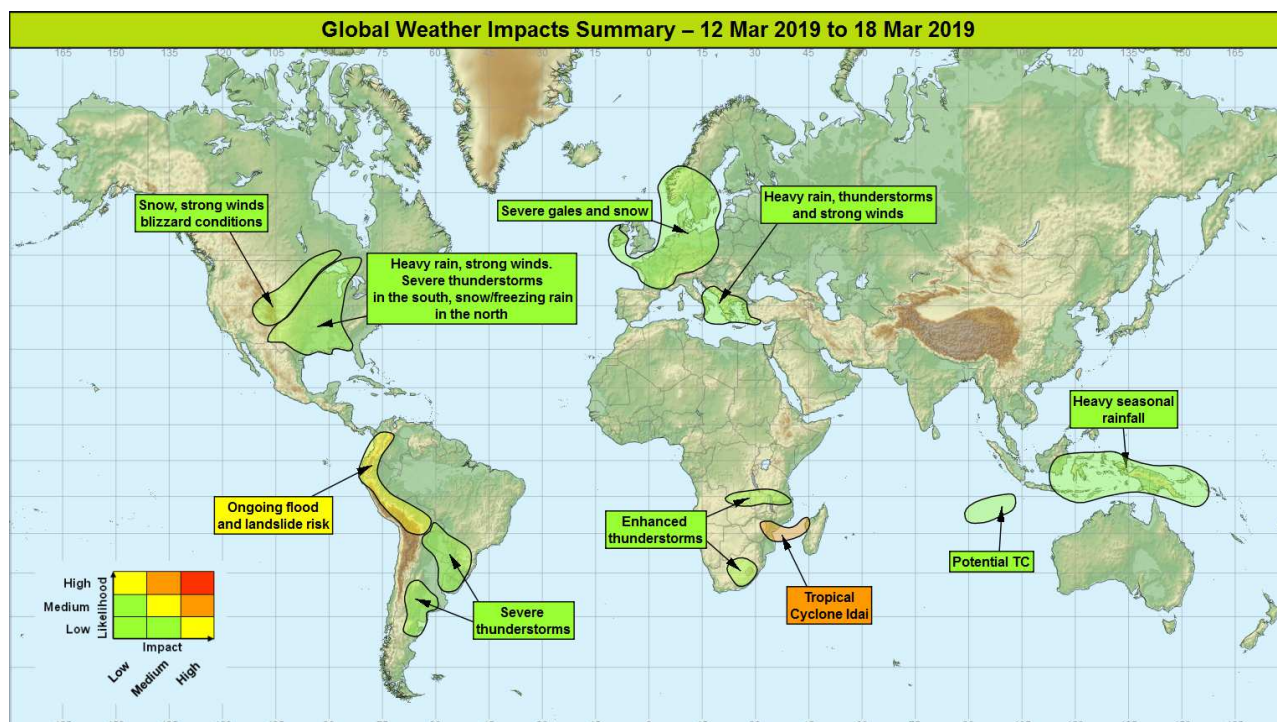


## Global Weather Impacts – Tuesday 12<sup>th</sup> to Monday 18<sup>th</sup> March 2019

Issued on Tuesday 12<sup>th</sup> March 2019

### HEADLINES

- Tropical Cyclone Idai looks likely to become a powerful and dangerous storm over the Mozambique Channel, impacting Mozambique late Thursday or early Friday.
- Another week of enhanced showers for the northern Andes, with further impacts likely.



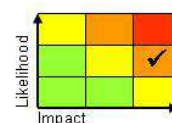
### DISCUSSION

#### Tropical Cyclones

#### Tropical Cyclone Idai – SW Indian Ocean

#### Weather

Idai has fluctuated in strength over the past 24 hours but as of 0600 it was a Tropical Cyclone with sustained 10-minute mean winds of 81 mph. Idai is expected transfer westwards to make landfall near to the port of Beira (Mozambique) late Thursday or early Friday; the official advisory taking the core slightly north of Beira towards the Zambezi delta. A swathe of exceptionally heavy rain associated with this tropical system will begin to spread inland across Central Mozambique and eventually in to Zimbabwe. Some locations will receive 750-1000 mm of rain over the course of the event (generally this part of the world sees around 200mm of rainfall in a typical March). Sustained winds in excess of 100 mph, with gusts around 130 mph, are likely to affect coastal areas in the immediate vicinity of the cyclone's core – less strong but still damaging winds will occur more widely. The strong winds and low pressure associated with the storm will also bring a significant storm surge and potential for coastal flooding where the system makes landfall.



This forecast may be amended at any time

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

© Crown copyright 2019 This information is for use by UK government only. It does not replace the advice and guidance provided by the official meteorological service for this region. Where there is a requirement to share this information with non-UK government agencies, please contact the Met Office to discuss.

**Discussion**

Over the past 24 hours Cyclone Idai has fluctuated in strength, its recent deterioration a consequence of slow forward speed and an eyewall replacement cycle. Idai is expected to begin moving to the southwest, then west through Tuesday and Wednesday, under favourable conditions for strengthening, making landfall close to the port of Beira with winds well in excess of 100 mph. The track guidance is consistent between models, although there remains some spread both north and south of Beira in the exact point of landfall, which will have major implications for the number of people impacted by the strongest winds. The official advisory calls for a storm surge in excess of 3 metres, with waves as high as 20 metres around the core upon landfall. Idai is expected to be a very dangerous cyclone and is expected to have significant impacts for the population already made vulnerable by recent flooding.

**Expected Impacts**

Flash and fluvial flooding, with major river systems such as the Zambezi, Pungwe, Revue and Save likely to be affected. Significant displacement of population. Destructive winds in the storm's centre will pose a danger to life, and significantly damage or destroy homes and infrastructure. Extremely large waves and a storm surge are likely to cause significant coastal impacts and flooding.

**The following area is being monitored for Tropical Cyclone development:****SE Indian Ocean****Weather**

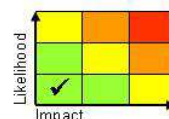
A tropical low and enhanced convection west of Christmas Island, southwest of Sumatra, Indonesia, may develop into a tropical cyclone over the next couple of days, passing close to Cocos Island. Even if a tropical cyclone does not develop, an area of enhanced showers and thunderstorms is likely. This system looks most likely to remain away from land however.

**Discussion**

An area of enhanced convection is evident on imagery west of Christmas Island. This looks from the model output to be the most likely area of tropical cyclogenesis over the next few days, however with the MJO in Phase 4 kicking out numerous Rossby Waves there are signals for later developments in the vicinity of north Australia. Signals have varied over the past few model runs with low confidence in any particular solution, but as stated, the aforementioned enhanced convection looks like the most likely candidate in the next few days.

**Expected Impacts**

Very low prob of flooding and wind impacts affecting the sparsely populated island of Cocos.

**Europe****North-western Europe****Weather**

A mobile and generally unsettled spell of weather is expected to continue across this region over the coming week, although nothing particularly unusual for March. A deep depression will bring a further spell of very strong winds across Ireland later today, before moving over parts of the near continent, accompanied by heavy rain for many and heavy snow across parts of southern Scandinavia. This unsettled pattern looks likely to continue for the rest of the week, although will probably become less severe.

**Discussion**

There remains a degree of uncertainty in the development of individual systems later this week, but there is a good signal for a period of unsettled and potentially very windy weather across much of the near continent. The uncertainty relates to frontal waves which may cross to the cold side of the powerful jet and undergo cyclogenesis, with the potential for some very potent lows to form. Differences from model to model and run to run are unlikely to resolve themselves until relatively short lead times.



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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

© Crown copyright 2019 This information is for use by UK government only. It does not replace the advice and guidance provided by the official meteorological service for this region. Where there is a requirement to share this information with non-UK government agencies, please contact the Met Office to discuss.

## Expected Impacts

The main impacts are likely to be wind related, so disruption to travel, especially aviation and marine seems likely. There is a lesser risk of disruption to power supplies from fallen trees. Snowfall may bring some disruption to parts of southern Scandinavia. Large rainfall totals building up through this event may begin to make parts of the Northern Alps and areas N/NW of here more sensitive to further rainfall.

## Italy, Balkans, Greece, S/E Turkey

### Weather

A developing weather system is expected to bring areas of heavy rain and thunderstorms as it slowly sinks south-eastwards across this region through today and tomorrow. Up to 30 cm of snow is expected to fall in the higher parts, eg Dinaric Alps. In addition very strong winds (Bora) are expected to develop on its western flank, bringing severe gales and rough seas across the Adriatic, southern Italy and into the Central Mediterranean.

### Discussion

Lee cyclogenesis has taken place over the Adriatic and is developing into a potent area of low pressure with strong forcing from a sharp upper trough powering its development. Strong pressure gradients to the north and west of the system will lead to very strong Bora winds along the Adriatic coast; while heavy rain and thunderstorms will develop along the eastern flank as warm, moist air is drawn northwards. Less heavy, but more persistent rain and mountain snow will slowly spread southwards on the northern flank of the system.

### Expected Impacts

Some flash flooding is possible, with heavy snow over mountains and strong Bora winds in its wake. The strong winds will be hazardous to shipping in the area, and may cause local land disruption, mainly to transport and aviation in the area across Italy.



## North America

### Central and SE USA

#### Weather

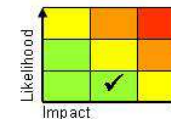
An exceptionally deep area of low pressure is expected to form over the Central Plains of the US on Wednesday, tracking north-eastwards over the following couple of days. Multiple hazards are expected in association with this system. A large swathe of heavy rain, accompanied by strong winds, looks likely to develop, bringing 100-150mm across many parts of central and southern US. There is the potential for severe thunderstorms to develop, which could bring large hail, localised damaging winds, and the risk of tornadoes to south-central and south-eastern parts through to the weekend. On the northern edge of this system, snow, transitioning to freezing rain may affect transport and aviation in and around the Great Lakes.

#### Discussion

A potent upper trough/cut-off vortex will slowly drift across the far S of the US over the next couple of days, engaging high WBPT air returning northwards on the backing low-level flow, and spinning up a very deep depression (sub 980hPa) during the middle part of next week. All models agree very well upon this evolution, with high confidence in the development. There is less confidence in the details of heavy rain however, particularly wrt to the details of any severe convection which could develop within the system's warm sector.

### Expected Impacts

Heavy rain may result in some urban and river flooding, frequent lightning may disrupt power supplies, large hail damage crops and property, with a risk of greater disruption (albeit on a very localised scale) if any significant tornadoes form. Freezing rain and snow likely to affect transport, mainly on a localised scale.



## Four Corners up to Minnesota/Great Lakes area, USA.

### Weather

In association with the system described above, an area of heavy snow and very strong winds/gales will develop as colder air from the northwest engages the developing precipitation area. Some areas could see as much as 50cm of snow, accompanied by gale force winds bringing blizzard conditions at times.



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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

© Crown copyright 2019 This information is for use by UK government only. It does not replace the advice and guidance provided by the official meteorological service for this region. Where there is a requirement to share this information with non-UK government agencies, please contact the Met Office to discuss.

## Discussion

Colder air arriving from the NW behind a Pacific frontal zone will undercut the developing system allowing ppn to turn to snow along quite a wide swathe. There is relatively high confidence in the region to be affected, although details of snowfall amounts naturally carry lower confidence at this range.

## Expected Impacts

Snowfall and strong winds will likely disrupt road, rail and air travel in the region. There is a risk that accretion of snow and ice on trees and power lines may lead to some short term outages. Heavy snowfall will also exacerbate the already elevated avalanche risk in parts of the Rockies.

## Central America and Caribbean

Nil significant.

## South America

### Northern Andes region (Southern Colombia, Ecuador, Peru and Bolivia)

#### Weather

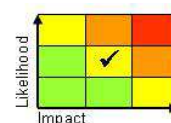
Heavy showers and thunderstorms are expected to continue to affect the northern Andes region for the next week. Rainfall accumulations will vary by location due to the showery nature of the rainfall, but some places are likely to see a further 200-300 mm of rain over the next week.

#### Discussion

Along the Pacific coastline north of NE Peru there are positive SST anomalies, and these indicate a weakening of trade winds and the Humboldt Current in this region. This setup allows sea breezes to draw moist oceanic air to the usually dry western Andes, with an unusually high frequency of heavy showers and thunderstorms occurring here.

#### Expected Impacts

Flash flooding and landslides remain an ongoing threat in the mountainous areas, as well as downstream river flooding. With much of this region now preconditioned by previous rainfall, further heavy rain will produce some additional impacts. There has already been significant damage to infrastructure from flooding, with homes, bridges and roads destroyed.



### Northern Argentina, Paraguay and southern Brazil

#### Weather

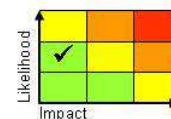
Frequent showers and thunderstorms, at times organised and severe, are expected to affect the region over the next few days. Thunderstorms will produce strong winds, large hail and a risk of tornadoes. Locally in excess of 100 mm of rainfall is possible in a few hours.

#### Discussion

A number of disturbances embedded within the subtropical jet are expected to lead to further episodes of severe convection along the South Atlantic Convergence Zone (SACZ). The environment will often be characterised by high CAPE and shear, supporting mesoscale convective systems and supercells.

#### Expected Impacts

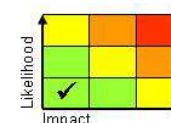
Severe thunderstorms are not unusual in this part of the world at this time of year but rainfall anomalies since the end of December have exceeded 200% in the far northeast of Argentina, across Uruguay and in the far south of Brazil. Further heavy rainfall is likely to lead to flash flooding and increased risk of landslides. Severe thunderstorms will also cause some highly localised but potentially significant property and infrastructure impacts due to strong winds, hail and lightning damage.



## Central Argentina

#### Weather

A separate area of thunderstorms looks likely to develop further south from Thursday. Much like their counterparts further north, strong winds and large hail are significantly risks, whilst the storms will bring in excess of 100 mm in a few hours to some localities.



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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

© Crown copyright 2019 This information is for use by UK government only. It does not replace the advice and guidance provided by the official meteorological service for this region. Where there is a requirement to share this information with non-UK government agencies, please contact the Met Office to discuss.

**Discussion**

A cut-off vortex slowly wandering northwards later this week will engage a plume of higher WBPT extruded southwards from the main tropical reservoir, generating an area of severe convection and likely torrential rainfall, large hail and strong winds. Details obviously vary between models, but the synoptic ingredients are strong and well agreed upon.

**Expected Impacts**

Increased potential for flash flooding, and landslides in more mountainous terrain. Hazards from lightning strikes and large hail will pose significant secondary issues, impacting utilities and transport.

**Africa****Far western Madagascar, central Mozambique**

See *Tropical Cyclones* section.

**South Africa, Lesotho****Weather**

A zone of enhanced showers and thunderstorms looks likely to continue to affect this region today. 20-40mm of rain could fall in an hour or two, with some locations possible seeing rainfall totals of over 80mm by the end of today.

**Discussion**

A cold front has stalled over the region, the backing flow ahead of the associated cut-off upper vortex drawing a plume of very warm, moist and unstable air southwards, providing a focus for outbreaks of severe convection through today before the vortex sinks away and conditions stabilise. Forecast profiles highlight 30-35mm of precipitable water, and 1500-2500 J/Kg of CAPE along with strongly sheared profiles indicative of fairly long lived storms. All models indicate areas of over 40mm of rainfall through today, in addition to the 20-30 mm which were reported yesterday, leading to around a month's worth of rainfall for somewhere like Bloemfontein. Densely populated areas such as Johannesburg could be affected.

**Expected Impacts**

Flash flooding is the most likely impact, particularly in urban catchments. Large hail, and strong, gusty winds will be an additional, secondary hazard in some storms.

**West Angola, south DRC, Zambia, north Malawi, south Tanzania, north Mozambique****Weather**

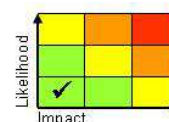
Enhanced showers and thunderstorms are expected to develop each day for the next day or two, bringing 25-50mm to some locations in only an hour or two.

**Discussion**

Weak southerly flow around the periphery of Idai is expected to develop a frontogenetic region, with a moisture and convergence boundary setting up as this pushes up against the monsoon plume. This boundary is likely to become a focus for explosive deep convection over the next few days; its slow moving nature meaning that some locations will likely see multiple rounds of heavy showers and thunderstorms and large rainfall totals building up. Activity is forecast to slowly fade from the middle of the week to normal levels.

**Expected Impacts**

Flooding, both flash and fluvial, and possible in association with these storms, with an increased likelihood of landslides in more mountainous areas. The main focus of the storms is likely to be across north Malawi, away from the hardest hit areas of recent flooding which occurred in the south.

**Middle East**

*Nil significant*

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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter

Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

© Crown copyright 2019 This information is for use by UK government only. It does not replace the advice and guidance provided by the official meteorological service for this region. Where there is a requirement to share this information with non-UK government agencies, please contact the Met Office to discuss.

**Asia****Eastern Indonesia and Papua New Guinea****Weather**

Above average rainfall is expected across many Maritime Continent islands through the next week. Whilst downpours are expected to be rather localised, they are likely to develop in a similar place each day with 100-150 mm of rain possible falling in 24 hours with some places likely to receive around 300 mm over the next week. In a typical 7-day period, this region normally receives around 50-100 mm.

**Discussion**

Over the past couple of weeks, the MJO phase has not been supportive of widespread convection but has instead allowed diurnal convection driven by the land-sea breeze cycle to become dominant. Since this is a cyclical process, convection has developed over similar locations each day, particularly along the central spine of narrow islands such as Java and East Britain. This week however, with the MJO passing through the region, convection is expected to be more widespread and intense.

**Expected Impacts**

An increased likelihood of flash flooding and landslides leading to localised damage to infrastructure and property.

**Australasia**

**Papua New Guinea** – See *Asia* section.

**Additional information**

Nil.

**Issued at:** 120850 UTC    **Meteorologist:** D J Harris

**Global Guidance Unit**

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

Global Guidance Unit, Operations Centre, Met Office, FitzRoy Road, Exeter  
Tel: +44(0)1392 884319 VPN: n6225 4319 Email: [ggu@metoffice.gov.uk](mailto:ggu@metoffice.gov.uk)

© Crown copyright 2019 This information is for use by UK government only. It does not replace the advice and guidance provided by the official meteorological service for this region. Where there is a requirement to share this information with non-UK government agencies, please contact the Met Office to discuss.