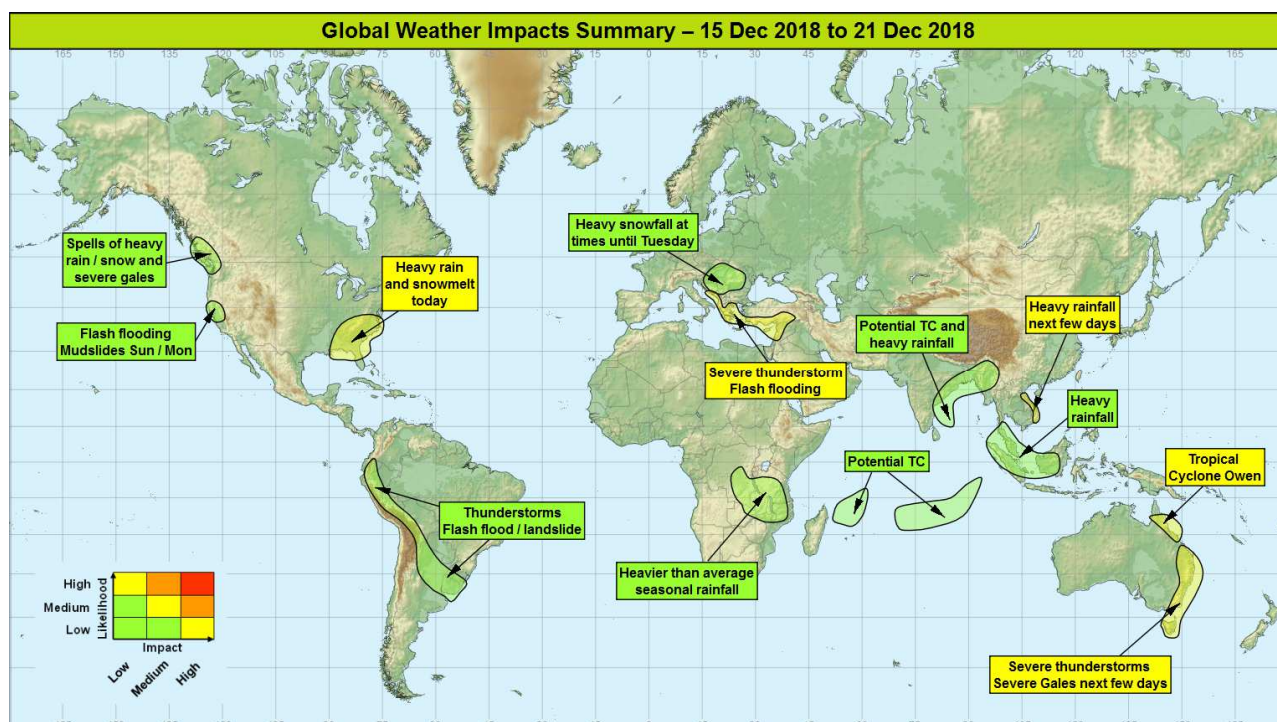


## **Global Weather Impacts – Saturday 15<sup>th</sup> December to Friday 21<sup>st</sup> December 2018**

Issued on Saturday 15<sup>th</sup> December 2018

### HEADLINES

- Ex-Tropical Cyclone Owen impacting northern Queensland until Monday.
- Heavy rainfall easing for Vietnam by the end of the weekend.
- Very unsettled in parts of southeastern Europe and the eastern Mediterranean.
- Heavy rain and snowmelt could lead to severe flooding in parts of the southeastern USA.
- Further severe thunderstorms for southeastern Australia this weekend.
- Potential tropical storm development in the Indian Ocean through the next week.



### DISCUSSION

#### Tropical Cyclones

##### Ex-Tropical Cyclone Owen (Australia)

###### **Weather**

Owen made landfall on the Cape York Peninsula of northern Queensland late on Friday and quickly weakened from a category 3 at landfall and is now classified as a tropical low with sustained winds around 37 mph and gusts to 53 mph.

Ex-Owen is expected to continue weakening through the weekend as it tracks southeast across northern Queensland then becomes slow moving along the coast or just offshore the northern Queensland. Ex-Owen is then likely to decay early next week across northeastern Queensland. This system could produce up to 300 mm of rainfall up to Monday across parts of northeastern Queensland where the average December rainfall is around 200 mm.

###### **Discussion**

Landfall has resulted in the commencement of Owen weakening. All models show a significant weakening as of this system as it tracks across northern Queensland this weekend, with an eventual decay early next week.

###### **Expected Impacts**



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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)

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Damage, disruption, and danger to life due to destructive winds will be the primary hazard, although the area is sparsely populated and used to tropical cyclones. Flash and river flooding could occur across northern Queensland, and should Owen hug the coast flooding is likely for cities such as Townsville and Cairns.

## **Potential Tropical Cyclones**

### **Bay of Bengal, Northeastern India, Bangladesh and Myanmar**

#### **Weather**

A well marked low pressure system continues to track northwestwards across the southern Bay of Bengal, located around 350 miles east-southeast of Chennai at 15/0300 GMT.

This system is likely to strengthen to become a named cyclone today (Saturday), and will likely make landfall later on Sunday or Monday across northern Andhra Pradesh as a weakening system.

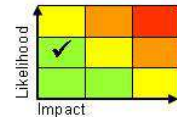
However, outer rain bands of this system are expected to bring unseasonable heavy rainfall (up to 50-100 mm) to parts of northeastern India from Sunday, to Bangladesh (including Cox's Bazaar) from Monday and northern Myanmar from Tuesday. Drier conditions will follow from midweek. The average December rainfall in this region is no more than 15 mm.

#### **Discussion**

High seas surface temperatures coupled with moderate vertical wind shear should allow for a modest strengthening of this system through the next few days. All main deterministic models indicate a tropical system developing, but also show this system weakening before landfall due to the interaction of a low latitude upper trough moving in from the west that will engage the plume to bring heavy rainfall to parts of northeast India, Bangladesh and Myanmar that are usually dry at this 'northeast monsoon' time of year.

#### **Expected Impacts**

The most probable impacts are from heavy rain, bringing potential unseasonable flash flooding.



### **Southern Indian Ocean**

#### **Weather**

There are increasing indications that one or two tropical cyclones could develop in the southern Indian Ocean through the next week.

The first potential cyclone could develop this weekend, but will remain across open water, well away from land.

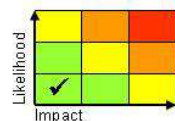
The second possibly cyclone development will likely occur next week, tacking southwestwards towards Madagascar.

#### **Discussion**

As the MJO moves from the Indian Ocean and into the Maritime Continent, conditions become more favourable for tropical cyclogenesis in the Southern Indian Ocean due to shedding of Equatorial Rossby Waves. Both deterministic and ensemble products suggest the potential for one or two tropical cyclone developments during the next week.

#### **Expected Impacts**

No impacts expected on land until later next week. However, dangerous seas are likely in the vicinity of these cyclonic storms.



### **Europe**

#### **Coastal parts of the Balkans, Greece, southern Turkey, Cyprus and western Levant**

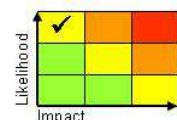
#### **Weather**

Several spells of heavy showers and thunderstorms are expected to affect this part of southeastern Europe and into the Levant region through the next 7 days.

As much as 300 mm of rain could accumulate during this time, especially in southern Turkey, with up to 100 mm of rain possible in 24 hours. Large hail and frequent lightning also possible.

The Balkan coastline is most at threat today (Saturday), with Greece most likely to see this severe weather this weekend and again from Tuesday. Southern Turkey will see the most severe conditions from Sunday, with Cyprus most likely to be impacted from Tuesday then into Levant coastal fringe from Wednesday.

#### **Discussion**



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

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A succession of marked upper troughs will drive areas of severe convection eastwards across southeastern Europe, the eastern Mediterranean and the Levant region at times through the next week.

## Expected Impacts

Flash flooding looks likely at times, with the possibility of crop damage from large hail and power disruption from frequent lightning.

### Croatia, Bosnia, Hungary, Slovakia, Slovenia, Serbia, and Romania

#### Weather

Significant snowfall is expected at times in these parts of southeastern Europe until Tuesday. Some places could see up to 30 cm of snowfall, especially on higher ground, but some large cities could see significant snowfall at times too.

#### Discussion

There is good agreement for areas of precip to continue pushing northeast across southeastern Europe until the early part of next week, with the frontal precipitation encountering much colder continental air to generate significant snowfall inland from the Adriatic coast.

However, there will be large uncertainties regarding the rising and lowering of the WBFL through this period. More southern areas will see the heavier precip with the higher WBFL, with the more northern areas seeing less precip with a lower WBFL.

#### Expected Impacts

Heavy snowfall is likely to lead to significant transport and power disruption in parts of this region until Tuesday, and could lead to some communities being temporarily cut off.



### North America

#### Southeast United States (especially North Carolina/Virginia and northern Florida).

#### Weather

An active weather system has been tracking east across the southeastern USA through Friday, producing severe thunderstorms that has produced over 100 mm of rain across northern Florida, along with the potential for large hail, tornadoes and frequent lightning. The worst of the conditions has passed, but further thunderstorms are likely here today (Saturday).

Less rainfall has fallen further north, but 25-75 mm of rain could fall in parts of north Carolina and Virginia by the end of today (Saturday), adding to the melting of the recent large snowfall.

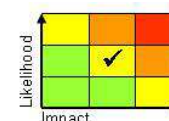
#### Discussion

Following the severe winter storm which brought significant snowfalls (40-60 cm) to North Carolina and Virginia, a quiet and fairly cold spell has seen only a slow thaw. This present rain-bearing system is affecting some of those areas affected by the previous winter storm, with the combination of heavy rain and warm tropical air melting the remaining snow and potential for severe flash and possibly river flooding.

In addition, thunderstorms to the southeast of the main rain area has been bringing localised flash flooding, and the potential for a tornado due to the engagement of the plume by a marked upper trough.

#### Expected Impacts

River flooding is likely to be the main impact, which could possibly be quite widespread in parts of the Carolinas and Virginia due to the addition of melting snow. Significant flooding of homes and businesses could occur, with localised transport disruption. Localised flash flooding (especially in northern Florida) and wind / large hail damage is possible elsewhere from severe thunderstorms.

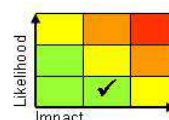


### Far southwest of Canada, and extreme northwest of United States

#### Weather

A succession of Pacific weather systems will see a further 250 to 400 mm of rainfall build up through the coming week, although much of this will be over high ground areas and locked up as snow. This is a fairly typical occurrence for this time of the year in this region, but further significant flooding is likely in Vancouver that could see up to another 100 mm of rain through the week, which is over half a month's worth of rainfall.

As well as the rainfall, severe gales or storm force winds are expected to impact coastal regions, with very large waves likely.



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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)

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## Discussion

A number of frontal systems are expected to drive in from the Pacific, with a strong orographic modulation to precipitation. Despite this being a fairly usual occurrence here for the time of year, models do show anomalously high rainfall totals with respect to climate. Vancouver in particular, often close to the warm sector/triple points of the various systems may see especially heavy rain at times, but most of the heaviest precipitation will be locked up as snow over the western slopes of the Cascades and coastal mountain ranges as well as the high ground of Vancouver Island and across the Olympic Mountains.

## Expected Impacts

Vancouver has already seen flooding impacts, with further flooding likely here. Very heavy mountain snowfall will increase the avalanche risk and will produce power and transport network impacts. Coastal flooding and wind damage is expected to be associated with each system.

## Northern California

### Weather

Periods of wet weather is expected to affect northern California on Sunday and Monday, affecting areas that were severely impacted by recent wildfire events. Up to a month's worth of rain (150 mm) could fall in 36 hours

### Discussion

An active Pacific frontal system is likely to bring heavy rainfall to coastal and Sierra Nevada mountain regions of northern California later this weekend and into next week.

### Expected Impacts

Flash flooding and mudslides look likely to impact a region still recovering from severe wildfire impacts.



## Central America and Caribbean

Nil significant.

## South America

### Uruguay, northern Argentina, far south of Brazil, Bolivia, Peru and Ecuador

#### Weather

Severe thunderstorms are expected to affect parts of Uruguay, northern Argentina and southern Brazil today (Saturday), and again on Monday to Wednesday. Up to 150 mm of rain could fall in 24 hours with large hail, frequent lightning and tornadoes possible. Bolivia, Peru and Ecuador will see heavier than usual monsoon rainfall this coming week, resulting in up to 400 mm of rainfall in places.

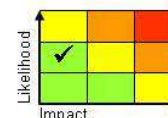
#### Discussion

An active pulse of the South Atlantic Convergence Zone (SACZ) will occur today, with another pulse likely from Monday. As repeated plumes of tropical moisture are drawn south, organised and very deep, vigorous convection is likely to develop, particularly along the south of the plume. Significant CAPE and vertical wind shear is present on forecast profiles, offering potential for large hail, gusty winds, and the odd tornado or two.

These pulses of the SACZ will feed north to enhance monsoon rainfall further north at times.

#### Expected Impacts

Flash flooding is likely, with an enhanced risk of landslides. Damage to infrastructure and property from large hail and lightning strikes also possible.



## Africa

### Tanzania, northern Mozambique, Malawi, northern Zambia, southeast Democratic Republic of Congo

#### Weather

Heavier than usual seasonal rainfall is expected to accumulate through the coming week, with as much as 200 mm of rainfall likely in places. This would be close to the monthly average occurring in a week.



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## Discussion

There is a strong model signal for heavier than climatological rainfall falling across this part of Africa during the next week.

## Expected Impacts

Enhanced likelihood of flash flooding and landslides compared to normal through the next week.

## Middle East

**Western Levant region** – see *Europe* section

## Asia

**Northeastern India, Bangladesh and northern Myanmar** – see *Tropical Cyclones* section

## Vietnam

### Weather

Heavy showers and thunderstorms are expected to continue across central Vietnam this weekend, brought in on a persistent moist northeasterly wind. Typical daily accumulations in the region of 25-750 mm are expected. Cumulative totals of 100-150 mm are likely through the next few days, on top of in places already incredibly heavy rainfall earlier this week. Next week looks like becoming mostly dry, bringing an end to this heavy rain event.

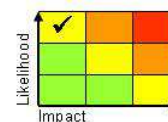
### Discussion

A persistent cold surge in the NE'ly monsoon flow will impinge on a large part of coastal Vietnam over the next few days, bringing in fairly persistent rounds of heavy showers and thunderstorms. Model signals indicate that rainfall will be far less than that which has been observed earlier this week, with 960 mm in 48 hours at Da Nang leading to severe flooding in the city, transport disruption due to landslides, over 20 reported fatalities.

The northeast monsoon cold surge will ease by the start of next week, allowing for much drier conditions to develop.

### Expected Impacts

Flash flooding of homes, businesses and urban areas are likely. River flooding also possible with an enhanced risk of landslides.



## Southern Thailand, Malaysia, Singapore, Indonesia (Borneo and Sumatra)

### Weather

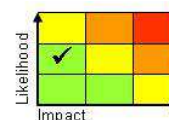
Enhanced heavy shower activity is likely to continue in this region, particularly areas immediate adjacent to the South China Sea. 50-100 mm per day is likely to be recorded in various locations, with 250 mm accumulating over the 5 days. However, December is one of the wettest months of the year, with these conditions not too unusual.

### Discussion

The combination of a cold surge and a Borneo Vortex will bring a markedly enhanced area of showers and thunderstorms to parts of western Indonesia until early next week. Equatorial Rossby Wave activity looks likely to enhance shower activity too.

### Expected Impacts

Localised flash flooding and enhanced risk of landslides are the most likely impacts.



## Australasia

**Australia - North Queensland and northeast Queensland coast** – see *Tropical Cyclones* section

## Southeastern Australia

### Weather



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## Daily Global Weather Impacts Assessment

The main focus will be associated with the severe thunderstorms that are expected to continue across eastern fringes of Victoria, New South Wales and southern Queensland, along with Tasmania (affecting Sydney and Brisbane at times) through the rest of the weekend. These storms will produce frequent lightning, large hail and very heavy rainfall (up to 200 mm of rain in 12-24 hours possible). To put this into context, the average December rainfall in this region is between 50 and 150 mm.

### **Discussion**

A slow moving upper vortex will continue to engage a warm plume across the eastern fringe of Australia through the next few days. Forecast profiles show large CAPE, strong vertical wind shear and high precipitable water, so there is potential for further severe storm activity.

### **Expected Impacts**

Flash flooding is a significant risk, especially in urban areas. Large hail and lightning will pose an additional hazard, and danger to life and power networks.

### **Additional information**

Nil.

**Issued at:** 150820 UTC    **Meteorologist:** Paul Hutcheon

**Global Guidance Unit**

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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)

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