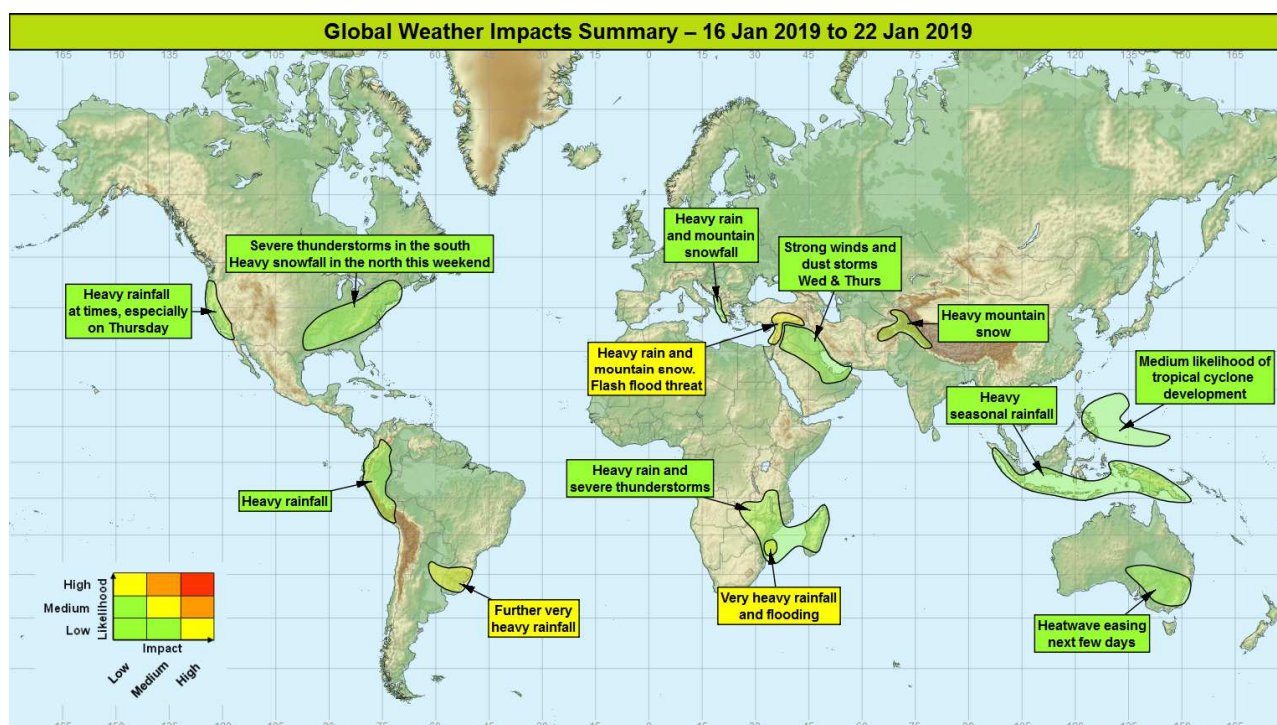


## Global Weather Impacts – Wednesday 16<sup>th</sup> to Tuesday 22<sup>nd</sup> January 2019

Issued on Wednesday 16<sup>th</sup> January 2019

### HEADLINES

- Very heavy rainfall with a risk of significant flooding developing across southern Mozambique.
- A threat of flash flooding for southern Turkey and the northwest Levant today.
- A continuing risk of heavy rain causing flooding in parts of South America.
- Potential for the development of a tropical storm in the Philippine Sea.
- A severe winter storm expected to affect parts of the USA this weekend.



### DISCUSSION

#### Tropical Cyclones

There are currently no named tropical cyclones. The following areas are being monitored:

#### Northwest Pacific (Micronesia and southern Philippines)

##### Weather

The remnants of a tropical depression are once more likely to become more organised as they move westwards across the Philippine Sea, with a medium likelihood of a tropical storm forming. This system is likely to approach the Philippines on Sunday, with uncertainty whether it would continue westwards across the islands, or begin to turn to the northeast. Regardless southeastern parts of the Philippines are likely to see strong winds heavy rainfall (50-100mm), if the system continues on a westward track this region could see as much as 500mm of rainfall.

##### Discussion

The remnants of TD01 will lay in an area favourable for development as they track towards the Philippines (high SSTs, low vertical wind shear and good upper level outflow). All deterministic output from shows this area becoming more organised with a tropical storm signalled to develop, there remains some uncertainty as to the maximum intensity and track of any development, with solutions split between a landfall in the Philippines on Sunday and others (such as the GM) suggesting to system turn to the northeast before reaching the Philippines.



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

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**Expected Impacts**

Flash flooding affecting some of the small Micronesian Islands (such as Palau) over the next few days. On Sunday and Monday, strong winds, rough seas and heavy rainfall may disrupt transport and utilities, and damage some property and crops in the Philippines. This region of the Philippines was adversely impacted in late December by the system that went on to become Tropical Storm Pabuk.

**Europe****Turkey, Lebanon, north and west Syria and northern Iraq****Weather**

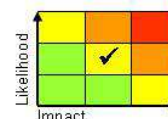
Further spells of heavy rain, thunderstorms, mountain snowfall and very strong winds are expected to affect the region today (Wednesday). The focus for the heaviest rainfall will be across southern Turkey and the Levant coastline. Some heavy snowfall is expected across higher ground, especially across Turkey. In addition to precipitation that fell on Tuesday a further 50-100 mm could fall today, with up to 250 mm accumulating in some parts of southern Turkey during the whole event. In the wake of the system cold air will be drawn south which will lead to several days of significantly below average temperatures.

**Discussion**

An upper trough will run across the area today engaging the surface depression and maintaining a very disturbed spell of weather here. Once this system clears east during Wednesday much more settled and benign, but notably cold conditions will follow from Thursday into next week.

**Expected Impacts**

An enhanced threat of flash flooding and landslides in the region, particularly as this follows previous wet weather in recent weeks/months. In addition strong winds and below average temperatures are likely to affect vulnerable populations in parts of southern Turkey and the Levant region, these lasting into next week. Snowfall over parts of Turkey may also cause some transport disruption and perhaps utility outages.

**Albania and Greece****Weather**

Heavy precipitation in the form of showers and thunderstorms will affect this region between Friday and Sunday. In total 50-100mm of precipitation could fall, with this falling as snow on high ground (generally above 500 M in elevation).

**Discussion**

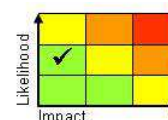
A series of weak upper troughs will maintain instability (showers) over the Adriatic and Ionian Seas. At low levels the southwesterly flow will steer these showers toward the coastlines of Albania and Greece, where orographic uplift will allow the realisation of further potential instability and increase precipitation totals on the windward hills.

**Expected Impacts**

This region has been very unsettled over recent weeks, so the rainfall could cause some localised flooding issues, and increase the risk of landslides. Currently snow lies across the mountains of this region, so additional snowfall will increase the risk of avalanches.

**North America****California and Oregon****Weather**

Further Pacific weather systems are expected to affect the region through the next week, producing spells of heavy rainfall, falling as snow above roughly 2000 metres thus giving further significant falls over the Sierra Nevada range. The main precipitation event looks likely to be on Thursday when up to 150 mm of precipitation could fall, with weekly totals of up to 250-300 mm of rainfall in the Sierra Nevada. Some lower lying and more populated parts of California (such as Los Angeles) and Oregon could see in excess of the January average rainfall on Thursday alone.

**Discussion**

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In line with the expected boreal winter conditions during a developing El Niño event, the Aleutian Low will remain displaced southeastward of its usual position, and deeper than average this next week. This results in a strong south-shifted Pacific polar front jet stream that can feed a succession of frontal systems into the western states of the USA, bringing very heavy rainfall and snowfall to the high mountains.

## **Expected Impacts**

Flash flooding has already affected California in recent days with the risk remaining elevated this week, particularly on Thursday. Mudslides are a significant threat in burn scar regions of California from the forest fires of recent months. Heightened avalanche threat is also likely in the Sierra Nevada.

## **Central and eastern USA and SE Canada**

### **Weather**

Related to the system that will bring heavy rainfall to California and Oregon this week, a deep area of low pressure will develop to the lee of the Rockies on Friday, and sweep northeastwards across the US this weekend. Southeast of the low centre warm air drawn up from the Gulf of Mexico will allow the development of some severe thunderstorms across southeastern states. To the northwest of the low cold air undercutting the system will result in widespread heavy snowfall and some regions of freezing rain. The latest signal is that the heaviest snowfall will remain inland from the main eastern coastal cities, with sleet and rainfall likely in Washington, New York, although slightly more marginal for Boston.

### **Discussion**

A marked confluent upper trough is expected to drive a developing frontal (later surface low) wave northeastwards across the central and eastern part of the USA at the weekend. On and just ahead of the cold front forecast profiles show the potential for severe thunderstorms, while the northern side of this system will engage the very cold Arctic airmass that will have been dragged well southwards. There is still some timing and track uncertainty between models, but there is high confidence for a significant winter storm with some very heavy snowfall this weekend, latest indications suggest the major east coast cities will on see transient snowfall with rain being the most likely prevailing precipitation mode.

### **Expected Impacts**

Significant disruption to travel and utility networks are likely, with a threat to life from winter hazards. Severe storms across southeastern states may bring (large hail, strong winds, tornadoes, frequent lightning, flash flood) impacts.

## **Central America and Caribbean**

Nil significant.

## **South America**

### **Northern Argentina, far south of Brazil and Uruguay**

### **Weather**

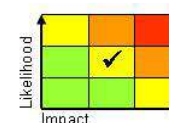
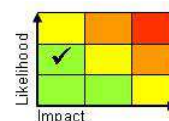
Further episodes of frequent heavy showers and severe thunderstorms are expected to affect this area over the next week, producing a combination of torrential, short-period rainfall, large hail, damaging wind gusts and a tornado threat. Storms will develop during most afternoons, persisting well into the night time. These storms are capable of producing up to 200 mm of rainfall in 24 hours (with much of this potentially falling in a much shorter time period). Thursday and Friday look to be the days when this zone is most active over the coming week.

### **Discussion**

Successive rounds of severe convection are expected as the seasonal warm plume is drawn south and engaged by shortwave upper troughs crossing South America. A combination of large CAPE and vertical wind shear will support the development of MCS and supercells.

### **Expected Impacts**

This region of South America has seen several times the average rainfall during the past month. So the impacts from the continued very wet weather could be severe, with river flooding as well as flash flooding. Additionally, large hail, frequent lightning and strong winds/tornadoes are likely to cause some damage to property and utilities infrastructure.



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## Western Colombia, Ecuador and Peru

### **Weather**

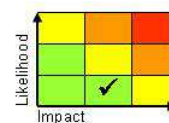
Enhanced rainfall, in association with frequent showers and thunderstorms, is expected this week across the region. There is the potential for 50-100 mm in places each day with up to 300 mm of rain across part of the Andes over the next week. This is likely to equate close to the average January rainfall in places.

### **Discussion**

In line with the developing El Nino, the southeasterly trade winds in the southeast Pacific are weaker than usual, this prevents the upwelling of cold water along the coastline and allows the build up of warm Pacific waters along the coastline (currently positive SST anomalies of 2 to 4°C). These weaker trades allow heating of the South American Continent to setup strong sea breezes along the coastline, drawing in this moist low-level air and allowing heavy showers and thunderstorms to form over the Andes, and also in the usually very dry areas to the west of the mountains.

### **Expected Impacts**

Increased likelihood of flooding and landslides.



## Africa

### Southern Mozambique

### **Weather**

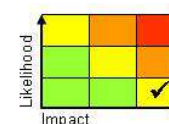
Very heavy seasonal rains in the form of torrential showers and thunderstorms are expected throughout this period with daily thunderstorm activity typically bringing widely 50-100 mm of rainfall in places each day, with some locations perhaps seeing in excess of 250mm of rainfall each day for several days. This would mean over the coming week some locations could see precipitation totals exceeding 750mm. On Tuesday 15<sup>th</sup> January an observation from Vilanculos (one of only a handful of observation in the country) received 210mm of rainfall within 24 hours.

### **Discussion**

Enhanced seasonal rainfall associated with monsoon plume is forecast to continue over the next week. Rainfall anomalies are signalled to increase from Friday with the potential for enhanced low level convergence and a slow-moving low pressure circulation helping to organised and focus severe convection. Models continue to signal intense rainfall for this period, with other modelling centres output joining the GM and suggesting in excess of 750mm of rainfall through the coming week. Mozambique is a country that has experienced severe flooding in the past. Looking back on the most recent event in January 2013 when the EU estimated 213,000 people were impacted by the floods, records from the handful of meteorological reporting sites in the country states that many locations sat between 250-450mm of rainfall through the month, with the wettest location seeing 623mm.

### **Expected Impacts**

The largest and most densely populated settlements in the areas highlighted virtually all tend to lie on flood plains and river deltas, where the majority of the agriculture occurs. Meaning that the region is highly vulnerable to flooding. It is felt likely that the upcoming event could lead to significant flooding related impacts in this region, with a Save, Limpopo and Buzi river basins most likely to see the greatest impacts. In additional large hail, frequent lightning and strong winds are likely to cause some damage to property, crops and infrastructure.



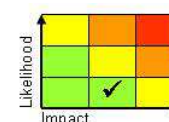
## Remainder of Mozambique, Zimbabwe, Zambia, Malawi, Madagascar, northern South Africa and southern Tanzania

### **Weather**

Enhanced seasonal rains are expected to continue in the form of more frequent thunderstorms. These could locally bring 50-100 mm of rainfall in 24 hours, with some significant totals perhaps falling in a short period. Some locations could see 200-300 mm over the next week, with these values close to the January average. In addition to heavy rainfall, these will likely produce frequent lightning, strong downdraughts and possibly large hailstones too.

### **Discussion**

Enhanced seasonal rainfall associated with monsoon plume is forecast to continue over the next week, with significant rainfall anomalies signalled. Showers will mainly be focussed by the (at times diffuse) axis of high WBPT and enhanced low level convergence.



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## Expected Impacts

The majority of the area highlighted is sparsely populated; however there are a few large densely populated cities within it. Impacts will be fairly localised given the nature of showers, but flash flooding from heavy rainfall is possible. Additionally, large hail, frequent lightning and strong winds are likely to cause some damage to property, crops and infrastructure.

## Middle East

**Lebanon, north and west Syria and northern Iraq** – See *Europe* section.

## **Much of Syria, Iraq, Jordan, Kuwait, eastern Saudi Arabia, Bahrain, Qatar and the UAE**

### Weather

Strong or gale force winds are expected across the north of this region on Wednesday, with these winds extending southeast through and around the Persian Gulf through Thursday. These winds will likely lift some dense dust storms across a large area.

### Discussion

This event is linked with the eastern Mediterranean deep depression event (see the *Europe* section). There is good model agreement for this event that will generate a strong Shamal.

### Expected Impacts

Dense dust storms can have an adverse impact on human and animal health, and disrupt land and air transport links.



## Asia

**Micronesia and southern Philippines** – See *Tropical Cyclone* section.

## **Much of Indonesia and Papua New Guinea**

### Weather

This is the wet season in southern Indonesia and Papua New Guinea, but the seasonal rainfall could be more intense and more widespread than usual this week. Up to 100 mm of rain could fall in a few hours, perhaps with strong winds or even a tornado (as seen in western Java recent days). Rainfall totals of up to 300 mm could accumulate in places, which would be around the average January rainfall.

### Discussion

A combination of Kelvin waves, equatorial Rossby waves, a strengthening cross equatorial northerly and an emerging Indian Ocean MJO is likely to result in enhanced seasonal rains this coming week.

### Expected Impacts

Flash flooding possible in places, with some wind damage possible near severe storms. There will also be an increasing threat of landslides and river flooding.



## **Afghanistan, Tajikistan, southern Turkmenistan and northern Pakistan**

### Weather

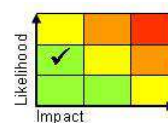
Further snow is expected to affect the region through the next week with many places seeing a further 15-25 cm of snow during this time. Isolated accumulations of up to a metre are likely, particularly over western Tajikistan and southeast Uzbekistan.

### Discussion

A mobile westerly pattern will extend eastward into southwest Asia through the coming week, engaging a series of WBPT plumes. This will lead to widespread snow on the abundant elevated topography of the region.

### Expected Impacts

This follows another snowfall event last week affecting a similar region. Fresh snowfall is expected to disrupt air and land-based transport networks in the region whilst power supplies could be interrupted. Cold temperatures may also have adverse impacts on human and animal health. Given the mountainous nature of the region, there will also be an increased likelihood of avalanches.



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**Australasia****Southeastern Australia****Weather**

Higher than normal temperatures will be focused on South Australia, New South Wales and Victoria this week. Maximum temperatures are expected to hit the high 30s to low 40s°C towards some of the more populated areas, including Canberra with some inland locations into the high 40s°C (Tarcoola, South Australia reached 49.1C on Tuesday, within two degrees of the Australian record). This is some 8-12°C above normal and many more local records are likely to be broken. The heat could trigger wildfires in parts of southeastern Australia. At the end of the week a cold front will bring an end to the extreme temperatures, and could spark some severe thunderstorms.

**Discussion**

High temperatures are not unusual for Australia in the last decade. The Bureau of Meteorology recently announced that 2018 was the 3<sup>rd</sup> warmest year on record. These heatwaves tend to develop over NW Australia, where the town of Marble Bar has now exceeded 40 degrees Celsius for almost a whole month, then spread south and east across the interior, then on to affect the more populous areas of south-eastern Australia. The Port Augusta temperature is within two degrees of the Australian record of 50.7, set at Oodnadatta, South Australia in January 1960.

**Expected Impacts**

Extreme heat can impact the health of the more vulnerable people and can adversely impact on the availability of water and the power network. The Australian Open tennis takes place this week in Melbourne and may impact both players and spectators alike. The heat, combined with prolonged dry weather will also lead to an increased risk of wildfires developing.

**Additional information**

Nil.



**Issued at:** 160845 UTC    **Meteorologist:** Nick Silkstone

**Global Guidance Unit**

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

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