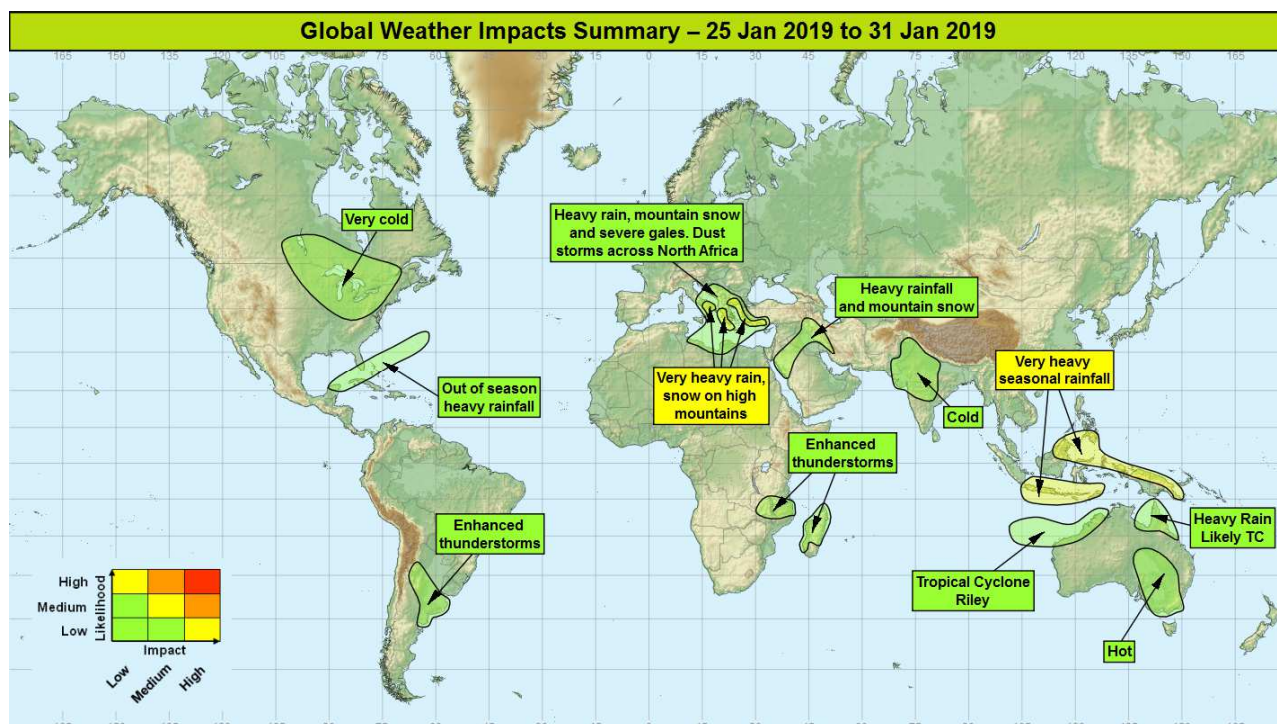


## Global Weather Impacts – Friday 25<sup>th</sup> to Thursday 31<sup>st</sup> January 2019

Issued on Friday 25<sup>th</sup> January 2019

### HEADLINES

- Very unsettled today across SE Europe/Central Med, heavy rain, thunderstorms, strong winds and dust.
- Continued heavy seasonal rainfall across the Maritime Continent.
- Tropical cyclone activity affecting far northern Australia, whilst remaining extremely hot in the SE.



### DISCUSSION

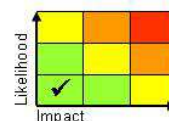
#### Tropical Cyclones

##### Tropical Cyclone Riley, Indian Ocean Weather

At 0001 GMT this morning Riley was centred over the Indian Ocean, around 400km northwest of Broome, Western Australia. Riley is currently a Category 2 system on the Australian scale, with sustained winds of 57 mph and gusts of 80 mph. Riley is expected to head westwards over open water and strengthen, with the periphery of the system bringing strong winds to parts of the Pilbara coast, whilst its associated heavy rain is expected to remain offshore.

##### Discussion

Enhanced convection in this region due to the passage of the MJO, and the various Equatorial Rossby Waves (ERW) that have formed in its wake helped create the favourable environment for Riley to develop. Some further strengthening is likely over the next day or two with environmental conditions remaining favourable, but there is strong model agreement in the idea of Riley tracking westwards over open water. A few ensemble members take a slightly more southerly track, which could result in gales for parts of Pilbara coast, whilst the rain associated with Riley looks likely to remain offshore. Some squally thunderstorms could develop across coastal regions however.



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

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## Expected Impacts

Dangerous sea conditions will develop, impacting marine transport and fishing operations. Winds inland look unlikely to cause disruption; associated thunderstorm activity could cause some minor flash flooding however the affected region is sparsely populated.

*The following regions are being monitored for potential tropical developments:*

### Tropical Low - Gulf of Carpentaria, Australia

#### **Weather**

A tropical low currently over the Gulf of Carpentaria is expected to drift towards the western coastline of the Cape York Peninsula of Queensland, Australia over the next day or two, with a high likelihood that it will strengthen into at least a Category 1 Tropical Cyclone (sustained winds exceeding 38 mph). With a forecast track grazing the coastline, the location of landfall is highly uncertain, nevertheless heavy rain and strong winds are expected over the next few days across sparsely populated parts of the Gulf of Carpentaria coastline. Enhanced flow induced by the cyclone will also develop a separate area of severe thunderstorms affecting the slightly more populous NE coast of Queensland. This could generate over 1000mm over the next few days.

#### **Discussion**

As the Madden Julian Oscillation (MJO) transfers eastwards across the Maritime Continent it is providing conditions suitable for enhanced convection across this region. The southern hemisphere couplet of an Equatorial Rossby Wave (ERW) pair is acting to organise convection, and is likely to promote tropical cyclone development within this area. With the slow movement and close proximity to the coastline, the track and potential landfall location remains highly uncertain, reflected by a large ensemble spread. The length of time over the water will modulate the potential peak strength, with the GM one of the quickest models to make landfall. Enhanced NE'ly flow and thunderstorm activity associated with the broader cyclonic circulation over the eastern Cape York Peninsula could lead to some extreme rainfall totals building up, with GM indicating potential for 1500mm over the next 5 days.

#### **Expected Impacts**

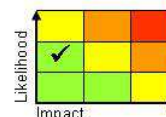
Rainfall will be the primary cause of impacts, with severe flash and river flooding potential quite widely across the Cape York Peninsula and Gulf of Carpentaria coastlines. Strong winds are unlikely to cause impacts with this area used to tropical cyclones, although minor impacts are possible should the system remain over open water for longer and strengthen further as a result.

### Europe

### Central Mediterranean and adjacent countries

#### **Weather**

An unusually deep area of Low Pressure in the Central Mediterranean will maintain very unsettled weather through today with multiple areas of heavy rain, thunderstorms, and snow over higher ground of southern Europe revolving around it. In addition, the depth of the Low will generate unusually strong winds for this region, enhancing Bora and Mistral winds, developing hazardous sea conditions, and whipping up dust storms across North Africa which will spread E across the Mediterranean towards places such as Greece and Cyprus. This system will steadily weaken whilst moving E, but will be followed by further albeit less potent areas of Low Pressure taking a similar track early next week.



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**Discussion**

The persistent, highly amplified flow across the Atlantic and ridge near the meridian continues to allow troughs to extend and sweep across S Europe, maintaining the south shifted storm track and unsettled pattern of recent months. The low today (Friday) over the Central Med is now co-located with its upper trough and gradually filling, but still retains a depth below 990hPa, and gales on its western and southern flanks. Heavy showers and thunderstorms will be present beneath the upper trough/cold pool, whilst the main frontal zone/warm plume will extend across Greece and the Balkans bringing areas of heavy ppn, mainly focussed over high ground and often locked up as snow. 25-50mm of ppn is likely to fall quite widely today (Friday), before the system gradually declines and fills over the weekend. The associated upper vortex will degenerate into a trough and pick up on the warm plume developing across the Middle East (see Middle East section). Further areas of low pressure follow next week with further heavy rain/snow for the Balkans/Dinaric Alps in particular.

**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. Snowfall over the high mountains may cause some disruption to transport over passes, and increase the risk of avalanches. The strong winds will likely generate a modest storm surge in some regions (risk of coastal flooding); dangerous sea conditions will pose a significant threat to marine transport (especially small craft). Lifted dust storms may impact on aviation and the health of the local populations.

**Southern Italy, parts of Greece, Macedonia, Bulgaria, and parts of southwest Turkey**  
**Weather**

Within the region of highly disturbed weather noted above, these three sub-zones are likely to have the greatest accumulations of rainfall over the coming days. All the locations highlighted are forecast to receive 200-400mm of rain over the coming week, the rainfall enhanced by strong onshore flow and orographic effects. Southern Italy is likely to see somewhat less (50 to locally 100mm), with the worst of the heavy rain today (Friday).

**Discussion**

As described in the previous section. It is worth a note that soil moisture in the regions affected is already analysed at being close to saturation, meaning the impacts from this precipitation could be increased.

**Expected Impacts**

Heavy rainfall will increase the risk of flash flooding, and with the exception of southern Italy river flooding too. Enhanced risk of landslides in areas where the terrain is steep. Snowfall over the high mountains may cause some disruption to transport over passes, and increase the risk of avalanche.

**North America****Northeast USA and southeast Canada****Weather**

Cold air has pushed southwards from the Canadian Arctic in the wake of the recent winter storm. This cold air now sits across the northeast USA and southeast Canada. In this zone some locations such as Chicago are likely to remain below -10°C until Monday (feeling even colder with wind-chill taken into account), and remain below freezing for at least the next 10 days. Within this large area of cold air, some localised snowfall may occur, such as "lake effect snowfall" around the great lakes.

**Discussion**

The strong northwesterly flow that has developed in the wake of the winter storm that cleared the US east coast on Thursday has drawn an area of very cold Arctic air across eastern parts of North America.

**Expected Impacts**

Vulnerable populations not able to access adequately heated accommodation will be at risk from cold related injuries. Some localised snowfall may cause some minor disruption to travel and utilities.



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**Florida** - see *Central America and Caribbean*

### **Central America and Caribbean**

**Cuba, Florida, Mexico (Yucatan), Turks and Caicos, Bahamas and Bermuda**

#### **Weather**

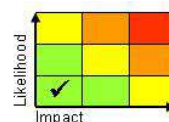
A slow moving band of rain and thunderstorms is expected to affect this area over the next few days – initially thunderstorms are expected to be heavy but fairly well scattered, but from Sunday more widespread, prolonged and organised areas of rain with embedded thunderstorms are expected to develop and run northeastwards. Some locations in this region could see up to 5 times the normal rain for this time of year (currently the drier season). However catchments in this region are more used to these totals in the wetter summer months, reducing the likelihood of impacts. Rainfall should gradually decline early next week.

#### **Discussion**

The cold front associated with the recent winter storm that affected North America is expected to become slow moving over this area as the forcing runs away NE'wards. Uplift along the frontal boundary as well as the moist tropical air to its S will likely generate scattered thunderstorms, but from Sunday engagement by a sharpening upper trough pushing across the US is signalled to develop a number of frontal waves which will generate larger areas of heavier rainfall. Activity is likely to decline into next week as forcing runs away NE'wards once again.

#### **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**

**Argentina**

#### **Weather**

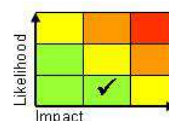
Further bouts of severe thunderstorms will affect this region over the coming days, with the potential for very heavy rainfall (locally in excess of 150mm) to accumulate in a few hours. These will be particularly active today (Friday) and Saturday, before a more settled interlude develops. Enhanced thunderstorm activity may resume again early next week in a similar area.

#### **Discussion**

The South American convergence zone will be active through the coming week. 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 formation 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 the province of Buenos Aires, which has already seen a wetter than normal start to the year. Severe thunderstorms will add further threats from very large hail, frequent lightning, strong gusty winds and isolated tornadoes.



### **Africa**

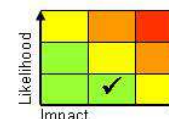
**Madagascar**

#### **Weather**

Heavy rain and thunderstorm activity could bring between 150 and 300mm of rainfall in some locations through the next few days, representing up to double the normal rainfall for this period (which is in the rainy season). A significant portion of this rainfall across the north-east of the country can be attributed to the enhanced flow in the wake of Ex-Eketsang. Rainfall activity should fall back to normal levels early next week.

#### **Discussion**

Although Tropical Cyclone Eketsang has been and gone since the previous issue of this assessment, the enhanced flow and moisture plume left in its wake is forecast to lead to enhanced showers and thunderstorms across the E and then N of the country over the next few days. Recent reports of landslides and flooding in this region suggest that the area is susceptible to greater than usual impacts from the upcoming rain.



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## Expected Impacts

Heavy rainfall will increase the risk of flash and river flooding, plus landslides in regions where terrain is steep.

### The area surrounding Lake Malawi, Malawi, Mozambique, Zambia and Tanzania.

#### Weather

An area of enhanced shower and thunderstorm activity is forecast to impact Lake Malawi and surrounding countries over the coming week. Some locations in this region could receive around 250mm of rainfall over the week, representing double the normal amounts.

#### Discussion

A moisture plume loosely tied to the remnants of Ex-Tropical Storm Desmond will combine with strong upper level divergence to promote active convection over this region over the coming week. Showers and thunderstorms are likely to follow the pattern of forming over land around the lake by day, and then over the lake itself by night. There have been recent reports of flooding in this region, hence this additional precipitation is expected to cause greater than usual disruption.

#### Expected Impacts

Heavy rainfall will increase the risk of flash and river flooding, plus landslides in regions where terrain is steep. Thunderstorms may generate frequent lightning posing a threat to people work outdoors, and strong winds generated by storms may lead to hazardous conditions out over the lake.



Algeria and Libya – See *Europe* section.

### Asia

#### Much of Indonesia and Papua New Guinea

#### Weather

The usual seasonal rainfall is expected to be more intense and widespread than is usual over the coming week. Up to 100 mm of rain could fall in a few hours, combined with locally strong winds. Rainfall totals of up to 350 mm could accumulate in places which is equivalent to around the whole of the average January rainfall in this region.

#### Discussion

With the Madden Julian Oscillation (MJO) running through the region, the usual convection will be more intense and widespread than usual. The MJO has also triggered several over tropical waves, and these will enhance and focus convection even further. Finally a cold surge running down the South China Sea is expected to cross the equator and reach Java, further enhancing the intensity of precipitation in this sub-region.

#### 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, with the potential for an isolated thunderstorm or waterspout.



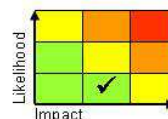
### Northwest Saudi Arabia, Turkey, Iraq and Iran

#### Weather

Through Sunday and Monday an area of very heavy rainfall and isolated embedded thunderstorms will push northeast across this region. Although this rainfall will be heavy across coastal parts of Saudi Arabia and much of Iraq, it will be especially heavy as it reaches the Zagros Mountains (falling as snow above approximately 2000 M). Around 50-100mm of rainfall could fall in some lower lying areas of Iraq, and more than a metre of snow could fall over the high mountains through the two days.

#### Discussion

A sharp upper trough moving east from the Mediterranean will draw a plume of warm moisture laden air northeastwards from the Red Sea, and then increasingly engage this plume through Sunday and Monday generating heavy precipitation first across Saudi Arabia and then Iraq, and the Zagros Mountains in particular. Despite the high precipitation rates indicated, profiles in the region only indicate isolated embedded thunderstorms.



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## Expected Impacts

Heavy rainfall will increase the risk of flash and fluvial flooding, in addition enhancing the risk of landslides in areas where the terrain is steep. Snowfall over the high mountains may cause some disruption to transport over passes, and increase the risk of avalanches.

### Northwest India, eastern Pakistan

#### Weather

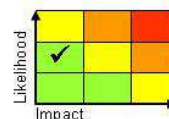
A prolonged spell of much colder than normal conditions is forecast over the next 5-7 days, with overnight minimum temperatures close to freezing. This is around 6-8°C below the seasonal average.

#### Discussion

Steady cold advection in the wake of an upper trough and cold front will lead to the gradual ingress of a cold airmass across this region. Whilst not desperately cold, it is significantly cold compared to the climate and with temperatures close to freezing will likely have health implications for a significant number of vulnerable people. IMD currently has 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.



### Australasia

Northern Australia – See *Tropical Cyclones* section.

### Southeastern Australia

#### Weather

The extreme heat of recent days (indeed, one spell of a number of hot spells this austral summer) will continue for another few days yet, whilst a colder airmass gradually infiltrates from the southwest bringing some relief to the more populated southeastern parts of the country. Temperatures will widely exceed 40°C, with some locations exceeding 45°C. Yesterday Port Augusta achieved 49.6°C, and Australia's capital Canberra could reach 40°C on Saturday.

#### Discussion

High temperatures are not unusual for Australia in the last decade, and a couple more days of the current heat wave are expected. The arrival of the cold front from the southwest will allow temperatures to return back to more normal values.

#### Expected Impacts

Impact on health of vulnerable populations. Melting of roads and buckling of railways impacts infrastructure. Thunderstorms adding further threats from hail and frequent lightning, whilst wildfires become more probable (potentially ignited by lightning as the thunderstorms will be present in the transition to colder conditions).



### Additional information

Nil.

**Issued at:** 250855 UTC **Meteorologist:** D J Harris

**Global Guidance Unit**

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