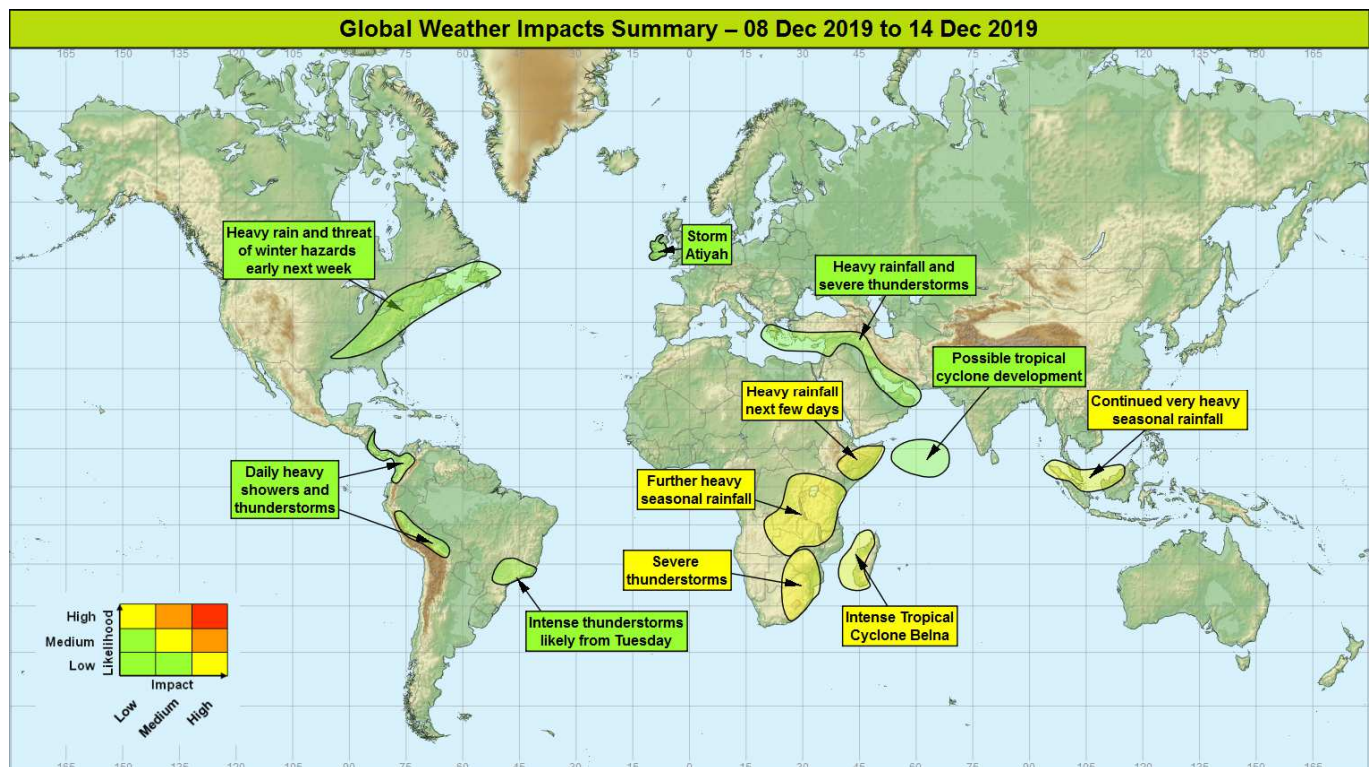


## Global Weather Impacts – Sunday 8<sup>th</sup> to Saturday 14<sup>th</sup> December 2019

Issued on Sunday 8<sup>th</sup> December 2019

### HEADLINES

- Intense Tropical Cyclone Belna impacting Madagascar through the next few days
- Heavy rain from ex-Cyclonic Storm Pawan continuing to impact Somalia today
- Further heavy rain and severe thunderstorms in parts of eastern, central and southeastern Africa



### DISCUSSION

#### Tropical Cyclones

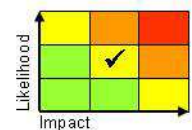
#### Intense Tropical Cyclone Belna (Comoros Islands and Madagascar)

##### Weather

Belna strengthened significantly through Saturday. By 1200 UTC Sunday it is expected to be located between the Comoros Islands and Madagascar with maximum sustained winds over 100 mph. Belna is expected to remain an Intense Tropical Cyclone as it tracks southwards, likely making landfall in western Madagascar into Monday. Belna will produce hurricane-force winds close to the eye, with these winds building very rough seas. Up to 200-400 mm of rain is likely to accumulate in 24-48 hours along the path of this cyclone. The average December rainfall in this region is 200-300 mm. Early next week Belna is expected to weaken and eventually decay as it moves south across western Madagascar.

##### Discussion

Weak vertical wind shear and the very warm SST environment allowed Belna to undergo strengthening through Saturday, though overnight it weakened a little as shear increased slightly. Some continued variation in strength is possible on Sunday, though currently it is still expected to be an Intense TC at landfall. Ensemble output shows confidence for a south-southwesterly track, but with continued uncertainty in the exact landfall location.



This forecast may be amended at any time

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**Expected Impacts**

Torrential rainfall likely bringing flash floods to parts of northern and western Madagascar, along with an enhanced landslide risk. Destructive winds and storm surge flooding are likely close to the centre of Belna.

*Possible tropical cyclone development areas:*

**Arabian Sea****Weather**

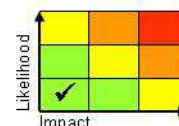
There is a possibility that another tropical cyclone will develop in the Arabian Sea through the next few days, although if this does occur it is currently expected to remain offshore.

**Discussion**

An Equatorial Rossby Wave will provide the potential for another tropical cyclone development with relatively slack vertical wind shear and a warm SST environment likely allowing for some development in the coming few days. The Indian Met Department (the official RSMC) has a moderate (50-75%) likelihood of a tropical cyclone development during the next three days.

**Expected Impacts**

Nil.

**Europe****Republic of Ireland****Weather**

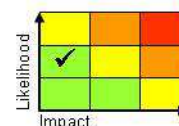
A deep depression will track eastwards to the north of the UK through Sunday, producing an area of very strong winds across the country for a time. This storm has been named 'Atiyah', with gusts possibly reaching up to 80 mph along the western coast of Ireland and as high as 60 mph elsewhere in the country. Winds will gradually ease down through Monday morning.

**Discussion**

Storm Atiyah was named by Met Eireann on Friday morning. The cold front associated with the low pressure system, which is currently deepening in the North Atlantic, will cross Ireland later today and in its wake winds will strengthen. The strongest winds are expected in coastal areas but gales are also likely inland.

**Expected Impacts**

Some property damage and disruption to utilities and travel are possible, as well as coastal flooding due to a combination of high seas and storm surge.

**Parts of southeast Europe across the north and east of the Middle East****Weather**

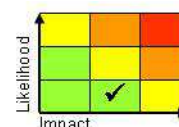
This region will see heavy showers and thunderstorms at times through the next seven days. Up to 50-100 mm could fall in 24 hours, with the highest rainfall totals likely for southwestern Turkey where this is the average December rainfall. The thunderstorms could be severe at times, producing a threat of large hail, frequent lightning and strong, gusty winds. These winds could lift dense dust storms in the Middle East.

**Discussion**

The combination of a south shifted PFJ and a strong STJ will produce areas of deep convection across this region, with the potential for long lived, severe thunderstorms in places.

**Expected Impacts**

Flash flooding is possible across this region, with frequent lightning impacts possible too. Waterspouts and tornadoes are possible across and around the Mediterranean, with dense lifted dust plumes likely in the Middle East. Heavy mountain snowfall likely in the mountain ranges of the Iran/Iraq border and southern Turkish border.



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**North America****Parts of eastern USA and southeastern Canada****Weather**

An area of heavy rain and showers with the potential for thunderstorms will transfer east across parts of eastern North America early next week.

Up to 50-75 mm of rain could fall in 24 hours, with the potential for heavy snow in more northern parts of this region.

**Discussion**

An upper trough will engage a cold front as it tracks east, resulting in an increasingly active frontal zone. Marked cold advection will produce a threat of heavy snow on the back edge of the cold front as it clears eastwards.

**Expected Impacts**

Local flash flooding is possible, with wintry hazards posing a threat of transport and power network impacts.

**South America****Ecuador, western Colombia, Panama, Costa Rica, Peru, Bolivia and eastern Nicaragua****Weather**

Frequent heavy showers and thunderstorms will affect these regions this weekend, 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. There are signs that activity will decrease early next week before picking up again midweek.

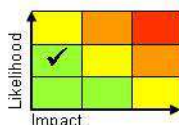
**Discussion**

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 week, and is also forecast to receive the highest rainfall totals.

The deep convection north of Colombia is likely to ease from Monday due to weakening low level convergence.

**Expected Impacts**

Flash and river flooding likely, with increased likelihood of landslides.

**Parts of eastern Brazil****Weather**

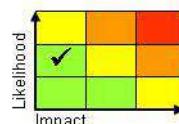
Intense thunderstorms are expected to affect parts of eastern Brazil from Tuesday, bringing up to 50-75 mm in a few hours and as much as 150-200 mm through the next week (which would be close to the average December rainfall). Frequent lightning is likely, and a risk of localised large hail.

**Discussion**

A significant pulse of the SACZ is expected through the next week. CAPE and PWAT are high, with localised flash flooding likely where they occur.

**Expected Impacts**

Localised flash flooding, and low risk of lightning damage affecting cities such as Sao Paolo and Rio de Janeiro.



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## Africa

### Somalia and eastern Ethiopia

#### **Weather**

Cyclonic Storm Pawan decayed on Saturday as it tracked into northeastern Somalia, but this system still brought extensive heavy showers and thunderstorms, with up to 150-200 mm likely to have accumulated in parts of northern Somalia and the far east of Ethiopia on Saturday. This being 10-20 times the average December rainfall and more than the annual average rainfall in this region.

Further heavy showers and thunderstorms are likely through the next few days, with the peak rainfall likely further south, across areas that suffered flooding last month, before the shower activity become less extensive towards midweek.

#### **Discussion**

Good model agreement for the area at risk of heavier convective rainfall through the next few days. River gauges show increasing river levels in the Shabelle River that flooded last month, displacing around 500,000 people.

#### **Expected Impacts**

Potential for flooding rains leading to threat to life, destruction of homes, displacement of populations and long term disruption to transport.



### Parts of eastern/central Africa

#### **Weather**

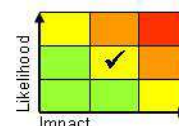
Further widespread heavy showers and thunderstorms associated with the seasonal rains are expected to continue to be heavier than normal over the next week, with a further 100-200 mm of rain falling in places from frequent heavy, thundery, afternoon downpours. This is close to the average rainfall in 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.

#### **Expected Impacts**

An increased threat of flash flooding and landslides in the region, with further river flooding likely. Frequent lightning is also likely, along with large hail and strong wind gusts.



### Southeastern Africa

#### **Weather**

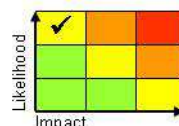
Areas of heavy showers and thunderstorms will occur through much of this period in this region until Wednesday. The severe storms will produce up to 100 mm in just a few hours, with some locations seeing up to 200 mm through the next 3 or 4 days, which would be around twice the monthly average in many parts of the region. There is also a threat of large hail, frequent lightning and strong, gusty winds

#### **Discussion**

The advance of a long wave upper trough will draw very warm air south from the sub-tropics that will then be engaged by increased levels of upper forcing to produce very high PWAT, high CAPE profiles that suggest some very intense downpours are likely at times, with the possibility of some long-lasting MCS severe storms due to some strong vertical wind shear profiles.

#### **Expected Impacts**

In the longer term this heavy rainfall will be welcome as this region of Africa has suffered droughts in the recent past. However, such intense downpours will generate flash flooding and landslides, potentially damaging infrastructure and crops.



### Comoros Islands and Madagascar – see *Tropical Cyclones* section

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### **Middle East**

**Levant coastline, northern parts of Syria, northern and eastern Iraq, western Iran, the UAE and Oman** – see *Europe* section

### **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**

A combination of a weak MJO moving across the Indian Ocean and a surge in the Northeast Monsoon is likely to continue enhancing deep convection through this week. These rains have already caused significant impacts in parts of this region.

#### **Expected Impacts**

Increased threat of flash flooding and landslides.



### **Australasia**

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

### **Additional Information**

**Eastern Australia – Wildfire**: Numerous bushfires continue in parts of eastern New South Wales, Queensland and Australian Capital Territory with continued mostly dry weather expected through the next four or five days at least. Temperatures are likely to peak on Tuesday, ahead of a cold front that could bring strong winds and dry lightning storms. So the threat of further fire generation and spread of existing fires is likely to peak on Tuesday.

**Issued at:** 080300 UTC    **Meteorologists:** Paul Hutcheon / Laura Ellam

**Global Guidance Unit**

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