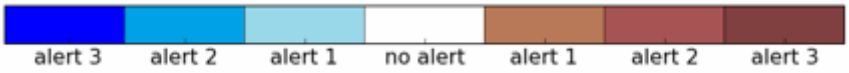
ABOUT EARLY ACTION RAINFALL WATCH OUTLOOKS

Early Action Rainfall (EAR) Watch outlooks are simply reformatted tercile outlooks. These were first created in 2013 to address the poor uptake of tercile and above/below median format outlooks in the Pacific Islands and the needs of disaster management government and non-government organisations e.g. Red Cross. The EAR Watch format focuses on the below normal and above normal tercile probabilities.

The EAR Watch outlook combines the rainfall outlook and model confidence into an alert level for a specific location (model confidence comes from looking back in time to see how accurate the model has been in the past). The EAR Watch outlook has seven alert levels, three stages of alert for wet, three stages for dry and one alert level for no alert indicating there is little risk of severe wetter or drier conditions in the coming season. The highest level of alert is alert level 3, indicating strong chances of either a wetter (blue) or drier (brown) outlook with high model skill for the coming season.



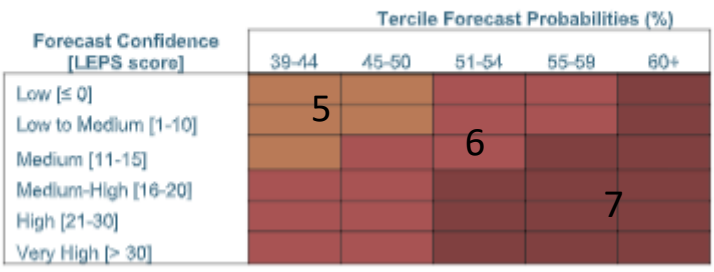
The EAR Watch outlooks are usually presented in regional and national EAR Watch bulletins which are used to inform Pacific Islands government and non-government agencies of recent and upcoming periods of prolonged drier or wetter than normal conditions.

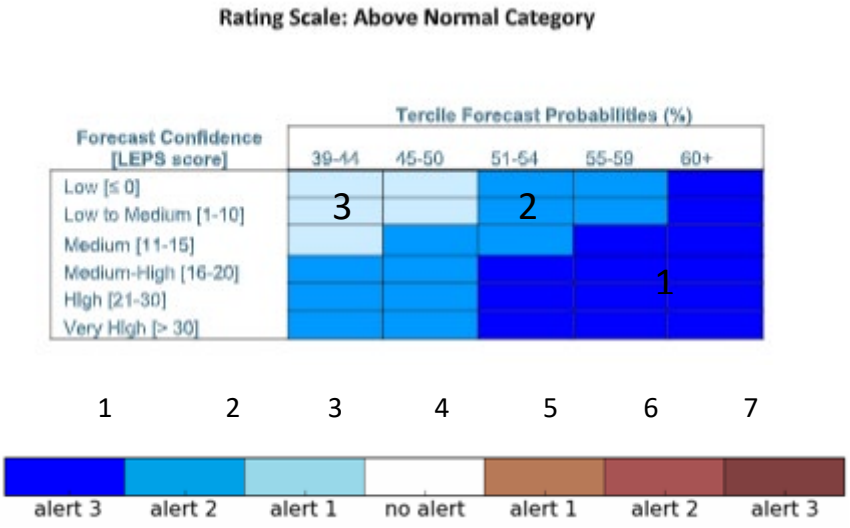
The EAR Watch bulletin and outlook production methodology are outcomes of work undertaken by the DFAT funded Climate and Oceans Program in the Pacific delivered through the Australian Bureau of Meteorology (BoM), Australian Red Cross and the International Federation of Red Cross and Red Crescent Societies (IFRC) to better communicate seasonal outlooks to climate-vulnerable communities in the Pacific.

HOW IS THE ACCESS-S BASED EAR WATCH OUTLOOK PRODUCED?

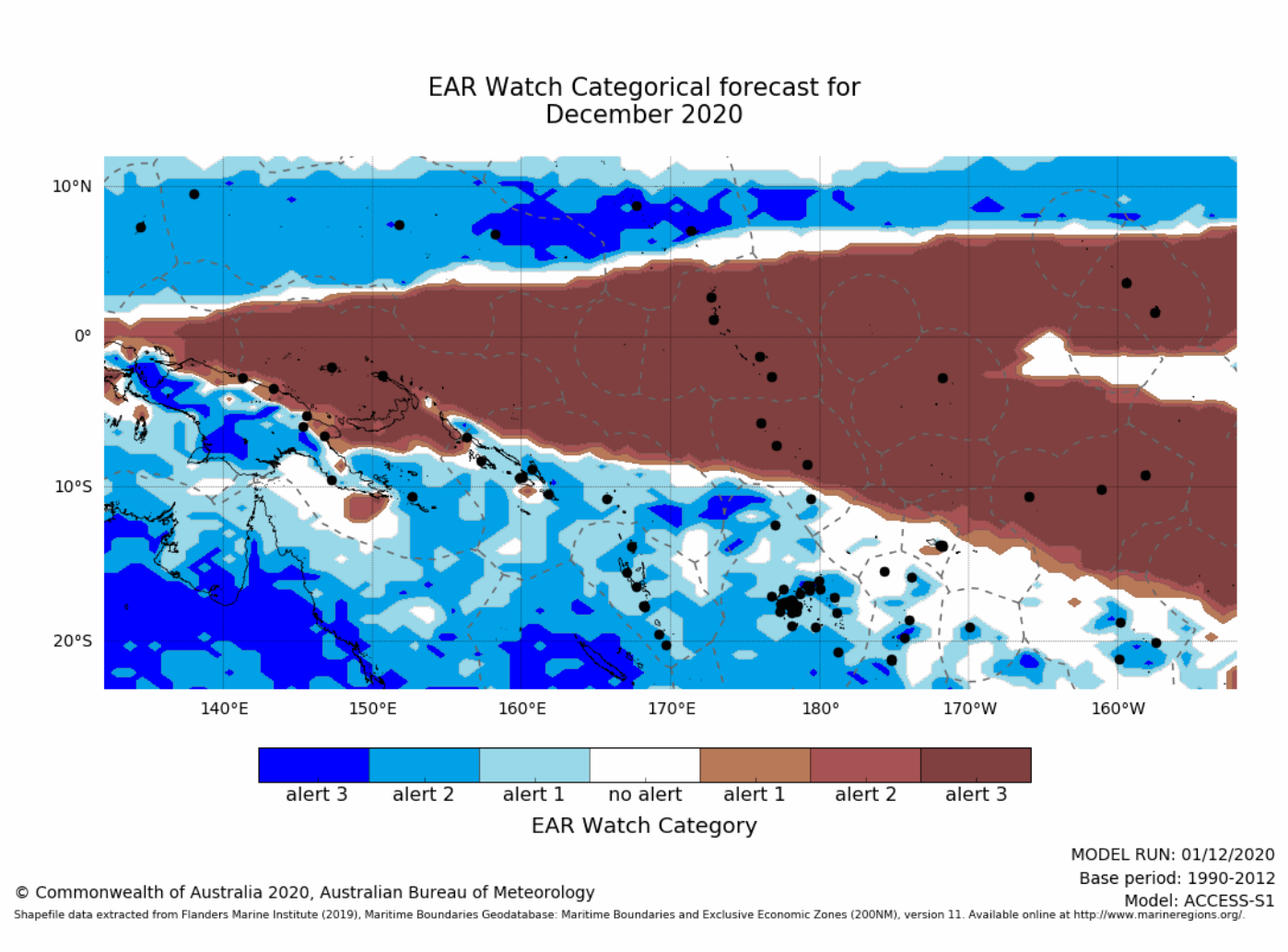
For each ACCESS-S1 tercile rainfall outlook and skill map 60km x 60km grid square (point), the highest tercile probability and associated skill score is noted. Using the rating scales below, the ACCESS-S1 tercile probability and skill score is converted to an EAR Watch below or above normal Level 1 to 3 alert. For EAR Watch purposes, only the highest probabilities in the above or below normal columns that are greater or equal to 39% are considered. Grid squares with maximum probabilities in the near normal tercile, or with probabilities less than 39% in the below and above normal tercile are assigned 'no alert'.

Rating Scale: Below Normal Category





The following map is an example of output from this process.



Stations have been marked with an • on the EAR Watch maps help link the information to the rainfall status information in the EAR Watch Bulletin (which remains station based), however it's important to consider the alert levels in the broader area when linking the alert levels to likely impacts. For example, large regions of alert level 3 dark brown colouring would give increased confidence of having a drier season than where there is only a small region of dark brown or multiple colours near each other.

ADVANTAGES OVER SCOPIC BASED EAR WATCH TABLES

EAR Watch outlooks produced from ACCESS-S1 have significant advantages over those issued via SCOPIC. SCOPIC is a statistical model that has been used in the Pacific for over a decade which requires about 40 years of historical station rainfall data to produce an outlook. This requirement significantly limits the number of locations for which an outlook could be issued. These are represented by an • on the map above. In comparison, an ACCESS-S1 EAR Watch outlook can be issued for the entire Pacific.

Other SCOPIC limitations include the inability to issue sub-seasonal outlooks as sub-seasonal statistical outlooks tend to have low skill. Climate change has also lowered SCOPIC outlook skill. While rainfall for most of the tropical Pacific Ocean shows little change in the last half century, equatorial Pacific ocean temperatures (used to predict rainfall in SCOPIC) have warmed significantly. This means the past is no longer suitable for predicting future under similar El Niño-Southern Oscillation conditions. ACCESS-S1 being a dynamical model considers the warming equatorial Pacific ocean in its outlooks.

ACCESS-S1, EAR Watch outlooks can be issued more often. At the current time they are issued on the X and X of the month. If required they could be issued twice a week.

FUTURE IMPROVEMENTS

ACCESS-S1 will soon be replaced by ACCESS-S2. Details on anticipated improvements are summarised at http://www.bom.gov.au/research/projects/ACCESS-S/#toc_fut. In summary is the skill of EAR Watch outlooks is expected to improve with future versions of ACCESS-S.