

COMMUNICATING FORECAST UNCERTAINTY

PWS-SG 1

This summary guide is for forecasters who are required to include uncertainty information in weather and climate forecasts and want to know the best way to present it. It provides advice on communicating probability forecasts, or other kinds of uncertainty information.



Why communicate forecast uncertainty?

Uncertainty information helps people make better decisions: People can make good plans and the right choices when they know the options they are facing. These plans range from simple things such as what clothes to wear, to major emergency responses such as community evacuation.

Communicating uncertainty helps manage user expectations: Meteorologists are routinely faced with forecast uncertainty. This can be stressful when users have an expectation that the forecast is always right. Communicating forecast uncertainty leads to a realistic understanding of the accuracy and reliability of the service.

Communicating uncertainty promotes user confidence: Surveys show that uncertainty information does not undermine people's confidence in the service. Instead, it reassures people that they are getting the full story, and gives them confidence that the service is being provided objectively and scientifically.

Forecast uncertainty reflects the state of the science: Meteorological services must be based on good science. Uncertainty is inherent in forecasts and it is appropriate that this uncertainty be incorporated into the services that are provided.

How should forecast uncertainty be communicated?

Tailor the information to the audience: Different users have different requirements and varying levels of understanding. For some, detailed information can be provided, including complex graphics. They may even have in place, specific response plans that describe certain actions to be taken according to defined thresholds. Less sophisticated users will prefer simpler information.

Understand how people interpret uncertainty: A person's interpretation of uncertainty can be influenced by personal feelings of risk and vulnerability. Make sure that your terminology is clearly defined so that people have an accurate understanding of the uncertainty involved.

Use colour wisely: Colour can be a powerful way to communicate meaning. Save the strongest colours for when they are needed. For example, use red only when there is a strong likelihood of a high-impact event.

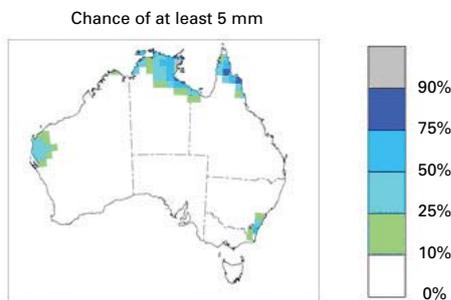
Examples of uncertainty information

Uncertainty information can be presented in all sorts of ways – simple plain language such as “chance of” and “possible”; numerically using indices and probabilities; descriptions of alternative scenarios, pictorially using icons, graphs and charts.

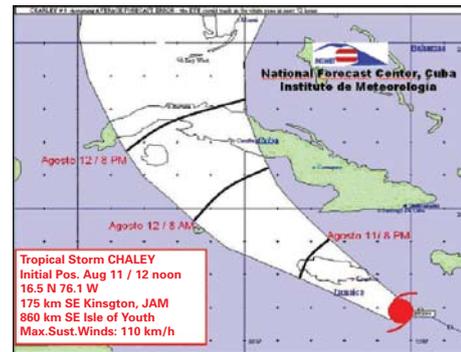
A likelihood scale

Terminology	Likelihood of the outcome
Extremely likely	Greater than 99% probability
Very likely	90% to 99% probability
Likely	70% to 89% probability
More likely than not	55% to 69% probability
Equally likely as not	45% to 54% probability
Less likely than not	30% to 44% probability
Unlikely	10% to 29% probability
Very unlikely	1% to 9% probability
Extremely unlikely	Less than 1% probability

Graphical probability



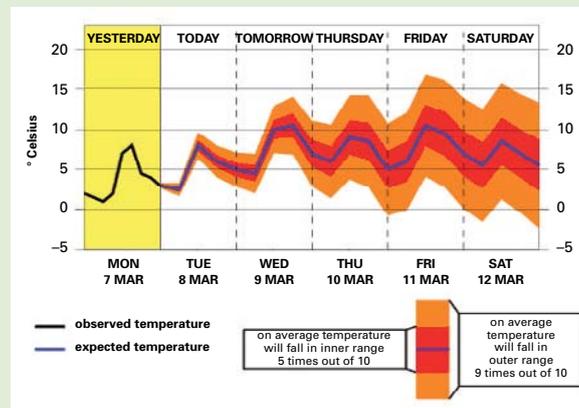
Depiction of forecast uncertainty in tropical cyclone track



As part of an icon



As a 'fan chart' showing the increase in uncertainty with time



Note: This summary guide is based on the "PWS Guidelines on Communicating Forecast Uncertainty" (WMO/TD No. 1422) - Available at www.wmo.int/pws



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Organization

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For more information, please contact:

World Meteorological Organization

Ms Haleh Kootval, Chief, Public Weather Services Division

Tel.: +41 (0) 22 730 83 33 – Fax: +41 (0) 22 730 81 28 – E-mail: HKootval@wmo.int

7 bis, avenue de la Paix – P.O. Box 2300 – CH-1211 Geneva 2 – Switzerland

www.wmo.int/pws