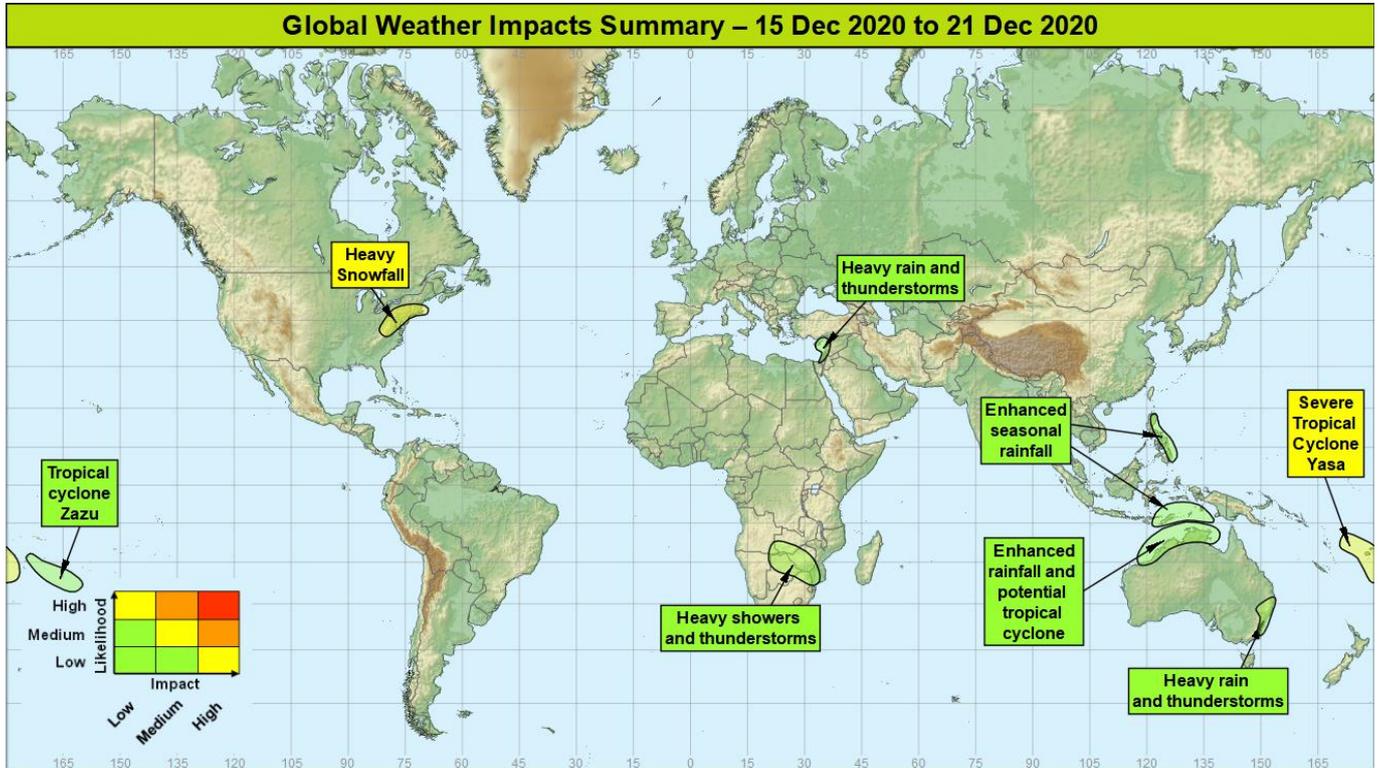


## Global Weather Impacts – Tuesday 15<sup>th</sup> to Monday 21<sup>st</sup> December

Issued on Tuesday 15<sup>th</sup> December 2020

### HEADLINES

- Severe Tropical Cyclone Yasa expected to impact to Fiji during Thursday.
- Heavy snowfall likely across a densely populated area of northeast USA on Wednesday and Thursday.



### Tropical Cyclones

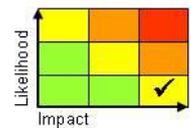
#### Severe Tropical Cyclone Yasa (Fiji)

##### Weather

Severe Tropical Cyclone Yasa, named on Sunday, became the first tropical cyclone of the season in the South Pacific. It is currently located almost midway between Fiji and Vanuatu and will remain slow-moving in this area over the next 36 hours with some gradual intensification likely place (sustained winds may reach 100mph). Thereafter Yasa will begin the move towards the southeast, likely passing either close to or over the main islands of Fiji (Viti Levu or Vanua Levu – a similar likelihood of Yasa making landfall over either island) on Thursday (UTC). While moving across Fiji Yasa is likely to continue to produce hurricane-force winds and will bring heavy rainfall widely across the islands with 250-500mm signalled to fall in a day or so. Typically around 325mm is seen in the very wettest months of the year in this region, so Yasa may bring a months' worth of rain within a day.

##### Discussion

Yasa is currently slow-moving in an area of weak steering currents between Fiji and Vanuatu, this region contains favourable environmental condition for further development of Yasa into a significant tropical cyclone. During Wednesday the system will begin to be steered towards the southeast as an upper trough approaches from the west, however, the position that the circulation ends up during the period of weak steering current, will have an impact on the track and timing of the system across Fijis main islands on Thursday. Thereafter a continued track to the southeast is signalled with the system gradually weakening as it passes over ever-lowering SSTs, but still capable of bringing damaging winds to Fijis numerous small islands.



**This forecast may be amended at any time**

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## Expected Impacts

Flash and riverine flooding likely along with an enhanced risk of landslides across Fiji's main large and mountainous islands. Winds are likely to be strong enough to cause damage to buildings and infrastructure with a threat of some destruction close to the central track of Yasa. High waves and storm surge capable of inundating low lying coastal regions. Disruption to transport and utilities is expected. Yasa has the potential to be of similar strength to Cyclone Harold which impacted Fiji during April 2020.

## Tropical Cyclone Zazu Southwest Pacific (Tonga and Niue)

### Weather

Zazu is now clearing southeast of the islands around Vava'u Island, Tonga. Zazu is expected to continue southeast moving clear of land and out into the open southwest Pacific. By the time the rainfall clears Vava'u Island later this morning around 200-300mm could have fallen in the next day or so, with around 300mm per month typical in this region.

### Discussion

Zazu currently lies just to the southeast of Vava'u Island, Tonga, and is now being steered southeastwards over the open southwest Pacific Ocean. In the coming days, it will move across much cooler SSTs loose convective activity, however, interaction with a mid-latitude upper trough could see a short term increase in maximum wind speeds as symmetry and convection associated with the system wains.

### Expected Impacts

Flash flooding and landslides. Chance of damaging winds, large waves and storm surge depending on development and track of the system.

*The following areas are also being monitored for tropical cyclone development that may impact land over the coming 7 days.*

## Timor Sea (Northern and northwestern Australia)

### Weather

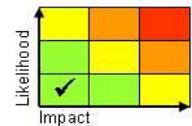
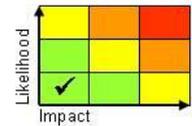
An area of enhanced shower and thunderstorm activity in the monsoon trough across the northwest of Australia may consolidate into a tropical cyclone close to the northern coastline of Australia in this region later this week. Regardless of development heavy rainfall is expected across this sparsely populated region with many locations seeing 100-200mm through the coming week, locally much more if a tropical cyclone does form.

### Discussion

An Equatorial Rossby Wave (ERW) currently in the Gulf of Carpentaria will move gradually west and enhance vorticity along the monsoon trough. This could and the enhanced convection associated with it could consolidate vorticity and potentially allow a tropical storm to form in this region, if this process happens quickly a cyclone could form in the Gulf of Carpentaria, but more likely will occur in the Timor Sea later in the week.

### Expected Impacts

Some minor disruption from flash or riverine flooding across this sparsely populated region, with the potential for strong winds, high seas, and a modest storm surge to cause some minor damage and disruption across the largely empty region.



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**Europe****Cyprus and the Levant coastline****Weather**

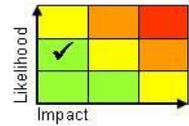
Following an exceptionally stormy day on Monday when tornadoes, large hail and heavy rainfall were reported across this region, two further days of above-average shower and thunderstorm activity are expected. The main hazard over the next couple of days will be rainfall. Although always variable in association with showers a further 20-40mm rainfall is expected fall quite widely, with the potential for 50-100mm in a few places (most probably along the Levant coastline).

**Discussion**

An upper vortex/cold pool lies across this region with a co-located cyclonic surface low, promoting deep convection over the warm underlying sea in this region. The centre of gravity of both the upper and surface patterns will transfer eastwards over the next couple of days in response to an upstream ridge building to the west, with benign settled conditions becoming established across this region by Thursday.

**Expected Impacts**

Localised flash flooding and an enhanced risk of landslides are likely. Rough sea conditions will be hazardous for small craft.

**North America****Northeastern USA****Weather**

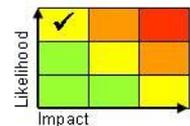
During Wednesday and Thursday, a band of heavy snowfall is expected to sweep northeastwards across this region, some locations could see 30-50cm of snow falling within 24 hours. To the south of the snow, heavy rain will fall, however, this is unlikely to bring many impacts. There is still some uncertainty regarding the exact north-south location of the narrow corridor of heavy snowfall (and how far north the rain extends), but all solutions bring heavy snowfall to some of the regions large population centres and major transport networks.

**Discussion**

A low latitude trough in the jet stream will initiate a major cyclogenesis event across the Carolinas on Wednesday, with the developing low then being steered northeast along the Eastern Seaboard of the USA. Although this low will bring heavy rainfall and strong winds, the main impacts are expected on the northwestern flank of the system where precipitation bands override cold air resident in the region, leading to heavy snowfall. The degree of pattern amplification is key to the track of the snowfall corridor, with convection-permitting NWP generally favouring a more northerly track, and models that parametrise convection favouring a more southerly track. This suggests that latent heat release through convection in the warm sector could be the main area of sensitivity and variability between NWP models.

**Expected Impacts**

Significant impacts from falling snow for the transport and utility networks in parts of this densely populated region. In addition, weather-related accidents and related health conditions will likely place additional strain on the regions health care system.

**Central America and Caribbean**

Nil.

**South America**

Nil.

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## Africa

### Areas of southern-central Africa

#### **Weather**

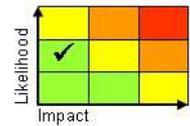
The rainy season continues across this region with further enhanced shower and thunderstorm activity affect this region over the coming week. Showers will be capable of bringing 50-100 mm of rainfall in a short duration with some locations seeing as much as 150-250 mm during the week. Typical December rainfall totals in this region are around (200-250 mm).

#### **Discussion**

As is typical for the time of year the plume of tropical air has been drawn southwards across the region of high topography, with weakening mid-latitude fronts (are their moisture footprints) making some northwards progress across the far south of the continent. This will lead to diurnal rounds of deep convection, aided by enhanced surface convergence close to the frontal zones. Profiles tend to show low shear, high precipitable water suggesting the heavy rainfall and lightning the most probable hazards.

#### **Expected Impacts**

Some flash and minor riverine flooding expected with an enhanced risk of landslides. Lightning will be an additional hazard.



## Middle East

Levant coastline – See *Europe* section.

## Asia

### Parts of Indonesia and The Philippines

#### **Weather**

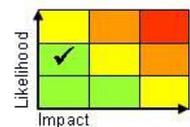
Seasonal heavy showers and thunderstorms will be more frequent and intense than usual through the coming week, with the most at-risk regions highlighted. Within rainfall totals of 50-100mm could occur in just an hour or so, with isolated spots in these regions perhaps seeing 250-500mm of rainfall through the coming week. Typically this region sees around 300-400mm of rainfall during the whole of December.

#### **Discussion**

Within the context of the La Nina background state which enhances the Walker Circulation and favours above-average convection across this region, the passage of at least one Kelvin Wave and Equatorial Rossby Wave (ERW) couplets his area will lead to further enhanced convection in this region. PWAT is in excess of 60 mm with a high skinny CAPE environment suggestive heavy rainfall being the primary hazards.

#### **Expected Impacts**

Potential for flash flooding and an enhanced risk of landslides.



## Australasia

Vanuatu, Fiji, Tonga and Niue – See *Tropical Cyclones* section.

Northern and northwestern Australia – See *Tropical Cyclones* section.

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**Southeast Queensland and northeast New South Wales, Australia****Weather**

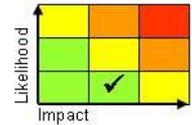
Heavy showers and thunderstorms, and perhaps more prolonged spells of heavy rain will gradually ease through the next couple of days. However, during this time they could bring a further 25-50mm of rainfall to a wide area between Brisbane and Canberra, with the potential for up to 150mm of rainfall in northeastern New South Wales. These larger totals would be well in excess of average December rainfall (130 mm for Gold Coast, for instance), and if realised, could break the record for the wettest December in some locations.

**Discussion**

A mid-latitude upper trough (cold pool) disrupted and formed a cut-off low across eastern Australia over the weekend, this feature will decay as it sinks slowly southeast through the next couple of days. Beneath this northeasterly winds draw tropical moisture across the region from the Coral Sea (PWAT is widely 40-50mm within this airmass), resulting in heavy showers and thunderstorms capable of bringing heavy rainfall to the region. A further trough extension will likely bring renewed shower activity to the region over the weekend.

**Expected Impacts**

Increased risk of flash and riverine flooding.

**Additional information****Northern India, Pakistan, Afghanistan and parts of eastern China**

Urban pollution will continue to generate high levels of air pollution in this area over the coming months. Very unhealthy air quality has continued to be reported in cities in the area including Delhi, Lahore, Kabul and Huai'an.

**Large parts of central and eastern Asia**

Very cold air from Siberia/Russia will affect these areas through the coming week, with temperatures 5-10°C below average, with some very cold nights. This will impact upon vulnerable members of the population lacking shelter and heating, particularly in places like Pakistan and India.

**Issued at:** 150845UTC

**Meteorologists:** Nick Silkstone / Chris Bulmer

**Global Guidance Unit**

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