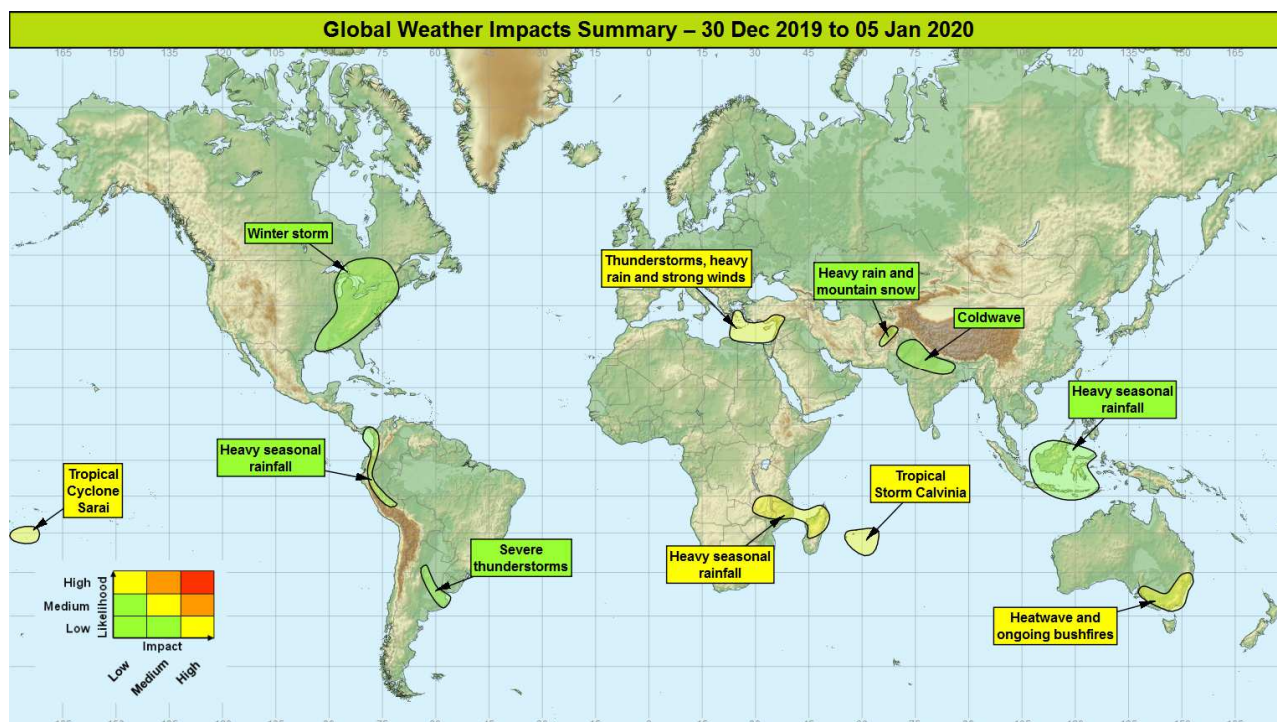


## Global Weather Impacts – Monday 30<sup>th</sup> December 2019 to Sunday 5<sup>th</sup> January 2020

Issued on Monday 30<sup>th</sup> December 2019

### HEADLINES

- Tropical Storm Calvinia to affect Mauritius and Tropical Cyclone Sarai to affect Tonga over the next few days.
- Very unsettled across the eastern Mediterranean and Levant
- Fire weather conditions hindering containment of ongoing bushfires in southeast Australia.



### DISCUSSION

#### Tropical Cyclones

#### Tropical Storm Calvinia (Southwest Indian Ocean)

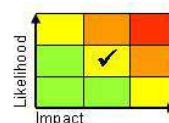
##### **Weather**

Tropical Storm Calvinia was located around 100 miles southeast of Mauritius on Monday morning with sustained winds of 45 mph. Calvinia is expected to remain slow-moving southeast of Mauritius through Monday before moving slowly away from land during Tuesday and gradually strengthening. The heaviest rainfall is expected to affect Rodrigues (150-300 mm possible) with lesser amounts for the islands of Mauritius and La Réunion (50-100 mm). In addition to tropical storm force winds and heavy rain, large waves and rough seas are likely around these islands.

##### **Discussion**

Calvinia developed from an equatorial Rossby wave on Sunday, but is expected to become slow-moving in the absence of significant steering flow across the system on Monday and early Tuesday. Some model output even suggests a small loop in the track close to Mauritius, before the steering flow increases and Calvinia is eventually swept up into the mid-latitude flow to the south.

##### **Expected Impacts**



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Flash flooding from heavy rainfall is the primary hazard which may cause damage to property and infrastructure, as well as being a threat to life. Tropical storm force winds may damage temporary or poorly built structures. Some coastal flooding is possible.

## **Tropical Cyclone Sarai (Southwest Pacific Ocean)**

### **Weather**

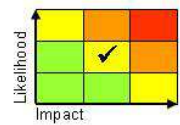
Tropical Cyclone Sarai was located around 300 miles southeast of Nadi, Fiji on Monday morning with sustained winds of 65 mph. Sarai is expected to continue moving slowly east and to cross Tonga on Tuesday at a slightly lower intensity. As well as tropical storm force winds, up to 300-400 mm of rainfall is possible (double the monthly average) with large waves and rough seas around the islands.

### **Discussion**

There is good model agreement in Sarai moving slowly eastward across the Tongan islands but there is considerable uncertainty in the rate at which the system weakens as well as the islands most likely to be affected by the strongest winds. At this stage, the greater likelihood for impacts exists across the Tongatapu Group, including the capital Nuku'alofa.

### **Expected Impacts**

Flash flooding from heavy rainfall is the primary hazard which may cause damage to property and infrastructure, as well as be a threat to life. Tropical storm force winds may damage temporary or poorly built structures. Some coastal flooding is possible.



## **Europe**

### **Eastern Mediterranean including southern Turkey, Crete, Cyprus, western Syria, Lebanon and Israel**

### **Weather**

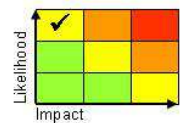
Unsettled conditions are expected to continue through this week with further episodes of frequent thunderstorm activity. Two peaks in activity are expected: today (Monday) and Thursday into Friday. Rainfall is expected to be highly variable but some places could receive up to 200 mm over the week, with the potential for 50-100 mm falling in a few hours. Strong to gale force winds will build rough or very rough seas at times through the Aegean Sea. Thunderstorms could also spawn a few waterspouts/tornadoes in the eastern Mediterranean, including Cyprus later this week.

### **Discussion**

Repeated Rossby wave breaking events will serve to reinforce the longwave upper trough across the region and trigger deep convection. Sufficient instability exists for frequent thunderstorms at times. Later in the week, the upper low over the Levant is expected to become vertically stacked, supporting the possibility of waterspouts and tornadoes here.

### **Expected Impacts**

Increased likelihood of flash flooding and landslides. Localised damage to property and infrastructure is also possible from lightning and waterspouts moving onshore. Dangerous sea conditions are likely at times through the Aegean Sea.



## **North America**

### **Eastern USA and southeast Canada**

### **Weather**

A winter storm underway across eastern North America will bring further heavy snow to southeast Canada through Monday before gradually easing during Tuesday. Freezing rain is also likely across parts of New York and New England with heavy rain and thunderstorms further south. Whilst a reprieve is expected by midweek, another area of low pressure is expected to bring further rain to the southern and eastern states from Thursday.

### **Discussion**



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A negatively tilted upper trough has led to cyclogenesis over the Midwest with subtropical air drawn from the Gulf of Mexico towards the resident arctic airmass further north. This brings the usual mixture of precipitation types from snow, through ice pellets, freezing rain and (in the south) rain. The relatively stagnant longwave pattern in the northern hemisphere supports the likelihood of another low developing along a similar trajectory later in the week.

## Expected Impacts

Power and transport network issues are likely in association with winter hazards. Flash flooding is possible in the south due to thunderstorms.

## Central America

**Panama** – See *South America* section.

## South America

### **Panama, western Colombia, Ecuador, Peru and Bolivia**

#### Weather

Continued heavy seasonal rainfall in the form of more widespread / frequent thunderstorms will affect areas close to the Andes Mountains from Bolivia northwards through the next week. Up to 300 mm of rainfall is expected in places (around twice the average December rainfall).

#### Discussion

With the South American Monsoon now extending well southward, daily rounds of showers and thunderstorms are expected to form to the west of the Andes of Colombia and Ecuador, and to the east of the Andes further south. The region highlighted has seen above average rainfall during the past weeks.

#### Expected Impacts

Flash flooding and landslides are an enhanced likelihood.



## Northern Argentina

#### Weather

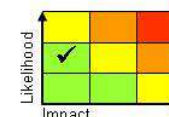
Intense thunderstorms are expected at times through the next couple of days bringing torrential rain (50-100 mm of rain could fall in a few hours), large hail, frequent lightning and strong wind gusts.

#### Discussion

The airmass over northern Argentina will be very unstable on Monday and Tuesday with forecast profiles showing CAPE of ~3000J/kg and significant wind shear that will allow for the development of severe thunderstorms and MCS events.

#### Expected Impacts

Flash flooding along with the potential for property and crop damage from strong wind and large hail. Lightning strikes could lead to power outages in places.



## Africa

**Reunion, Mauritius and Rodrigues** – See *Tropical Cyclones* section.

## Madagascar, Mozambique, Tanzania, Malawi and Zambia

#### Weather

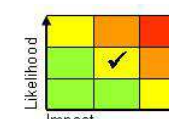
More widespread / frequent thunderstorms than is usually expected will affect this region of eastern Africa at times through the next week, producing up to 300 mm of rainfall in places during the next 7 days (around twice the average December rainfall).

#### Discussion

Strong model signal for the ITCZ to be active across this region of Eastern and Southeastern Africa through the next week.

#### Expected Impacts

There will be an enhanced likelihood of some flash flooding and landslides given the already wet conditions.



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**Middle East**

**Western Syria, Lebanon and Israel** – See *Europe* section.

**Asia****Afghanistan****Weather**

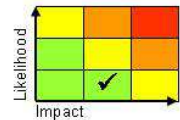
A spell of heavy rain is likely to affect the southeast of the country through Wednesday and Thursday with some locations (including Kandahar) at risk of receiving 50-75 mm of rain over two days. This would be equivalent to a third of the annual average rainfall (190 mm) falling in 48 hours. Further north, heavy snow is likely to fall above 1800 metres (including the area surrounding Kabul).

**Discussion**

A diffluent upper trough is expected to engage the baroclinic zone lying across the country during Wednesday. Warm air drawn Northeastwards from the Arabian Peninsula is expected to be extruded across the country, destabilising across the south with embedded thunderstorms and falling as snow across the Hindu Kush and Central Highlands.

**Expected Impacts**

The main hazard is expected to be flash flooding causing property and infrastructure damage, as well as posing a risk to life across parts of southeast Afghanistan. Further north, heavy snow may cause transport disruption and low temperatures a risk to vulnerable population groups.

**North India and eastern Pakistan****Weather**

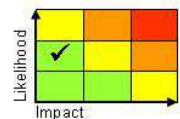
Below average temperatures are expected to persist across northern India and eastern Pakistan over the next couple of days before returning to nearer normal from Wednesday. Over the weekend, several locations recorded minima close to freezing. These below average temperatures have been accompanied by areas of dense fog and poorer than normal air quality.

**Discussion**

The succession of Western Disturbances originating from the Mediterranean and reaching south Asia has resulted in a protracted period of below average temperatures across northwestern parts of the Indian subcontinent. The colder than average temperatures have also contributed to poorer than average air quality due to a stronger surface inversion and increased demand for heating.

**Expected Impacts**

Poor visibility has already, and will continue to, affect air, road and rail networks in the region. Below average temperatures are also likely to have a human health impact to vulnerable people exposed to near freezing overnight temperatures.

**Eastern Malaysia and Indonesia****Weather**

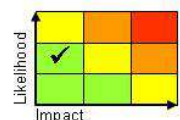
Scattered heavy showers and thunderstorms will be more frequent than usual over the next week. Some places are likely to receive up to 100-150 mm per day although rainfall amounts will be highly variable from location to location.

**Discussion**

The lasting impact of the MJO across the Pacific Ocean is likely to be contributing to above average thunderstorm activity near the equator. Whilst we are entering the wet season for this part of the world, impacts from flash flooding and landslides have already been reported in the past week in Indonesia.

**Expected Impacts**

Increased likelihood of flash flooding and landslides.



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**Australasia**

**Tonga** – See *Tropical Cyclones* section

**Southern and eastern Australia**

**Weather**

Numerous bush fires continue across parts of Victoria, eastern New South Wales, southeastern Queensland and Australian Capital Territory with dry conditions persisting across much of the region. Heatwave conditions are likely to continue across much of this region through much of the next week, with maximum temperatures rising above 40 °C in some places (10 °C above average).

**Discussion**

A cool change on Monday night and through Tuesday is expected to move east across southeastern Australia. Ahead of this, strong winds and low relative humidity will support dangerous fire weather conditions. Rainfall along the front is unlikely to provide much respite and thunderstorms could even trigger further bushfires. Nevertheless, the sheer size of wildfires across the Blue Mountains in New South Wales will mean considerable rainfall will be required to limit further progress.

**Expected Impacts**

The sheer size of many ongoing fires will continue to produce large amounts of small particulates that will contribute to hazardous air quality for several weeks to come, affecting heavily populated areas such as Sydney.



**Additional Information**

Nil.

**Issued at:** 300800 UTC    **Meteorologists:** Matthew Lehnert and Chris Tubbs    **Global Guidance Unit**

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