

Technology Fact Sheet for Adaptation

VII. Real-time weather stations and weather forecasting ⁱ

Introduction

With growing evidences of climate change and occurrence of extreme weather events, information on weather and forecasting of weather conditions are crucial to alleviate the impacts of climate-induced disasters, including loss of lives and properties. Furthermore, Bhutan's key economic sectors – agriculture and hydropower – are dependent on climate patterns. Information on weather and projection of weather conditions, precipitation levels in particular, are crucial for adaptive management of these sectors in response to observed and projected climate change.

Technology characteristics

Weather observation and forecasting technology has improved over the past 20-30 years. Modern weather observation and forecasting systems rely on automated weather stations (AWS) with GSM/GPRS communication technology for real-time data. Weather forecasting can be multi-range varying from now casting (forecasting of weather within the next 1 to 6 hours) to long-term climate prediction (see the figure below). Most weather forecasting systems now provide forecasts of next 5-7 days.

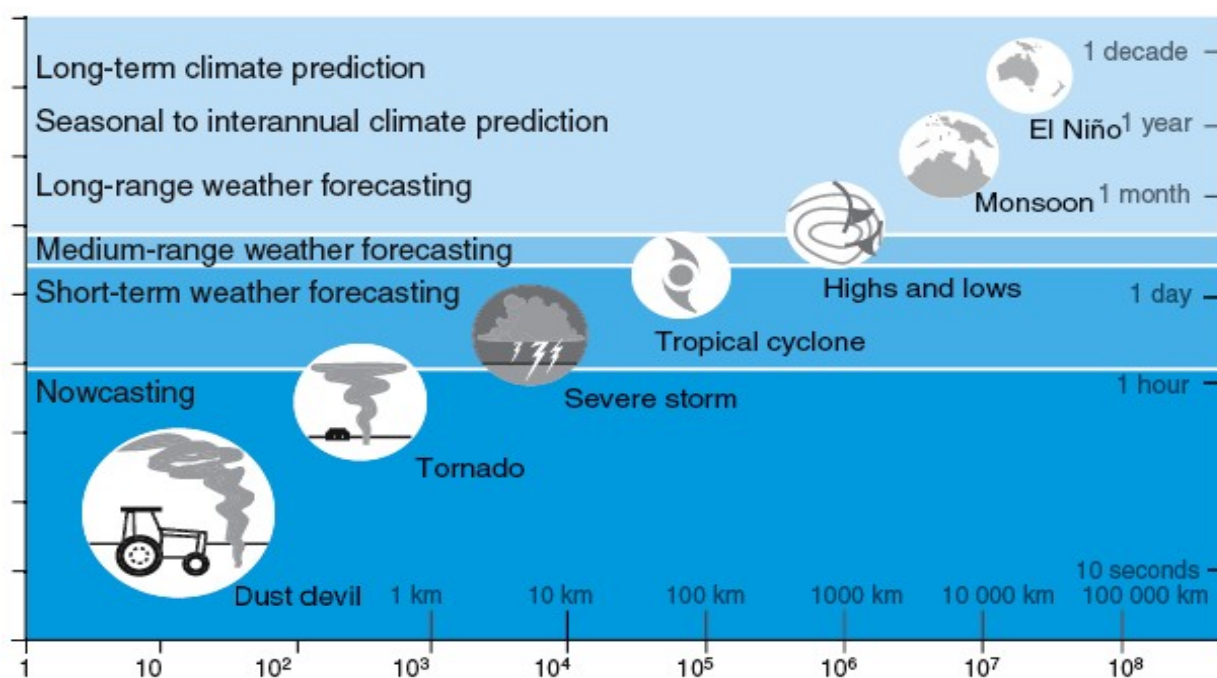


Figure 1: Various Ranges in Weather Forecasting and Climate Prediction

Source: Golnaraghi M, 2005¹

Country specific applicability and potential

Weather observation and forecasting system has universal applicability and potential.

Status of technology in country

Bhutan's weather observation and forecasting system is limited. Currently, there are only three automated weather stations (AWS). There is a need to increase the number of AWS for a more comprehensive coverage.

¹ Golnaraghi M., Early warning systems, UNEP/GRID-Arendal Maps and Graphics Library: http://maps.grida.no/go/graphic/early_warning_systems, 2005.

Benefits to economic, social and environmental development

A comprehensive weather monitoring and forecasting system would have numerous benefits. These include weather alerts and advisories to protect life and property when severe or hazardous weather is expected, planning and implementation of farming activities, hydropower production, and travel and recreation, and disaster risk management including forest fires.

Financial Requirements and Costs

The cost of setting up 3 AWS and 2 automated water level stations was Nu. 18.15 million. This included equipment, software development and operationalization, and staff training.

ⁱ This fact sheet has been extracted from TNA Report – Technology Needs Assessment and Technology Action Plans for Climate Change Adaptation – Bhutan. You can access the complete report from the TNA project website <http://tech-action.org/>