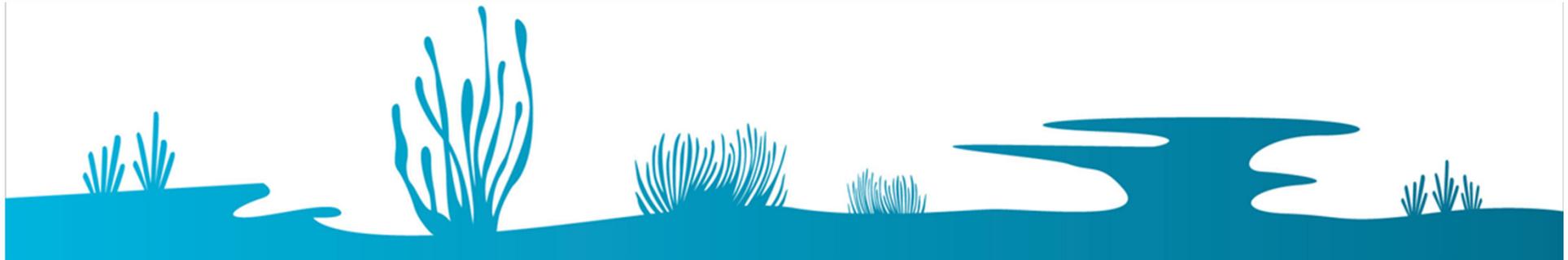




Climate and Oceans Support  
Program in the Pacific

# Communicating Seasonal Climate Outlooks

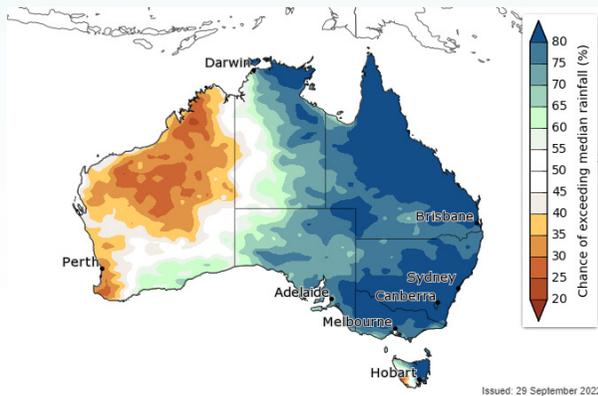




# Climate versus weather

"Climate is what you expect;  
weather is what you get."

## Next 3 months



## Next 7 days

Q Melbourne, VIC		☰
Tomorrow	9° 19°	▼
Saturday	9° 19°	▼
Sunday	7° 19°	▼
Monday	9° 21°	▼
Tuesday	11° 21°	▼
Wednesday	15° 20°	▼



# Different information for different audiences

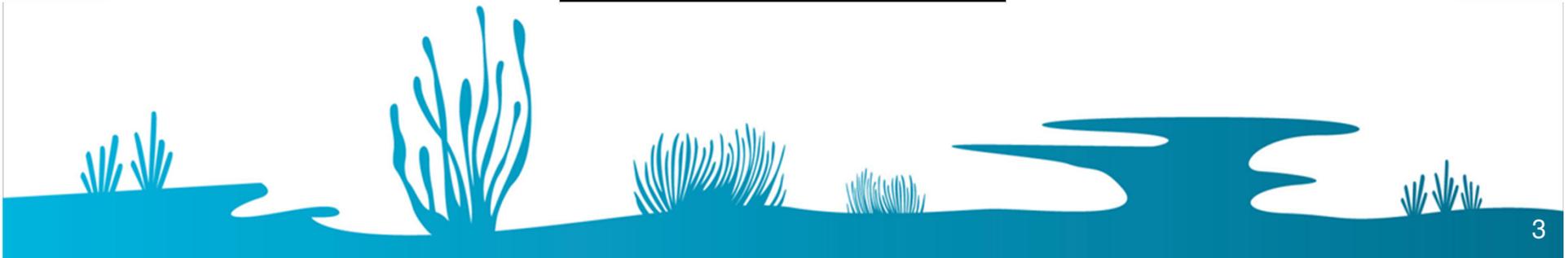
**1. Farmer**



**2. Water Manager**



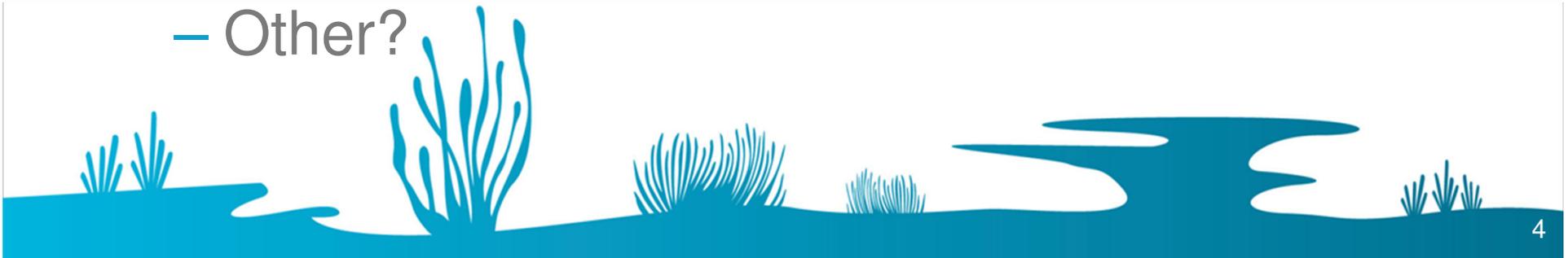
**3. Woman washing clothes**





# Channels to communicate climate information

- Bulletin
  - Website
  - Direct email
  - Social media eg Facebook post
  - Media release
  - Direct briefings
  - Media eg TV, newspaper, Radio
  - Other?





# Different needs of different audiences

- Text
- Maps
- Description
- Video

The screenshot displays the Australian Government Bureau of Meteorology website. The page title is "Climate outlooks—weeks, months and seasons". It features a navigation menu with options like "Overview", "Summary", "Climate influences", and "Outlook video". The main content area is titled "Climate outlook overview" and includes two maps: "Rainfall" and "Temperature: maximum". The text below the maps provides detailed information about rainfall and temperature outlooks for October to December 2022.

**Climate outlook overview**  
Issued: 29 September 2022

- October to December rainfall is likely to be above median for the eastern half of Australia, but below median for the west coast and the northern and central Western Australia.
- For the fortnight 3 to 16 October, above median rainfall is very likely (greater than 80% chance) for much of the eastern half of Australia, decreasing to moderately likely (80% to 70%) for the Kimberley and Eucla districts of Western Australia and the south-east of the Northern Territory. For western parts of the South West Land Division of Western Australia, there is a moderately likely chance of below median rainfall.
- October to December maximum temperatures are likely to be above median for the northern tropical coastline, the Kimberley district and west coast of Western Australia, and Tasmania; cooler than median days are likely across much of the south-eastern half of the mainland, with chances greater than 80% around the Bight, most of New South Wales and southern Queensland.
- Minimum temperatures are generally likely to be warmer than median for October to December for

<http://www.bom.gov.au/climate/outlooks/#/overview/summary>





# Best language

## 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*

## 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.





# Other Research Findings

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



<b>Current</b>	<b>Other or preferred options</b>
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 / <b>Average (but be careful as mean is also a form of 'average')</b> .
Percent consistent	Past accuracy
Chance of exceeding median	Chance above average
A return to neutral conditions.	Neither El Nino nor La Nina



# Median Outlooks Above/Below median

## Converting percentages to words

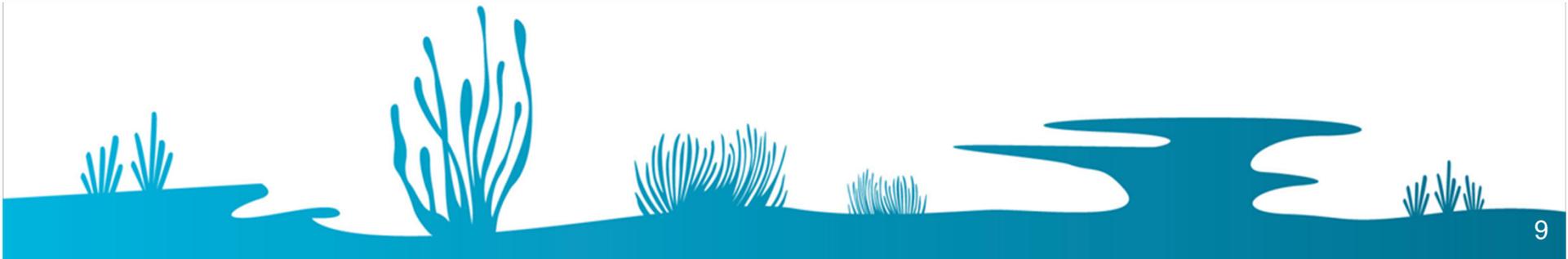
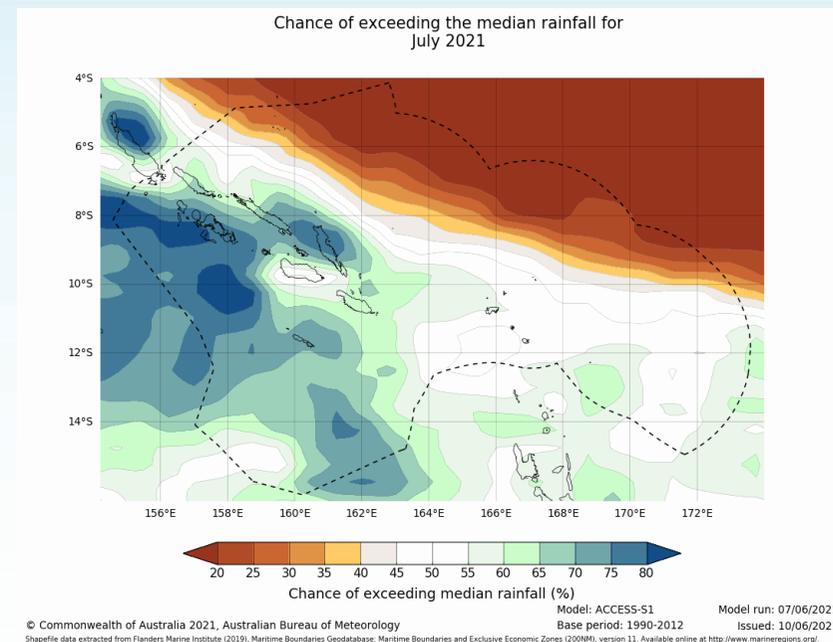
From 40 to less than 60% - average

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.)*





# Median Outlooks Above/Below median

## Converting percentages to words

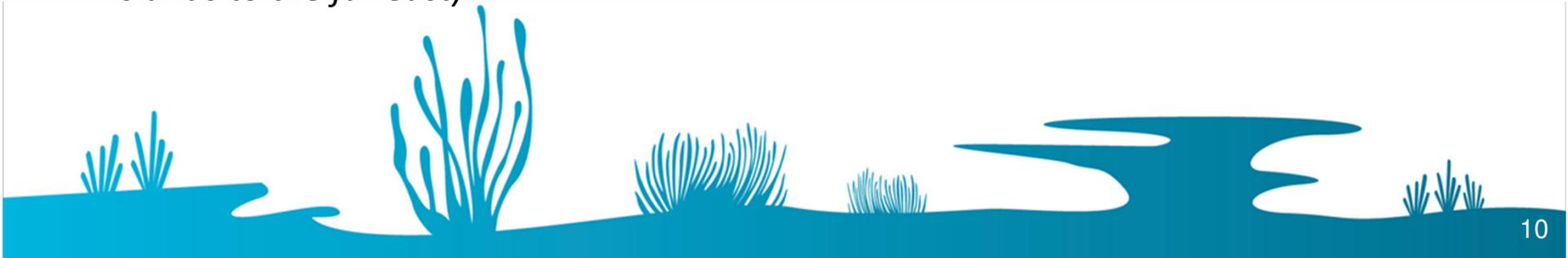
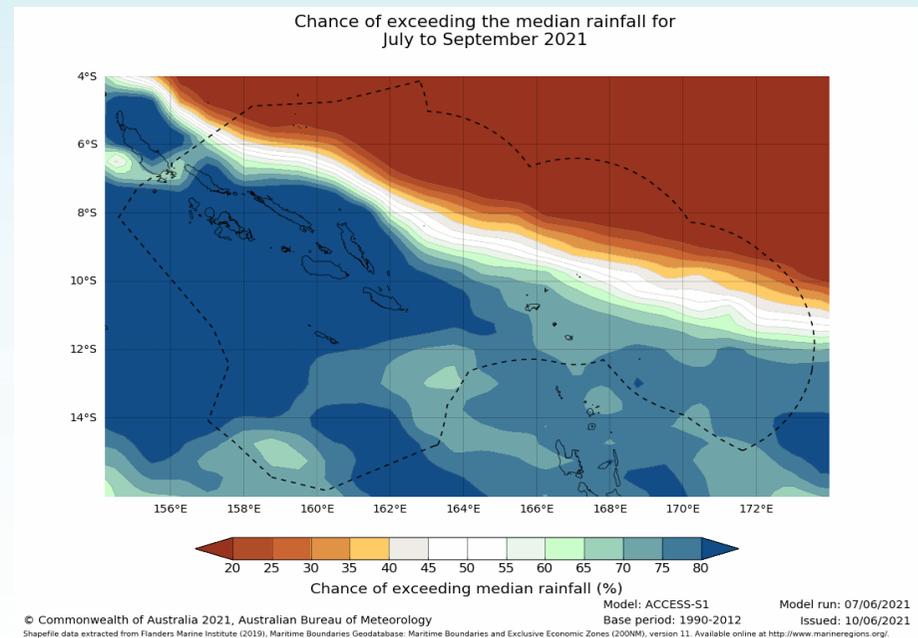
From 40 to less than 60% - average

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).*





# Tercile Outlooks

## Below/Normal/Above Normal

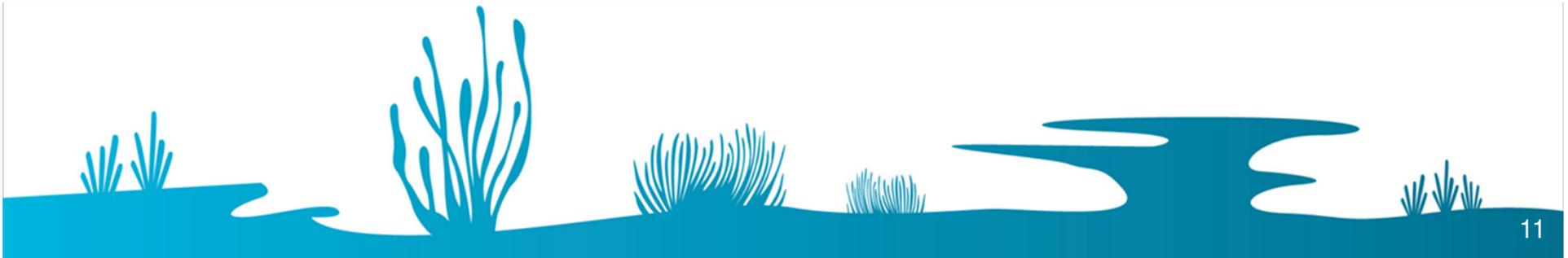
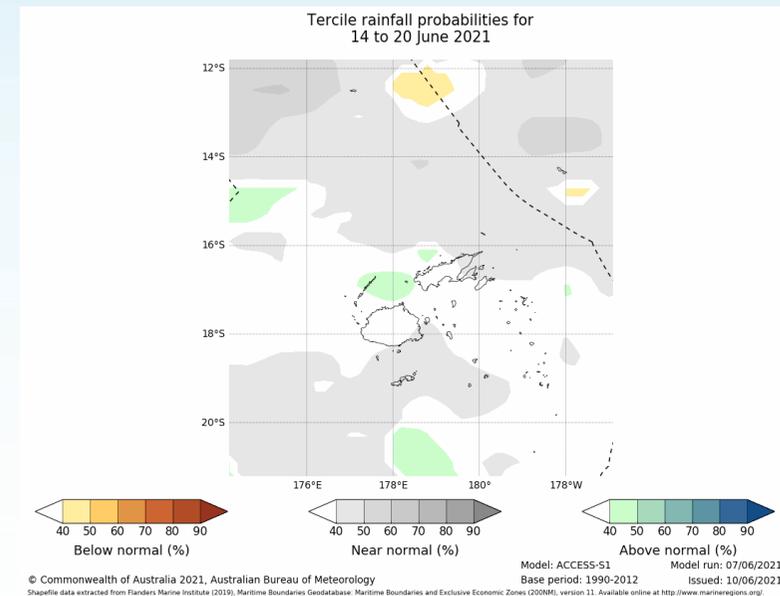
### Converting percentages to words

Less than 40% - little guidance

Between 40-59% - likely or favour

Greater than 60% - very likely

*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.*





# Tercile Outlooks

## Below/Normal/Above Normal

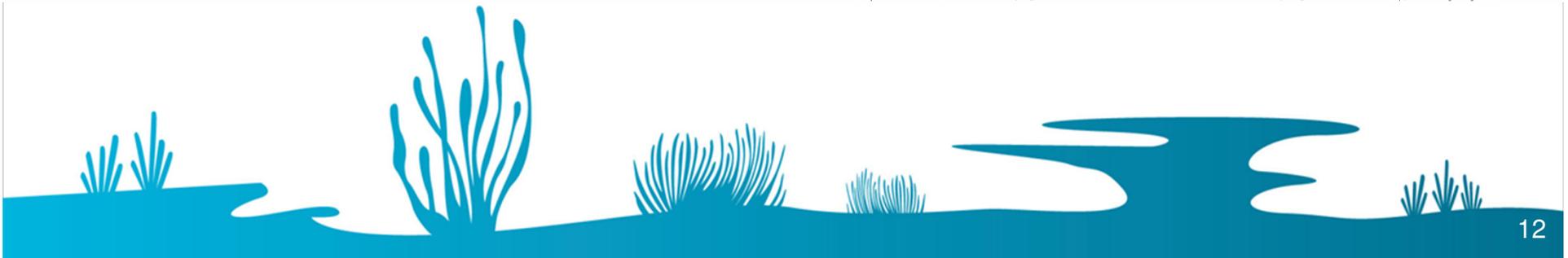
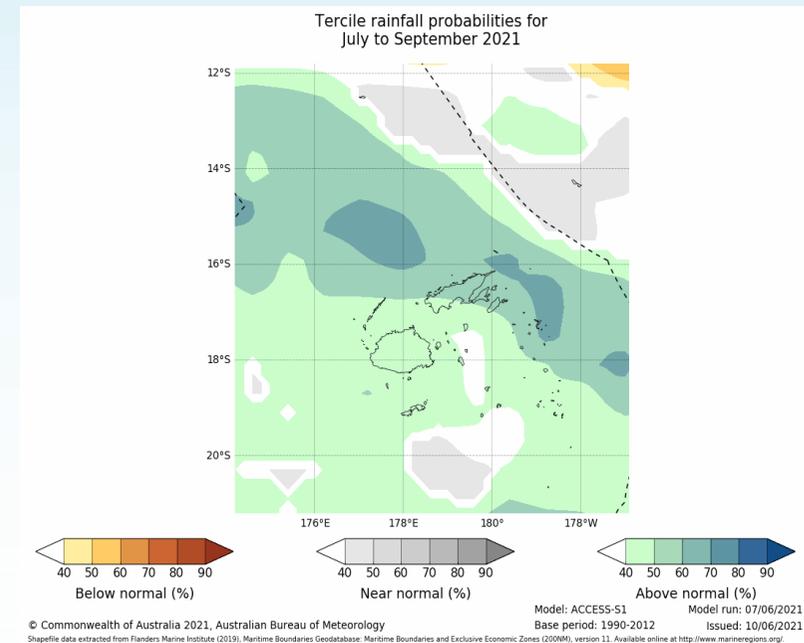
### Converting percentages to words

Less than 40% - little guidance

Between 40-59% - likely or favour

Greater than 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 remainder of the main islands. For Rotuma there is no clear guidance.*

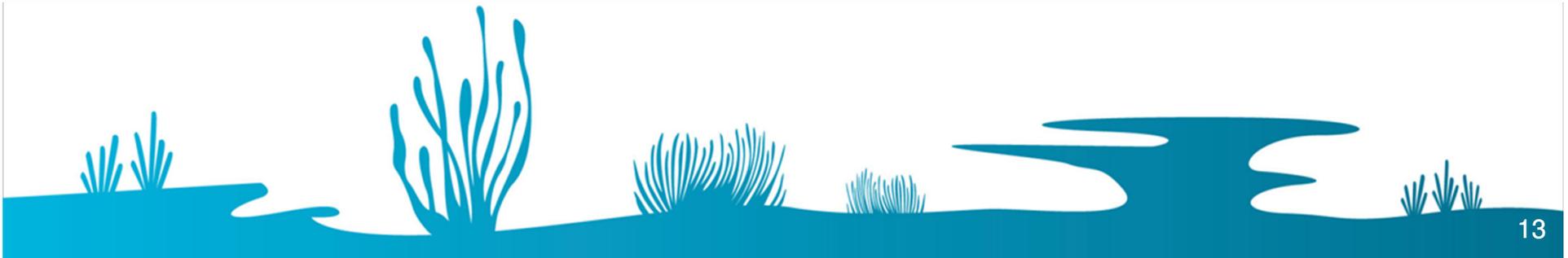




# Communicating Uncertainty



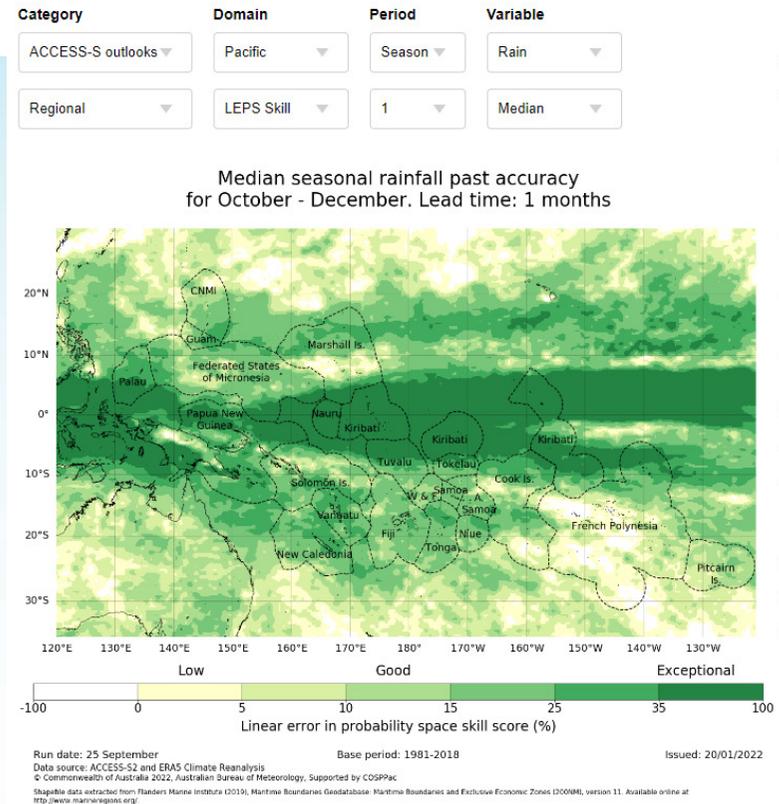
- Communicating uncertainty and forecast skill is a huge challenge globally.
- No forecast (weather, seasonal climate and hydrological prediction) is complete without a description of its uncertainty.
- Using clear and consistent language is one way of addressing uncertainty in seasonal climate forecasts.





# Skill

- Stronger the green, better the skill
- Skill calculated over 37 years (1981-2018)
- Lock into ENSO, confident for 6 months



<http://www.bom.gov.au/climate/pacific/outlooks/>

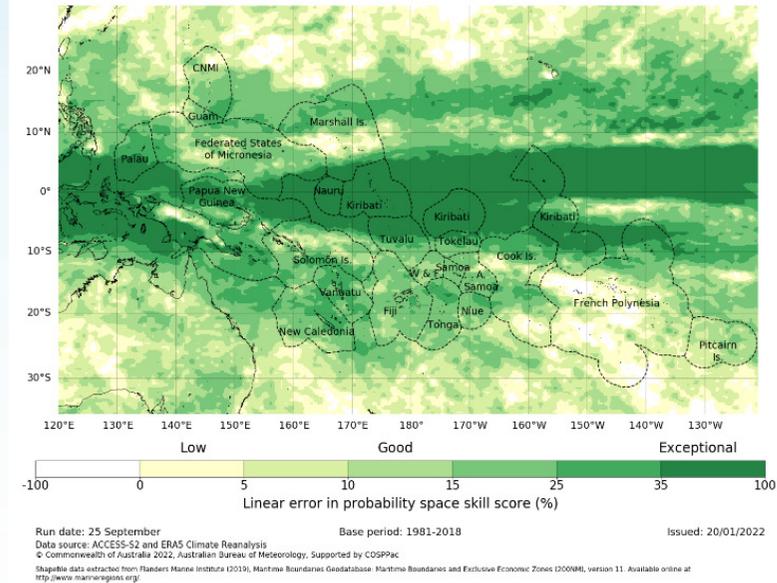


# Communicating Uncertainty

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

Category: ACCESS-S outlooks  
 Domain: Pacific  
 Period: Season  
 Variable: Rain  
 Regional  
 LEPS Skill  
 1  
 Median

Median seasonal rainfall past accuracy for October - December. Lead time: 1 months



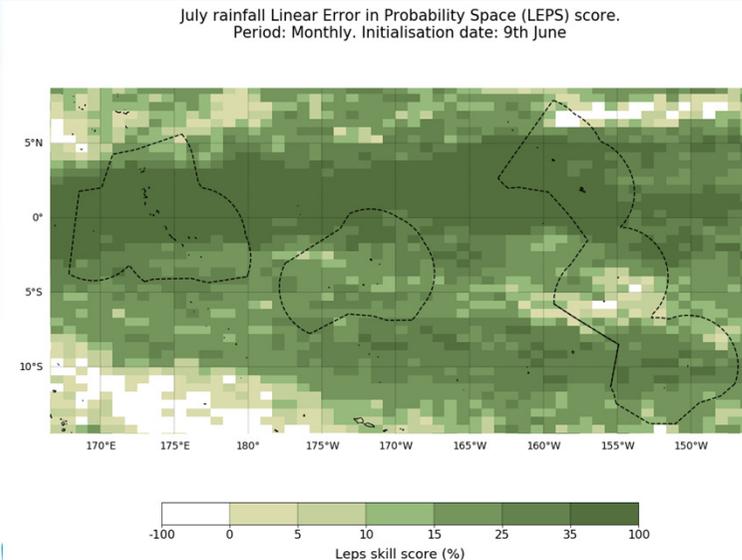
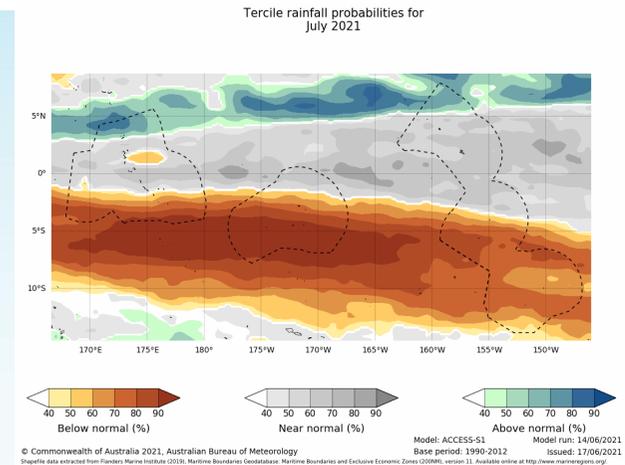
<http://www.bom.gov.au/climate/pacific/outlooks/>



# Tercile Forecast and Skill Below/Normal/Above Normal

*Rainfall across the Gilbert Island's are 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.**



Source: ACCESS-S1 and ERA5 Climate Reanalysis  
© Commonwealth of Australia 2020, Australian Bureau of Meteorology  
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.  
Shapelle 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/>

Hindcast period: 1990-2012  
Created: 07/07/2020

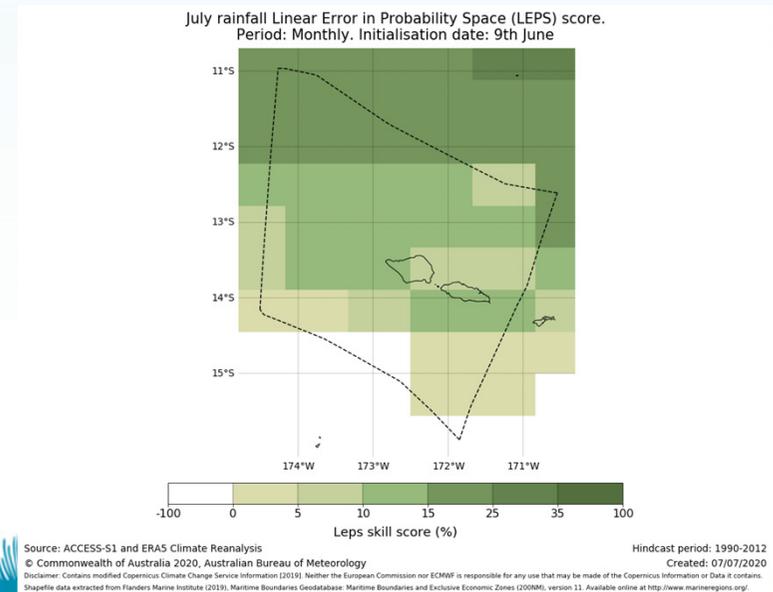
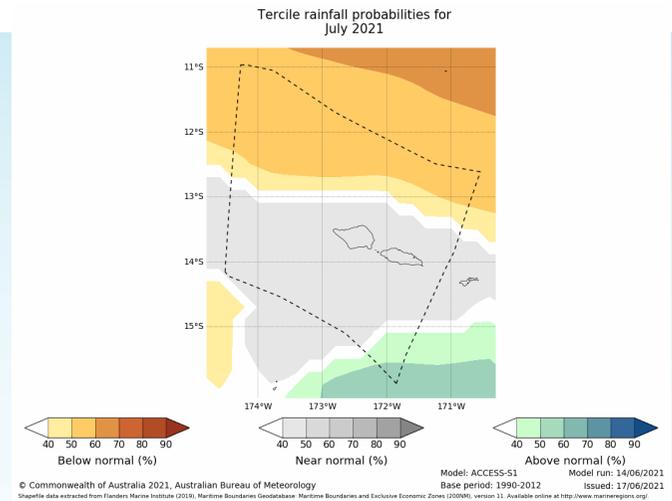


# Tercile Forecast and Skill Below/Normal/Above Normal

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

**Confidence in these outlooks is low.**

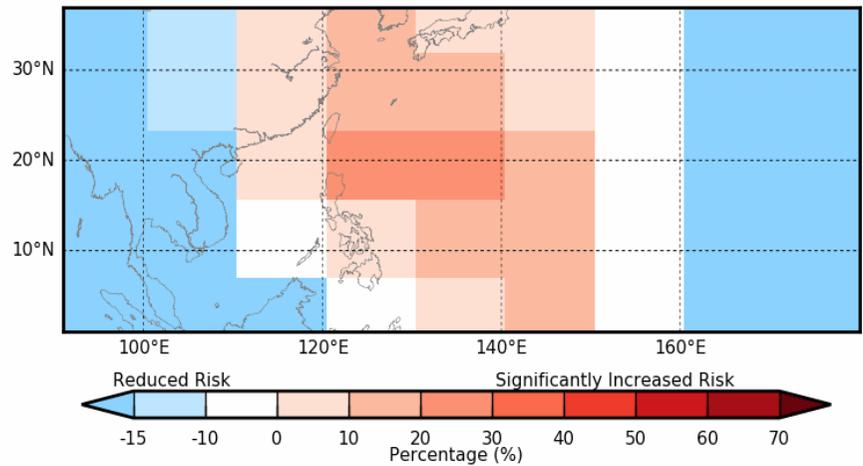
**Could be 'low to moderate', however consider that the probabilities are a light grey colour (not strong). There is also no strong climate driver impacting the forecast.**





# Tropical Cyclone interpretation example – NW Pacific

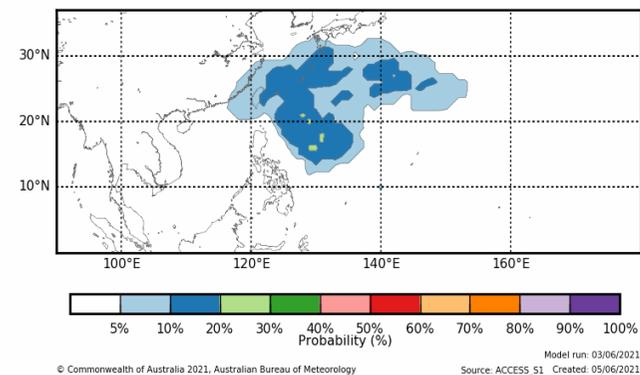
Difference from normal chance of Tropical Cyclone's in the Northern Pacific  
Forecast period: 11/06/2021 - 17/06/2021



Calibrated Model anomaly probability in overlapping 15 x 20 degree boxes  
© Commonwealth of Australia 2021, Australian Bureau of Meteorology  
Model run: 03/06/2021  
Source: ACCESS\_S1  
Created: 05/06/2021

*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.*

Tropical Cyclone probabilities in the Northern Pacific  
Forecast period: 11/06/2021 - 17/06/2021



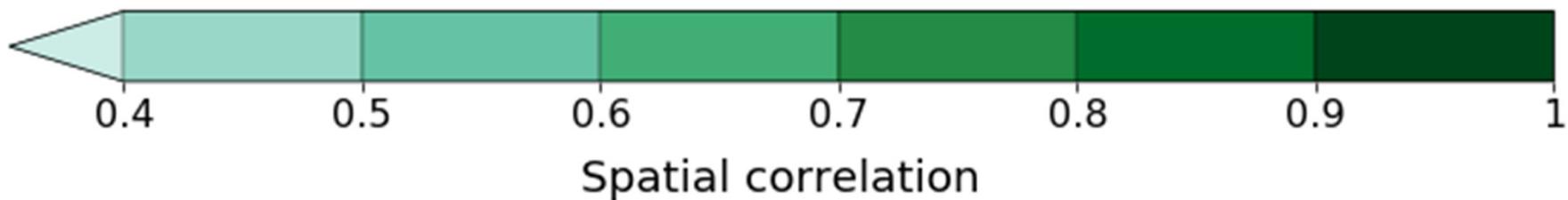
© Commonwealth of Australia 2021, Australian Bureau of Meteorology  
Model run: 03/06/2021  
Source: ACCESS\_S1  
Created: 05/06/2021

<http://www.bom.gov.au/climate/pacific/outlooks/>



# Communicating Ocean Outlooks

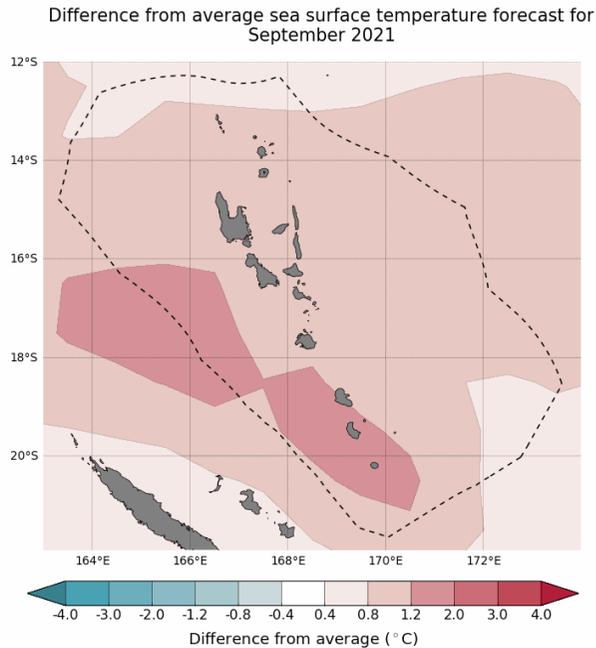
- Ocean outlooks available from ACCESS-S are typically shown as the ensemble mean.
- This shows the SST and Sea Level forecast as a predicted value, rather than probabilistic.
- Ensemble mean is most commonly conveyed using correlation coefficients.
- Typically we refer to the skill as either having: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





# Exercise: Vanuatu SST

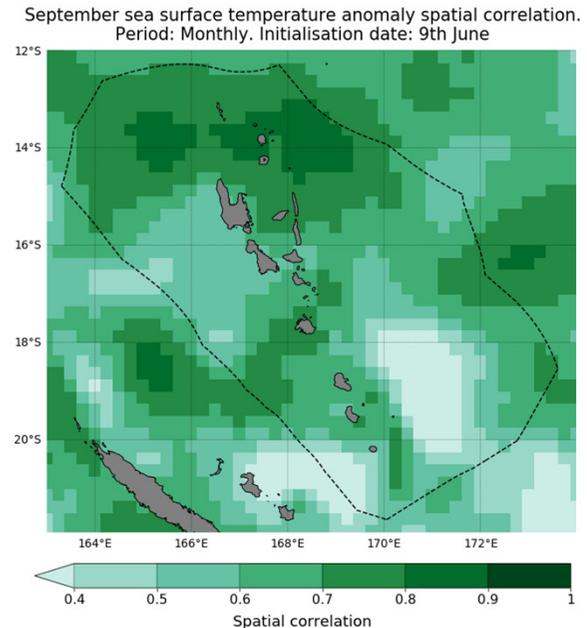
## How would you explain this outlook?



© Commonwealth of Australia 2021, Australian Bureau of Meteorology  
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.marinerregions.org/>

Model: ACCESS-S1  
Base period: 1990-2012

Model run: 14/06/2021  
Issued: 16/06/2021



Source: ACCESS-S1 and NOAA OISST V2

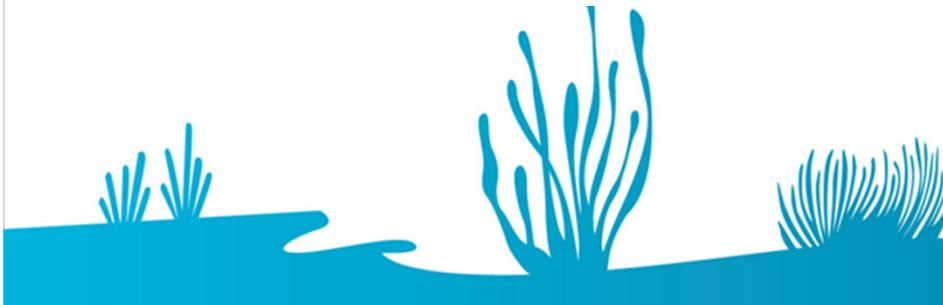
© Commonwealth of Australia 2020, Australian Bureau of Meteorology

Disclaimer: Contains NOAA OISST V2 data provided by NOAA/ANCEI, Asheville, North Carolina, USA, from their website <https://www.ndbc.noaa.gov/oisst>.

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.marinerregions.org/>

Hindcast period: 1990-2012  
Created: 10/02/2020

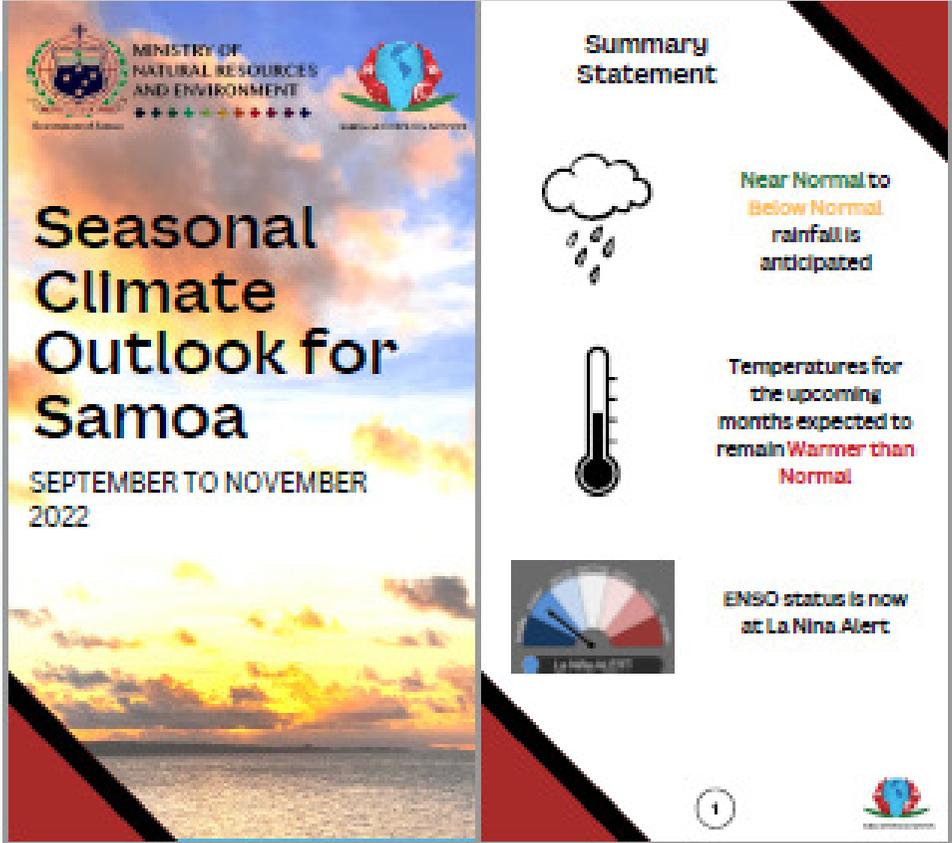
*SST will be warm at Vanuatu.*



**Sea Surface Temperature is likely to be warmer than average across the Vanuatu EEZ in September, with predicted temperatures between 1.2 and 2C in the south east. Model forecast skill ranges from moderate to good in the south east.**



# Seasonal Climate Outlook for Samoa



The image shows the cover of a report titled "Seasonal Climate Outlook for Samoa" for the period "SEPTEMBER TO NOVEMBER 2022". The cover features a sunset over the ocean. At the top, it includes the logo of the Ministry of Natural Resources and Environment and the text "MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT".

**Summary Statement**

-  **Near Normal to Below Normal rainfall is anticipated**
-  **Temperatures for the upcoming months expected to remain **Warmer than Normal****
-  **ENSO status is now at **La Nina Alert****

At the bottom right of the summary statement, there is a small circular icon with the number "1" and a small globe icon.

<http://www.samet.gov.ws/>





# Seasonal Climate Outlook for Samoa



### Rainfall Outlook September to November 2022

According to the ACCU-M2 model, rainfall for Samoa is expected to be normal. To the north of the group, rainfall activities may be reduced, and to the south, rainfall activities are expected to be enhanced. The model results have a good confidence when the forecast period is well within the season. In this case, the dry season.

The methodology for how some climate model outputs are presented (e.g., grid cell geographic area) might vary from the standard conventions in meteorology.

Figure 1: The outlook being presented for the above three forecasting time.

Figure 2: A vertical cross-section diagram showing rainfall outlook for September to November 2022. The x-axis represents longitude from 150°W to 150°E, and the y-axis represents latitude from 10°S to 10°N. The diagram shows a color gradient from yellow (north) to green (south), indicating rainfall outlook. A legend at the bottom shows color-coded boxes for 'Above Normal', 'Near Normal', and 'Below Normal'.

Figure 2: The outlook being presented for the above three forecasting time.

### Temperature Outlook for September to November 2022

According to Figure 3, the model has high confidence that during the next period of September to November 2022 will experience warmer than normal conditions. The normal daytime (maximum) temperatures for these three months for September to November 2022 show a normal standard deviation between 22.8 to 30.3 degree Celsius.

The outlook being presented above some other models approach the outlook being presented for September to November 2022.

Figure 3: The outlook being presented for the above three forecasting time.

Figure 4: A bar chart showing temperature outlook for September to November 2022. The x-axis represents months from 09/01 to 11/30. The y-axis represents temperature in degrees Celsius. The chart shows bars for 'Maximum temperature outlook' (red) and 'Minimum temperature outlook' (blue). A legend at the bottom shows color-coded boxes for 'Above Normal', 'Near Normal', and 'Below Normal'.

Figure 4: The outlook being presented for the above three forecasting time.

### El Niño Southern Oscillation (ENSO)

ENSO status is now at La Niña Alert.

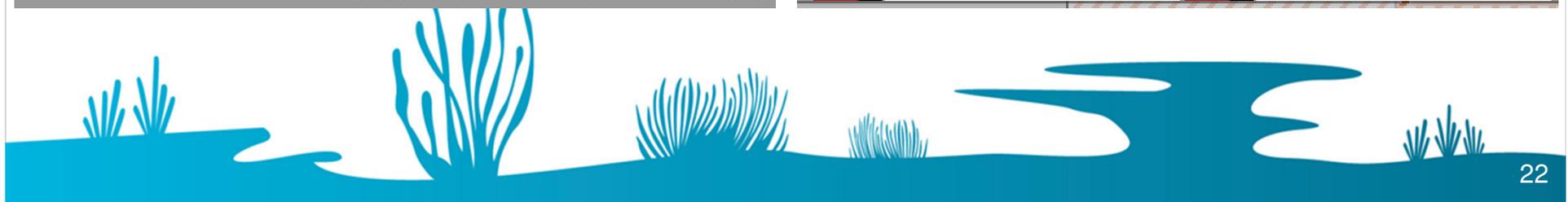
ENSO status is now at La Niña Alert.

Figure 5: The outlook being presented for the above three forecasting time.

Major Contributors

### Climate Normals for Samoa (Normal period 1981-2010)

Major Contributors





# Fiji Climate Outlook

The image shows the cover of the 'Fiji Climate Outlook' report and a highlights page. The cover is dark grey with a blue header and footer. The header contains the text: 'ISSUED: August 31, 2022', 'NEXT ISSUE: September 30, 2022', and 'VOLUME 18: ISSUE 04'. Below this is the logo of the Ministry of Infrastructure and Meteorological Services. The main title 'FIJI CLIMATE OUTLOOK' is in large white letters, followed by the periods: 'SEPTEMBER 2022;', 'SEPTEMBER TO NOVEMBER 2022;', 'AND', 'DECEMBER 2022 TO FEBRUARY 2023'. The footer of the cover says 'Fiji Meteorological Service'. The highlights page has a blue header with the word 'HIGHLIGHTS' in white. Below the header are three circular gauges labeled 'Rainfall Outlook', 'ENSO Outlook', and 'Air Temperature'. The 'Rainfall Outlook' gauge shows a needle pointing towards the 'Normal' section. The 'ENSO Outlook' gauge shows a needle pointing towards the 'Neutral' section. The 'Air Temperature' gauge shows a needle pointing towards the 'Above Normal' section. Below the gauges is a list of six bullet points providing climate outlook details for different periods and regions.

ISSUED: August 31, 2022  
NEXT ISSUE: September 30, 2022  
VOLUME 18: ISSUE 04

MINISTRY OF INFRASTRUCTURE  
AND METEOROLOGICAL SERVICES

## FIJI CLIMATE OUTLOOK

SEPTEMBER 2022;  
SEPTEMBER TO NOVEMBER 2022;  
AND  
DECEMBER 2022 TO FEBRUARY 2023

Fiji Meteorological Service

### HIGHLIGHTS

Rainfall Outlook      ENSO Outlook      Air Temperature

- Rainfall during September 2022 is likely to be near normal or above normal in the Northern and Central Divisions, while there is little guidance for the Western and Eastern Divisions with almost equal chances of below normal, normal and above normal rainfall. Normal or below normal rainfall is favored for Rotuma.
- For September to November 2022 period, above normal rainfall is likely across the Fiji Group, while there is little guidance for Rotuma with almost equal chances of below normal, normal and above normal rainfall.
- During December 2022 to February 2023 period, above normal rainfall is likely across the Fiji Group, while there is little guidance for Rotuma with almost equal chances of below normal, normal and above normal rainfall.
- The air temperatures are likely to be above normal across the country during September and the September to November 2022 period.
- The tropical Pacific Ocean is currently in an ENSO-neutral state. However, the tropical Pacific Ocean have recently cooled towards La Niña threshold.
- Majority of the global climate models predict continuation of the ENSO-neutral state for the rest of 2022, with La Niña conditions favored during September to November 2022 period.

FIJI CLIMATE OUTLOOK      PAGE 02





# Fiji Climate Outlook

18:40 August 31, 2022  
18:17:58 September 1, 2022  
VALUES IN THIS PDF  
VARIABLES

**FIJI CLIMATE OUTLOOK**  
SEPTEMBER 2022;  
SEPTEMBER TO NOVEMBER 2022;  
AND  
DECEMBER 2022 TO FEBRUARY 2023

**HIGHLIGHTS**

- Rainfall Outlook: ENI0 Outlook: All Temperature
- Sept/Oct during September 2022 is likely to be near normal or above normal in the Northern and Central Divisions, while there is little guidance for the Eastern and Western Divisions with an increased chance of above-normal, normal and above-normal rainfall. Normal or below normal rainfall is favored for Rotuma.
- For September to November 2022 period, above normal rainfall is likely across the FIJ Group, while there is little guidance for Rotuma with almost equal chances of above-normal, normal and above-normal rainfall.
- During December 2022 to February 2023 period, above normal rainfall is likely across the FIJ Group, while there is little guidance for Rotuma with almost equal chances of above-normal, normal and above-normal rainfall.
- The air temperatures are likely to be above normal across the country during September and the September to November 2022 period.
- The tropical Pacific Ocean is currently in an ENI0-neutral state. However, the Tropical Pacific Ocean has recently cooled towards La Niña threshold.
- Majority of the global climate models predict continuation of the ENI0-neutral state for the rest of 2022, with La Niña conditions favored during September to November 2022 period.

FIJI METEOROLOGICAL SERVICE  
PAGE 05

**RAINFALL OUTLOOK**

**SEPTEMBER 2022**

**Western Division:** Almost equal chances of below normal, normal and above normal rainfall  
**Central Division:** Normal or above normal rainfall  
**Northern Division:** Normal or above normal rainfall  
**Eastern Division:** Almost equal chances of below normal, normal and above normal rainfall  
**Rotuma:** Normal or below normal rainfall

FIJI CLIMATE OUTLOOK

**RAINFALL OUTLOOK**

**SEPTEMBER TO NOVEMBER 2022**

**Western Division:** Above normal rainfall  
**Central Division:** Above normal rainfall  
**Northern Division:** Above normal rainfall  
**Eastern Division:** Above normal rainfall  
**Rotuma:** Almost equal chances of below normal, normal and above normal rainfall

FIJI CLIMATE OUTLOOK

**RAINFALL OUTLOOK**

**DECEMBER 2022 TO FEBRUARY 2023**

**Western Division:** Above normal rainfall  
**Central Division:** Above normal rainfall  
**Northern Division:** Above normal rainfall  
**Eastern Division:** Above normal rainfall  
**Rotuma:** Almost equal chances of below normal, normal and above normal rainfall

FIJI CLIMATE OUTLOOK

**AIR TEMPERATURE OUTLOOKS**

**SEPTEMBER 2022**

**SEPTEMBER TO NOVEMBER 2022**

Above normal air temperatures are likely over the FIJ Group during September 2022, and as well as the September to November 2022 period.

FIJI CLIMATE OUTLOOK

**EL-NIÑO SOUTHERN OSCILLATION (ENSO)**

Source: International Research Institute for Climate and Society

The tropical Pacific Ocean is in an ENSO-neutral state, that is, neither El Niño nor La Niña. The tropical Pacific Ocean has recently cooled towards La Niña threshold. However, there is no clear coupling between the atmospheric and oceanic indicators to constitute a La Niña event.

Majority of the global climate models predict continuation of the ENSO-neutral state for the rest of 2022. However, during September to November 2022 period La Niña conditions are favored over ENSO-neutral.

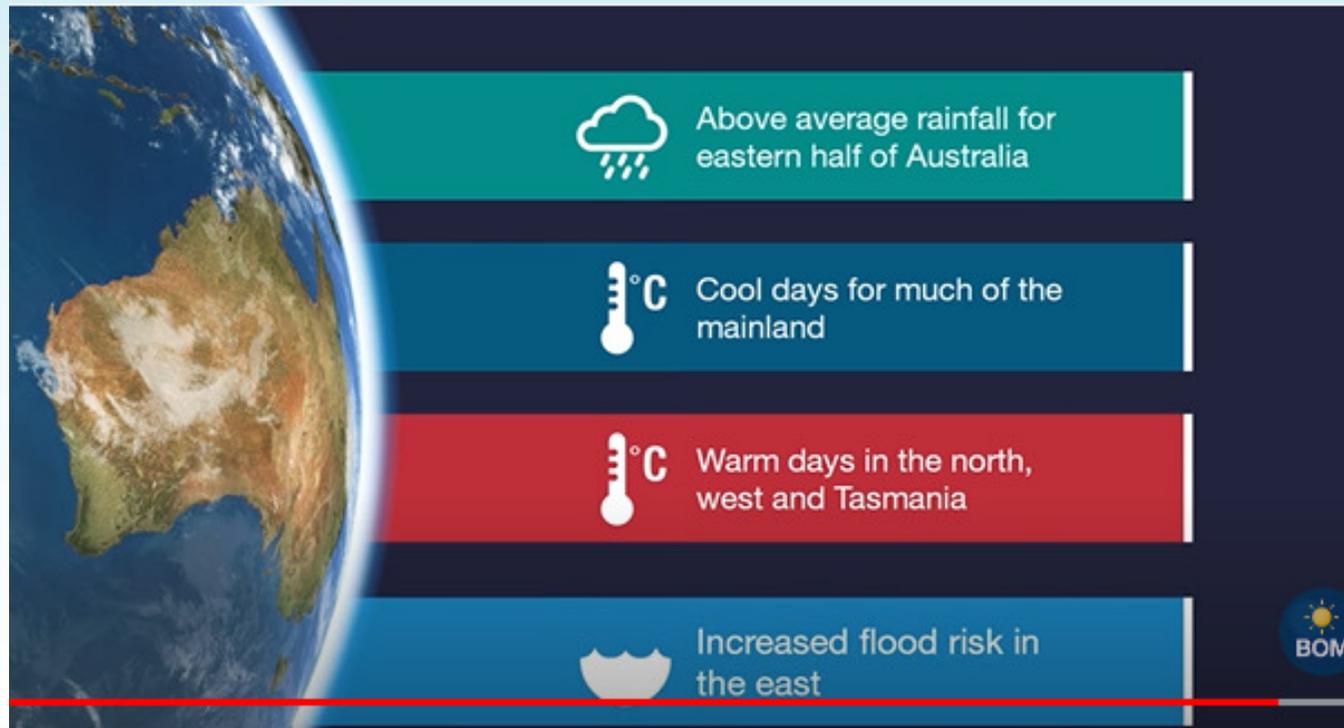
The model predictions for later part of the year at this time have lower accuracy. Thus, FMS will continue to monitor the ENSO conditions closely and provide updates accordingly.

FIJI METEOROLOGICAL SERVICE Private Mail Bag (PMB 081)  
Suva, Fiji  
Tel: +679 8704888, Fax: +679 8730400  
Email: [climate@met.gov.fj](mailto:climate@met.gov.fj)  
Also online at: [www.met.gov.fj](http://www.met.gov.fj)

<https://www.met.gov.fj/index.php?page=climateOutlooks#September%202022climateOut2022.08.31%2015.36.51.pdf>



## Climate Outlook video - summary



<https://www.youtube.com/watch?v=ljtwyCsak1Y>





# Social media - Ocean Outlook

## Fiji Ocean Outlook

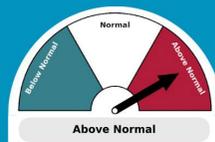
FIJI MET Service

October to December 2022 Period



### ENSO OUTLOOK

- The tropical Pacific Ocean is in a La Niña state.



### SST OUTLOOK

- Above normal sea surface temperatures (SSTs) are likely to be observed within the Fiji Waters during the October to December 2022 period.
- The average position of the 29°C Convergence Zone is likely to be located closer to Fiji's EEZ during the October to December 2022 period.



### CORAL BLEACHING OUTLOOK

- The 12 weeks outlook is at 'Watch' for parts of the Yasawa Group.



### SEA LEVEL OUTLOOK

- Sea level is likely to be above normal across most of Fiji's EEZ during the October to December 2022 period.

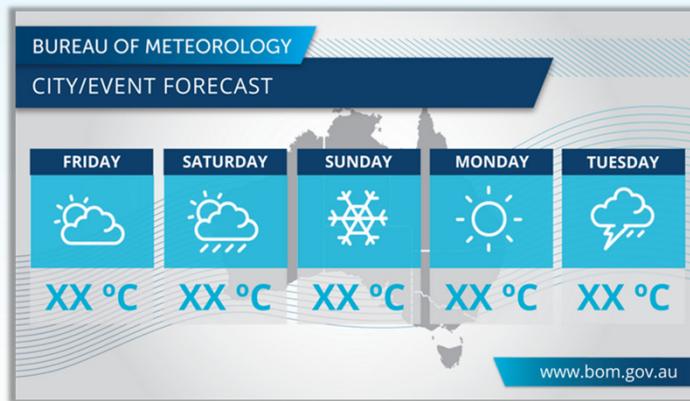
SOURCE: [WWW.MET.GOV.FJ](http://WWW.MET.GOV.FJ)



# For social media graphics – try Canva



Web-based tool for professional, on-brand graphics



BUREAU OF METEOROLOGY

## WEATHER EVENT NAME

**WATCH**

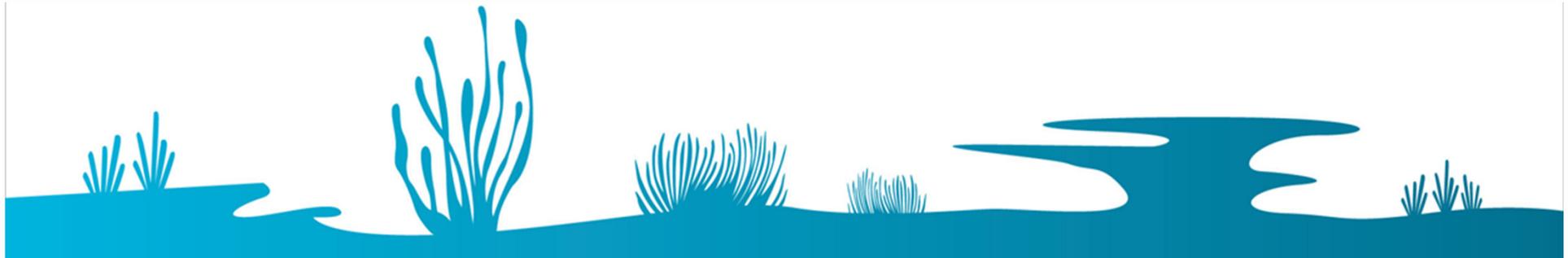
(Spokesperson name and title)

**Sky News Weather**  
(Foxtel channel 603)

**from 4 pm AEST**  
(5 pm AEDT)

Insert image here

...and in the meantime check [bom.gov.au](http://bom.gov.au)





## Summary

- Different information in alternate channels for various audiences
- Set language for outlooks and skill  
eg "Rainfall across Samoa is likely to be near average for July 2021. Confidence in this outlook is high"
- Outlook products at <http://www.bom.gov.au/climate/pacific/outlooks/>

