Meteorology

Meteorology word emerged from Greek word *meteorologia* from *meteoros* meaning things up above. Meteorology is the study of atmospheric phenomena. This study consists of physics, chemistry, and dynamics of the atmosphere. It also includes many of the direct effects the atmosphere has upon Earth's surface, the oceans, and life in general.

In this course we will study the overall fundamentals of meteorology, a thorough description of atmospheric physics and circulation, air masses, fronts, and meteorological elements. This information supplies the necessary background to understand chart analysis, tropical analysis, satellite analysis, and chart interpretation.

Branch of Meteorology

Meteorology can be divided into three wings:

1) Microclimatology : Microclimatology is the branch of meteorology, in which climate of small region few meters above the ground surface is studied. The climate of crop canopy and above crop canopy (around 2 m above) is studied in Microclimatology. it also includes the climatic conditions in the soil extending from the ground to the depth of maximum root penetration. The microclimate is also called plant climate, ecoclimate and habitat climate.
2) Mesoclimatology: Mesoclimatology dealt with the climatic conditions of the topographic regions spreading over 20 to 1000 Km. All the phenomenon occurs in Planetory Boundary layer (PBL) Ex: Land breeze, sea breeze, cylones, storms etc
3) Macroclimatology: Macroclimatology consider the climatic pattern of relatively large regions such as hemisphere, continents, country, large scale air circulations, fronts etc. monsoon movement, Trade winds, westerlies, easterlies etc are parts of Macroclimatology.

Agrometeorology

Agricultural meteorology – Agrometeorology abbreviated from Agricultural Meteorology and also wrongly referred as Agroclimatology, deals with the behaviour of the atmosphere related to agricultural crop production. Agrometeorology puts the science of meteorology to the services of agriculture, in its various forms and facets, to help the sensible use of land, accelerate production of food and to avoid the irreversible abuse of land resources.

The meeting of Agrometeorologist in Moscow in 1951 defined agrometeorology as a science investigating the meteorologic, climatologic and hydrologic conditions which are significant for agriculture owing to their interaction with the objects and processes of agriculture production.

Interdisciplinary Science

1. **Environmental Science**
2. **Plant Science**
3. **Soil Science**
4. **Agronomy**
5. **Entomology**
6. **Pathology**
7. **Parasitology**
8. **Animal Science**
9. **Fisheries**
10. **Forestry**

Pratical Utility / Scope / Aspects

1) The crops are to be sown at the optimum period for maximum yield. In dry lands, the time of receipt rainfall decides the sowing date. The study of agro-meteorology enables the farmer to have the crops sown at the optimum periods and ill effects of late sowing on crop production.
2) Study of agro-meteorology helps to minimize the crop losses due to excess rainfall, cold/heat waves, cyclones, etc.
3) It helps in forecasting pest and diseases, choice of crops, irrigation and other cultural operations through short, medium and long range forecasts
4) It helps to identify places with same climate conditions (agroclimatic zones). This enables to adopt suitable crop production practices based on the local climatic conditions. It also helps in the introduction of new crops and varieties which are more productive than the native crops varieties.
5) It helps in the development of crop weather models which enables to predict crop productivity under various climatic conditions.
6) It helps in the preparation of crop weather calendars for different locations.
7) It enables to issue crop weather bulletins to farmers.
8) It enables to forecast the crop yield based on weather to plan and manage food production changes in a region.
9) To make the farmers more weather conscious in planning their agricultural operations.

Weather and Climate

Weather

In atmospheric science the terms "Weather" and "Climate" have different connotations. Weather refers to the State of Atmosphere at any given time denoting the short-term variations of atmosphere in terms of temperature, pressure, wind, moisture, cloudiness, precipitation and visibility. Weather is highly variable. It is constantly changing, sometimes. From hour to hour and at other times from day to day

Climate

Climate on the other hand, is the sum total of the variety of weather conditions of place or an area form day to day. Thus, climate may be defined simply as 'average weather'. The term climate denotes a description of aggregate weather conditions The world Meteorological Organization has suggested standard period of 30 years for calculating the climatic averages of different weather elements.