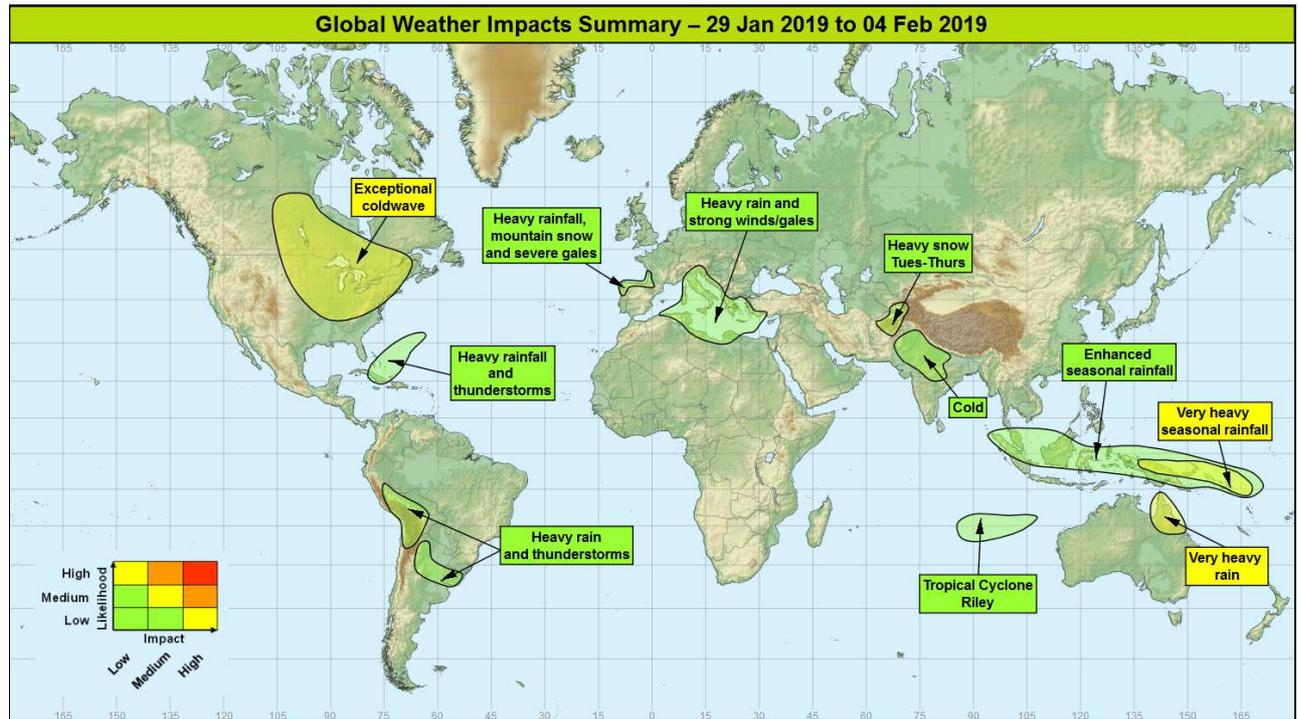


## Global Weather Impacts – Tuesday 29<sup>th</sup> January to Monday 4<sup>th</sup> February 2019

Issued on Tuesday 29<sup>th</sup> January 2019

### HEADLINES

- Exceptional cold across NE USA and SE Canada.
- Enhanced seasonal heavy rainfall across parts of the Maritime Continent.
- Intense downpours and severe flooding over NE Australia.



### DISCUSSION

#### Tropical Cyclones

#### Tropical Cyclone Riley (Indian Ocean)

##### Weather

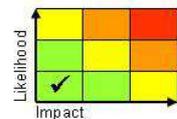
Tropical Cyclone Riley continues to track west-southwest away from Australia and over the open Indian Ocean. This system poses no threat to land but associated strong winds will produce rough or very rough seas within its vicinity.

##### Discussion

Conditions are marginal for further development but satellite imagery suggests Riley has weakened over the last 24 hours with deteriorating levels of convection. Conditions are marginal for further development but as it is steered west-southwest under the influence of the subtropical ridge, cooler SSTs and increasing wind shear should see Riley gradually dissipate over the Indian Ocean.

##### Expected Impacts

Strong winds and rough or very rough seas could impact any marine transport / shipping in the area.



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

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## Europe

### Central Mediterranean and adjacent countries

#### Weather

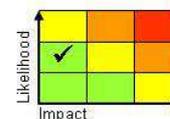
Remaining very unsettled throughout this period with periodic bouts of heavy rain, thunderstorms and strong winds. The highest rainfall totals through the period are expected over parts of Italy, Austria, Slovenia, Croatia, Bosnia & Herzegovina, Montenegro and Albania with 150-250 mm building up although some of this will be locked up as snow over mountains. Each day some areas could see as much as 50-100 mm of rain (locations likely to change day to day). Strong winds and coastal gales will lead to rough seas at times and may generate dust storms across parts of north Africa, especially Tunisia and Libya.

#### Discussion

Repetitious troughs will extend southeast across the area spawning several potentially deep depressions over the central Med. Some organised deep convection is expected and the heaviest and most persistent ppn is likely to be focused on windward coastal areas.

#### Expected Impacts

Heavy rainfall will increase the risk of flash flooding, in addition enhancing the risk of landslides in areas where the terrain is steep. The strong winds will likely generate large waves and a modest storm surge in some regions (risk of coastal flooding). Lifted dust storms may impact on aviation and the health of the local populations.



### Southwest France and northern Spain/Portugal

#### Weather

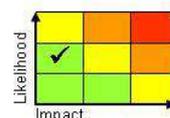
Through this week spells of heavy rain will be followed by frequent showers. The heaviest rain is likely to be in coastal regions with 100 to 150 mm possible by the end of the period. Heavy snow is expected over the Pyrenees with up to 2 metres of snow building up in places. In addition, severe gales and large waves will affect coastal areas during today (Tuesday) and again on Thursday and Friday.

#### Discussion

The PFJ will steer a couple of deep depression across Biscay during this week (today and again during Thursday and Friday). Associated active frontal systems will bring spells of heavy rain and mountain snow. In between frontal systems deep convection and relatively high SSTs over Biscay will maintain a feed and frequent, heavy showers. The deep depression which will run across Biscay and into France during today has been named 'Gabriel' by Meteo France.

#### Expected Impacts

Risk of flash flooding is likely to increase, whilst disruption to travel is expected at higher elevations due to heavy snowfall. By the end of the week, the risk of avalanches also increases in parts of the Pyrenees. Marine operations are likely to be impacted and there is also a risk of coastal flooding.



## North America

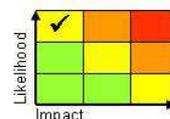
### Northeast USA and southeast Canada

#### Weather

Exceptionally cold weather developing this week across a large swathe of the USA and Canada with the most extreme cold around the Great Lakes. Across a wide area temperatures are forecast to be in excess of 20 degrees below average; therefore remain substantially below freezing for several days. The nadir of the extreme cold looks likely to be on Wednesday and Thursday with a number of records for lowest maxima and minima likely to be broken. Major cities including Chicago, Detroit, Toronto and Montreal will be impacted. Some snowfall will continue with this also likely to be heaviest around the Great Lakes. Strong winds will exacerbate the severe cold. During Friday and over the weekend temperatures are signalled to recover back towards more normal values.

#### Discussion

A long fetch northerly flow on the rear of a vortex extending across the east of the USA will advect exceptionally cold arctic air to a large portion of North America. A wave depression running over northeast USA and E Canada on during the middle of the week will bring a spell of snow and strong winds to some areas. Record low at Chicago is -33 °C; Toronto -32.8 °C with current forecasts suggesting lows of this magnitude during Wednesday night.



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## Expected Impacts

Exposure to this exceptional cold spell, without specialist cold climate clothing is likely to result in a danger to health or life from a variety of cold weather injuries (frostbite, hypothermia etc). Snowfall (or blowing snow) may cause some minor disruption to travel. Utilities may be severely impacted by things such as frozen water pipes. The severe cold alone may be enough to cause disruption to travel, for example temperatures will fall low enough for diesel fuels to gel.

## Central America and Caribbean

### Cuba, Bahamas, Turks and Caicos Islands & Bermuda

#### Weather

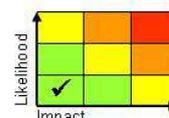
Heavy rain and thunderstorms will continue to affect the region over the next couple of days. Some locations in this region could see 40-80 mm of rainfall fall within a few hours. This in excess of normal monthly values as it is currently the drier season.

#### Discussion

A plume of >20C 850hPa WBPT will remain the focus for the development of heavy showers and thunderstorms over the coming days. Activity is currently being aided by low level convergence, this looks likely to weaken during the course of the week.

#### Expected Impacts

Heavy rainfall will increase the risk of flash flooding, in addition enhancing the risk of landslides in areas where the terrain is steep. Thunderstorms adding further localised threats from hail and frequent lightning.



## South America

### Northern Argentina and Uruguay

#### Weather

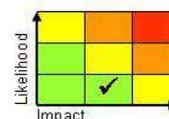
Further bouts of severe thunderstorms will affect this region from Wednesday, with the potential for very heavy rainfall (locally in excess of 150 mm) to accumulate in a few hours.

#### Discussion

The South American convergence zone will remain active. Areas of severe thunderstorms will form as the South American monsoon plume is engaged by troughs in the sub-tropical jet. Storms could be very severe with CAPE signalled to exceed 5000 J/Kg at times. This along with marked vertical wind shear makes MCS and supercell development likely.

#### Expected Impacts

Heavy rainfall will bring some flooding related impacts mainly of the flash variety if urban areas are impacted. Impacts are most likely over Uruguay where over the past 30 days, much of the country has received over double the normal rainfall. Severe thunderstorms will add further threats from very large hail, frequent lightning, strong gusty winds and isolated tornadoes.



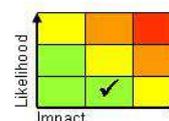
## Northern Chile, Bolivia and southeast Peru

#### Weather

Frequent heavy showers and thunderstorms will affect this area through the week before activity probably reduces over the coming weekend. Rainfall looks likely to be particularly heavy over parts of Bolivia today (Tuesday) and tomorrow with daily rainfall totals of 100-150 mm possible in places. Whilst these amounts of rainfall are not too unusual for many places in this region they still bring an increased risk of impacts. Across the desert regions of northwestern Chile and southwestern Peru these totals are highly unusual, and there is a low risk that some medium impacts could ensure as most of the population within this region live and farm on alluvial plains.

#### Discussion

Enhanced rainfall is expected in these over the coming days with the potential for severe convection. Forecast profiles suggest CAPE in range of 1000-2000 J/Kg combined with marked wind shear with height which is likely to lead to storm organisation and very efficient rain bearing cells.



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## Expected Impacts

Flash flooding if thunderstorms impact urban areas. Severe thunderstorms also bring the threat of large hail, frequent lightning, strong gusty winds and isolated tornadoes. Across the desert regions the unusual rainfall may bring severe flooding in the usually dry alluvial plains, that many people live and farm along.

## Africa

**Algeria, Tunisia and Libya** – See *Europe* section.

## Middle East

Nil.

## Asia

### Far east of Indonesia, Papua New Guinea and Solomon Islands

#### Weather

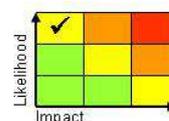
Seasonal rainfall is expected to be more intense and widespread than is normal over the next week. Up to 100 mm of rain could fall in a few hours, combined with locally strong winds. Rainfall totals of 200-350 mm could accumulate in places which is equivalent to around the average January rainfall for this region.

#### Discussion

With the Madden Julian Oscillation (MJO) now emerging into the western Pacific, convection will remain more intense and widespread than usual during this week.

#### Expected Impacts

Heavy rainfall will increase the risk of flash and fluvial flooding, plus landslides in regions where terrain is steep. Thunderstorms will produce frequent lightning.



### Much of the Maritime Continent

#### Weather

Seasonal rainfall is expected to be more intense and widespread than is normal over the next week. 50-100 mm of rain could fall in a few hours, combined with locally strong winds. Rainfall totals of up to 150-250 mm could accumulate in places which is close to around the average January rainfall in parts of this region.

#### Discussion

With the Madden Julian Oscillation (MJO) now emerging into the western Pacific, convection will remain more intense and widespread than usual over the next 5 days or so. The MJO may trigger several tropical waves which will enhance and focus convection further.

#### Expected Impacts

Heavy rainfall will increase the risk of flash and fluvial flooding, plus landslides in regions where terrain is steep. Thunderstorms will produce frequent lightning.



### Tajikistan, southeast Uzbekistan and northern Afghanistan

#### Weather

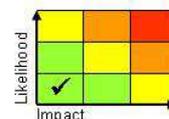
A spell of snow, occasionally heavy, is expected to develop across this region during Tuesday and Wednesday before easing on Thursday. Accumulations of 10-20 cm are most likely at lower levels (e.g. Kabul) and up to 50-75 cm of snow over higher ground. Some heavy rain is possible across lower ground in the northwest of this area.

#### Discussion

An upper trough currently moving across the Middle East will engage and draw low level WBPT plume north over the area. Within this area much of the precipitation is likely to fall as snow although some heavy rain and snow melt is possible across lower ground in the northwest.

#### Expected Impacts

An increased risk of flash flooding as a consequence of heavy rain and snow melt at lower elevations with a renewed threat of avalanches from fresh snow over higher ground. Colder conditions may also have an adverse impact on vulnerable people in the region, particularly those without winterised shelter.



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

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**Northern India and eastern Pakistan****Weather**

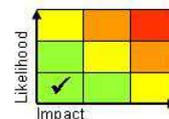
The recent spell of much colder than average weather will wane over the next couple of days as temperatures start to rise back to closer to average. Temperatures are currently 6-8 °C below the seasonal average with minimum temperatures close to freezing in colder spots in the north.

**Discussion**

Warm advection from the south and west from Wednesday onwards will lead to an upward trend in temperatures. Whilst not desperately cold, it is significantly cold compared to the climate and the IMD continue to have cold wave and frost warnings out across this area.

**Expected Impacts**

With overnight frosts fairly prevalent through this period, or at least temperatures close to freezing, this is likely to be detrimental to a large section of the population in poor housing and without access to heating or appropriate clothing.

**Australasia****Northern Australia****Weather**

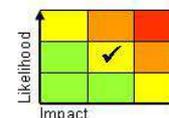
Frequent spells of heavy rainfall and thunderstorms are expected throughout this period with the potential for rainfall to become more intense from Friday onwards. Urban areas along the Great Barrier Reef are likely to see some intense downpours, this includes Cairns, Townsville and Mackay. At this stage, large parts of northern Queensland look likely to see 100-200 mm during this period with some areas seeing 500-800 mm. There is currently a low probability of some parts seeing in excess of 1000mm during this period. Average monthly rainfall for this region is between 200-500 mm.

**Discussion**

The monsoon trough currently sits over the north of Queensland focusing convection here. A tropical low is embedded within it and this will probably help to focus convection and heavy rainfall. At this stage, there appears on a very low prob that the low will move over the Gulf of Carpentaria and form a tropical cyclone. In addition, the MJO now moving over the western Pacific may be having some influence in enhancing activity here. Whilst models are in good agreement of large totals accumulating over the coming week there are substantial differences with the GM currently at the extreme end of solutions in producing spot maxima over the next 6 days of 2000-2500mm.

**Expected Impacts**

Rainfall will be the primary cause of impacts, with severe flash and river flooding potential quite widely across the northern Queensland.

**Additional information**

Nil.

**Issued at:** 290830 UTC **Meteorologist:** Chris Bulmer

**Global Guidance Unit**

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

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