

## Weather Forecast Its Types Methods and Importance in Agriculture

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### INTRODUCTION

Weather forecasting is the use of science and technology to forecast atmospheric conditions for a certain place and period. It is a science to know that what will be the atmosphere or weather conditions is likely to happen at a particular place at particular time. Knowing the future weather conditions of a particular place at particular time with certain probability is known as weather forecasting. This is done with the use weather modeling with help of super computer. In other words, it's a way of predicting things like cloud cover, rain, snow, wind speed, and temperature before they happen. In short advance prediction of weather is known as forecasting.

#### Types of Weather Forecasting

**Nowcasting:** These types of forecast are valid for few hours to one day and more accurate and its area of application is very limited. This type of forecast is mainly used by fisherman.

**Short range forecast:** This type of forecast is valid for one to three day and area of application is large with more accuracy. This type forecast is mainly used in agriculture, water management and for other use also.

**Medium large forecast:** This type of forecast is valid for 3 to 10 days and area of applicability is of much large a region or district. This type of forecast is mainly used in agriculture. The forecast accuracy is around 70 per cent.

**Extended range weather forecasting:** This type of forecast is valid for more than 10 days to 4 week. This type of forecast is also used in many areas including agriculture. This type of forecast is mainly related to give an idea of deviation from normal.

**Long range forecast:** This type of forecast is valid for month to season and large area applicability a state or for combinations of many states. The monsoon forecast is a type of long range forecast.

Each forecast type is associated with a level of confidence of probability of occurrence /success. For example, a forecaster may predict rain next Tuesday with a 90% level of confidence. Short-range forecasts are far more accurate than medium- or long-range ones.

The medium range weather forecast is mainly used in agriculture. In India under the network of Gramin Krishi Mausam Sewa projects; medium range weather forecast valid for 5 days for every districts of India being received at 130 units of Agro-meteorological Field Units (AMFU). These AMFU centre is being issuing biweekly weather based crop management bulletins for every district of India on every Tuesday and Friday for farmers use for making their tactical decisions and by other stakeholders.

#### Methods Used to Find the Weather Forecasting

**1. Synoptic Method:** A systematic study of recent weather forecasts from a wide area is used in this method of weather forecasting. Present weather conditions are

linked to comparable scenarios in the past, and predictions are based on the premise that the current scenario would behave similarly to the analogous situation in the past.

**2. Statistical Method:** Regression equations or other advanced relationships are formed between various weather elements and the subsequent climate in this method of weather forecasting. Predictions or weather criteria are usually chosen based on a potential physical interaction with the predictants.

**3. Numerical Weather Prediction Techniques:** Numerical weather prediction definition states that it forecasts weather using statistical models of the atmosphere and oceans dependent on current weather conditions. The action of the atmosphere is expressed in this system by a series of equations based on physical laws governing airflow, air pressure, and other data. The method has been shown to be optimal for medium-term forecasts.

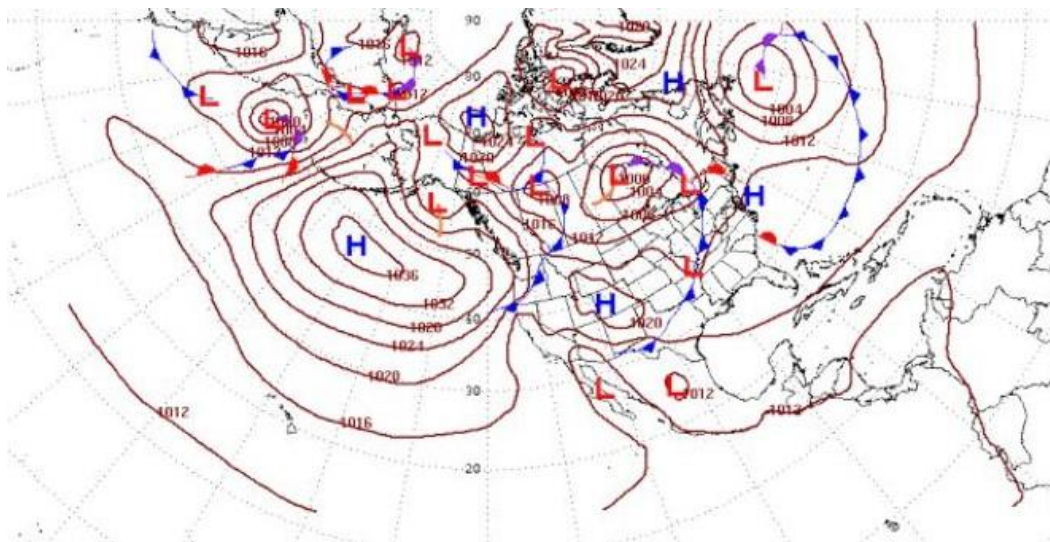


Fig. 1: Synoptic method of forecast

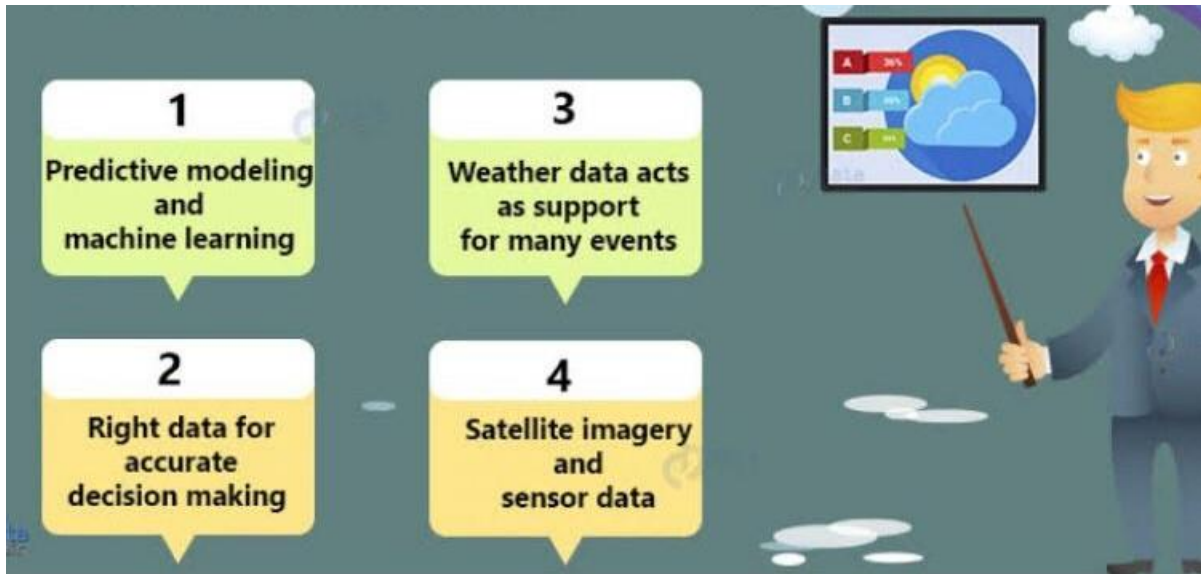


Fig. 2: Statistical method



Fig. 3: Numerical weather prediction method

### CONCLUSIONS

#### Use of weather forecast in agriculture

Agriculture and farming are mainly dependent on seasons and weather. The temperature matters a lot in that case when it comes to the farming of different kinds of fruits, vegetables, and pulses. Now that the technology is developed and special weather forecasting mechanisms are available, the farmers can get all the updates are on a smartphone. Occurrences of erratic weather are beyond human control. It is possible, however, to adapt to or mitigate the effects of adverse weather if a forecast of the expected weather can be obtained in time. Some aspects of

weather forecasts for agriculture are quite distinct from synoptic weather forecasts. While clear weather is required for sowing operations, it must be preceded by seed zone soil moisture storage. Crop weather factors mean that crops and cropping practices vary across areas within the same season. Weather forecasting is a prediction on conditions of atmosphere depending on location and time. Every area will have their different predictions related to the condition of weather which makes pretty easy for the farmers to know how and what to do when. The relationship between weather and agriculture has, therefore, necessitated the need for accurate

prediction of the weather; to enable farmers to make an informed decision that will not bring losses to them. Temperature, sunlight, and rainfall have major effects on the crops. For livestock, temperatures and adequate water and food are essential. The forecast of the weather event helps for suitable planning of farming operations. It helps to decide whether to undertake or withhold the sowing operation. To irrigate the crop or not, when to apply fertilizer and whether to start complete harvesting or to withhold it are the major components for which forecasting is a must. Irrigation is an artificial application of water to land for agricultural production and farming. The requirements for irrigation and crop growth are affected by weather variability. The amount of timing and evapotranspiration are two main weather-related requirements. Climate variability is something that all farmers need to react upon. Extended periods

of dry conditions, commonly known as drought is one of the major impacts in the irrigation system. Managing under the extreme conditions, irrigators need to understand daily and seasonal crop water use patterns, as well as adopt practices and technology which result in good production of crops. Timing of fertilizer has a significant effect on crop yields. Proper timing of the fertilizer application increases yields, reduces nutrient losses and prevents damage to the environment. Wrong timing and not predicting the weather may result to waste of fertilizer and even damage the crop. Knowledge of how the application of the fertilizer is done is required. Weather forecast can help the farmers to decide the timing on when to apply them and in which condition. Both the resources and money could be wasted if the application of fertilizer is done wrong and hence a proper knowledge and prediction is a must.