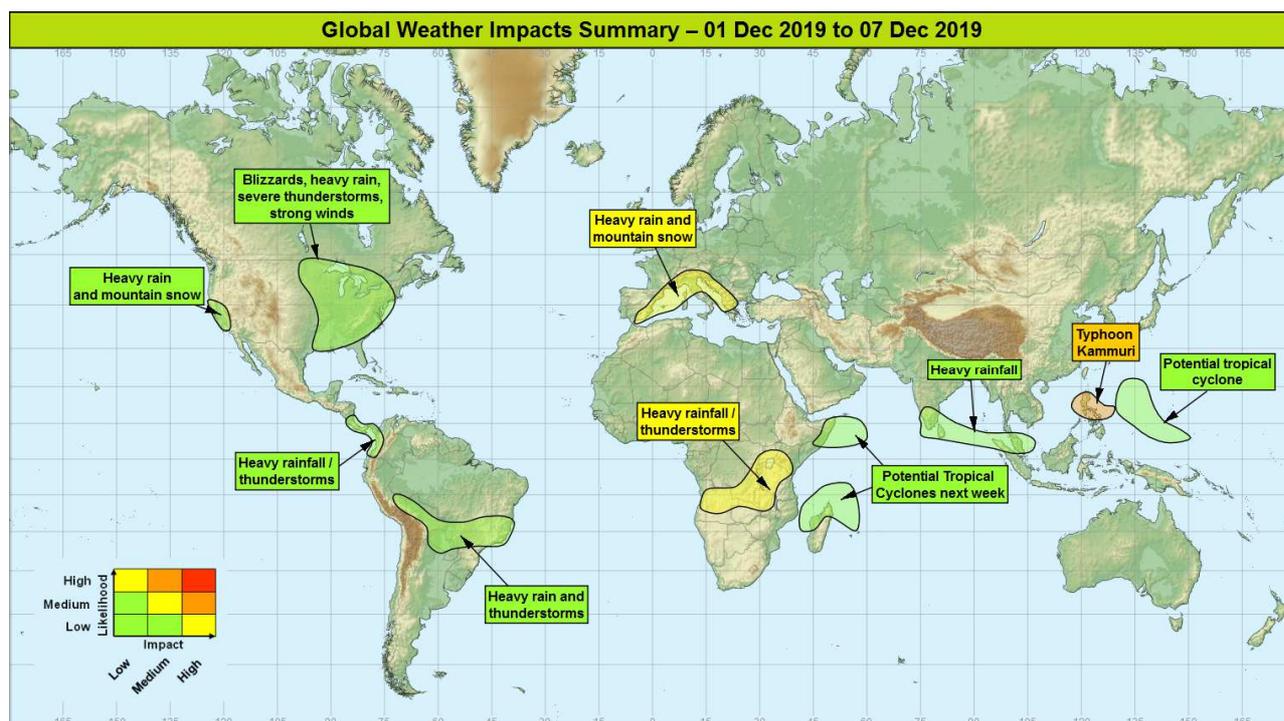


**Global Weather Impacts – Sunday 1<sup>st</sup> to Saturday 7<sup>th</sup> December 2019**

Issued on Sunday 1<sup>st</sup> December 2019

**HEADLINES**

- Typhoon Kammuri expected to reach the Philippines on Monday as a very strong typhoon.
- Wetter than normal conditions over Eastern/Central Africa, perhaps enhanced by tropical cyclone development next week.
- Heavy rain and mountain snow across part of southern Europe.



**DISCUSSION**

**Tropical Cyclones**

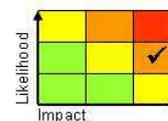
**Typhoon Kammuri Weather**

Typhoon Kammuri was located around 300 miles east of Philippines at 0300 UTC on Sunday with sustained winds of 90-95 mph. Kammuri is continuing to move steadily west, and should reach the central Philippines (most likely at this time in the vicinity of Virac, Catanduanes island) on Monday (UK time). Kammuri at landfall is expected to be a very strong typhoon, bringing destructive winds (sustained winds around 105 mph) and a swathe of heavy rain (300-500mm). Kammuri is forecast to cross the Philippines and exit to the South China Sea on Tuesday, where it is expected to become slow moving and decay over open water by the end of the week

**Discussion**

Weak or moderate wind shear and SST's of 29°C will be conducive to slow but steady strengthening of Kammuri as it makes steady progress west, steered by the subtropical ridge. The system is expected to make landfall towards the Central or Northern Philippines on Monday. There is now good and consistent model output for this evolution.

**Expected Impacts**



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Flash flooding and damaging, locally destructive winds likely in some parts of Central/Northern Philippines. Coastal impacts likely due to a large surge. Disruption of island-island marine transport.

*The following regions are being monitored for possible impactful tropical cyclone development.*

### **Western Indian Ocean**

#### **Weather**

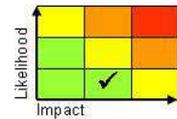
In the coming week there is the potential for tropical storms to form in the western Indian Ocean both north and south of the Equator. The more likely area to see development is within an area of convection presently to the north-east of Madagascar. Both the actual formation of any tropical systems, and the subsequent evolution and track there remains low confidence. Irrespective, enhanced showers in these regions are likely to help enhance rainfall across parts of east Africa and possibly northern Madagascar.

#### **Discussion**

Weak wind shear and SST's some 1 to 1.5°C above normal (a result of the ongoing positive Indian Ocean Dipole event) provide the background for an increased likelihood of tropical storms. Although the NWP signal is mixed, a mass of enhanced convection is present over the western Indian Ocean, and there are indications from both deterministic and ensemble output of the potential for tropical cyclogenesis in either (or both) hemisphere over the coming days. Steering flow is weak, and consequently there is very large model/ensemble spread with respect to intensity/track of any development thus far. The highlighted areas on the map correspond to the areas most under threat from any system that does form.

#### **Expected Impacts**

Potential for heavy rainfall over parts of Somalia, Madagascar, Comoros, Tanzania and Mozambique, but very low confidence at present. Damaging winds also a threat.



### **Western Pacific**

#### **Weather**

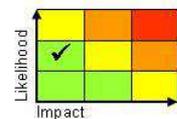
An area of organised showers and thunderstorms has been identified close to Micronesia, western Pacific. There is the potential for this to develop into a tropical cyclone in the coming few days as it tracks westward and well to the south of the Northern Mariana Islands. This cyclone (if it develops) is expected then to remain over the open water as it curves north when well to the east of the Philippines later this week, before decaying.

#### **Discussion**

There is moderate confidence for the development of a tropical depression or cyclone in the coming days for this feature when over the open water of the western Pacific. However only low confidence if this cyclone maintains its identity as it first tracks west, then north later this week.

#### **Expected Impacts**

Nil.



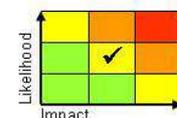
### **Europe**

#### **Parts of Southern Europe**

#### **Weather**

A larger scale weather system arriving across Iberia/W France will slide south-east, bringing a spell of heavy rain, with a particular focus on parts of southeast France, northern Italy, and the Balkans where 100-150mm is possible in 24-36 hours on Sunday and into Monday and Tuesday. Snow is likely to fairly low elevations on the Northern Alps and increasingly so across the Balkans (perhaps down to 300-500m Alps, 700-100m Balkans) as the system moves east. Mid-week, the focus will likely shift to the potential for heavy, thundery downpours affecting other parts of the Mediterranean coastline (including Morocco and Algeria), accompanied by strong winds.

#### **Discussion**



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Mobility remains well south-shifted, as it has done for some time now, continuing to drive destabilising frontal systems across southern Europe. An upper vortex slides SE across Iberia and the associated frontal system becomes well forced and orographically modulated over SE France and N Italy, producing large amounts of precipitation here. Further east the forcing could still produce large amounts of precipitation over high ground across the Balkans. A further cut-off vortex is likely to generate areas of deep instability and slow moving/training thunderstorms, although the location where this becomes anchored shows large variations in the models so confidence in the location of heavier rain during the middle of next week becomes lower.

#### **Expected Impacts**

Flash-flooding, landslides and increased avalanche risk. Parts of SE France and NW Italy (eg. Liguria) particularly vulnerable given a similar (although more extreme) event last week. Travel disruption is possible into early next week as snow affects more populated areas.

### **North America**

#### **South-west USA, North-west Mexico**

##### **Weather**

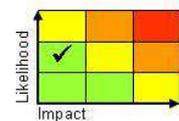
Heavy rain/mountain snow, accompanied by strong winds, is expected to arrive from the Pacific on Sunday, and become slow moving over California and the Sierra Nevada for the next 3 or 4 days. 100-200mm of rain is likely over the more populated, lower ground areas, and 2-3 metres of snow is expected in some parts of the Sierra Nevada.

##### **Discussion**

A low latitude, complex and disrupting upper trough are then expected to engage a warm plume to produce an active system across the area, leading to heavy rain. As the trough undergoes multiple disruptions and mobility stalls, warm conveyor flow will be set up for a time across California, bringing spells of persistent and at times heavy spell of precipitation during the coming week.

##### **Expected Impacts**

The most significant impacts are likely across California, where heavy rainfall is likely to produce some flooding of densely populated west coast cities, whilst heavy snowfall at higher elevations brings blizzard conditions, increased avalanche risk, and major disruption to mountain passes. Strong winds could also produce some localised disruption to utilities and transport for a time early Sunday before this aspect lessens.



### **Eastern USA**

##### **Weather**

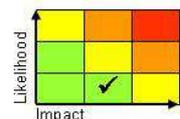
Heavy rainfall and strong winds are likely to affect parts of the north-eastern USA on Sunday and Monday. On the northern and back edge of the system blizzard conditions are likely across the Northern Plains. Further south and east severe thunderstorms are possible on Sunday, producing torrential downpours, strong winds, large hail and the odd tornado.

##### **Discussion**

A mature but potent depression is currently affecting the eastern USA, and is expected to transfer west across the Atlantic on Monday, before transferring towards eastern Canada on Tuesday. A period of heavy snow and blizzard conditions is likely across the Northern Plains on Sunday, transferring towards the northeastern States on Sunday night. Some significant snow is possible, especially over the higher ground. Ahead of the cold front forecast profiles support severe convection across parts of the south on Sunday.

##### **Expected Impacts**

Significant disruption to road, rail and air travel is likely across the Thanksgiving Holiday weekend. Some disruption to power supplies is possible.



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**Central America and Caribbean**

**Costa Rica & Panama** – see South America section

**South America**

**Western Colombia, northern Ecuador, Costa Rica and Panama**

**Weather**

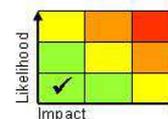
Further heavy showers are expected in this region over the next 7 days. 50-100 mm is likely to fall in a few places in a 24 hour period, with the potential for over 300 mm in a few spots over the week. This region has been slightly wetter than usual over the past month, and rainfall amounts over the coming week represent around a further month's worth of rainfall for the wettest spots.

**Discussion**

A combination of continued enhanced convection, and wetter than normal antecedent conditions, has helped to identify this region as the most likely to see impacts. Models signal 100-300mm of rain, mainly triggered by upslope motion on the western slopes of the Andes. Increased convergence over southern Central America will help to generate enhanced showers/thunderstorms today, before this weakens going into the weekend.

**Expected Impacts**

Flash and river flooding with landslides possible in mountainous areas. This follows on from a recent wet period across the region with significant river flooding reported over the last couple of weeks.



**Bolivia, Paraguay, far north Argentina, southern Peru and southern Brazil**

**Weather**

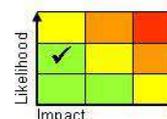
Heavy showers and thunderstorms are expected at times through the next week in this region. 50-100 mm of rainfall in a few hours is possible with a few places perhaps seeing 150-250 mm over a period of a couple of days. Additional hazards include frequent lightning strikes, large hail and a risk of tornadoes

**Discussion**

Two South American Convergence Zone events are likely to affect this region through the next week, with the first one easing today across south-eastern Brazil, before the second event develops a little further south over Paraguay from later in the weekend. Forecast profiles (large CAPE and decent amounts of vertical wind shear) show the potential for severe thunderstorms as the sub-tropical jet migrates a little further north during these events and interacts with the warm plume across the region.

**Expected Impacts**

Increased likelihood of flash flooding causing a danger to life, damage to property and infrastructure. Frequent lightning strikes and large hail are also possible, with a lower risk that tornadoes could also produce localised significant damage.



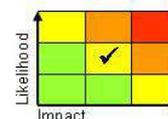
**Africa**

**Central and eastern Africa**

**Weather**

Showers and thunderstorms associated with the seasonal rains are forecast to continue to be heavier than normal over the next week, with 100-200mm, perhaps locally as much as 300mm of rain falling in frequent heavy, thundery, afternoon downpours. The heaviest rain is expected from Kenya to Angola, through Uganda, Tanzania and Zambia. Much of this area has seen 200-400% of the usual rainfall over the past week, although the rainfall expected over Angola may be more welcome with much drier than average conditions here in recent times. In addition, next week there is the threat of enhanced rainfall from tropical storms, mainly a threat to Somalia, and eastern parts of Tanzania and Mozambique.

**Discussion**



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Enhanced seasonal rainfall in association with the strong positive Indian Ocean Dipole event which, although declining, is still in full swing. Large tracts of eastern Africa have seen well above average rainfall over the past 3-6 months, and even parts of Angola, although recently dry, have seen above normal rainfall in the past month. The combination of all these factors dramatically increases the likelihood of further flash and river flooding – potential tropical cyclones (see tropical cyclone section) adds further to this risk for select locations.

**Expected Impacts**

An increased risk of flash flooding and landslides in the region, with further river flooding likely. This is also true of regions in the far south of the area which have been experiencing drought conditions. Frequent lightning is also likely, along with large hail and strong wind gusts.

**Middle East**

Nil.

**Asia**

**Philippines** – see *Tropical Cyclones* section

**Malaysia, northern Sumatra, Sri Lanka and southern India**

**Weather**

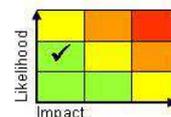
Even though it is the ‘rainy season’ in this region heavy rainfall is expected through the next week, with some places seeing up to 300 mm through the next week (equivalent of 50-75% of the average monthly rainfall at this time of year).

**Discussion**

With the MJO in the process of entering the Indian Ocean the ITCZ in the northern Indian Ocean is expected to become more active through the next week, resulting in more widespread intense convection.

**Expected Impacts**

Increased threat of flash flooding and landslides.



**Australasia**

Nil.

**Additional Information**

**Eastern Australia – Wildfire:** Numerous bushfires continue in parts of eastern New South Wales, Victoria and Australian Capital Territory. A cold front brought some rainfall and introduced cooler air across the region through Saturday, which likely lowered the wildfire threat and aid the containment of existing wildfires going into next week.

**Issued at:** 010300 UTC **Meteorologists:** Tony Wardle

**Global Guidance Unit**

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

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