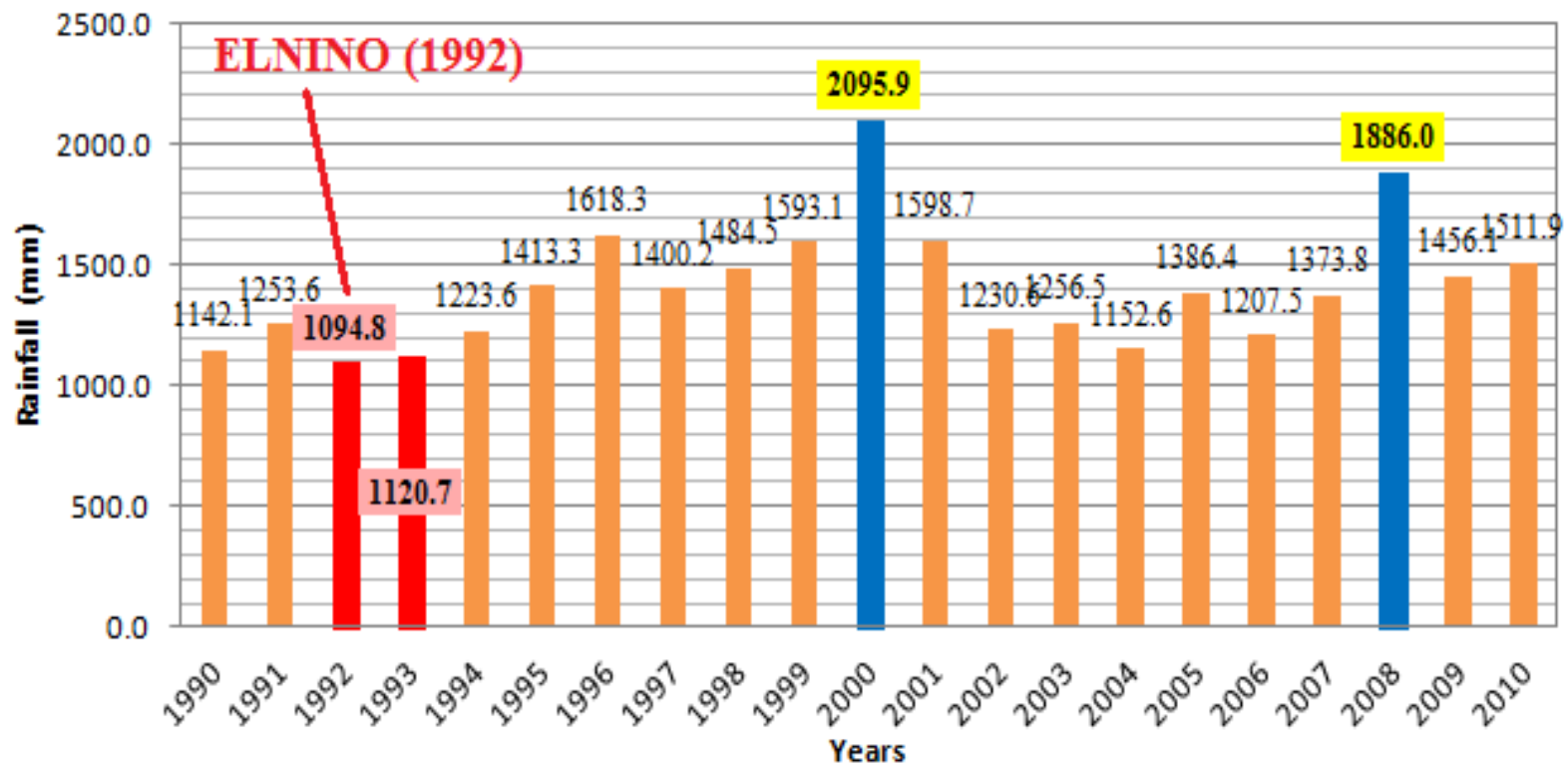
(Hygrometer)

Psychrometer



(Thermograph)

Total rainfall Of Many Years Phnom Penh (Pochentong) Station



Rainfall Profile of Driest and Wettest Year from Phnom Penh (Pochentong) Station

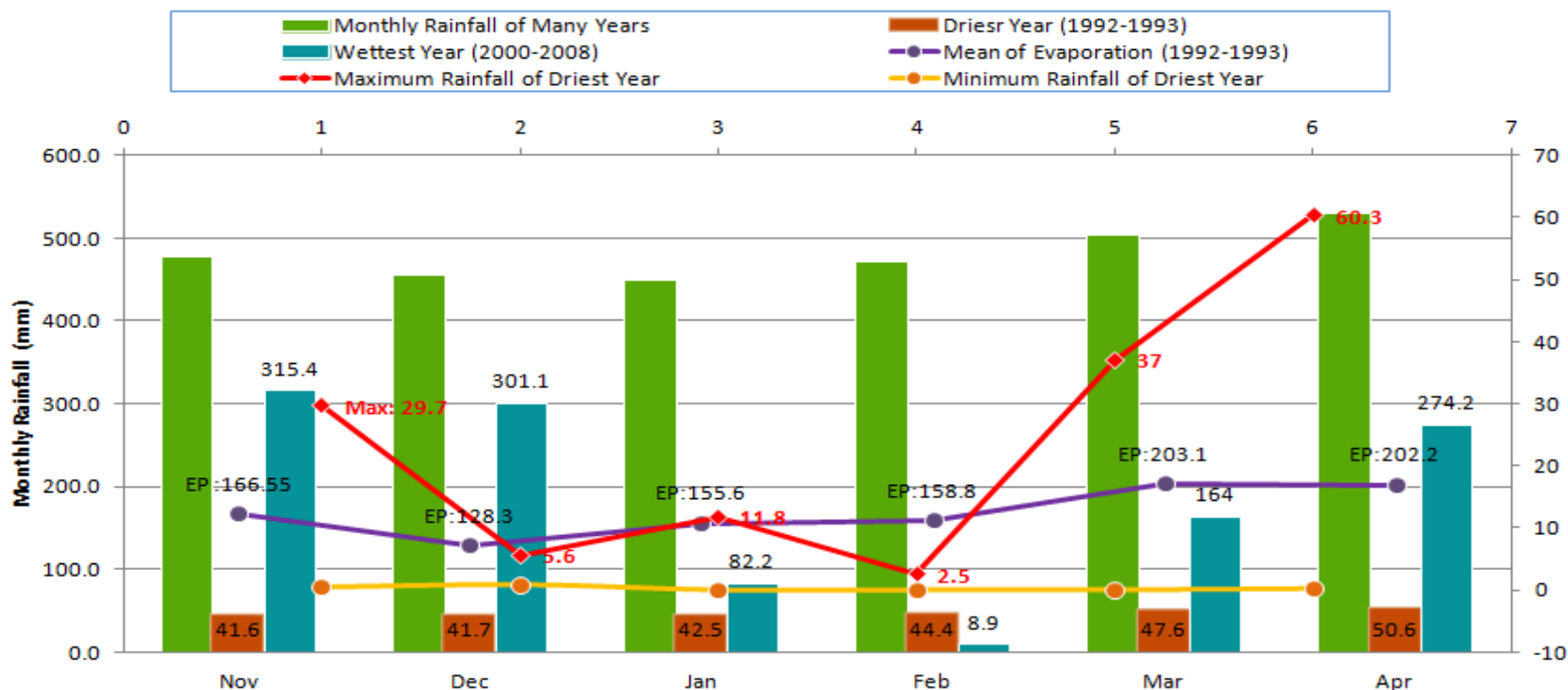
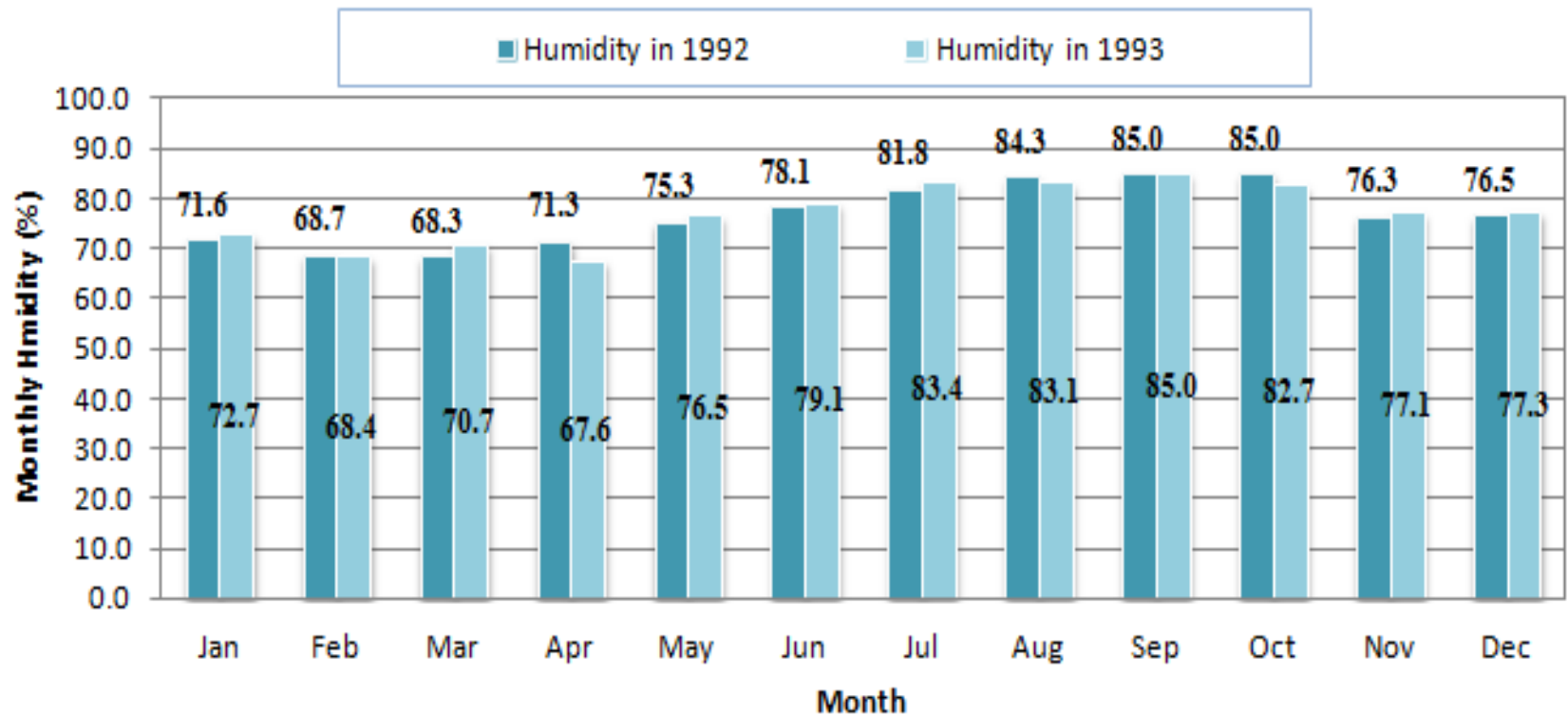
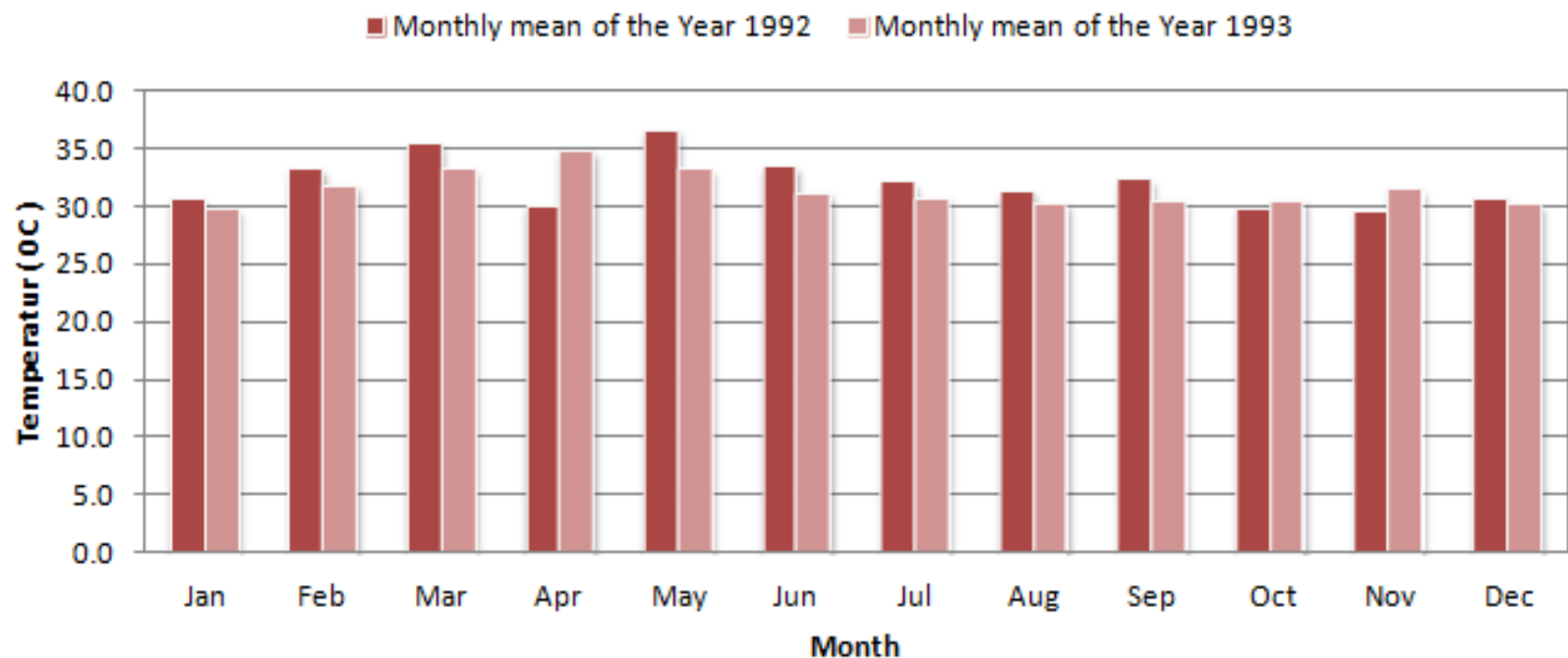


Fig. Monthly Rainfall , Maximum , Minimum ,
Rainfall profile of Driest and Wettest Year and Evaporation value in driest year.

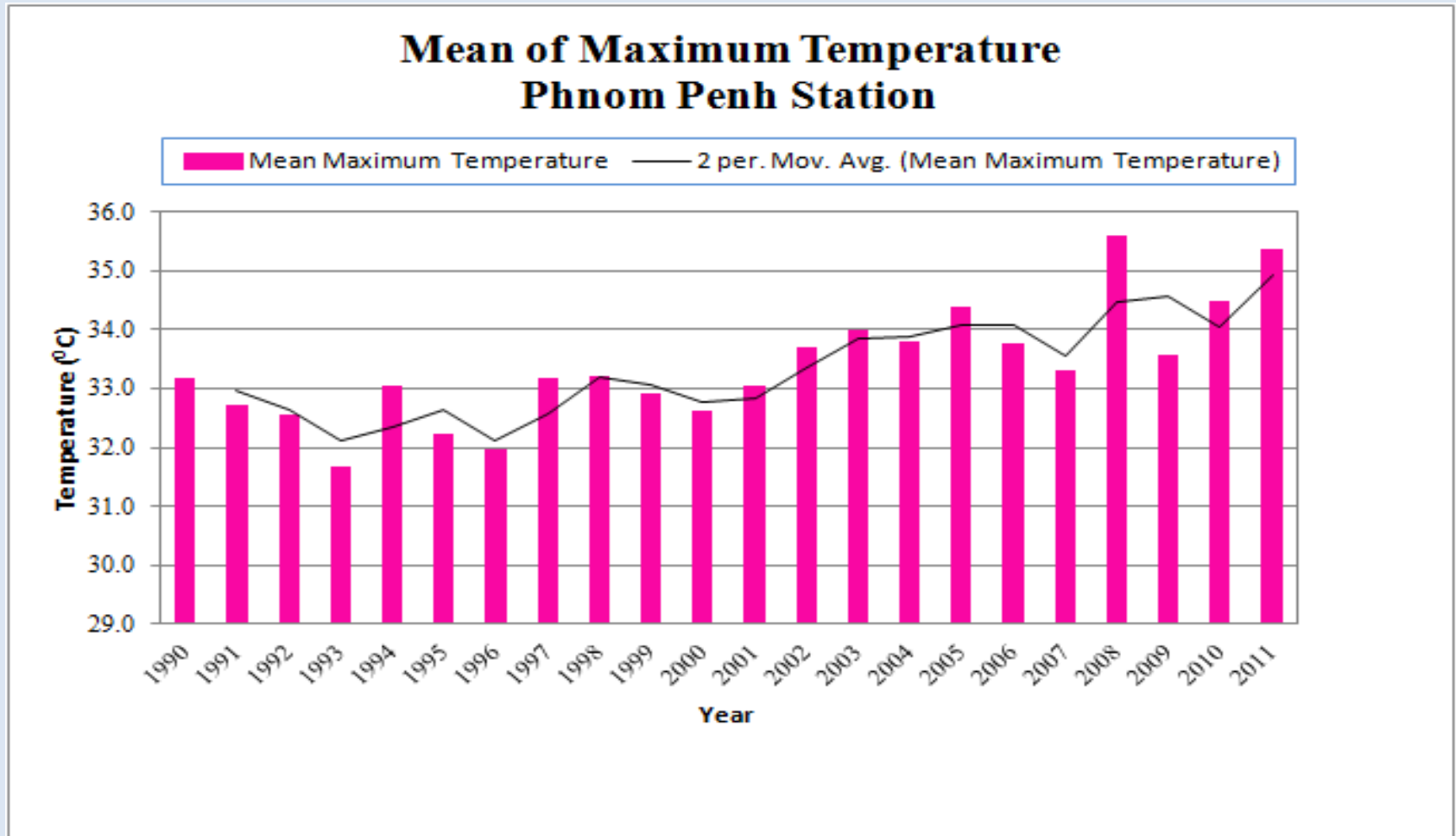
Humidity During the Driest Year (1992-1993) Phnom Penh Station



Monthly Maximum Mean Temperature of the Year 1992-1993 Phnom Penh (Pochentong) Station

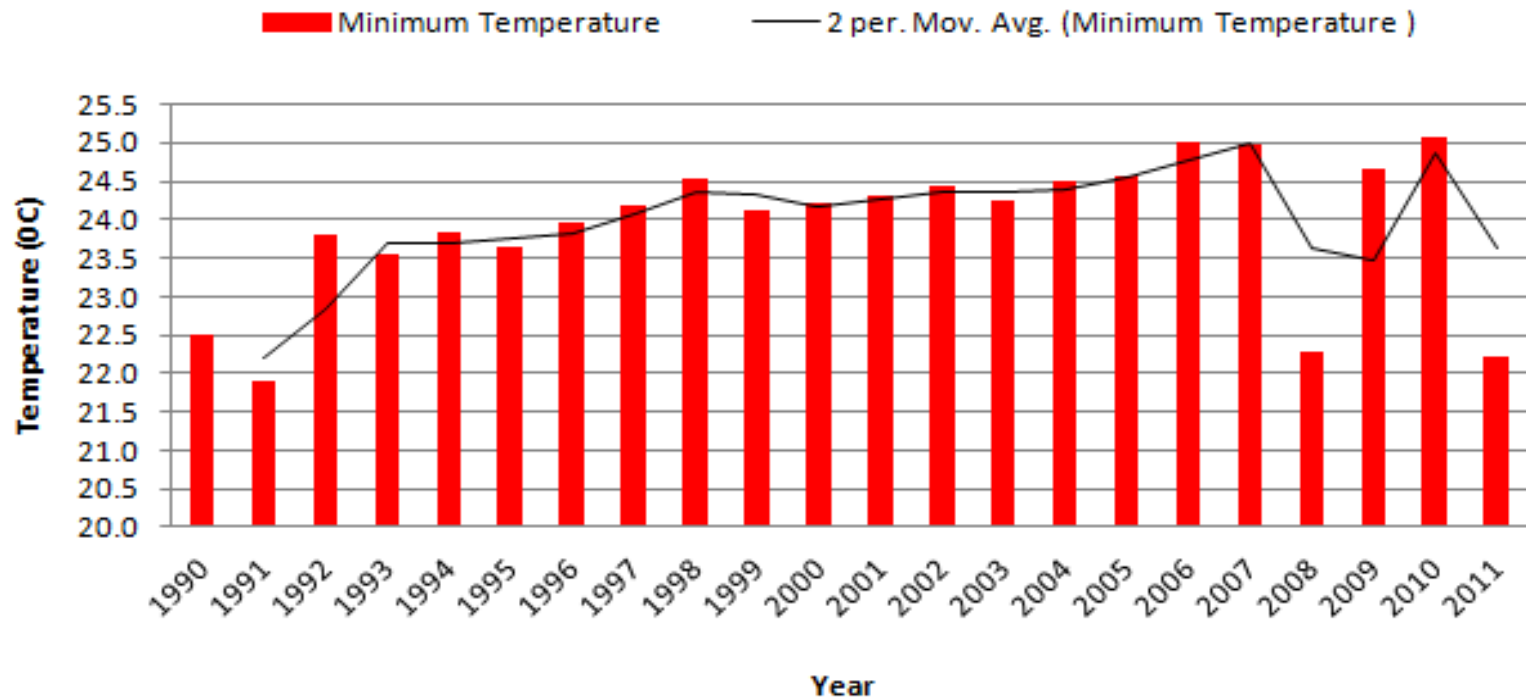


Maximum Temperature Pattern



Minimum Temperature Pattern

**Mean of Minimum Temperature
Phnom Penh Station**

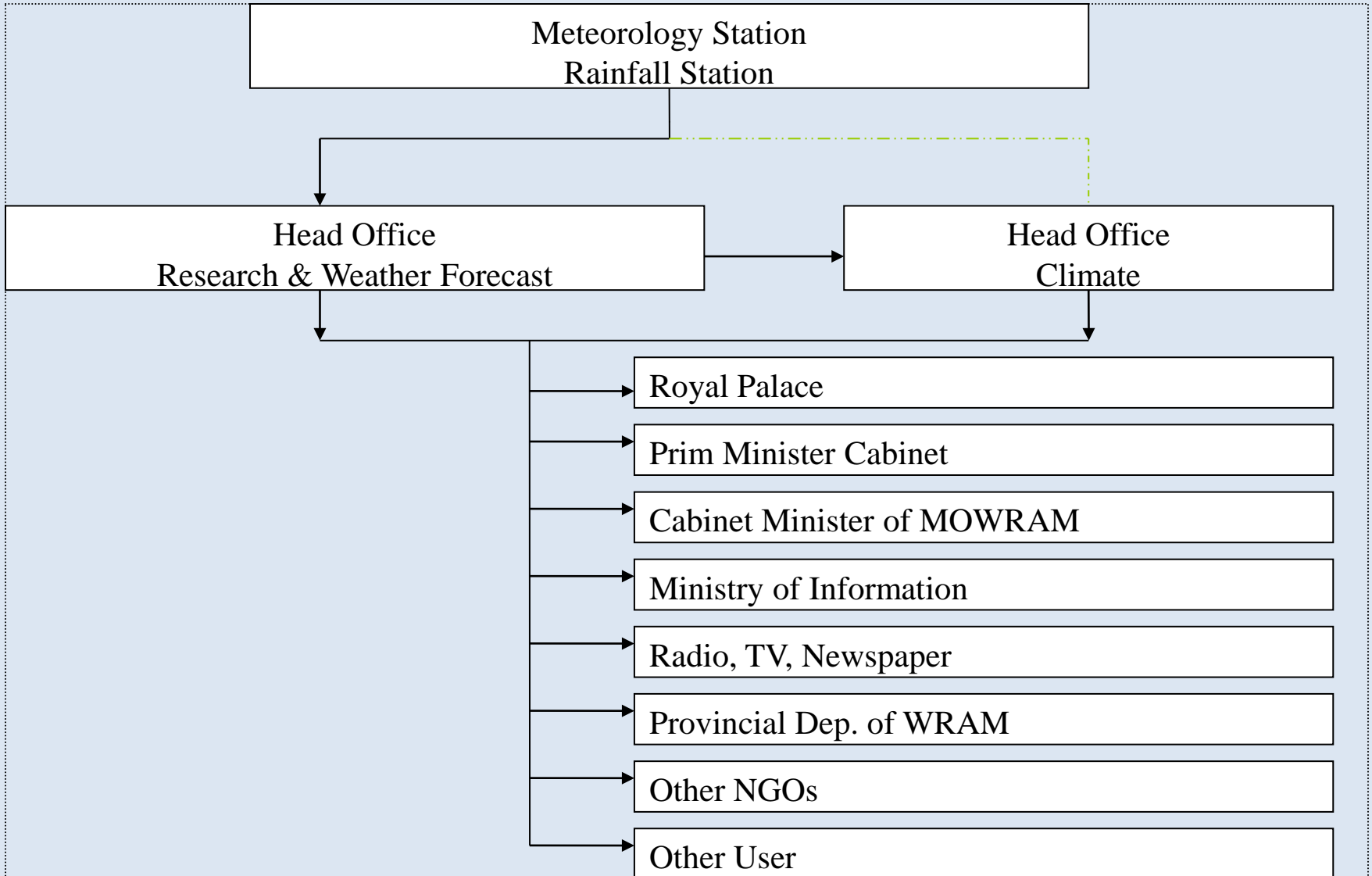


4. Weather Forecasting Products

- Use of Local data / Information
- Use Information by GTS and MTSAT and,
- Source of JMA, Hong Kong, NOAA, TMD
- Provide Weather Note to Flood Management and Mitigation Center
- Provide Weather Bulletin for daily and 3 days to the Public Through Media and Local Authority
- Provide the General Seasonal Weather Forecast
- Severe Weather Warning.

5. Data flow to users and archives

Structure of Data Flow and Archive Chart



6. Problem to faced

- Lack of human resources
- Lack of equipments
- Still to use old models of equipments
- Quality of prediction is permitted.
- The knowledge's staffs are permitted.
- The Field of Meteorology in Cambodia need more knowledge, skill , experience from developed Countries through training course short and long term or post graduate in abroad.

7. Current Issues and future Plan

- To strengthen human resources.
- To increase quality of weather prediction.
- To cooperate regional and international meteorological agencies
- To exchange meteorological data in the worldwide.
- To have more modern technology equipment.
- Reinstall automatic synoptic station .
- Build technical capacity to the staffs.
- Improve observation Data Management.
- Install Upper Air Weather Observation.
- Improve Telecommunication Service.

WEATHER RADAR STATION



**THANK YOU
FOR YOUR ATTENTION!**