

Foundation for sustainability and development

The efficient use of basic weather and climate information is extremely important for both industrial and developing countries.

The growing season in agriculture and forestry is determined with the help of available meteorological information. Short- and long-range forecasts are needed in sowing, yield estimates, frost protection, irrigation, fertilising, pest control, harvesting, and the protection of livestock and plants. Information on the climate (long-term average of precipitation, sunshine, temperature, etc.) is also required in choosing the right species of plants, planning the use of water resources, distribution of seeds and fertilisers and land use.

The statistics provided by the National Meteorological Services enable the experts to assess the availability of wind and solar energy on time and space dimensions.

The monitoring of drought, rainfall and wind is necessary in the assessment of rain and wind erosion in order to prevent desertification.

Assessing the distribution of atmospheric impurities is based on observations of the atmosphere as well as on the availability of numerical models based on these observations. Environmental programmes also require information about climate and weather.

The largest user sector of real time weather forecasts consists of marine, air, and overland traffic. Aviation forecasts form the basis of flight safety. Predicting the state of the atmosphere with the help of different variables also helps to reduce flight costs. The aeronautical forecast system is needed in flight planning, fixing routes, assessing the amount of fuel needed, in take-offs and landings as well as during the flight.

The occurrence of a tropical cyclone, flood, heat wave, drought, or some other hazardous meteorological phenomenon may harm

the socio-economic development of a developing country for years afterwards. The most harmful hurricanes spring up west of Africa, from which they move to the Caribbean, growing in strength. Central American countries and the islands in the Caribbean are struck by approximately a dozen storms annually. Many of these storms are classified as hurricanes. Typhoons appear in the Pacific and cause immeasurable damage in the Far East. Cyclones cause havoc in South and East African countries. Forecasting the behaviour of the storms as well as rescue work require operational meteorological and communication networks in these countries.

The UN named the 1990s the International Decade of Natural Disaster Reduction. Statistics show that the most harmful disasters are drought, floods, and tropical storms (IDNDR, Yokohama, 1994). Only storms that have affected more than 1% of the population or caused damage worth more than 1% of total annual GNP have been taken into account. The frequency of drought, floods and tropical storms is many times greater than that of other disasters. As these phenomena are weather-related they are predictable only if good meteorological services can be provided both at national and international level. The National Meteorological Services, producing the basic weather information, play an important role in disaster reduction. Preventing disasters is much more economical than repairing their consequences.

Measurement of dryness, for instance, is one of the basic activities of the National Meteorological Services, and even the most important activity in countries affected by drought. Weather forecasts and long-term climate data reveal the progress of aridity before damage is done to the plant life. Those responsible for the production of food in developing countries need to have regular access to such forecasts. ♦