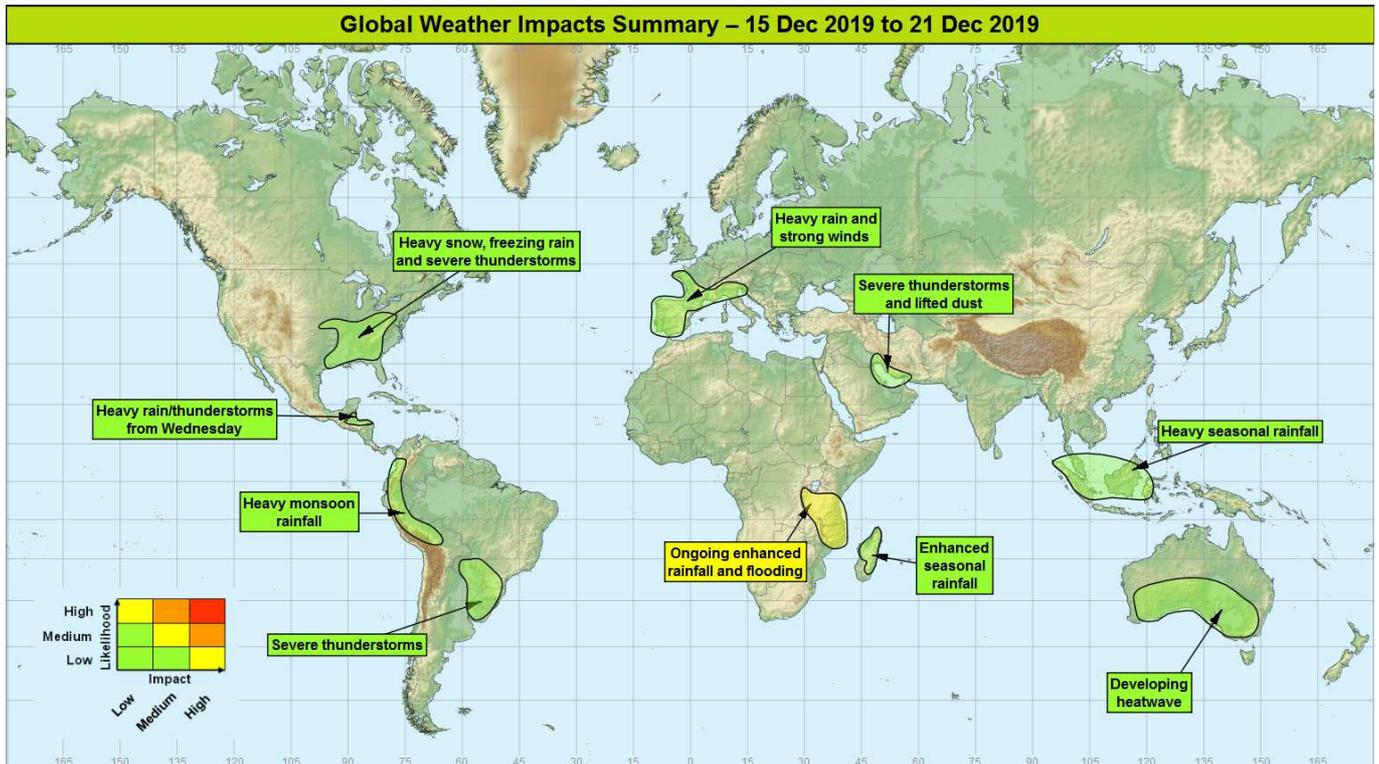


## Global Weather Impacts – Sunday 15<sup>th</sup> to Saturday 21<sup>st</sup> December 2019

Issued on Sunday 15<sup>th</sup> December 2019

### HEADLINES

- Above average rainfall ongoing across parts of eastern Africa.
- Very unsettled weather continuing across western Europe and parts of the Middle East.
- Developing heatwave across parts of Australia.



### DISCUSSION

#### Tropical Cyclones

There are currently no active or potential tropical cyclones expected to pose a threat to land over the next 7 days.

#### Europe

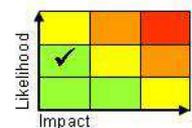
#### Western Europe Weather

Remaining predominately very unsettled through the coming week, with spells of heavy rain and strong winds, followed by brief quieter interludes. The most extreme rainfall is likely across northern Spain and Portugal, where 150-300mm could fall through the week. Heavy rain is also likely at times across the rest of the region, with 30-50mm likely widely, and up to 100mm over some high ground. The weather will generally be milder this coming week, with mountain snowfall largely restricted to above 1800 metres.

#### Discussion

A powerful Atlantic jet will drive a succession of active frontal systems into western Europe. An upper trough will extend and eventually disrupt, focusing the heaviest rainfall over NW Iberia as high WBPT airmass is dredged NE from the sub-tropics. Later in the week, there is potential for heavy rain to fall more widely as the jet dives further south, driving active frontal systems across a wider area of Portugal and central/southern Spain.

#### Expected Impacts



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The combination of flash flooding and strong winds is likely to cause disruption to travel and property/infrastructure damage. Snow will be confined to higher elevations, with snow melt at lower elevations possibly contributing to the overall flood risk.

## North America

### Central and eastern USA

#### **Weather**

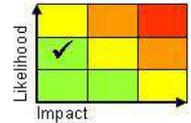
A multi-hazard severe weather event is expected to affect large parts of the USA east of the Rockies from Sunday afternoon through to Tuesday. In the north of the region, heavy snow and freezing rain are likely. Around 15-30 cm of snow could fall quite widely with up to 50 cm in places. Further south severe thunderstorms are expected, bringing intense downpours (50-75 mm within 6 hrs), hail, strong winds and perhaps a few tornadoes.

#### **Discussion**

A rather confluent upper trough will interact with a mass of high WBPT moving NE from Mexico and the Gulf of Mexico to produce a fairly vigorous depression and active frontal systems, which then moves E/NE across a large part of the USA east of the Rockies. On the northern flank of the system heavy snow is likely as the system interacts with cold air moving south from Canada. Forecast profiles also support freezing rain in places. In the warm sector, severe thunderstorms are possible and whilst CAPE is not exceptional, mostly in the range 500-1000J/kg, vertical wind shear is large, suggesting the potential for supercells and tornadoes.

#### **Expected Impacts**

A combination of heavy snow and freezing rain will bring widespread disruption to travel and the possibility of power outages. Flash flooding is possible in the south along with property and crop damage from strong winds.



## Central America

### Belize, Honduras and northern Guatemala

#### **Weather**

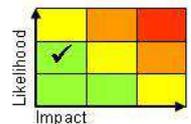
Heavy rain and thunderstorms are likely to affect the area from Wednesday, bringing widely 50-75mm of rain by the end of the period. Some areas could see 150-250mm of rain during Wednesday and Thursday, with much of this falling in a relatively short space of time.

#### **Discussion**

A mid-latitude cold front is expected to enter the area late Tuesday and into Wednesday, before stalling and then acting as the focus for heavy rain and severe thunderstorms. Given the lead-time, there is excellent agreement between deterministic models with this evolution. Forecast profiles support slow-moving torrential downpours, with frequent lightning and large hail.

#### **Expected Impacts**

Flash and river-flooding. Disruption to utilities and infrastructure.



## South America

### Ecuador, western Colombia, Peru and Bolivia

#### **Weather**

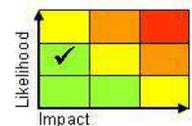
Frequent heavy showers and thunderstorms will affect these regions through the next 7 days, with the showers each day bringing 50-75 mm in just a few hours, with some locations receiving over 200 mm (around the December average rainfall). As is the nature of showers, spatial coverage on any one day will be highly variable.

#### **Discussion**

With the South American Monsoon extending well south now, 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, and is also forecast to receive the highest rainfall totals.

#### **Expected Impacts**

Flash flooding likely, with increased likelihood of landslides.



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## Parts of Argentina, Paraguay, Uruguay, and southern Brazil

### **Weather**

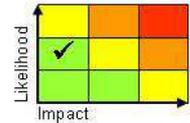
Periods of severe thunderstorms are signalled to develop and move northeast across this region. Frequent lightning is likely, and a risk of localised large hail. From midweek activity should become less intense with longer drier spells developing.

### **Discussion**

Broad areas of instability are likely to result in further severe thunderstorms, before a shortwave upper trough in the subtropical jet runs northeast east across this region. This will engage the high moisture plume associated with the South American Monsoon, resulting in a significant pulse of the South Atlantic Convergence Zone. Within this zone, more concerted areas of heavy rainfall and severe convection are supported.

### **Expected Impacts**

Localised flash flooding, and low risk of localised damage from large hail, frequent lightning and strong wind gusts.



## Africa

### Parts of eastern/central Africa

### **Weather**

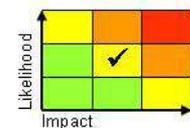
Further widespread heavy showers and thunderstorms associated with the seasonal rains are expected to continue to be heavier than normal over the next week, with a further 100-200 mm of rain falling in places from frequent heavy, thundery, afternoon downpours. This is close to the average rainfall in this region for the whole of December, with this area having already seen 200-400% of the usual rainfall over the past few weeks.

### **Discussion**

Enhanced seasonal rainfall in association with the strong positive Indian Ocean Dipole event which, although declining, is still influencing the large scale shower distribution. Large tracts of eastern Africa have seen well above average rainfall over the past few months. The combination of all these factors dramatically increases the likelihood of further flash and river flooding along with further deadly landslides. There are signs that the area of enhanced rainfall is slowly waning, with totals offered by extended models also slowly reducing.

### **Expected Impacts**

An increased threat of flash flooding and landslides in the region, with further river flooding likely.



## Madagascar

### **Weather**

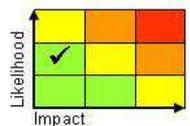
Tropical moisture from the transit and dissipation of TC Belna is expected to promote above normal shower and thunderstorm activity through to midweek. 50 mm of rainfall is locally possible in a couple of hours whilst some locations may receive 200-300 mm overall; this representing around a month's rainfall during the wet season.

### **Discussion**

The moisture plume associated with the remnants of Belna will become slow-moving over the country. This source of moisture will act to promote shower and thunderstorm activity, with the passage of subtle troughs in the sub-tropical jet acting to enhance these further. December is a very wet month in Madagascar at the start of the annual rainy season, hence it is thought that these rainfall accumulations although high are unlikely to be overly problematic.

### **Expected Impacts**

Localised flash flooding possible and an elevated risk of landslides in areas where terrain is steep.



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## Middle East

### Kuwait, southern Iran, UAE, Qatar, Bahrain and eastern Saudi Arabia

#### **Weather**

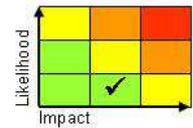
Unsettled conditions are expected to continue across the Persian Gulf through to the middle of next week with the most widespread thunderstorm activity expected to affect western Iran (including Bushehr and Bandar Abbas) on Monday and Tuesday. Very localised heavy rainfall of 15-25 mm in a few hours is possible throughout, but 75-100 mm of rain is possible on Monday and/or Tuesday. This is equivalent to around the entire December average rainfall for the eastern Persian Gulf.

#### **Discussion**

Disturbances within the sub-tropical jet cutting across the region will engage the resident baroclinic zone which remains relatively slow-moving over the Arabian Peninsula. Areas of elevated convection are expected to develop over the coming days, but it is a confluent trough crossing the Gulf on Monday into Tuesday which will likely lead to a widespread area of heavy rain and thunderstorm activity to develop.

#### **Expected Impacts**

Flash flooding likely in urban regions. Transport likely to be disrupted, especially aviation with the region home to several large hub airports. Strong winds and lightning will bring the risk of localised damage, and lifted dust will reduce air quality.



## Asia

### Malaysia, Borneo, Brunei and Sumatra

#### **Weather**

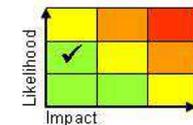
Even though it is the rainy season in this region, heavy rainfall is expected to continue through the next week with some places seeing up to 300mm (equivalent of 50-75% of the average monthly rainfall at this time of year).

#### **Discussion**

Above average SSTs in the Java Sea and surrounding waters, combined with increased convergence as a result of a stronger northeasterly flow through the South China Sea is likely to contribute to enhanced convection through the next week. These rains have already caused significant impacts in parts of this region, with flooding being reported across parts of Malaysia.

#### **Expected Impacts**

Increased threat of flash flooding and landslides.



## Australasia

### Eastern Australia – see *Additional Information* section.

### Parts of central/southern Australia

#### **Weather**

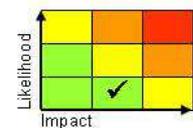
Developing northerly flow is signalled to draw hot desert air south across these parts of Australia by the middle of the coming week. Maximum temperatures are likely to be some 10-15°C above normal, with values possibly achieving the mid to high 40s°C, potentially approaching, and locally exceeding all-time records for December.

#### **Discussion**

An area of high pressure to the S of Australia is likely to drift E, with N'ly flow developing on its W'ern flank. This is likely to result in hot desert air being drawn S, leading to some exceptional temperatures.

#### **Expected Impacts**

Impacts on infrastructure, including road and rail, as well as utilities, can be expected. Impacts on vulnerable populations are also likely.



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**Additional Information****Eastern Australia**

Numerous bush fires continue across parts of eastern New South Wales, Queensland and Australian Capital Territory with widely dry conditions persisting across all but coastal Queensland over the next week. Whilst fire weather conditions have improved relative to recent days, the sheer size of many ongoing fires will continue to produce large amounts of small particulates that will contribute to very poor air quality for several weeks to come.

**Issued at:** 150400 UTC    **Meteorologists:** Brent Walker / Mark Sidaway

**Global Guidance Unit**

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