



**EVALUATING WEATHER FORECASTS IN TERMS OF TWO
MEASURES OF HOW ACCURATELY A SET OF FUTURE EVENTS
HAVE BEEN PREDICTED
– INTENSITY AND TIMING**

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Two Approaches

Two approaches to forecast evaluation are examined.

The first approach explored addresses the capability of a forecast system to correctly indicate *the intensity* of a set of weather events.

The second approach explored addresses the capability of a forecast system to *correctly time* a set of events.

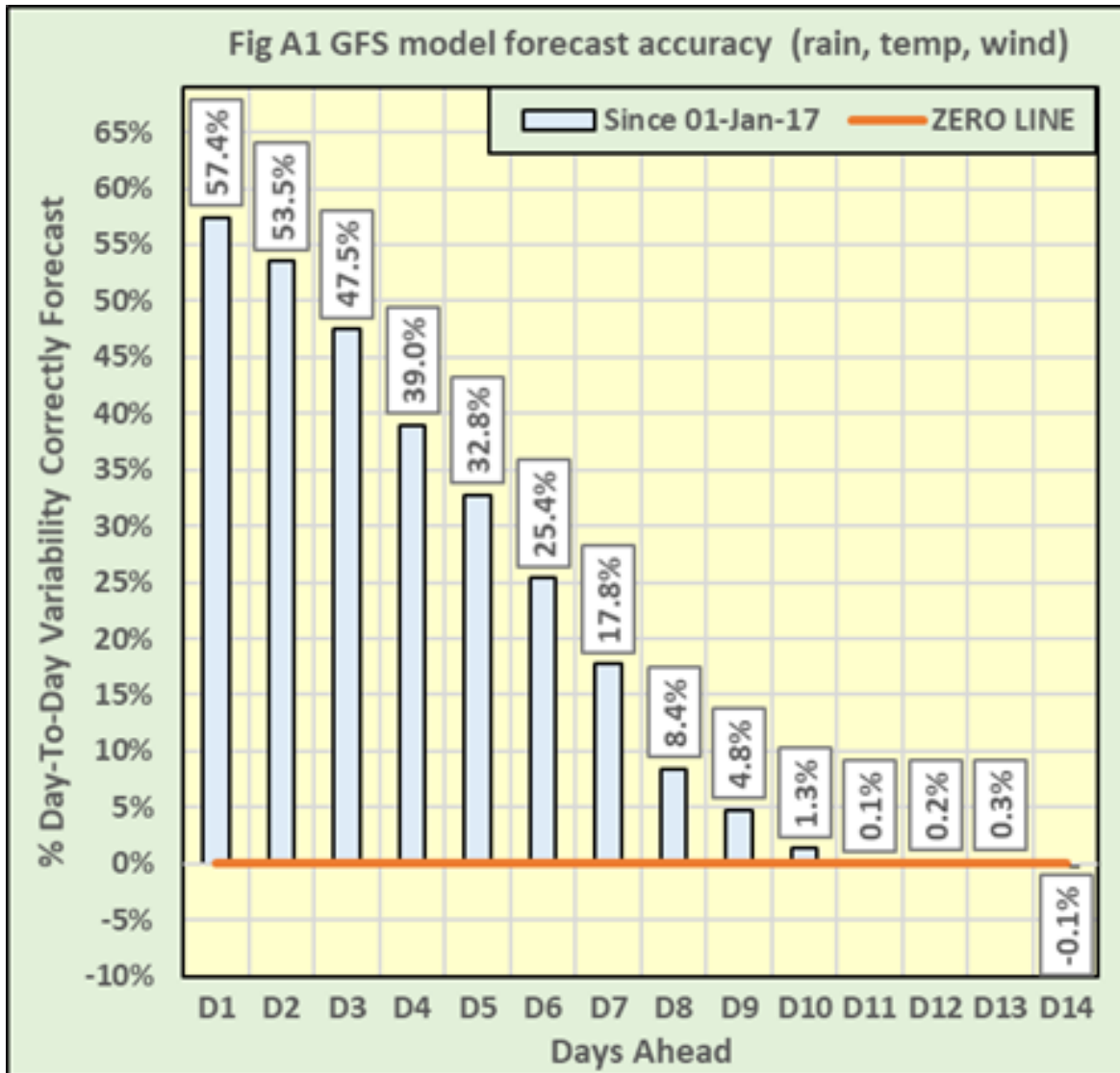
Two Sets of Forecasts

Two sets of forecasts for Melbourne, Australia, are evaluated.

A set of the *official forecasts* (out to Day-7).

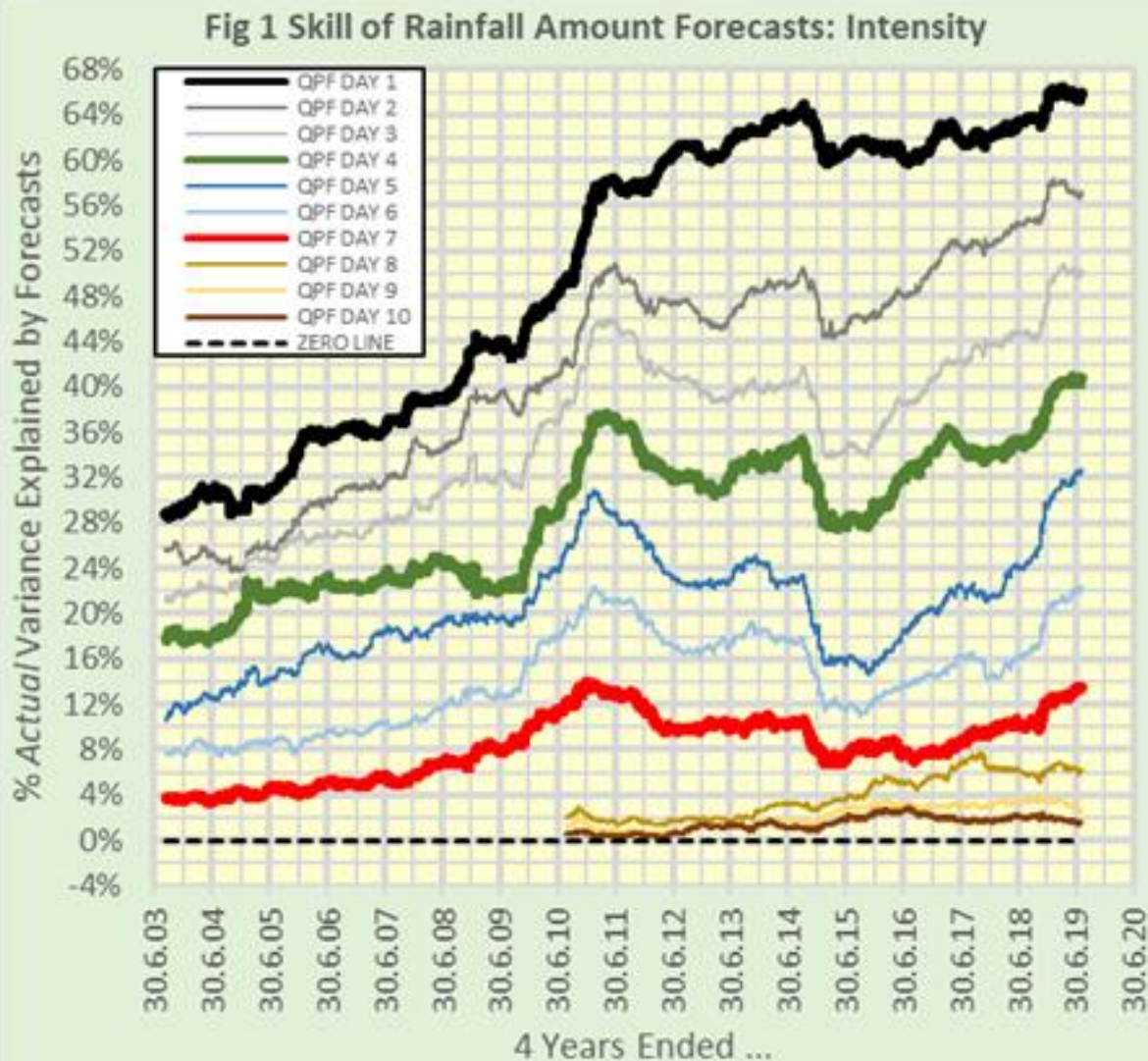
A set of forecasts generated automatically via an algorithm (out to Day-14) interpreting the *GFS NWP model forecasts*.

The overall skill of the GFS model algorithm forecasts



The overall skill of the GFS model forecasts is encouraging, at least out to Day-10.

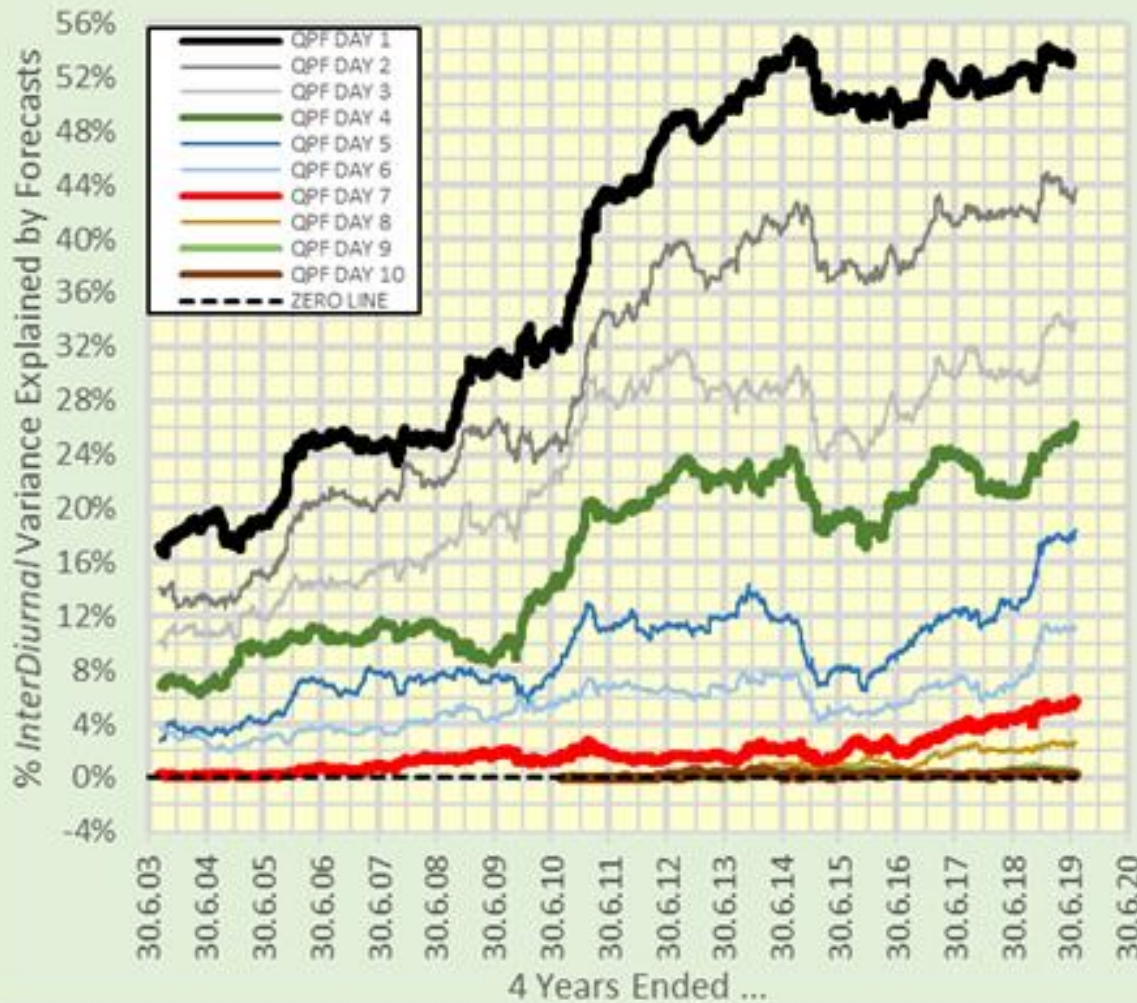
Trends in the accumulated skill at predicting precipitation intensity



An overall increase in skill for most lead times, the Day-5 official predictions being now as skilful as the Day-1 official predictions were less than two decades ago. Some limited skill is shown to be emerging for GFS predictions out to Day-10.

Trends in the accumulated skill at predicting precipitation timing

Fig 2 Skill of Rainfall Amount Forecasts - Timing



An overall increase in skill for precipitation timing, albeit at a somewhat lower performance level than for precipitation intensity.

Several significant rainfall events from mid-November 2017 to late-December 2017

18 Nov-2017: 24.8 mm

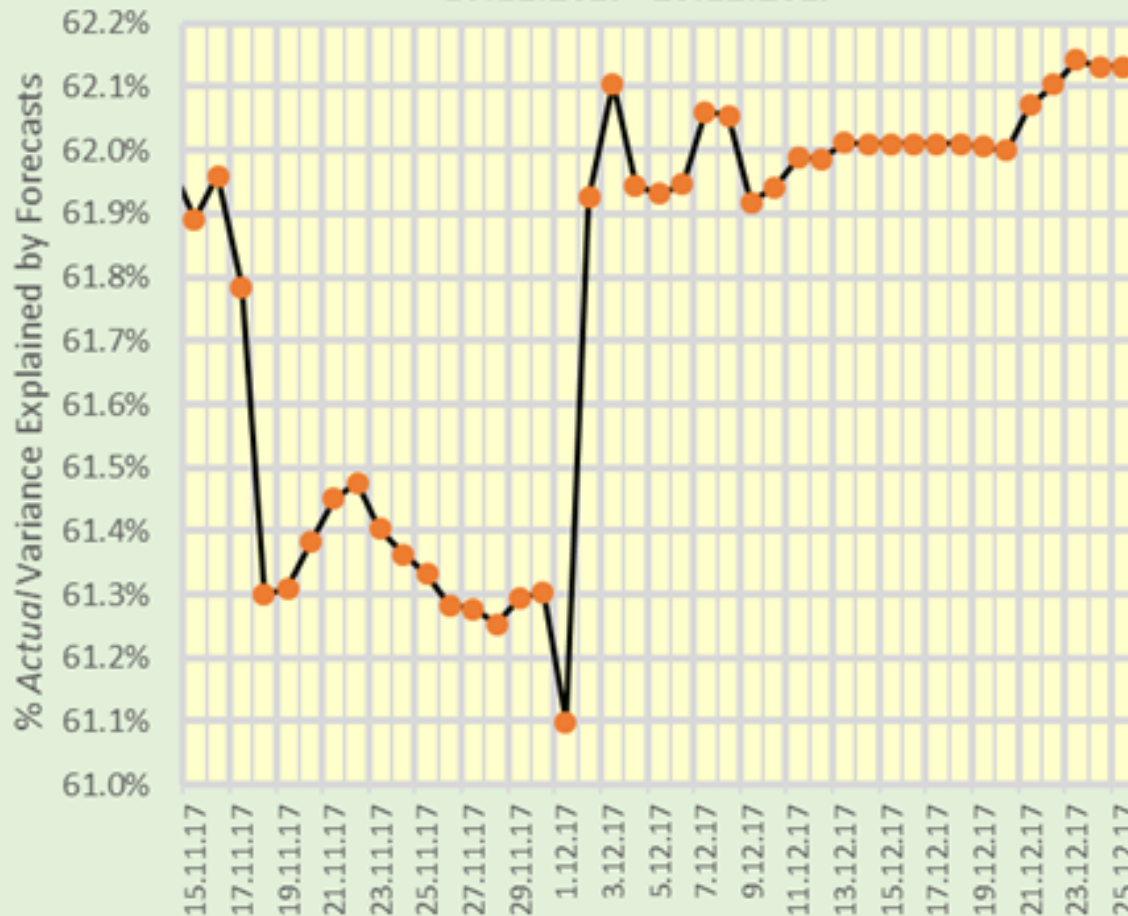
1-4 Dec-2017: 73.4 mm

7-8 Dec-2017: 25.2 mm

19-20 Dec-2017: 20.8 mm

The accumulated skill at predicting precipitation intensity for Day-1

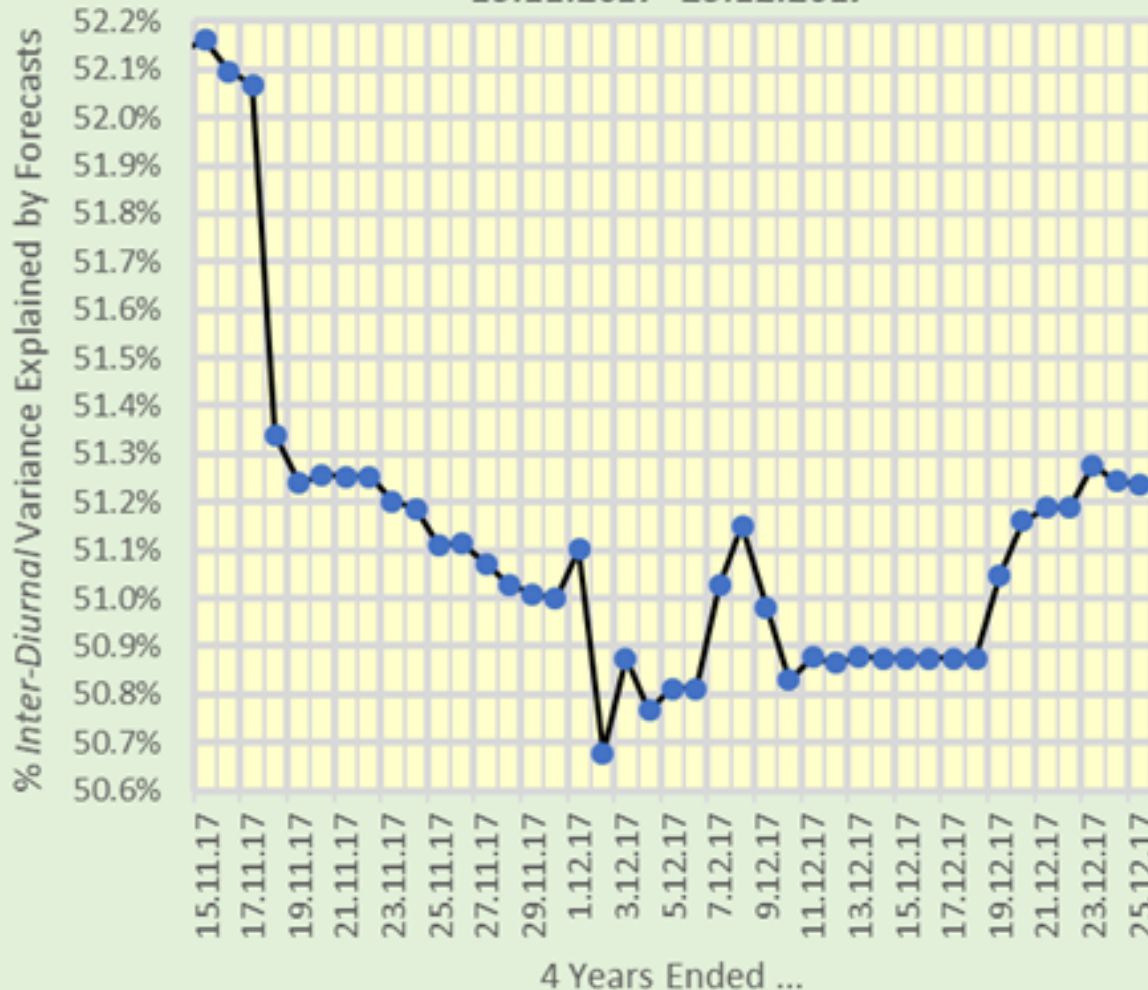
Fig 3 Skill of Day-1 Rainfall Amount Forecasts : Intensity
15.11.2017 - 25.12.2017



The intensity of the 18-Nov event was very poorly forecast, the intensity of the 1-4 Dec event was very well forecast, whilst there was nothing special that may be concluded regarding how well the intensity of the 7-8 Dec event and the intensity of the 19-20 Dec event were forecast.

The accumulated skill at predicting precipitation timing for Day-1

Fig 4 Skill of Day-1 Rainfall Amount Forecasts: Timing
15.11.2017 - 25.12.2017



The timing of the 18-Nov event was very poorly forecast, the timing of the 1-4 Dec event was slightly disappointing, whilst the timing of the 7-8 Dec event and the timing of the 19-20 Dec event were both reasonably well forecast.

Concluding Remark

Two approaches to evaluating the accuracy of weather forecasts (severity of an event and its timing) have been described.

Their value has been then illustrated by applying them to several significant rainfall events during the latter weeks of 2017 in Melbourne, Australia.