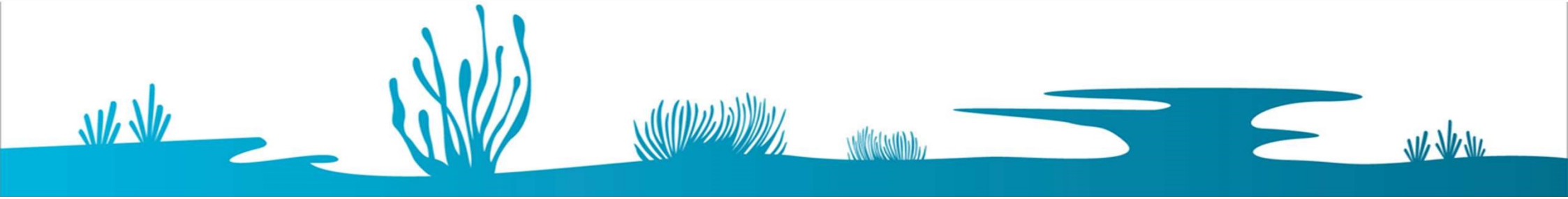
Climate and Oceans Support
Program in the Pacific

ACCESS-S Workshop

MODULE: Communicating Outlooks



Climate and Oceans Support Program in the Pacific

Communicating Climate Outlooks

- Communicating climate science to non-climatologists can be challenging, more so non-scientists. Very difficult to those with little formal education. Need to find balance between being true to the science and making the information easier to understand.

Climate and Oceans Support Program in the Pacific

Communicating Climate Outlooks

- About a decade ago stakeholders told BoM that our climate outlooks were not well understood. Similar experiences in the Pacific. Market research with users in 2011 (which would have included media, government and industry stakeholders and the general public).

- The objective of the research was to find out what how audiences needed the information communicated so that they could understand and use the outlooks (while also preserving the integrity of the science).

- Even though we are looking at these findings throughout this session, the research may only reflect the needs of the Australian audience – however, they do provide some insight about the types of areas reviewed (outlook structure, wording and alternative sentence structures) and solutions found.

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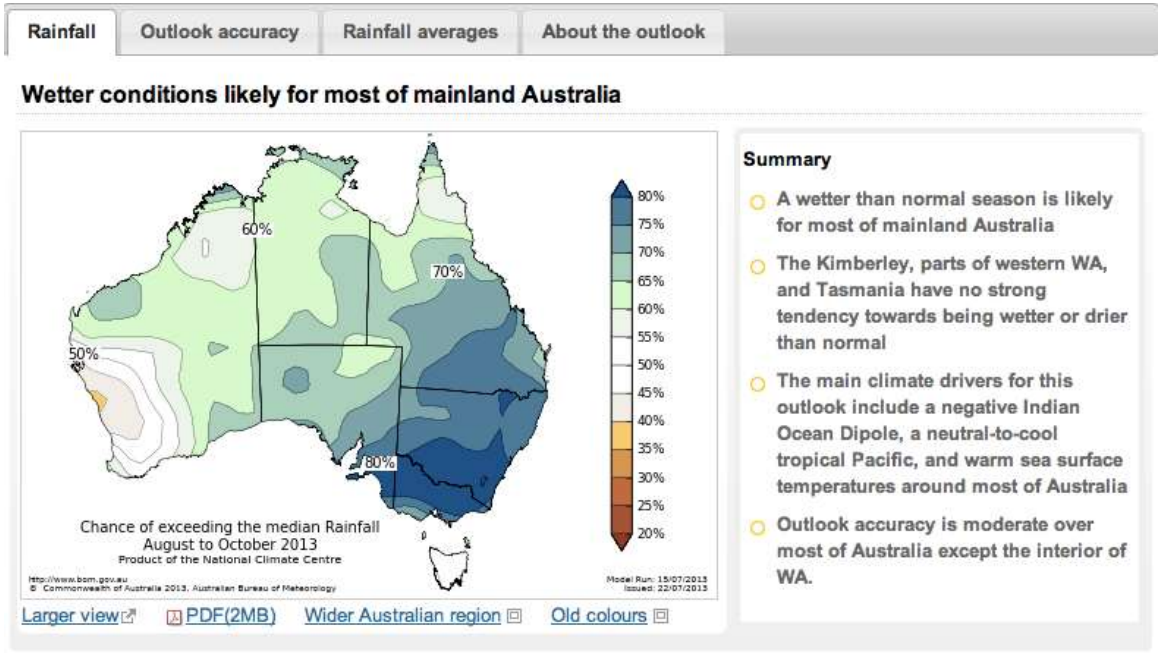
Different Needs of Audiences

- Some audiences wanted a snapshot
- Some wanted a summary
- Some required all of this and more



Communicating Climate Outlooks

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No acronyms.

- ENSO is an exception to this rule.
- SCO should not be used. It can be shortened to 'the outlook.'
- Do not use 'JFM' – use Jan-Mar period (NDJFMA in the Pacific).

Main point upfront.

- *This can be qualified with another sentence if required*

State location first:

- Good: "Northern Australia is expected to be warmer than average…"
- Bad: "It will be warmer than average in Northern Australia…"

Short sentences.

- One key point per sentence (i.e. try to avoid double/triple barrelled sentences)

Don't refer to 'confidence' and 'outlook' in the same sentence.

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Communicating Climate Outlooks

- **Maintain accuracy** of information. This does not mean the full story has to be presented immediately.
- **Talking headings**. For example, the heading is not just ‘rainfall’ it could be ‘higher than normal rain expected’

Communicating Climate Outlooks

Current	Other or preferred options
Odds	Likelihood or likely Chance
Probability or probabilities	Likelihood Chances (ok to use in some instances)
Anomalies	May need phrase to describe. Difference from average or normal
Favoured	Likely
Median	Normal / Usual / **Average (but be careful as mean is also a form of 'average').**
Percent consistent	Past accuracy
Chance of exceeding median	Chance above average
A return to neutral conditions.	Neither El Nino nor La Nina

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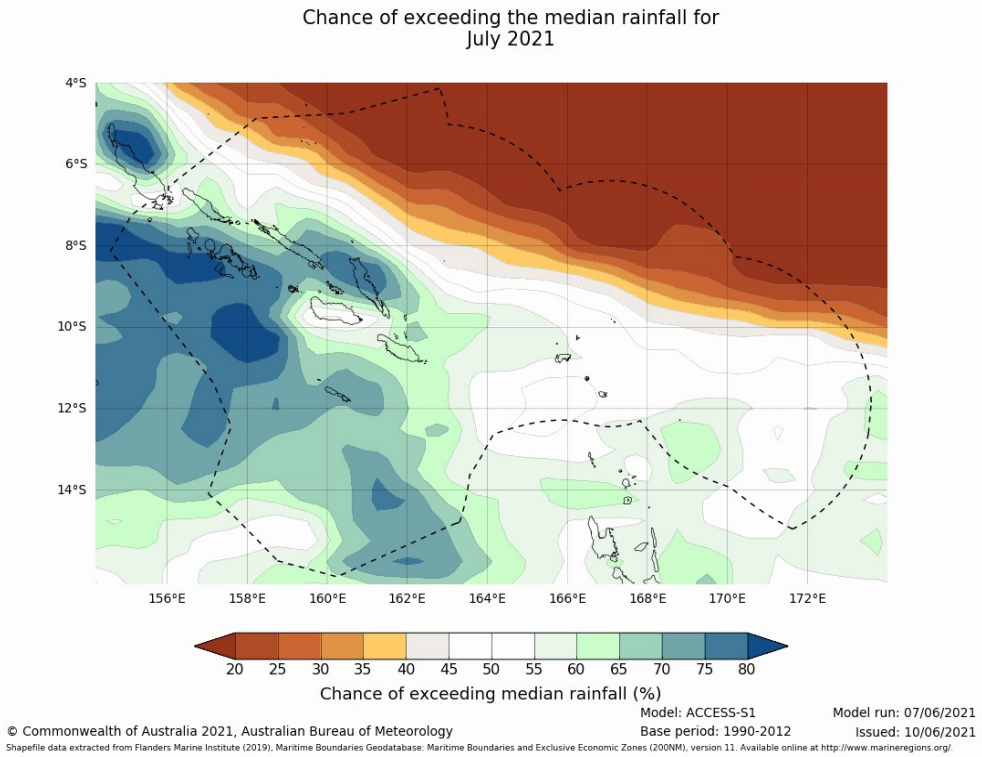
Above/Below Median Outlooks

Converting percentages to words
From 40 to less than 60% - little guidance
(Note: could also be average. Compare with tercile outlook, try to avoid commenting on this category)
Between 60 to 80% - likely or favour
Greater than 80% - very likely

For most of the Solomon Islands, July rainfall is *likely* to be above average. There is little guidance for the Santa Cruz islands and Guadalcanal.



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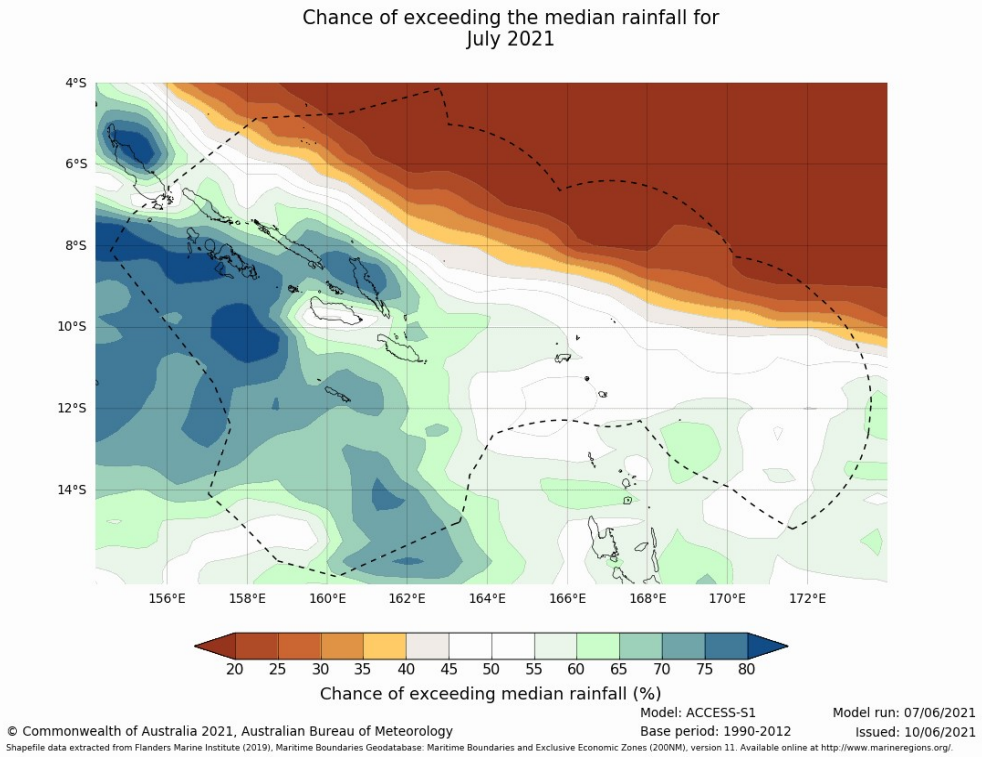
Above/Below Median Outlooks

The Solomon Islands outlook *favours* above average (normal) rainfall for July for most of the country.

For the Santa Cruz islands and Guadalcanal there is *little guidance* for July as the chances of above and below median (average) are similar.



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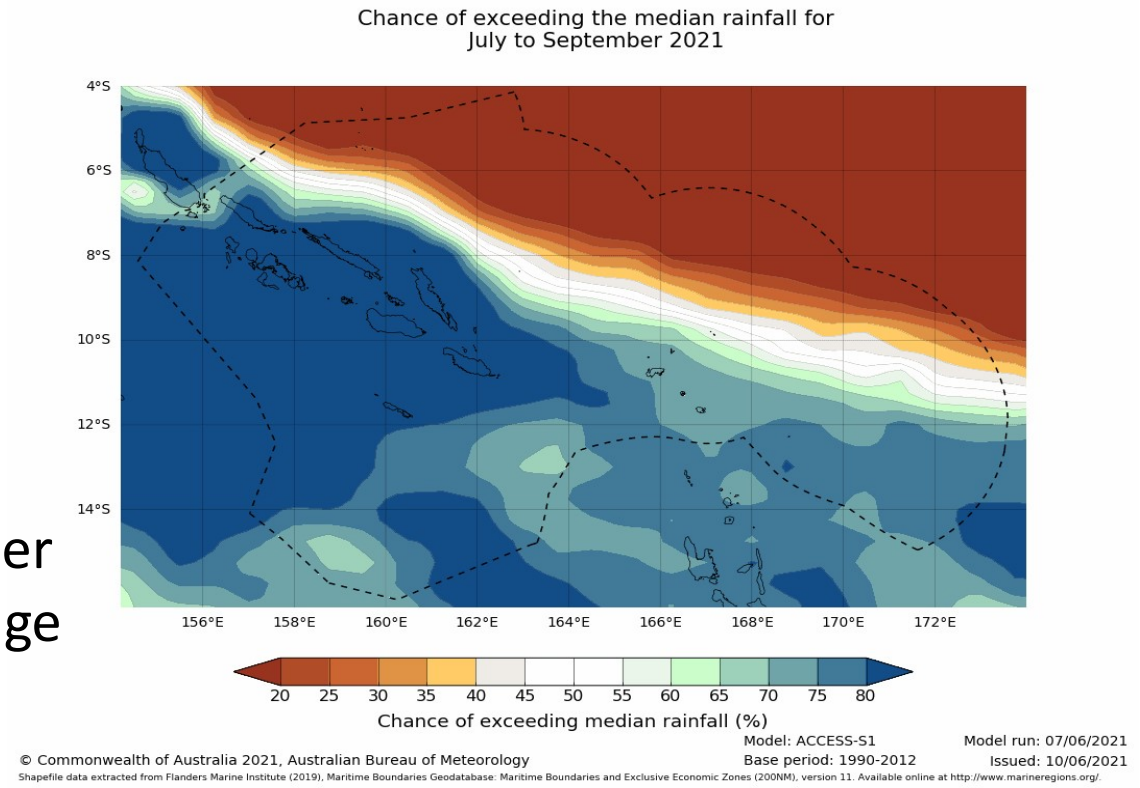
Above/Below Median Outlooks

Converting percentages to words
From 40 to less than 60% - little guidance (Note: could also be average. Compare with tercile outlook, try to avoid commenting on this category)
Between 60 to 80% - likely or favour
Greater than 80% - very likely

The Solomon Island's July to September rainfall is *very likely* to be above average for most of the country.

(Note very likely doesn't apply to Temotu islands to the far east.)



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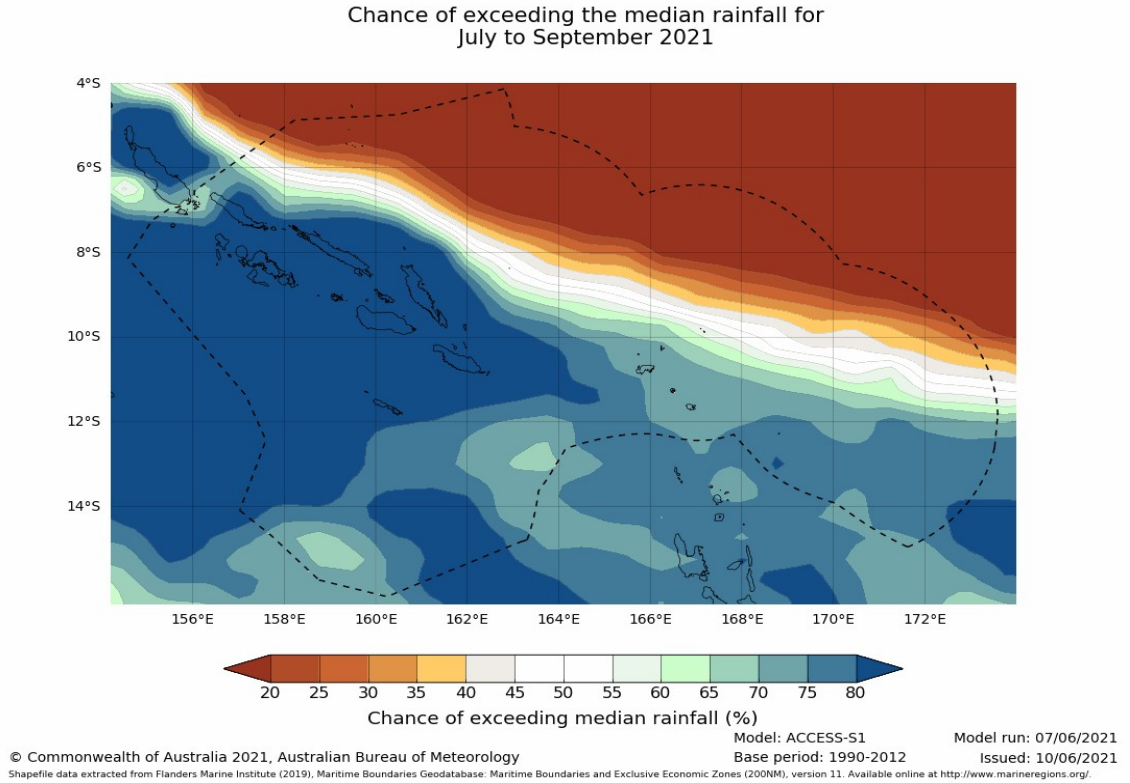
Above/Below Median Outlooks

The Solomon Island outlook *favours* above average (normal) rainfall for July to September.

But as we have >80% chance of exceeding median rainfall we need a stronger statement e.g. The Solomon Island outlook (strongly) *favours* above average (normal) rainfall for July to September.

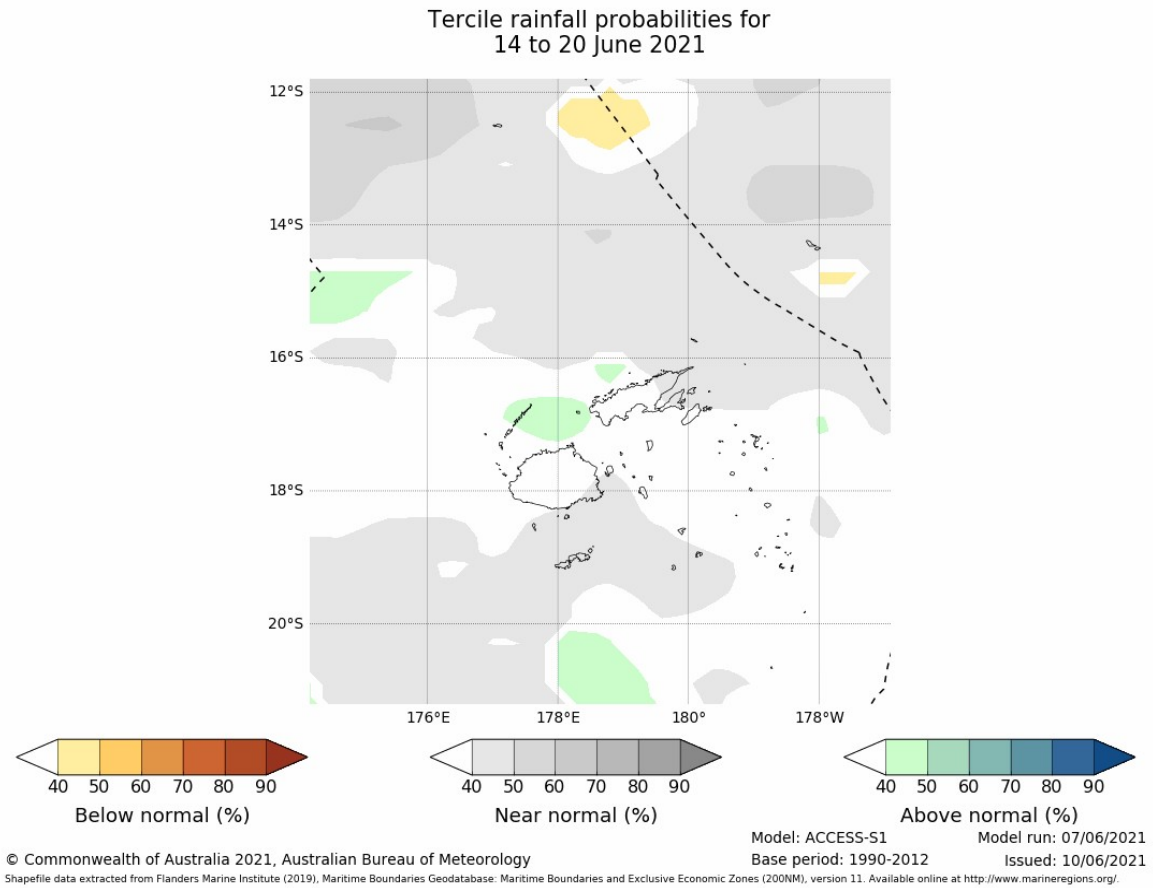


Below/Normal/Above Normal Tercile Outlooks

Converting percentages to words
Less than 40% - little guidance
Between 40-59% - likely or favour
Greater or equal to 60% - very likely

For the main islands of Fiji, the rainfall outlook for 14 to 20 June 2021 offers little guidance as the chances of above normal, normal and below normal rainfall are similar. For Rotuma and Kadavu, near normal rainfall is likely (favoured).

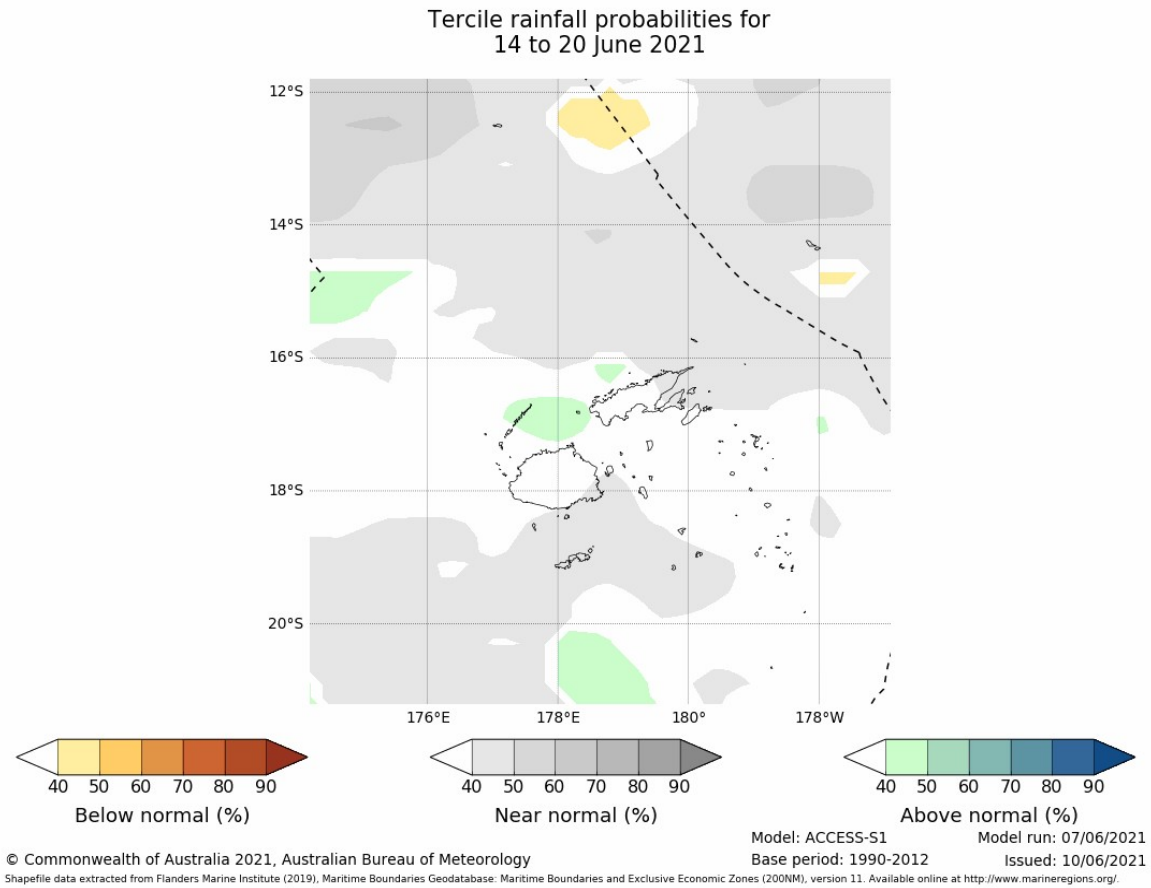
(perhaps best not to focus too much on the green as there isn't a large amount of this colour, also close to next category)



Below/Normal/Above Normal Tercile Outlooks

For the main islands of Fiji, the rainfall outlook for 14 to 20 June 2021 offers little guidance as the chances of above normal, normal and below normal rainfall are similar. For Suva, Rotuma, Kadavu and northeast Vanua Levu, near normal rainfall is most likely.

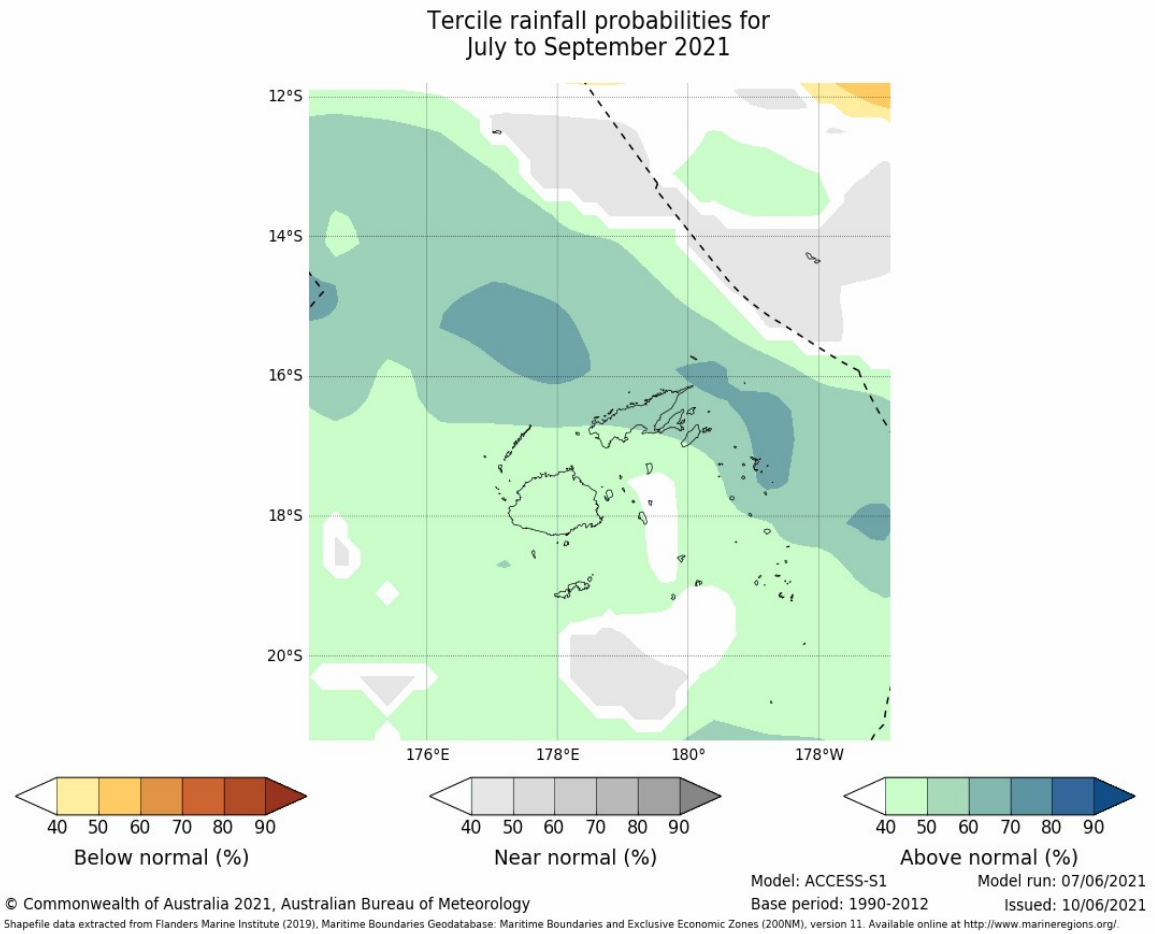
(perhaps best not to focus too much on the green as there isn't a large amount of this colour, also close to next category)



Below/Normal/Above Normal Tercile Outlooks

Converting percentages to words
Less than 40% - little guidance
Between 40-59% - likely or favour
Greater or equal to 60% - very likely

For northeast Vanua Levu and the northern Lau Group for July to September 2021, above normal rainfall is very likely. Above normal rainfall is likely (favoured) for the reminder of the main islands. For Rotuma there is no clear guidance.

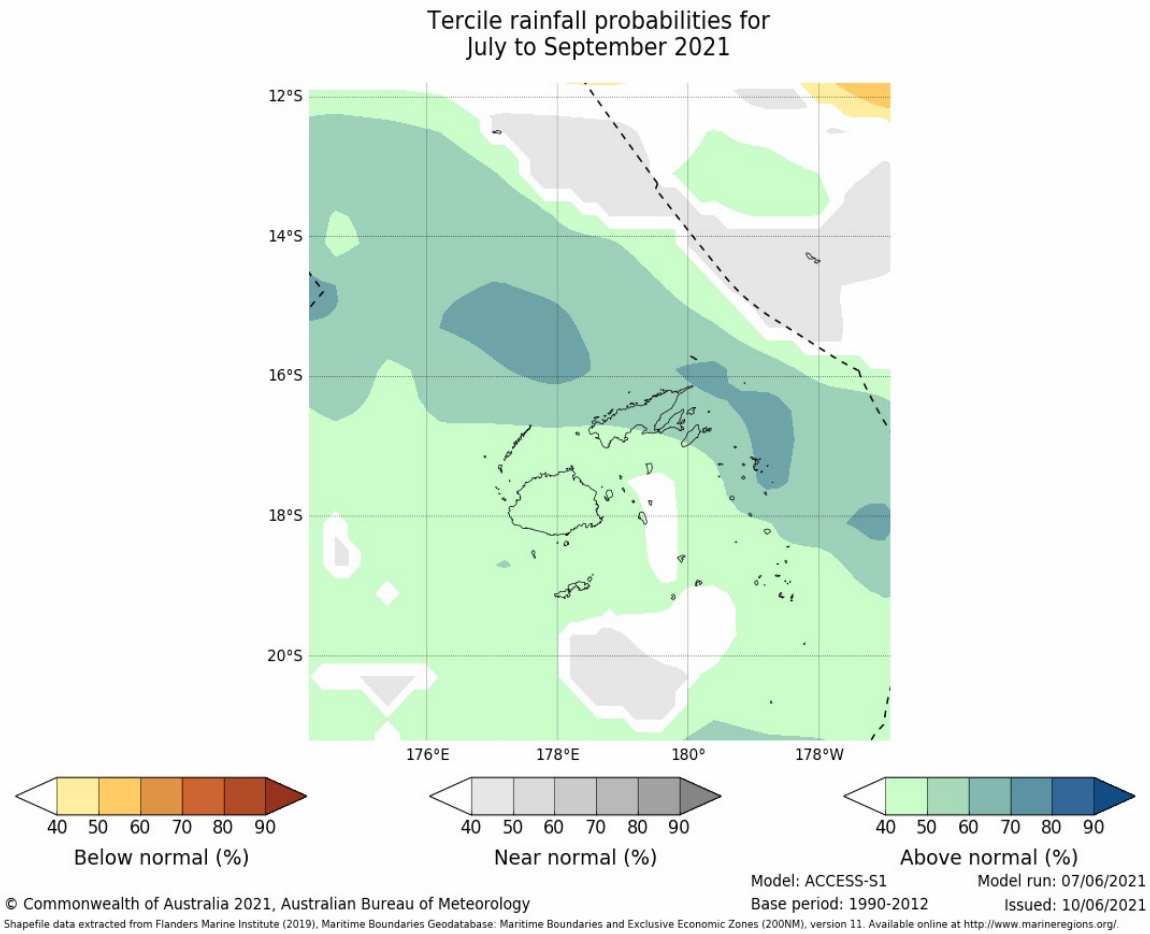


Below/Normal/Above Normal Tercile Outlooks

For northeast Vanua Levu and the northern Lau Group above normal rainfall is favoured for July to September 2021.

Above normal rainfall is most likely for the reminder of the main islands.

For Rotuma there is little guidance as the chances of above-normal, normal and below-normal are similar



Translating outlooks from English to local languages

Climate and Oceans Support Program in the Pacific

Four outlook statements sent to Fiji. Responses in Hindi and itaukei

1a. Adhikaansh Fiji samooh ke liye, saamany se adhik barish sabse sambhaavik parinaam hai.

1b. Translate above back into English

1c. For most of the Fiji Group, above average rainfall is the most likely outcome.

2a. Adhikaansh Fiji samooh ke liye, saamany se adhik barish acha rahega.

2b. Translate above back into English

2c. For most of the Fiji Group, above average rainfall is favoured.

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Translating outlooks from English to local languages

3a. Adhikaansh Fiji samooh ke liye, saamany se adhik barish bahoot acha rahega.

3b. Translate above back into English

3c. For most of the Fiji Group, above average rainfall is strongly favoured.

4a. Fiji ke mukhye deepon ke liye, 14 se 20 June 2021 tak barish ka anumaan bahut kam maargadarshan pradaan kar raha hai kyonki saamaany se adhik, saamaany aur saamaany se kam barish kee sambhaavana samaan hai

4b. Translate above back into English

4c. For the main islands of Fiji, forecast for rainfall for 14 to 20 June 2021 is providing very little guidance as the probability of above normal, normal and below normal rainfall is equal.

Translating outlooks from English to local languages

Climate and Oceans Support Program in the Pacific

Four outlook statements sent to Vanuatu. Responses in Bislama

1a. Plante place lo ol aelans blong Vanuatu, renfol bai bitim mak wei i stap lo hem evri team.

1b. Translate above back into English

1c. For most of the Vanuatu Islands, above average rainfall is the most likely outcome

2a. Plante place lo ol aelans blong Vanuatu, renfol bai I bitim mak wei I stap lo hem evri taem

2b. As for 1b

2c. For most of the Vanuatu Islands, above average rainfall is favoured

Climate and Oceans Support Program in the Pacific

Translating outlooks from English to local languages

3a. Plante place lo ol aelans blong Vanuatu, renfol bai i plante moa bitim make wei hemi stap lo hem evri team.

3b. Translate above back into English

3c. For most of the Vanuatu Islands, above average rainfall is strongly favoured.

4a. Ol men aelans blo Vanuatu, lukluk blo 14 kasem 20 June 2021 i sowem se janis blo renfol hemi ko antap bitim mak blo hem o I ko doan bitim mak blo hem o I stap ol mak bl hem olsem evri taem bai i bai semmak nomo.

4b. Translate above back into English

4c. For the main islands of Vanuatu, the outlook for 14 to 20 June 2021 offers little guidance as the chances of above normal, normal and below normal rainfall are similar.

Climate and Oceans Support Program in the Pacific

Communicating uncertainty

- Communicating uncertainty and forecast skill is a huge challenge globally.
- No forecast (weather, seasonal climate and hydrological prediction) is complete without a description of its uncertainty.
- Deterministic and probabilistic forecasts are often shortened representations of much richer information.
- Using clear and consistent language is one way of addressing uncertainty in seasonal climate forecasts.

Climate and Oceans Support Program in the Pacific

Communicating Uncertainty

There is a skill map that goes with each outlook, this shows how well the model has performed in the past for your location and time period.

But also consider:

1. Outlook confidence increases with stronger tercile colours, this means more ensemble members are in that tercile category.
2. Lastly, what are the climate drivers at the moment? Our forecast confidence is higher with a strong climate driver such as ENSO (that's why skill is usually highest towards the end and start of the year rather than in the middle).

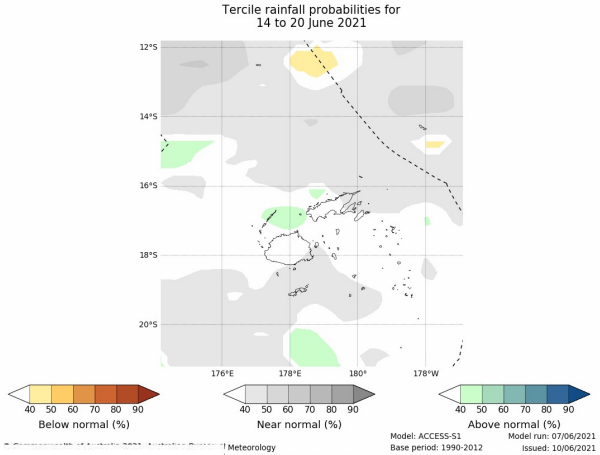
LEPS Value	Word
$X < 0.0$	Very Low
$0 \leq X < 5$	Low
$5 \leq X < 10$	Moderate
$10 \leq X < 15$	Good
$15 \leq X < 25$	High
$25 \leq X < 35$	Very High
$X \geq 35$	Exceptional

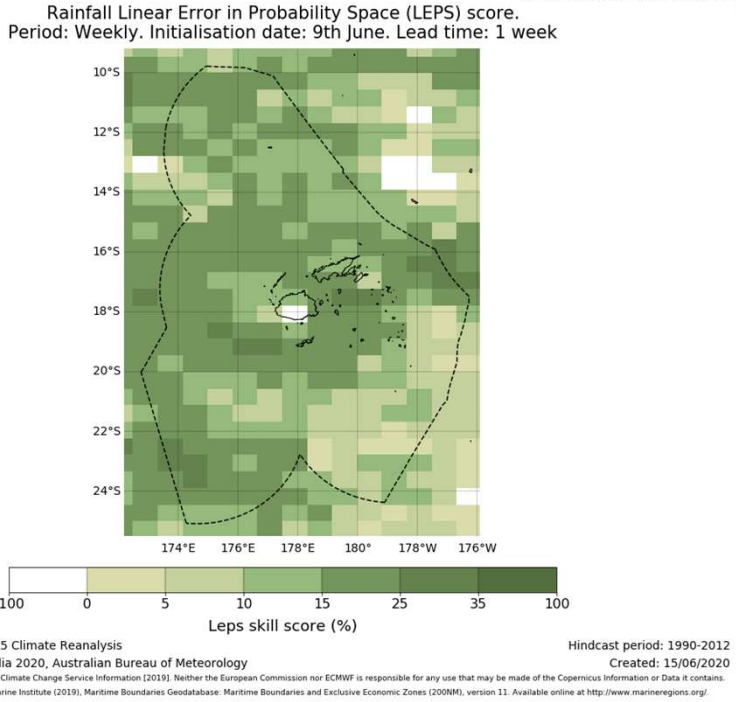
Climate and Oceans Support Program in the Pacific

Below/Normal/Above Normal Tercile Skill

For main islands of Fiji, the rainfall outlook for 14 to 20 June 2021 offers little guidance as the chances of above normal, normal and below normal rainfall are similar. Near normal rainfall is likely (favoured) for Rotuma and Kadavu.

The skill of these outlooks is good to high over the Fiji EEZ, with the exception of southern Viti Levu.

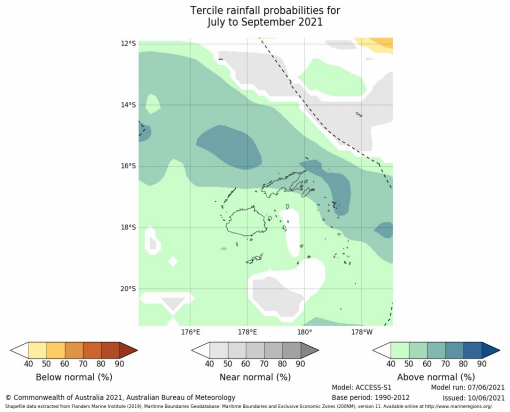


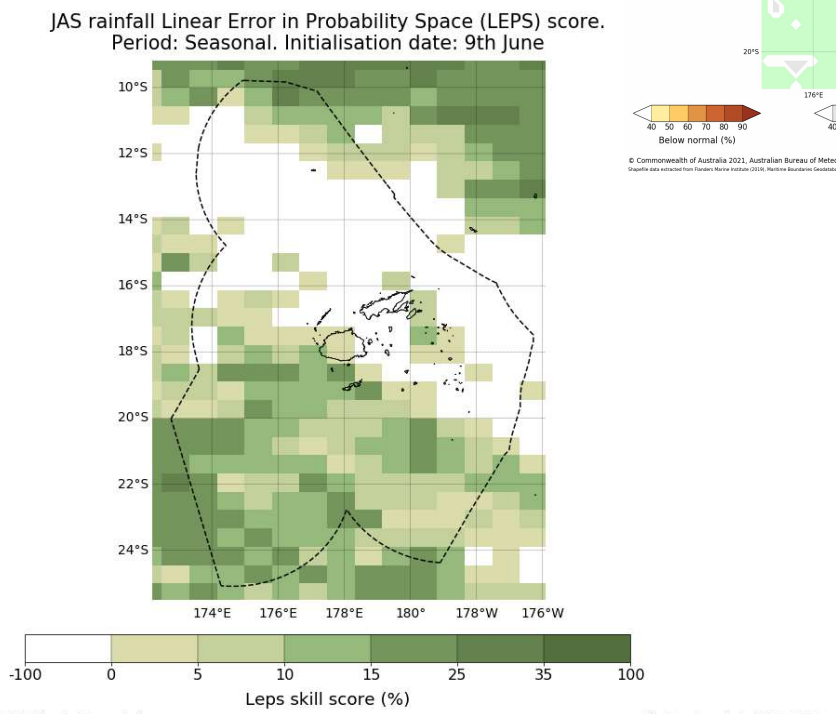


Below/Normal/Above Normal Tercile Skill

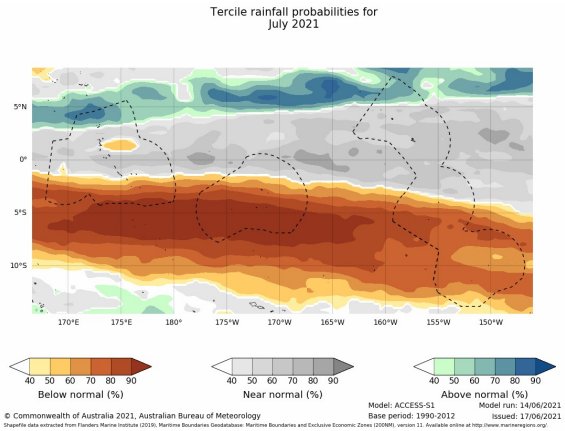
For northeast Vanua Levu and the northern Lau Group for July to September 2021, above normal rainfall is very likely. Above normal rainfall is likely (favoured) for the reminder of the main islands. For Rotuma there is no clear guidance.

The skill of these outlooks is low over Viti Levu, Kadavu and the Lau Group. Elsewhere the confidence in the outlooks is very low.





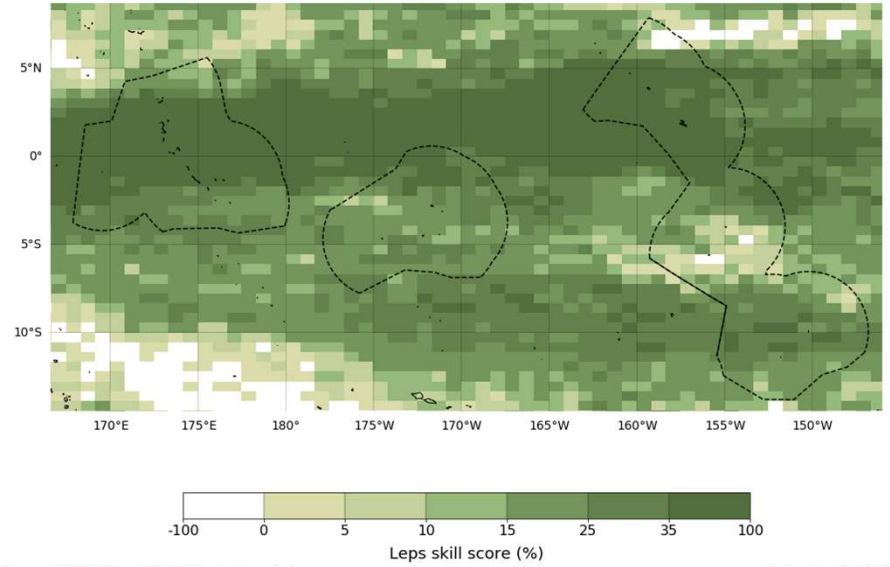
Below/Normal/Above Normal Tercile Skill



Rainfall across the Gilbert Island's is likely to be close to average for July 2021. For the Phoenix Island's below normal rainfall is very likely, and for the northern Line island's normal rainfall is favoured, while below normal is favoured for the southern Line Island's.

Confidence in these outlooks is very high with the exception of the Phoenix Island's where it is high and the central Line Island's EEZ where confidence is low.

July rainfall Linear Error in Probability Space (LEPS) score.
Period: Monthly. Initialisation date: 9th June



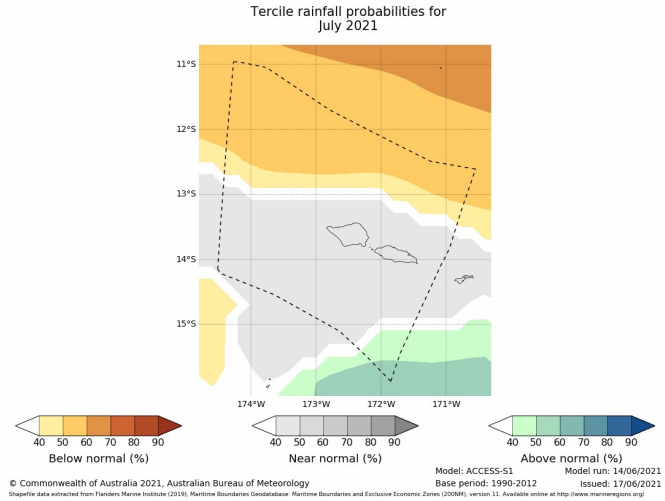
Source: ACCESS-S1 and ERA5 Climate Reanalysis
Hindcast period: 1990-2012
© Commonwealth of Australia 2020, Australian Bureau of Meteorology
Created: 07/07/2020
Disclaimer: Contains modified Copernicus Climate Change Service Information [2019]. Neither the European Commission nor ECMWF is responsible for any use that may be made of the Copernicus Information or Data it contains.
Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at http://www.marineregions.org/.

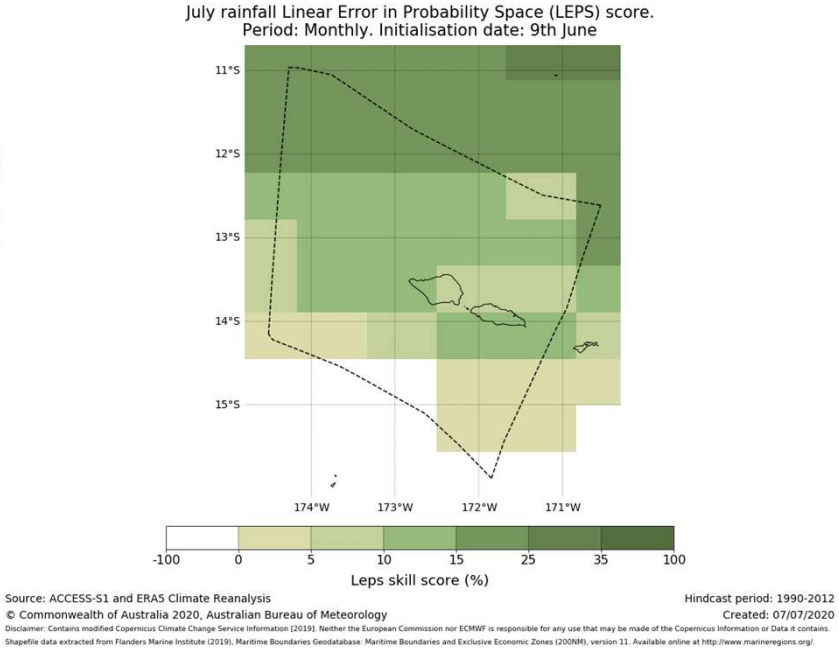
Below/Normal/Above Normal Tercile Skill

Rainfall across Samoa is likely to be near average for July 2021.

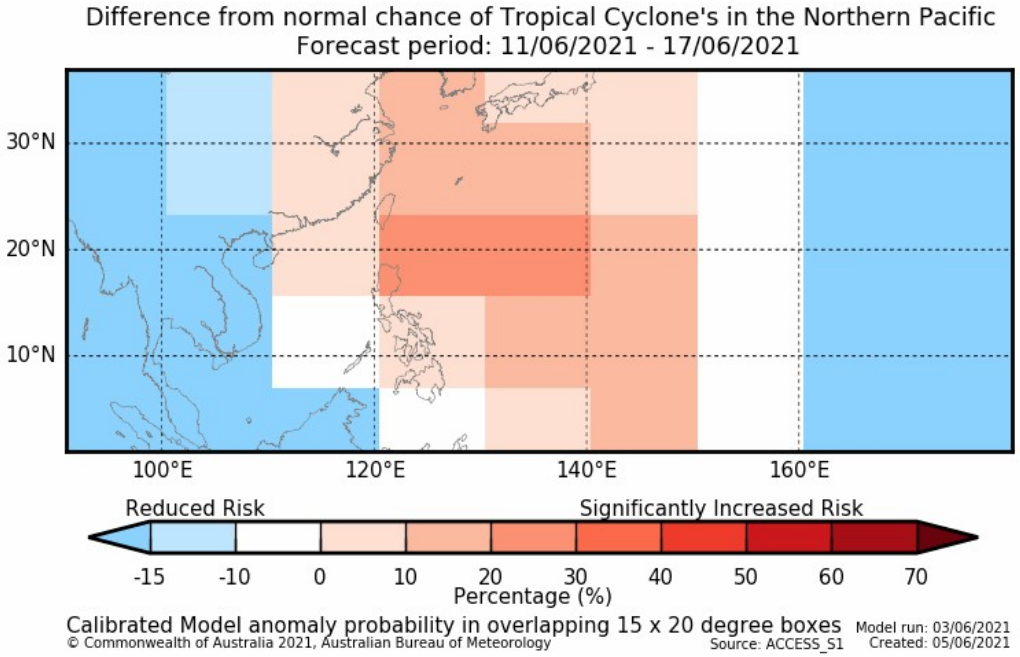
Confidence in these outlooks is low.

Could be 'low to moderate', however consider that the probabilities are a lig grey colour (not strong). There is also n strong climate driver impacting the forecast.

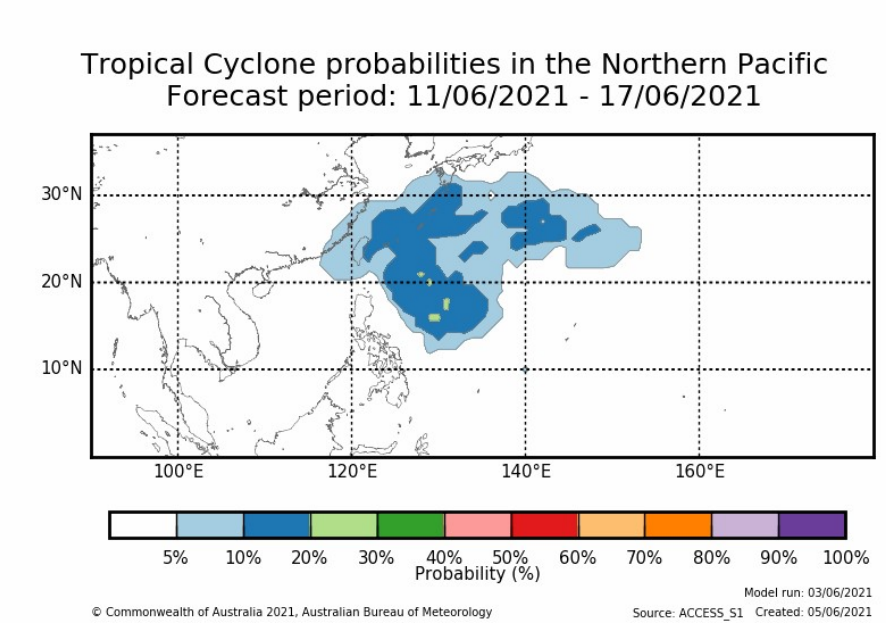




Tropical Cyclone interpretation Example – NW Pacific



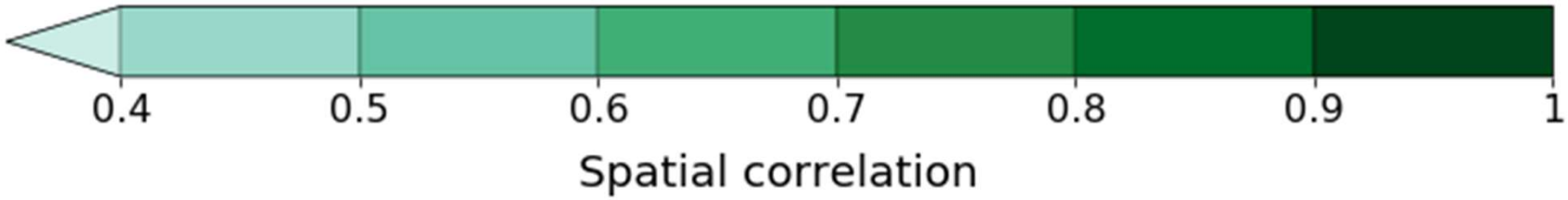
Tropical Cyclone occurrence risk is significantly higher over the northern Philippines, Guam and the Mariana Islands region, elsewhere there is increased risk in the north west Pacific for 11 to 17 June.



Climate and Oceans Support Program in the Pacific

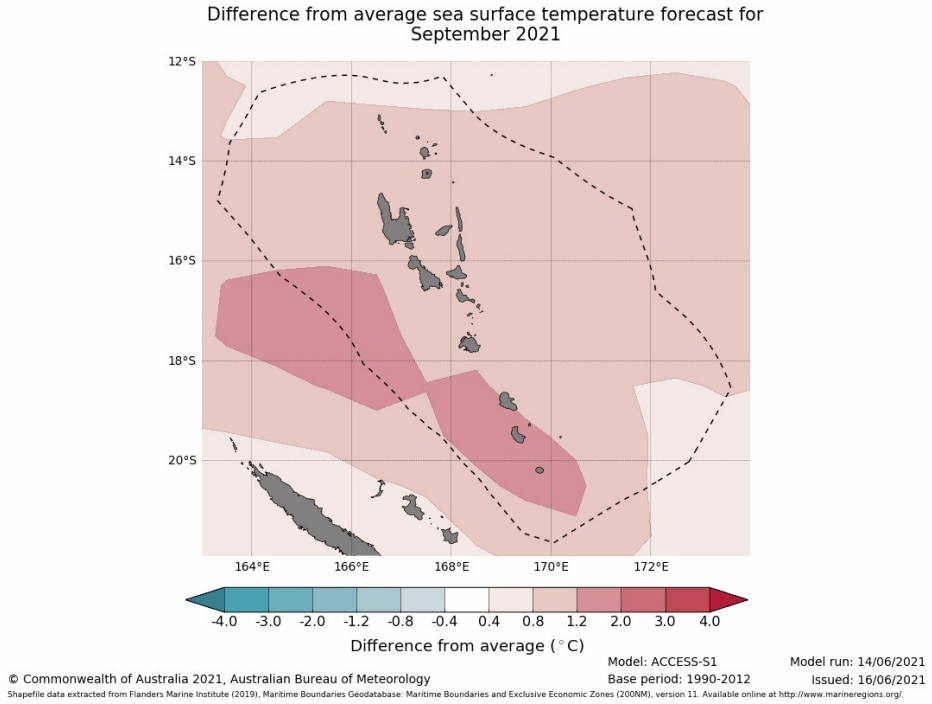
Communicating Ocean Outlooks

- Ocean outlooks available from ACCESS-S are typically shown as the ensemble mean.
- This shows the SST and Sea Level forecast as a predicted value, rather than probabilisti
- Ensemble mean is most commonly conveyed using correlation coefficients.
- Typically we refer to the skill as either having:
  - No skill (lightest green colour <0.4)
  - Has skill (0.4 to 0.6)
  - Moderate skill (0.6 to 0.8)
  - Good skill (>0.8)

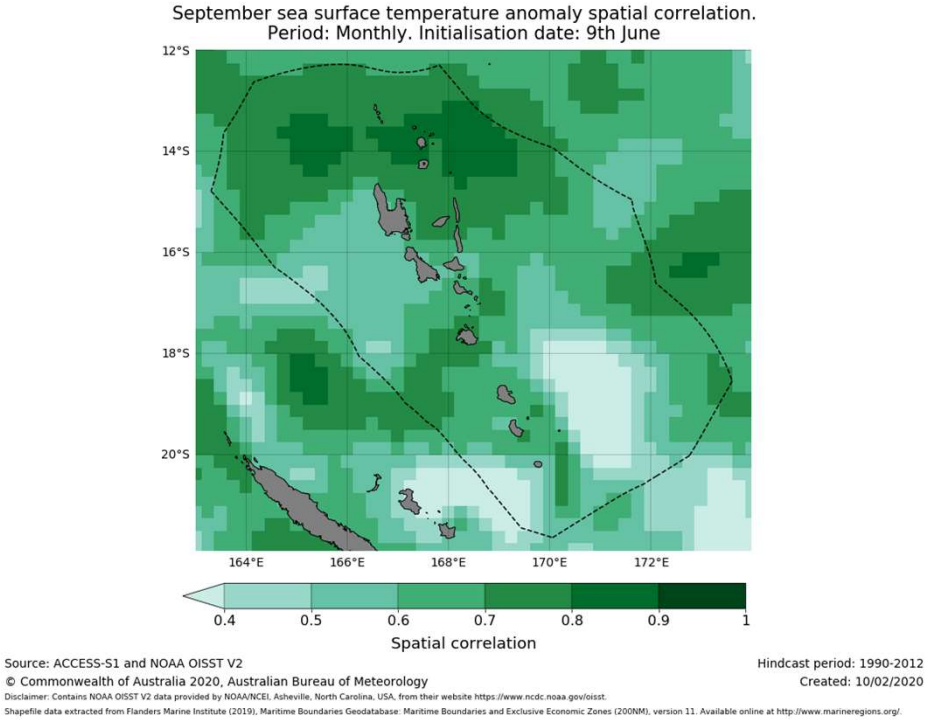


Climate and Oceans Support Program in

Case study: Vanuatu



SST will be warm at Vanuatu.



Sea Surface Temperature is likely to be higher than average across the Vanuatu EEZ in September, with predicted temperature anomalies between +1.2 and +2.0C in the southeast. Model forecast skill ranges from moderate to good in the southeast.