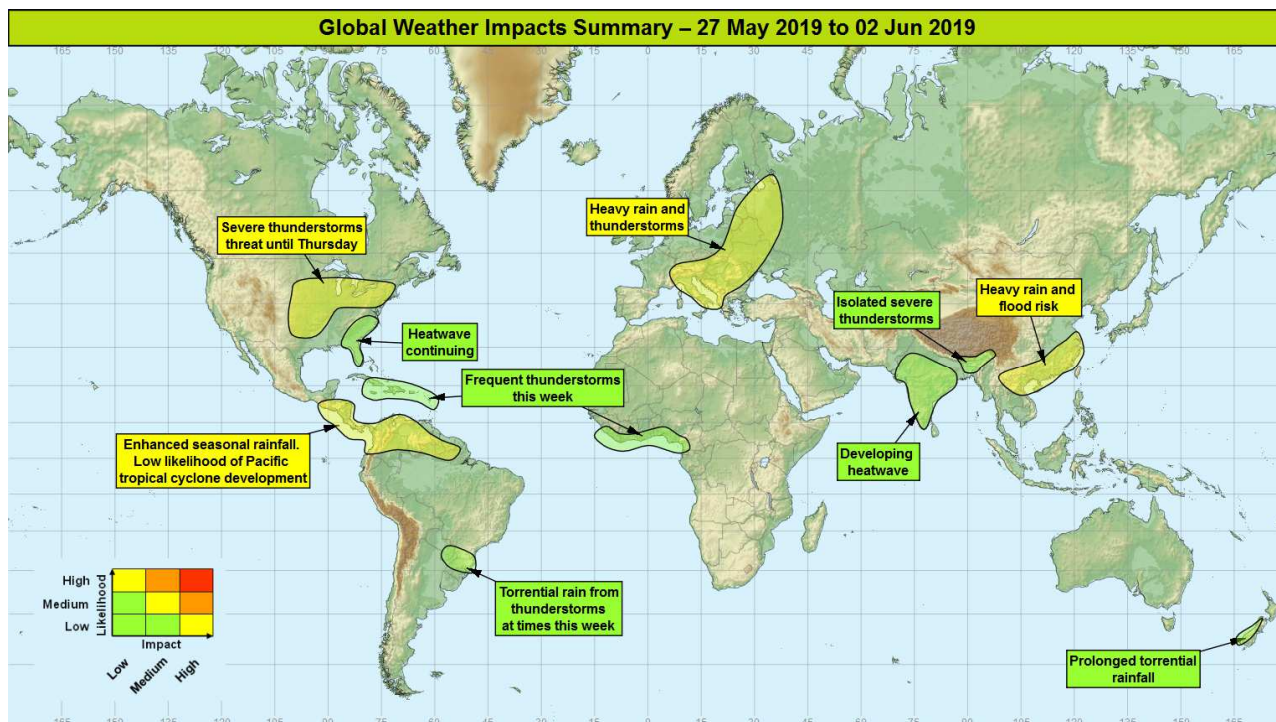


Global Weather Impacts – Monday 27th to Sunday 2nd June 2019

Issued on Monday 27th May 2019

HEADLINE

- Locally severe thunderstorms affecting parts of Europe and USA.
- Intense rainfall across parts of Central America.
- Heavy rain and flood risk for southeast China and northern Vietnam.



DISCUSSION

Tropical Cyclones

There are no active tropical cyclones currently. The following area is being monitored for potential tropical cyclone development:

Northeast Pacific – see *Central America and Caribbean* section.

Europe

Italy and the Alps northeast to Poland, western Russia and the Baltic states

Weather

Heavy showers and thunderstorms will develop across the Alps and much of Italy on Monday, with these storms then expected to extend northeast and east to affect much of eastern Europe, into western Russia from Tuesday through to the end of the week or into the weekend. The thunderstorms will produce up to 100 mm in a 6-12 hour period in places, with some Alpine and Dalmatian coastline location seeing up to 150 mm of rainfall in a few days. Some of the storms will be severe, producing very strong winds (gusts up to 50 mph), frequent lightning and large hail with a small risk of tornadoes too.

Discussion



This forecast may be amended at any time

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A complex cyclonic upper pattern will develop during the next few days as a western Mediterranean vortex moves northeast ahead of a disrupting western European upper trough. The associated forcing will engage a very warm plume to produce a combination of skinny and large CAPE atmospheric profiles. Skinny CAPE deep convection will produce highly efficient rain bearing storms, while the large CAPE deep convection will produce a severe storm threat when added to a strong vertical shear environment. The complex nature of the upper air evolution produces increasingly divergent model solutions which lower confidence in precip details. This uncertainty will be added to by MCS events that will modify the atmosphere in ways that global NWP can't resolve.

Expected Impacts

Flash flooding is the main concern, with an increased risk of landslides in the mountainous areas. Severe storms will add a significant likelihood of frequent lightning, damaging hail and winds, which will pose a threat to life as well as power and transport networks.

North America**Central and northeastern USA****Weather**

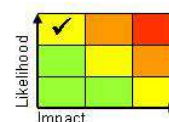
Severe thunderstorm outbreaks will continue across the central US through until the midweek period, with northeastern parts of the US up into the Great Lakes region seeing a threat of severe storms too. Where they occur, they bring a threat of very strong winds, large hail and tornadoes, with up to 100-150 mm of rain falling in a 24 hour period in places, and up to 250 mm of rain possible in a few places through the next week, which is around twice the average May rainfall in this region.

Discussion

Strongly negative PNA pattern allows for strong SW'ly flow forward of upper troughing and across an extremely warm/moist low level airmass, which is conducive to severe thunderstorm development and accompanying hazards. Details will inevitably vary day on day (see SPC for details), and this will come on top of what has already been an active convective season with reduced resilience in some already affected areas. The PNA pattern is expected to change, which should reduce the severe storm risk later in the week.

Expected Impacts

Flash flooding, large hail, damaging winds and strong tornadoes are all likely. Aviation and transportation likely to be affected at times. The longevity of this event increases the likelihood of significant population centres being impacted. Another impact could be larger scale river flooding due to already very high river levels through the central part of the USA.

**Southeastern USA****Weather**

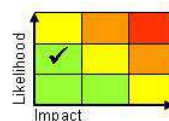
Across southeastern parts of the USA temperatures will continue to rise around 10 degrees Celsius above the late May average through the coming week, resulting in highs in excess of 40 degrees Celsius in places, along with overnight minima no lower than 24 degrees Celsius. These values are likely to break monthly records in places.

Discussion

A persistence of an upper trough across the western USA and a downstream upper ridge across the eastern USA (negative PNA pattern) has allowed a low level southerly flow to bring unseasonably hot air north across the southeast of the USA. This pattern will continue until the end of the week or even the weekend.

Expected Impacts

Heat stress will become an increased issue across the region, especially for tourists.



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Central America and Caribbean

Far south of Mexico and Guatemala south to northern parts of South America

Weather

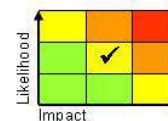
Torrential showers and thunderstorms will remain frequent and persistent across the area through much of the next week. Some places will see up to 100-150 mm in a 24 hour period, with up to 400 mm accumulating through the next week in places. The highest rainfall accumulations are likely to be seen in parts of Central America, especially the Pacific coast of Nicaragua, where there is a low likelihood of a tropical storm development during the first part of the week. For a comparison with what is normal at this time of year, the average rainfall total for Managua (Pacific coast of Nicaragua) for May is 166 mm.

Discussion

The MJO will continue to propagate eastwards across the western hemisphere this coming week, maintaining the active convection along the ITCZ as it does so. As the week progresses the departing MJO will have less influence, but an African Easterly Wave (presently across the Caribbean) will likely maintain an active convective regime. Large amounts of precipitable water and CAPE (3000 J/kg) are present; the heaviest precipitation this week looks to be associated with the potentially enhanced flow ahead of a potential tropical storm development area.

Expected Impacts

Flash flooding, with significantly increased risk of landslides in what is a mountainous area and gusty winds are all likely. However, heavy rainfall in Central America will also be welcome in the longer term due to the significant drought here.



Caribbean (Jamaica and southern Cuba eastwards to northern Lesser Antilles)

Weather

More frequent thunderstorms than are normally seen in the Caribbean in later May are expected through the coming week. These storms could produce up to 75 mm of rain in a 6 hour period, with some islands seeing up to 200 mm of rain through the next week. So it is possible that some islands could see up to twice the average May rainfall in a few days to a week.

Discussion

A succession of African Easterly Waves will combine with the MJO to produce more frequent thunderstorms across the region than is usually seen in late May.

Expected Impacts

Flash flooding and rockslides are the most likely impacts from the weather this coming week. The severe weather could impact islands that are still recovering from the impacts of the 2017 Hurricane season.



South America

Northern Ecuador, much of Colombia, Venezuela, Guyana, Suriname - see *Central America and Caribbean* section.

Southeast Brazil and the far east of Paraguay

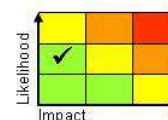
Weather

Following a break in the heavy showers experienced across the region in the past few days, a resumption of intense thunderstorms is expected to develop on Monday and Tuesday with a further 100-200mm of rain over the course of 48 hours in some areas. Torrential rain, with a risk of localised wind damage will be the main hazard. Another period of torrential rain and thunderstorms looks likely on Thursday and Friday.

Discussion

Following the clearance of the recent SACZ plume, a sharp trough in the STJ moving across the country will engage the next plume drifting south from Brazil, generating a band of thunderstorms that will move across the area over the course of Monday and Tuesday. High PWAT and tall, skinny CAPE profiles will contribute to large volumes of rain. A similar event is likely later in the week.

Expected Impacts



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Localised flash flooding and increased chance of landslides in mountainous areas. Localised strong winds and frequent lightning are additional hazards which may cause damage to property and disruption to transport and utilities. Parts of this region are recovering from ongoing flooding and this rainfall is likely to hamper this recovery.

Africa

Gulf of Guinea coast of west Africa

Weather

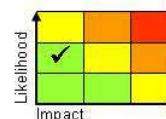
This region of West Africa is likely to see heavier than average rainfall through the next week in the form of intense rainfall. Up to 50-75 mm of rain could fall in a 6 hour period, with up to 250 mm accumulating in places through the coming week.

Discussion

The MJO will move through tropical Africa this coming week, and will combine with African Easterly Waves to bring an active pulse of seasonal rainfall long the Gulf of Guinea coastline.

Expected Impacts

Flash flooding is the main threat, but with landslides likely in prone hilly regions. There are a number of very large cities along this coastline, which increases the threat of significant local impacts.



Middle East

Nil significant.

Asia

Northeast India, Bhutan and northern Bangladesh

Weather

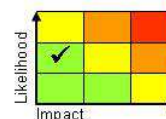
Severe thunderstorm activity is expected to increase again from Wednesday. As well as intense rainfall (up to 100 mm daily, although many areas will miss the heaviest rain), large hail and strong winds are possible.

Discussion

A shortwave upper trough in the sub-tropical jet will transfer east over northern India and Nepal to lead to destabilisation of the very warm and moist airmass, and the development of diurnal thunderstorms. High CAPE and vertical wind shear will aid the development of severe, long-lasting storms, with hail and strong winds additional hazards.

Expected Impacts

Localised flash flooding and increased chance of landslides in mountainous areas bringing a danger to life. Large hail, strong winds and frequent lightning are additional hazards which may cause damage to property and disruption to transport and utilities. The Bangladeshi capital, Dhaka, could see severe storms during the period.



India

Weather

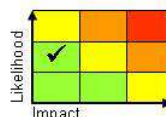
The pre-monsoon heatwave is expected to intensify across parts of India through the coming week, with temperatures beginning to rise significantly above average. This event could become more significant through the following week or two with the expected late arrival of the monsoon rains likely to aid a prolonged heatwave across the country.

Discussion

There are signals that the arrival of the monsoon rains into India will be around a week later than usual. This will allow for an extended period of day on day temperature rises that could result in a prolonged pre-monsoon heat wave.

Expected Impacts

Increased threat of heat stress and power failures.



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Southeastern China and northern Vietnam**Weather**

Very heavy rainfall is expected to affect parts of southeastern China and northern Vietnam for much of the next week, with over 200 mm possible in 24 hrs. In some areas this could lead to event totals of 350 mm. This would be over the average monthly rainfall for May (which is 150-300 mm). This rainfall is associated with an active pulse of the seasonal Mei-yu rains, and will see severe thunderstorms in places, that could produce large hail, very strong winds and frequent lightning.

Discussion

There is good model agreement for an upper trough to continue to engage a surface warm plume for the next few days, with another likely next weekend. This will destabilise the plume, resulting in large CAPE / vertical wind shear profiles that also contain a signal for a low level warm nose above a shallow moist zone. These are ingredients for severe convection.

Expected Impacts

Flooding and flash flooding are likely to be the main impacts, especially in urban areas. However, there will be an increased likelihood of landslides, with a threat of impacts on the power network from frequent lightning, and structural damage from large hail and very strong winds. Hong Kong along with a number of other very large cities will be at threat of flooding during the next week.

**Australasia****Westland and Fiordland, South Island, New Zealand****Weather**

A period of moist northwesterly flow with a number of weather fronts embedded within it will lead to prolonged heavy rain in this region during the coming week. Accumulations of 400-600 mm are expected during the course of this event over western parts of the Southern Alps, representing around twice the average May rainfall for parts of this region.

Discussion

Broadscale upper troughing arriving in to the west of New Zealand, will become slow moving providing an extended period of north-westerly flow with embedded frontal zones onto the NW facing upslopes of the mountains of South Island. Although this region is used to heavy rain, this is expected to be a significant event with warnings issued by New Zealand Met Service.

Expected Impacts

The main impact will be increased risk of flooding, with streams and rivers also rising rapidly. Increased risk of landslides is also likely. There is the potential for bridges and roads to be destroyed in flash flooding events, similar to the flood events in a similar region back in March.

**Additional information**

Nil.

Issued at: 270650 UTC **Meteorologists:** Paul Hutcheon / Matthew Lewis

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