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Bureau of Meteorology

Probability Matched Ensemble (PME) Products User Guide

This document describes the Bureau of Meteorology's Probability Matched Ensemble (PME) rainfall forecast product suite.

System Information

For information on how the PME system operates, please refer to Operations Bulletins numbers 81, 82, 85, 87, 91, 102 and 116 found here:
http://www.bom.gov.au/australia/charts/bulletins/nmoc_bulletin.shtml

Product ID numbers

Product ID	Description
IDYPME11	Daily rainfall amounts and probabilities for 8 days, PME, 0.25 degree grid, 15-15UTC period
IDYPME12	Three-hourly rainfall amounts and probabilities for 8 days, PME, 0.25 degree grid

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Product fields

IDYPME11 (daily)	IDYPME12 (three-hourly)
accum_precip_cal_10Pct accum_precip_cal_25Pct accum_precip_cal_50Pct accum_precip_cal_75Pct accum_precip_expected mcpop_pt2mm mcpop_pt4mm mcpop_pt6mm mcpop_1mm mcpop_2mm mcpop_5mm mcpop_7mm mcpop_10mm mcpop_15mm mcpop_25mm mcpop_35mm mcpop_50mm mcpop_75mm mcpop_100mm mcpop_125mm mcpop_150mm mcpop_300mm mcpop_500mm prob_precip_cal_0p2mm prob_precip_cal_0p4mm prob_precip_cal_0p6mm prob_precip_cal_1mm prob_precip_cal_2mm prob_precip_cal_5mm prob_precip_cal_7mm prob_precip_cal_10mm prob_precip_cal_15mm prob_precip_cal_25mm prob_precip_cal_35mm prob_precip_cal_50mm prob_precip_cal_75mm prob_precip_cal_100mm prob_precip_cal_125mm prob_precip_cal_150mm prob_precip_cal_300mm prob_precip_cal_500mm	CatPrecip10Pct CatPrecip25Pct CatPrecip50Pct CatPrecip75Pct prob_precip_cal_0p2mm prob_precip_cal_0p4mm prob_precip_cal_0p6mm prob_precip_cal_1mm prob_precip_cal_2mm prob_precip_cal_5mm prob_precip_cal_7mm prob_precip_cal_10mm prob_precip_cal_15mm prob_precip_cal_25mm prob_precip_cal_35mm prob_precip_cal_50mm prob_precip_cal_75mm prob_precip_cal_100mm prob_precip_cal_125mm prob_precip_cal_150mm prob_precip_cal_300mm prob_precip_cal_500mm expected_rain mcpop_pt2mm mcpop_pt4mm mcpop_pt6mm mcpop_1mm mcpop_2mm mcpop_5mm mcpop_7mm mcpop_10mm mcpop_15mm mcpop_25mm mcpop_35mm mcpop_50mm mcpop_75mm mcpop_100mm mcpop_125mm mcpop_150mm mcpop_300mm mcpop_500mm

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File Details

PME files are summarised as follows:

- Input models are:
    - Australian Community Climate and Earth-System Simulator – Regional domain (ACCESS-R);
    - Australian Community Climate and Earth-System Simulator – Global domain (ACCESS-G);
    - European Centre Spectral Prognosis (ECSP);
    - European Centre Ensemble Prediction System (EPS);
    - Japan Meteorological Agency Global Spectral Model (JMAGSM);
    - United Kingdom Grid Code (UKGC);
    - United States of America Global Forecast System (USAGFS); and
    - Canadian Meteorological Centre Global Environmental Multiscale Model (CMCGEM).
- Files are NetCDF4 format;
- Files are structured by time, latitude, longitude;
- Grid resolution is 0.25 degrees for both products;
- Daily forecasts are valid for 15UTC to 15UTC;
- IDYPME11 issue times are:
    - 0800UTC (00Z run);
    - 0940UTC (06Z run);
    - 1920UTC (12Z run);
    - 2135UTC (18Z run);
- IDYPME12 issue times are:
    - 0805UTC (00Z run);
    - 0945UTC (06Z run);
    - 1930UTC (12Z run);
    - 2140UTC (18Z run);
- PME NetCDF4 directory names are /nwp4/IDYPME11.v3.yyyymmdd-hh.nc4 and /nwp4/IDYPME12.v3.yyyymmdd-hh.nc4.

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Field definitions

accum_precip_expected (daily) AND **expected_rain** (three-hourly)
The calibrated forecast rainfall amount (in millimetres). This is also consistent with the probability distribution implied by the accum_precip_cal_xxPct and prob_precip_cal_xmm figures.

accum_precip_cal_xxPct (daily) AND **CatPrecipxxPct** (three-hourly)
Rainfall amount forecast to be equalled or exceeded with a probability of xx% (in millimetres).

mcpop_xmm AND **mcpop_ptxmm**
Forecast probability of rainfall above x mm obtained from the vote counting method. These are calculated using the fraction of models in the PME for which the rainfall exceeds the threshold amount. They are not calibrated using past model performance.

prob_precip_cal_xmm
Calibrated forecast probability of rainfall above x mm obtained by taking a weighted average of the fraction of ensemble members predicting rain above each threshold (as a percentage).

Time definitions

basetime
The base time of PME run, in seconds since 1 January 1970. The file name has the date of the basetime as yyyymmdd.

time
The time the forecast is valid: the number of hours after the base time corresponding to the end of the 24 hour rainfall accumulation period.

time_bounds
The beginning and end of the rainfall accumulation period, in hours after the forecast base time.