

## **Climatic data collection, presentation and analysis**

### **1. Climatic data**

Climate data is the extensive and systematic collection of several key variables that characterize climate over timescale.

Climate data can provide a great deal of information about the atmospheric environment that impacts almost all aspects of human endeavor.

Automatic methods of collecting and processing meteorological data was started in the late 1950s. Today, the management of climate records requires a systematic approach that encompasses paper records, microfilm records and digital records, where the latter include image files as well as the traditional alphanumeric representation.

### **2. Climatic data collection**

Climatic data collection includes the following:

#### **a. Station identifiers**

Station names usually refer to the city or village where the data are collected.

#### **b. Geographical data**

Climate data are associated with geographical locations (latitude, longitude, elevation and above mean sea level).

**c. Landuse/ landcover**

Landuse/ landcover classification includes the following

- i. Artificial surfaces:** Continuous urban cover; discontinuous urban cover; industrial and commercial areas; transportation infrastructures; harbour areas; airports; mines, dumps and areas under construction; artificial green areas (non-agricultural).
- ii. Agricultural surfaces:** non irrigated crops; irrigated crops; rice fields and other inundated crops; grasslands; mixed crops; agricultural-forest systems
- iii. Natural vegetation and open areas:** deciduous forests; evergreen forests; mixed forest; shrub vegetation; mixed shrub and forest; natural grasslands and prairies
- iv. Wetlands:** swamp areas; peat lands; marshes; inter tidal flat areas.
- v. Water bodies:** rivers and other natural water courses; artificial water courses; lakes and lagoons; dams; estuaries; seas and oceans

**3. Type of climatic variable**

Data about following variables must be collected

- Temperature
- Humidity
- Wind direction
- Wind speed
- Precipitation
- Global radiation
- Sunshine
- Evaporation

## **4. Metadata documentation and management**

In order that meteorological data be useful for future users, it is essential that an adequate set of metadata be available.

### **i. Data recording and transmission**

When a meteorological element is measured with an instrument, data have to be recorded. Data collection should be as close to the source as possible. Manually observed data should be collected and captured on-site and transferred as soon as possible to the climate data management system (CDMS).

### **ii. Data processing**

It is very important to keep information on how the data are to be processed, validated and transmitted to the regional or central office from every single station.

### **iii. Storage and archiving of hard copy records**

All paper records should be stored in a controlled environment to avoid deterioration and possible destruction by temperature and humidity extremes, insects, pests, fire, flood, accidents or vandalism. But before archiving, the records should be captured in microfilm or, preferably, in electronic image form through a digital camera or scanner.

### **iv. Storage and archiving of digital information**

Climatic data should be stored in data storage system like DVD

### **v. Data exchange**

Exchange of data between organizations is essential for climatology.