



Case Study of floods in 2018

May 2018

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Department of Meteorology
Sri Lanka

Outline

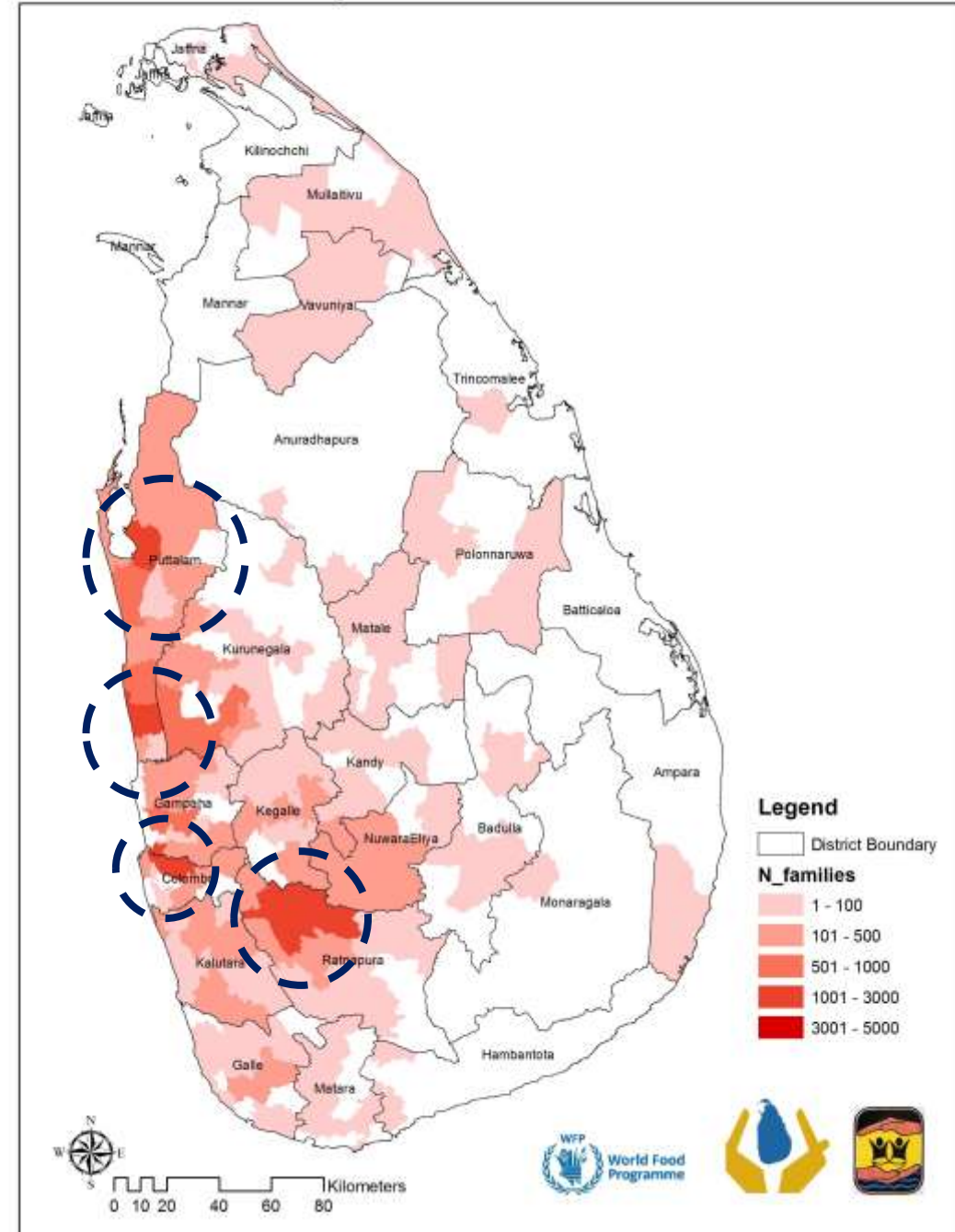
- Situation & status of flood
- Synoptic conditions
- Case study

Situation

- Heavy rainfall was received across several parts of Sri Lanka between 20-24 May 2018.
- These pre-monsoon rains caused heavy rainfall and floods mainly in 7 districts including Ratnapura, Kegalle, Kalutara, Colombo, Gampaha, Puttalam and Mathara.

Status – No of families affected

Flood status - 26 May 2018 - 1200 hours

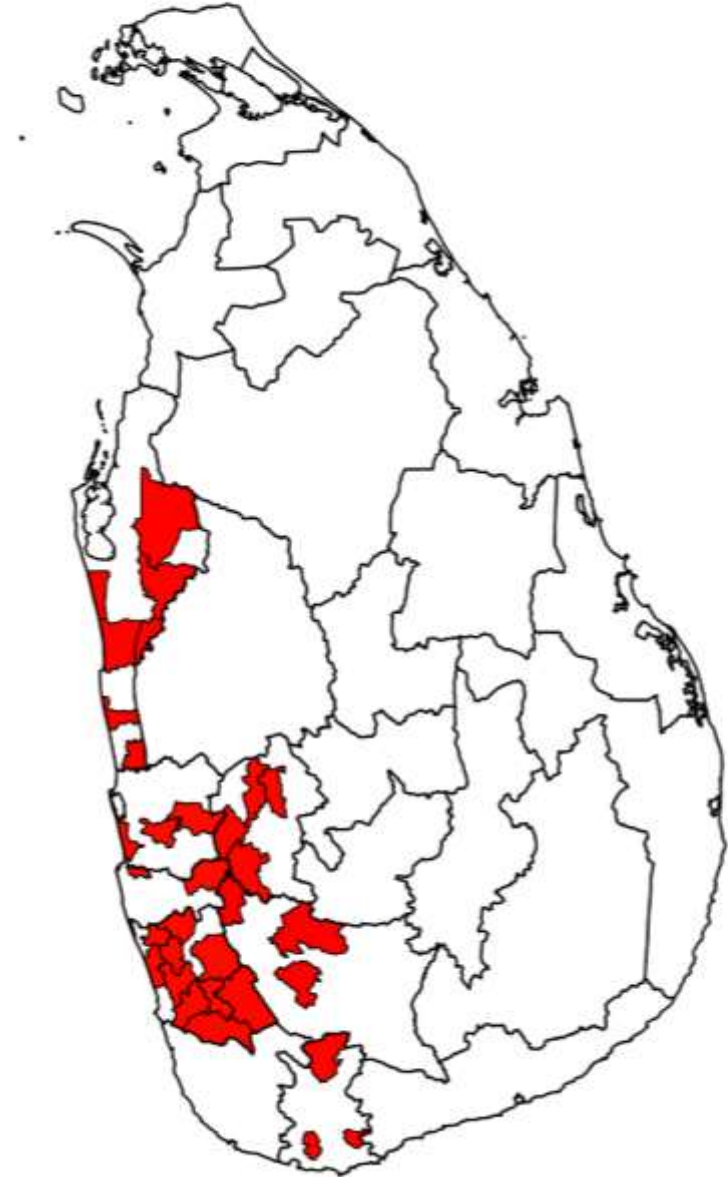


Map courtesy: Situation Report, Disaster Management Centre on 28 May 2018

Flood affected areas

- Reported on 20 and 21 May 2018
- Data was taken from the summary situation reports generated by the Disaster Management Centre

Flood affected DS divisions



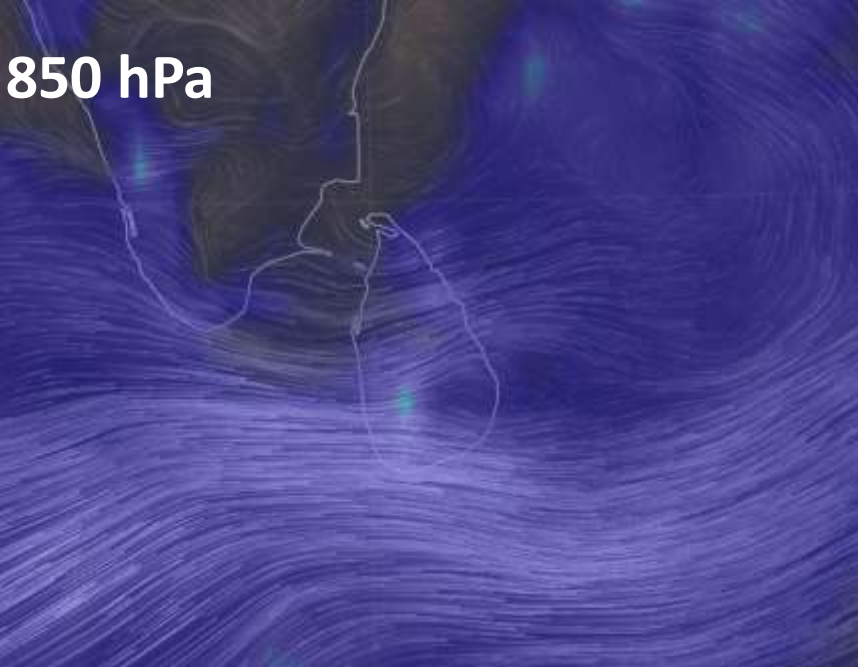
Damage and Losses

- As a result of these heavy rains,
 - 174,310 people (45,680 families) have been affected (the Disaster Situation Report National Disaster Relief Services Centre (NDRSC) at 1200 hours on 28th of May 2018).

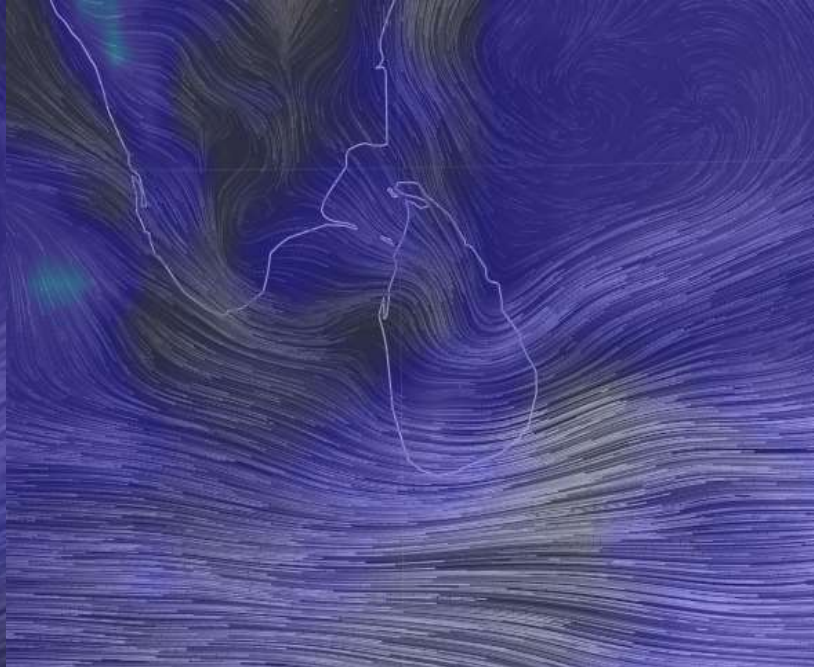


- People at flood risk areas were evacuated to safe locations. At present approximately 17,976 families were evacuated into 265 welfare centres due to flood and landslide risks in 09 Districts.

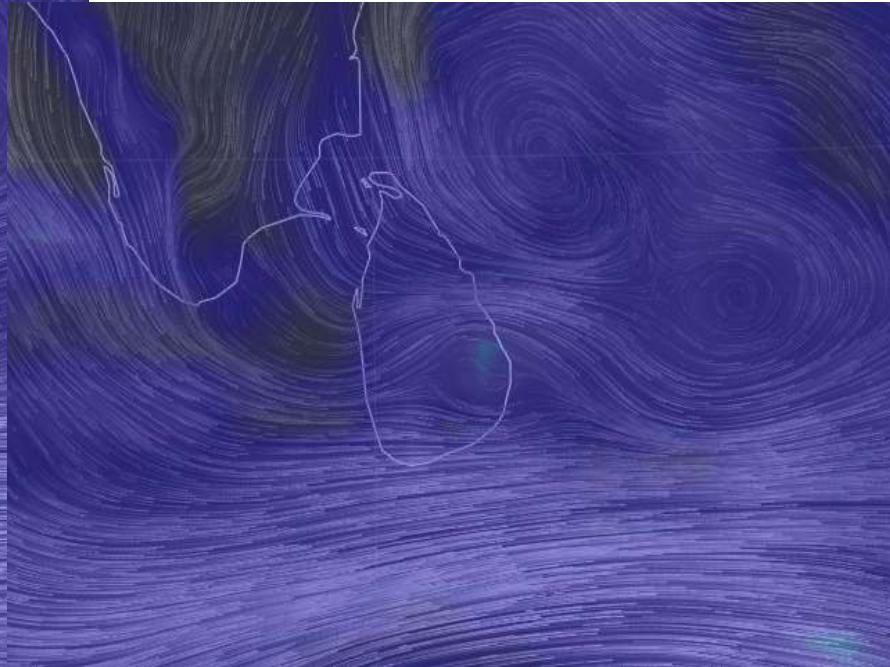
850 hPa



2018-05-20

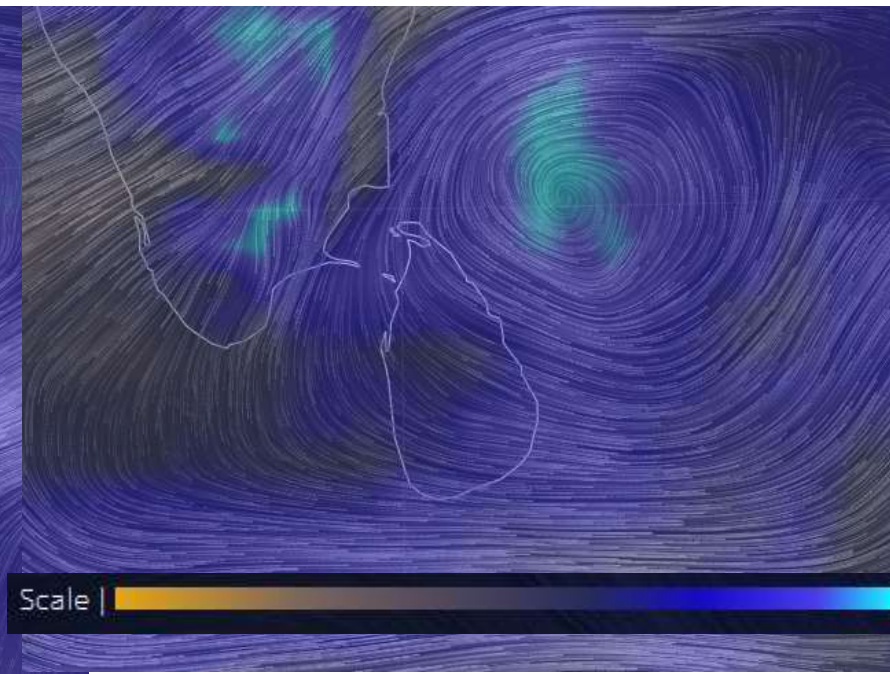
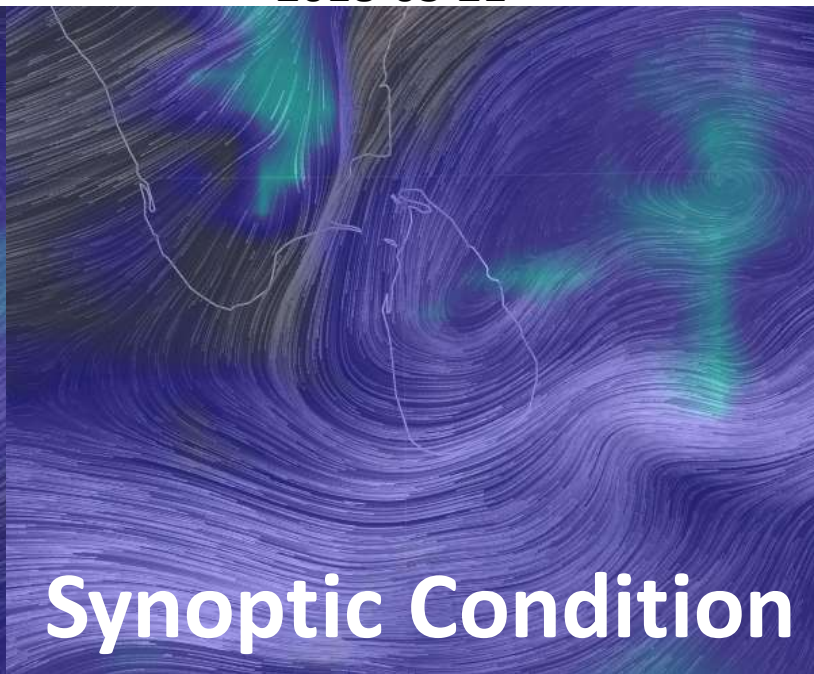
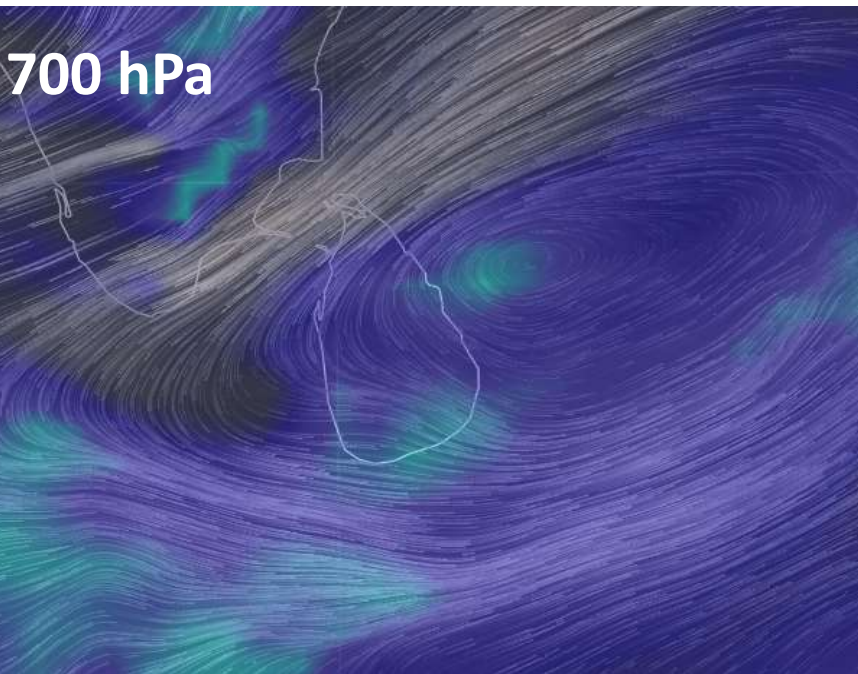


2018-05-21



2018-05-22

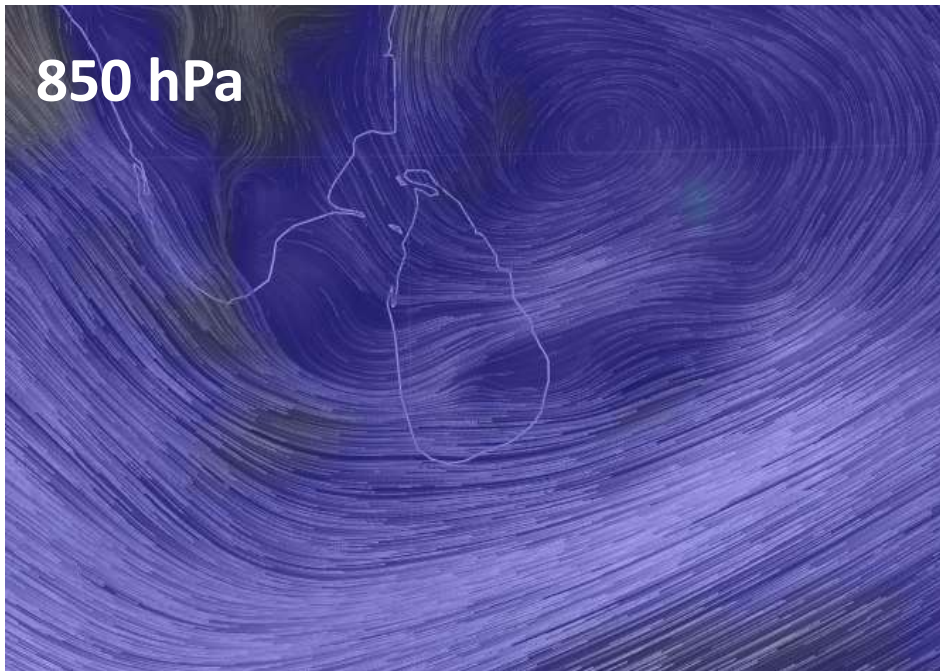
700 hPa



Synoptic Condition



850 hPa

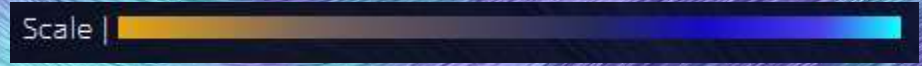
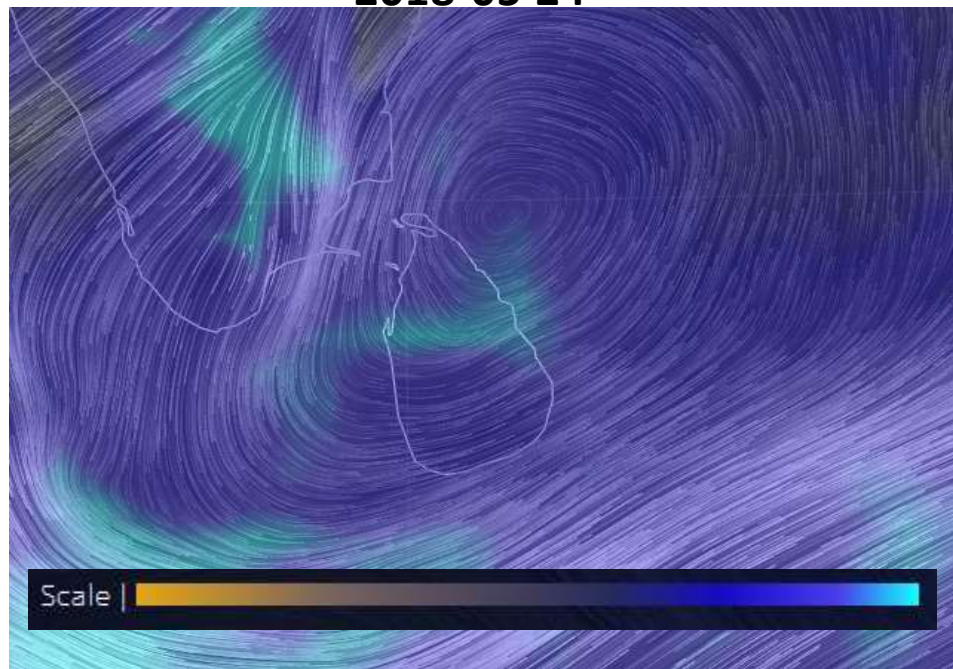
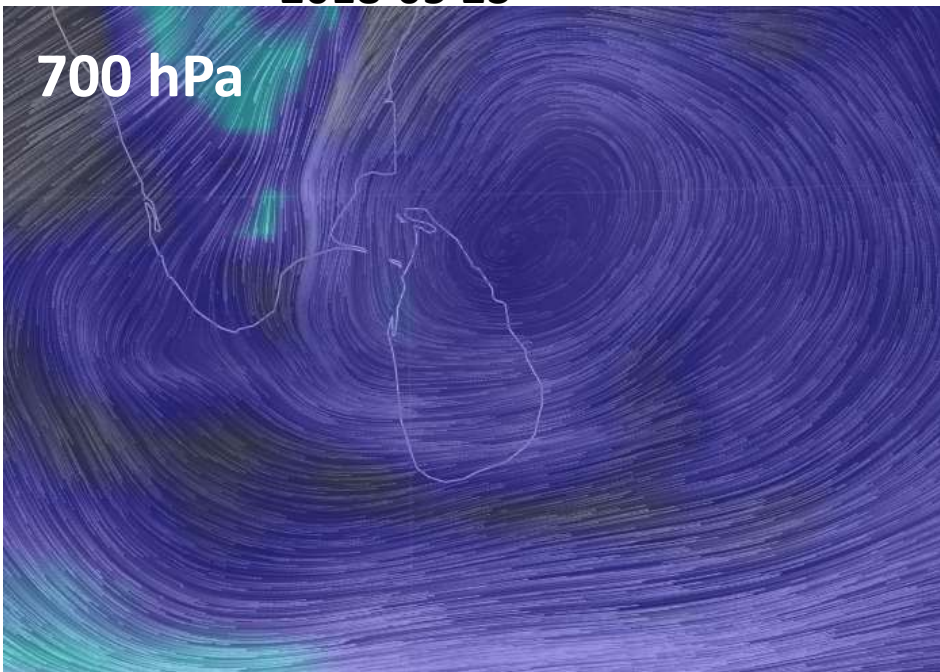


2018-05-23



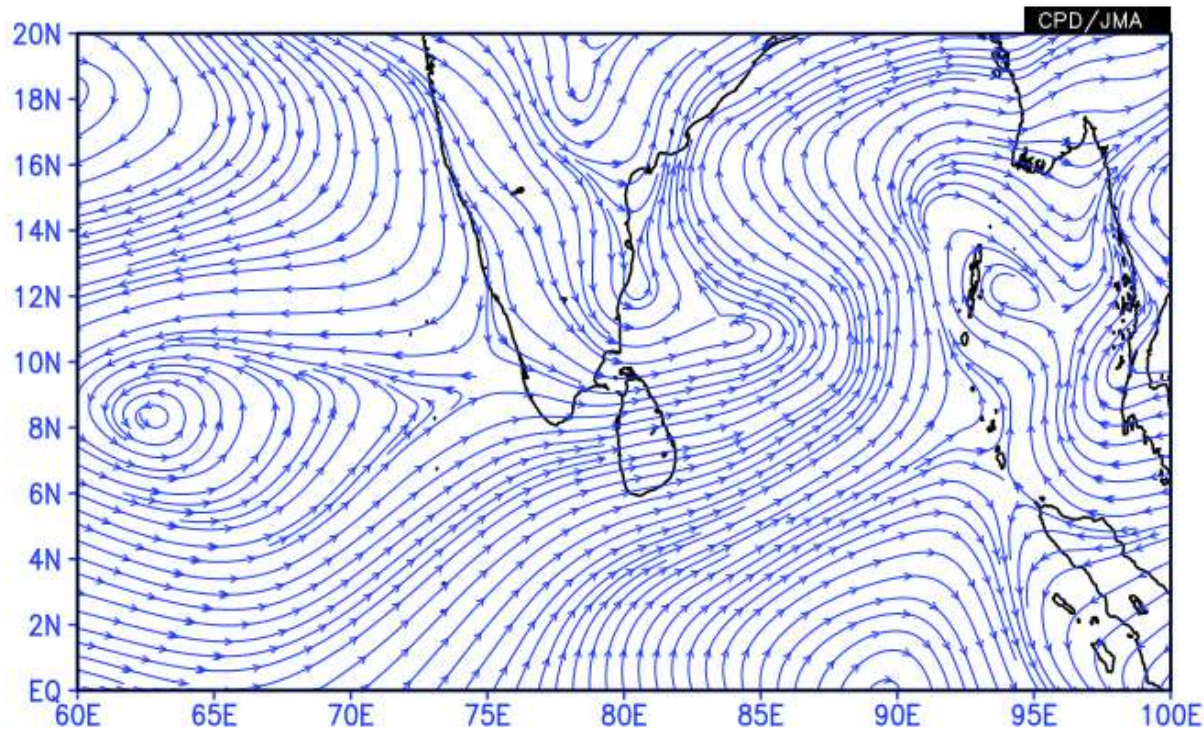
2018-05-24

700 hPa

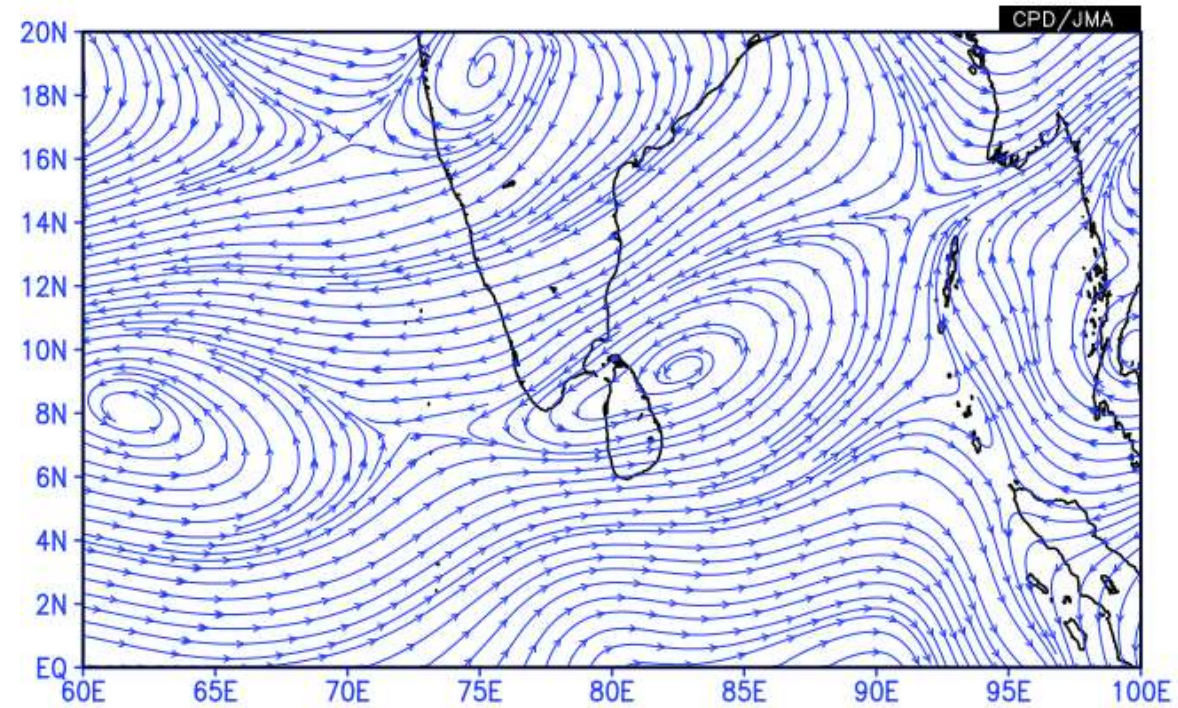


Synoptic condition

DATA1 JRA-55 u37,v37 HIST lat = 0:20 lon = 60:100 level = 7:7
time = 2018052000:2018052000 ave = 1DY



DATA1 JRA-55 u37,v37 HIST lat = 0:20 lon = 60:100 level = 12:12
time = 2018052000:2018052000 ave = 1DY

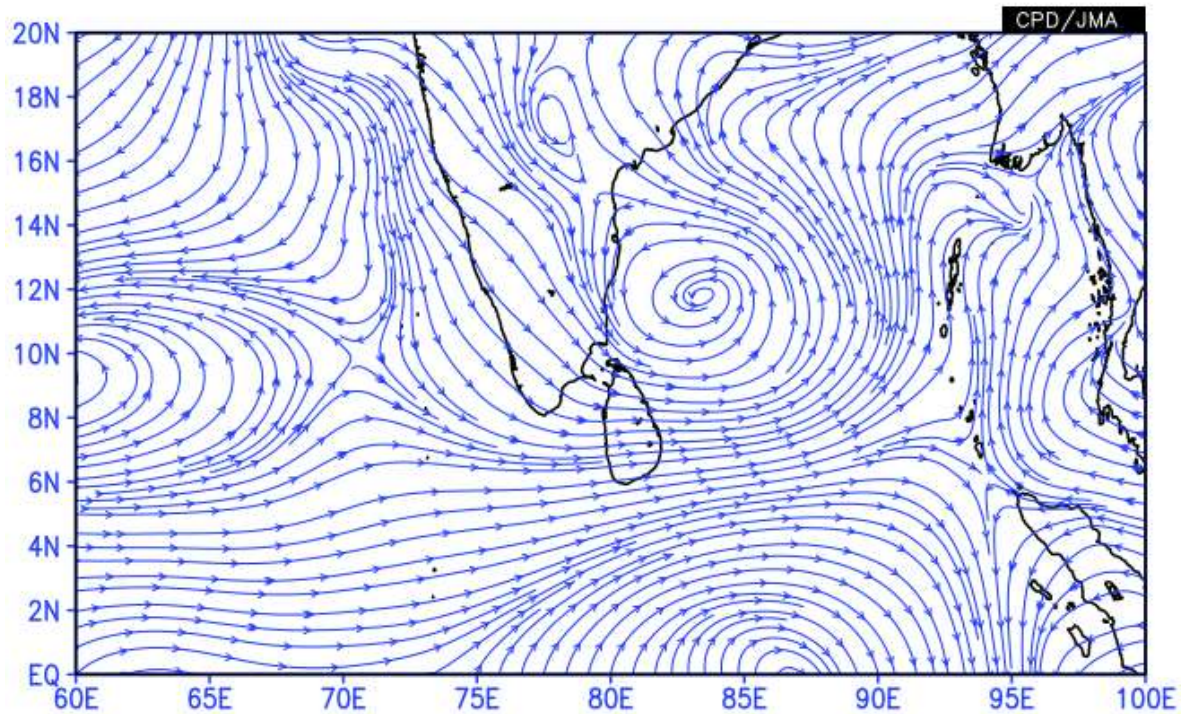


2018-05-20

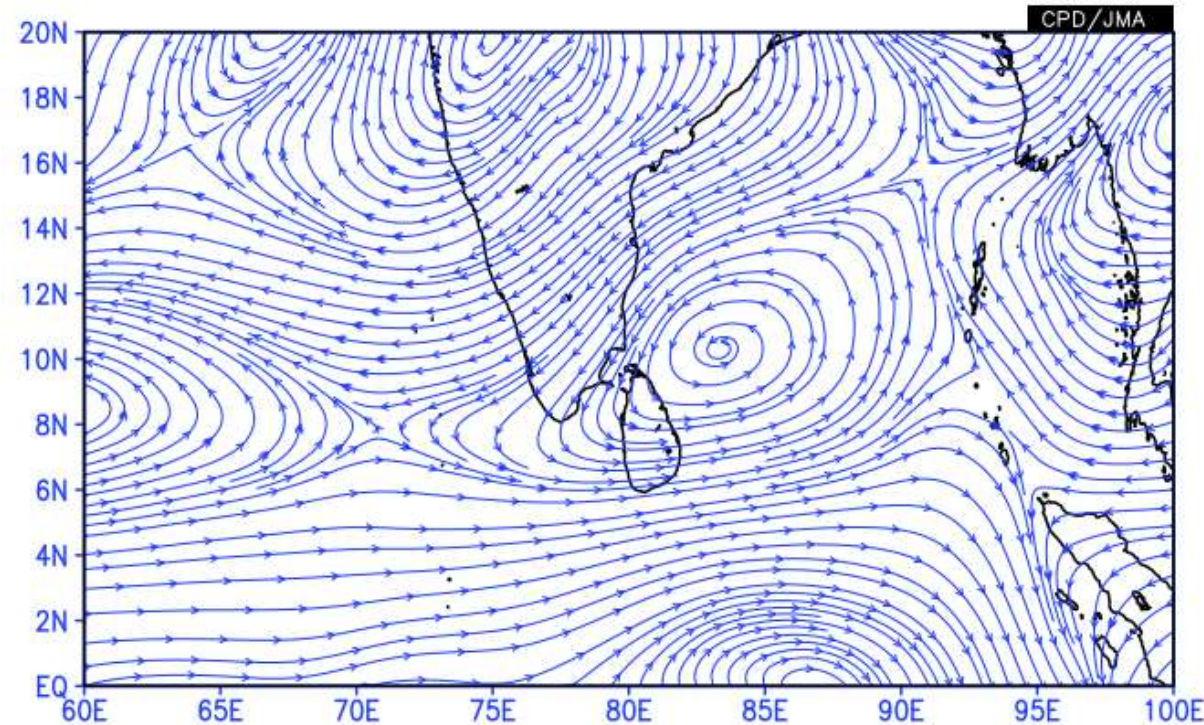
Analysis image courtesy: ITACS, JMA

Synoptic condition

DATA1 JRA-55 u37,v37 HIST lat = 0:20 lon = 60:100 level = 7:7
time = 2018052100:2018052100 ave = 1DY



DATA1 JRA-55 u37,v37 HIST lat = 0:20 lon = 60:100 level = 12:12
time = 2018052100:2018052100 ave = 1DY

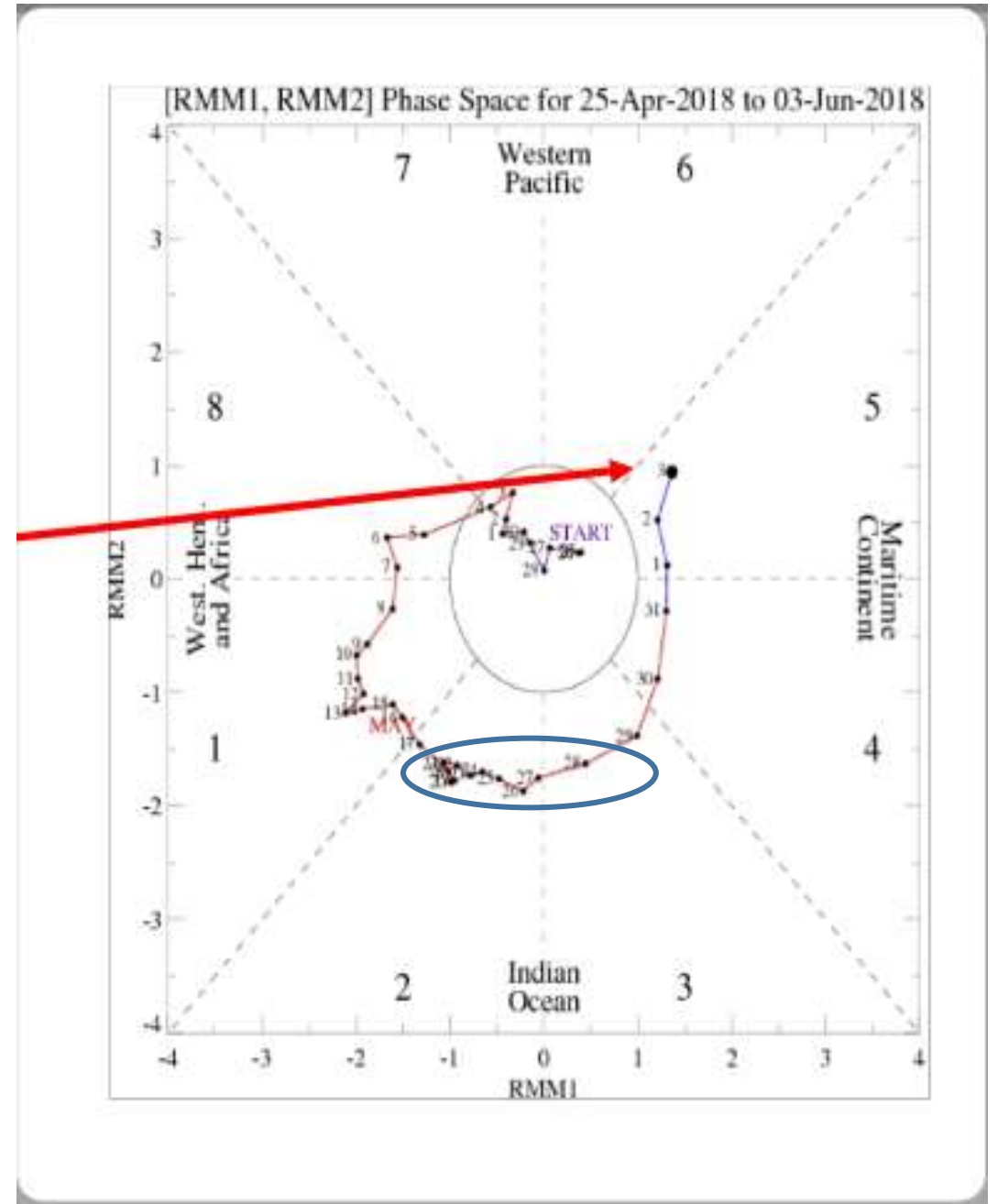


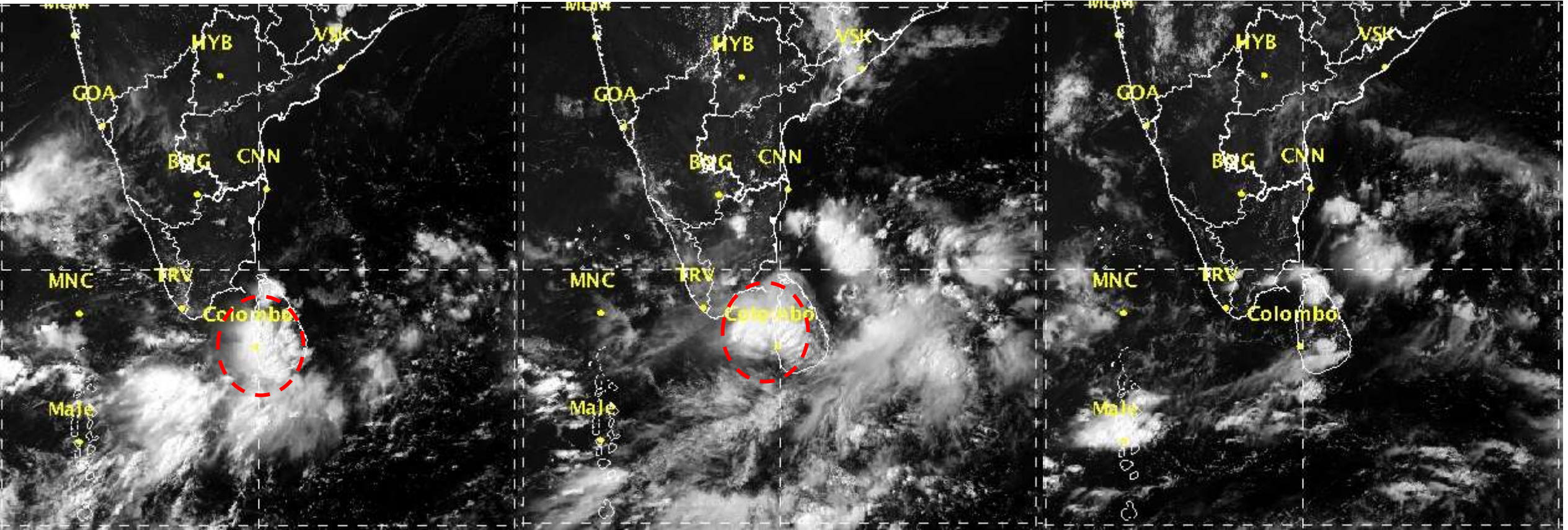
2018-05-21

Analysis image courtesy: ITACS, JMA

MJO

June 03, 2018



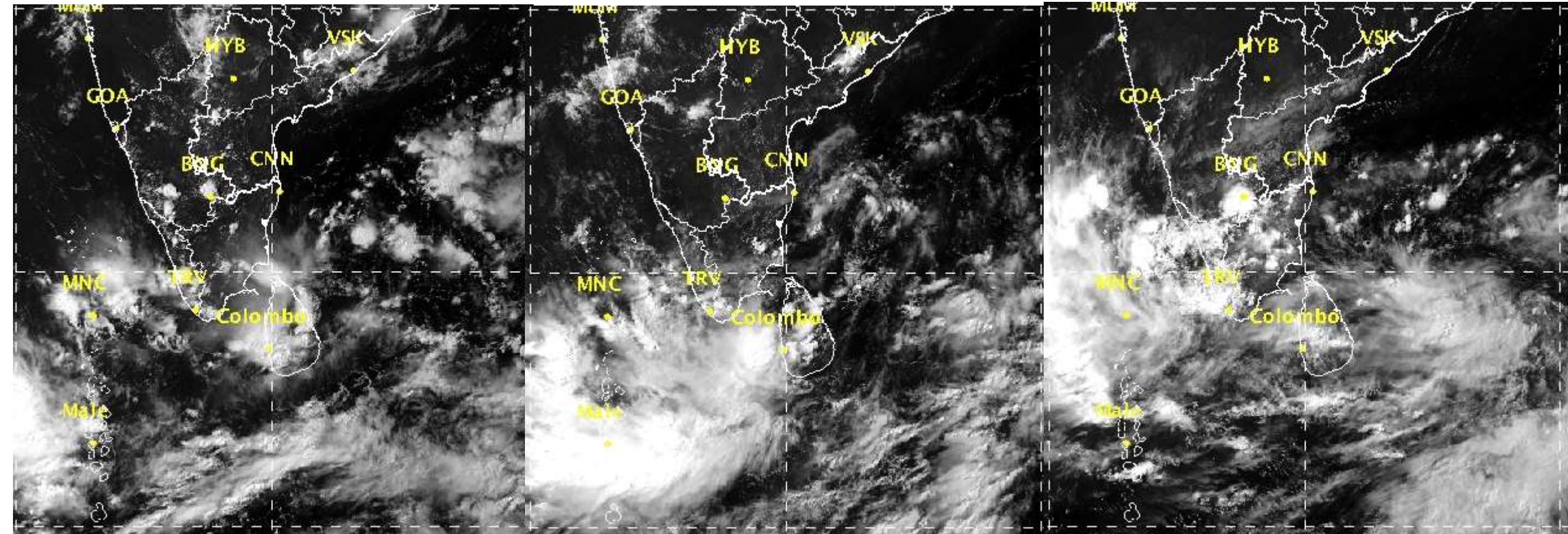


2018-05-20

2018-05-21

2018-05-22

Image courtesy: Indian Meteorological Department



2018-05-23

2018-05-24

2018-05-25

Image courtesy: Indian Meteorological Department

Summary of synoptic conditions

- High moisture content in the atmosphere.
- Low level disturbances in the vicinity of Sri Lanka.
- Converging winds over the western part of Sri Lanka.
- Presence of MJO with a strong signal in the phase 2 of Indian ocean.

(Classic example of a slow moving system)



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வளிமண்டலவியல் திணைக்களம்
Department of Meteorology

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COLOR: Amber

WW/OL/18/05/19/01

Heavy Rain Advisory

Issued by the Natural Hazards Early Warning Centre
At 11.30 p.m. 19 May 2018 for the period until 11.30 p.m. 20 May 2018

For Western, North-western, Sabaragamuwa, Uva, Central provinces and Galle and Mathara districts

PLEASE BE AWARE

Heavy falls above 100 mm can be expected at some places in above mentioned areas.

There may be temporary localized strong winds during thundershowers. General public is kindly requested to take adequate precautions to minimize damages caused by lightning activity.

SITUATION AT 11.30 p.m.

A active cloudiness has developed over Western, North-western and Sabaragamuwa provinces of Sri Lanka.

FORECAST

The active cloudiness is likely to persist during next few hours.

Western and South-western Sea areas to the island

PL-----

Warning issued at 2330LT on 19 May 2018

The possibility for sudden roughness, associated with sudden increase of wind speed (up to 70-80 kmph) in the sea areas in the above sea area is high.

Navel and fishing communities are also requested to be vigilant in this regards.

Rainfall amount (mm): Fairly Heavy rain: 50 -100, Heavy rain: 100 – 150, Very heavy rain: 150 or more.

State of Sea: Clam: (0-5) Kmph Smooth: (05-15) kmph, Slight: (16-28) kmph, Moderate: (29-37) kmph, Fairly rough: (28-46) kmph, Rough: (47-55) kmph, Very rough: (56-74) kmph, High: (75-102) kmph, Very high: above 103kmph



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Bulletin No: 02
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WW/OL/18/05/20/02

Heavy Rain and lightning Advisory

Issued by the Natural Hazards Early Warning Centre
At 01.00 p.m. 20 May 2018 for the period until 09.00 a.m. 21 May 2018

For Western, Sabaragamuwa, Uva, Central provinces and Galle, Matara and Puttalam districts

PLEASE BE AWARE

Very heavy falls about 150mm can be expected at some places in Sabaragamuwa and Western province and in Galle and Matara districts. Heavy falls above 100 mm can be expected at some places in other above mentioned areas.

There may be temporary localized strong winds during thundershowers. General public is kindly requested to take adequate precautions to minimize damages caused by lightning activity.

SITUATION AT 01.00 p.m.

Showers or thundershowers are occurring in the Western and Sabaragamuwa provinces. Fairly heavy Showers or thundershowers have recorded from Galle district. Moderate showers or thundershowers have recorded from Rathnapura district.

FORECAST

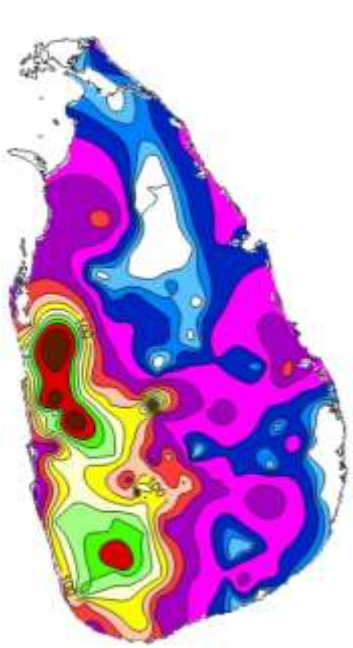
Showery condition can be expected to enhance further in next few hours.

Warning issued at 1300LT on 20 May 2018

Rainfall amount (mm): Fairly Heavy rain: 50 -100, Heavy rain: 100 – 150, Very heavy rain: 150 or more.

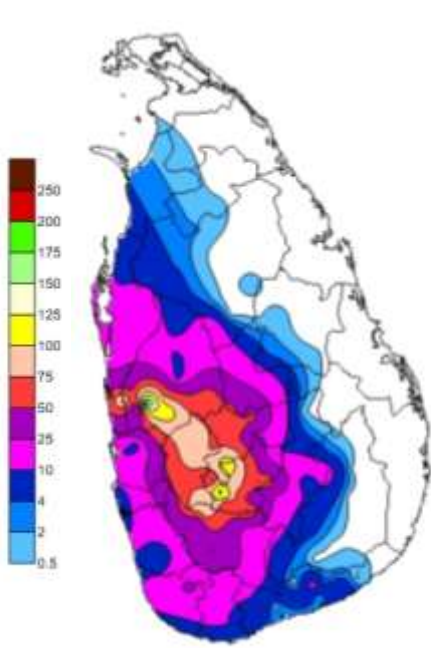
State of Sea: Clam: (0-5) Kmph Smooth: (05-15) kmph, Slight: (16-28) kmph, Moderate: (29-37) kmph, Fairly rough: (28-46) kmph, Rough: (47-55) kmph, Very rough: (56-74) kmph, High: (75-102) kmph, Very high: above 103kmph

Rainfall received during 20-24 May 2018



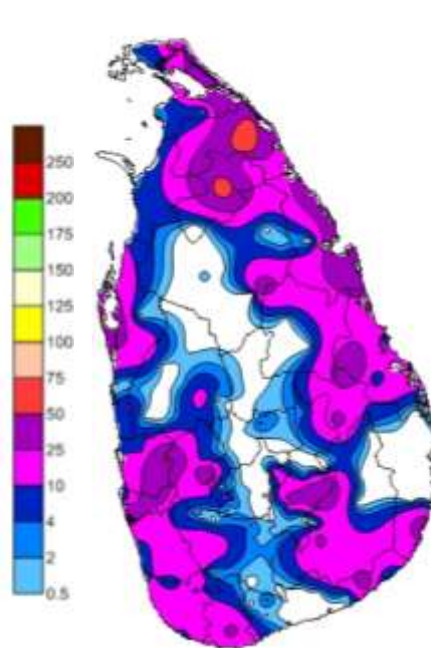
**Anamaduwa
(Puttalam)
353.8 mm**

2018-05-20



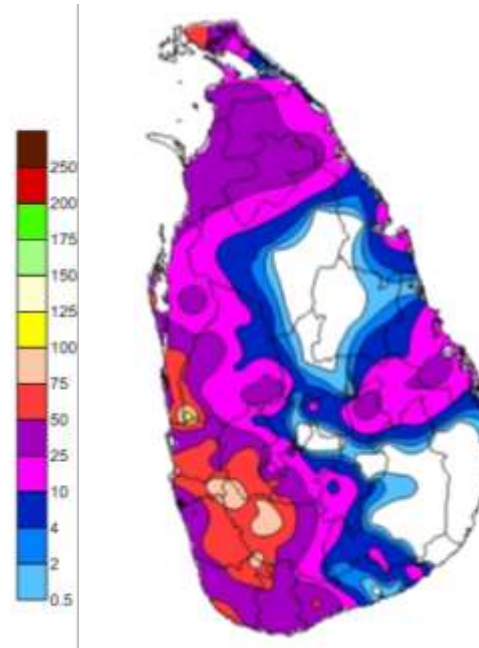
**Kuliyapitiya
(Kurunegala)
194.8 mm**

2018-05-21



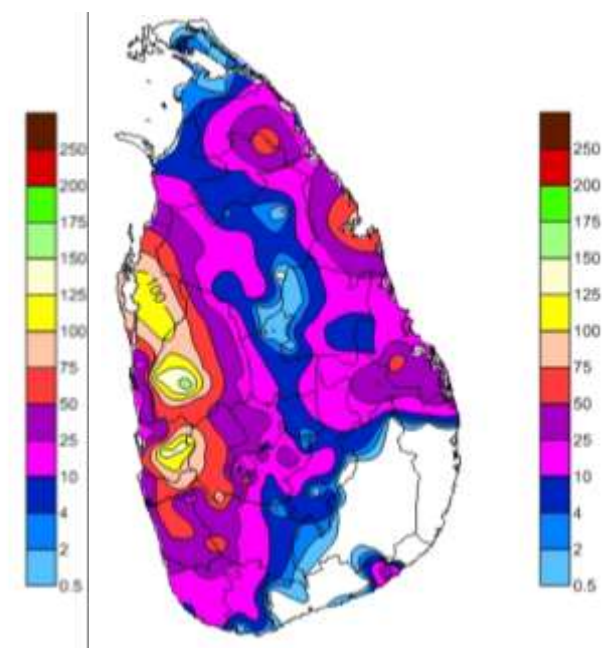
**Oddusudan
(Mullativu)
72.7 mm**

2018-05-22



**Mellawa
(Puttalam)
122.7 mm**

2018-05-23

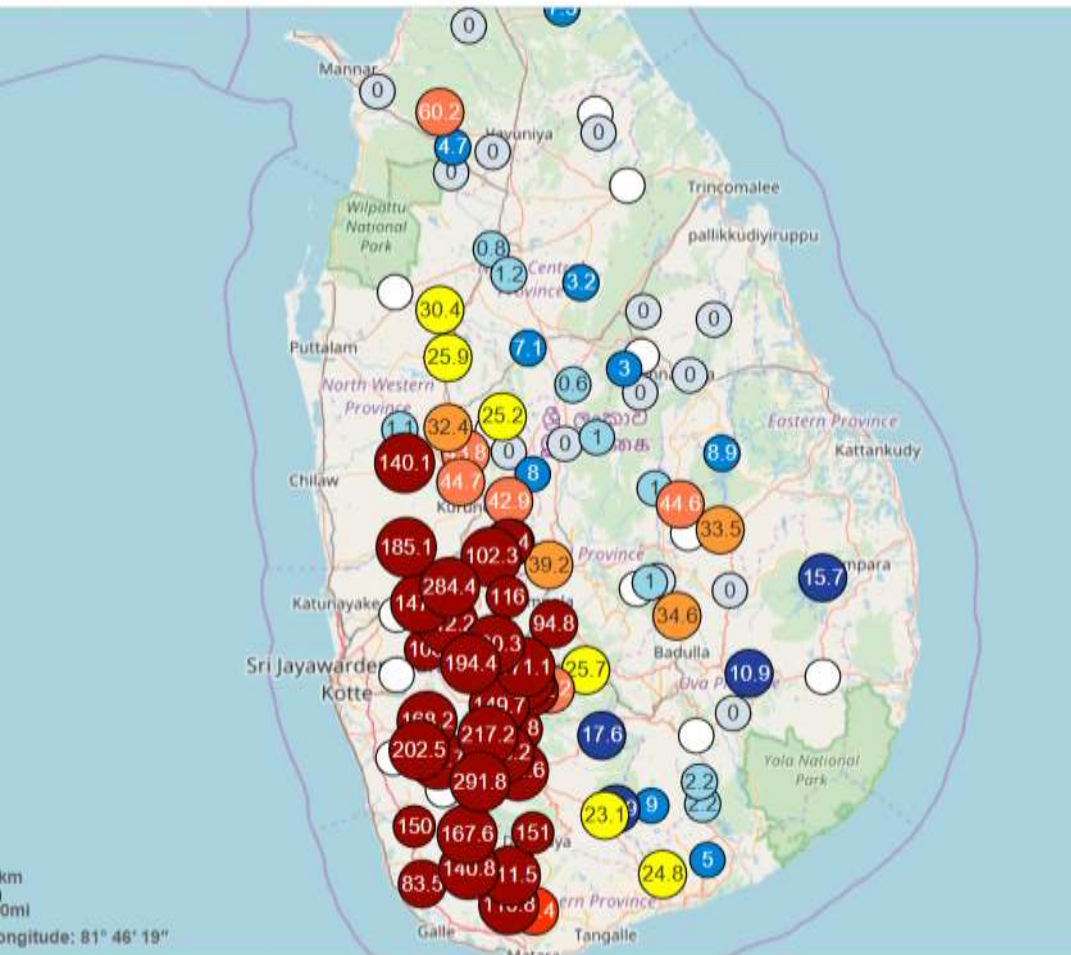


**Hindawa
(Ratnapura)
169.0 mm**

2018-05-24

Parameter: Precipitation Increment Select Value: Total Rain Select Interval: Daily

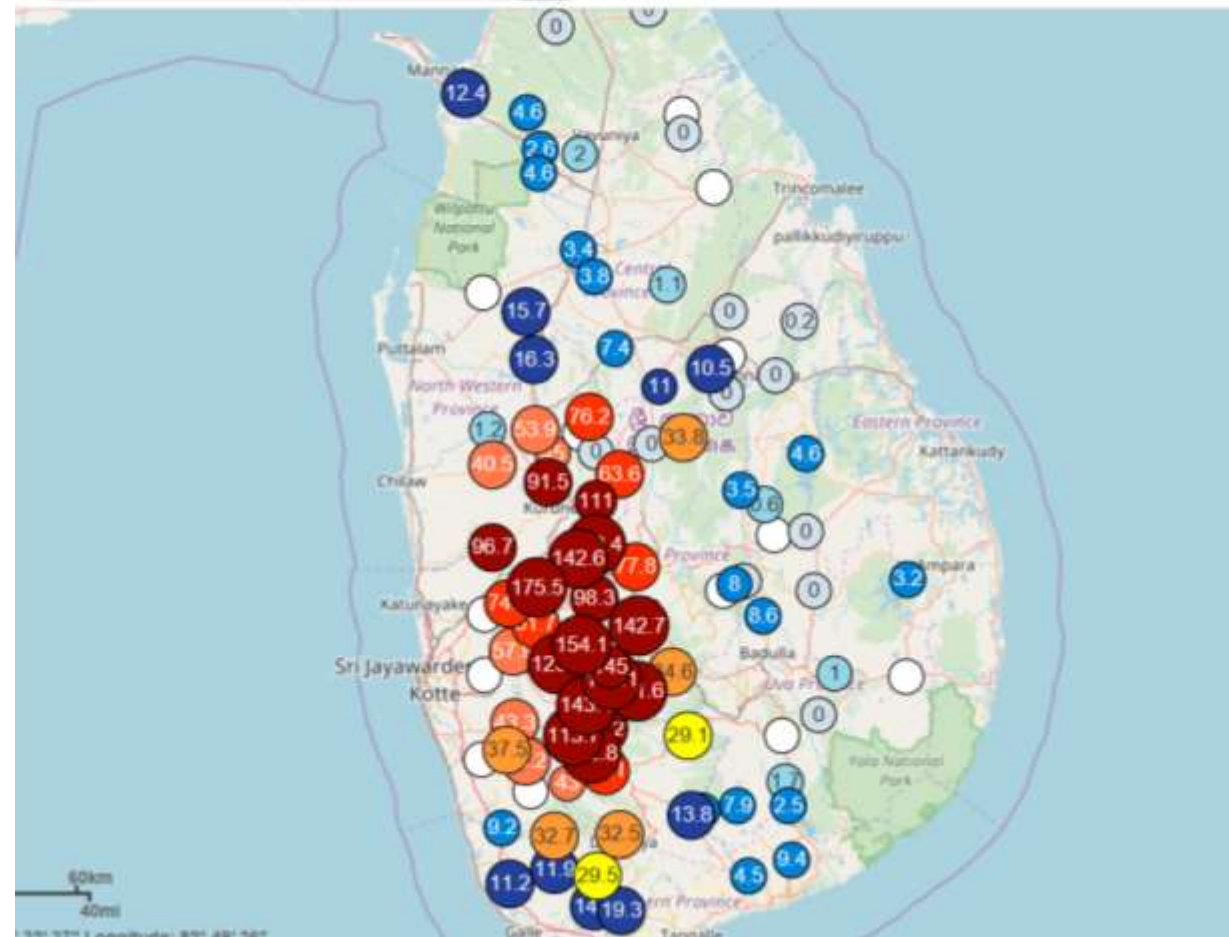
Date: 2018-05-20



2018-05-20

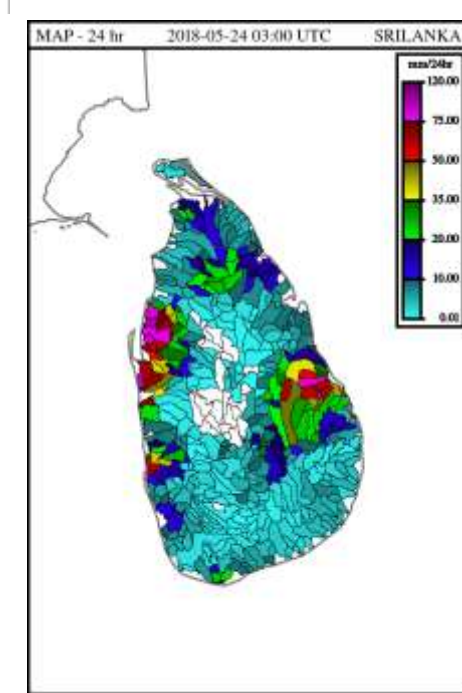
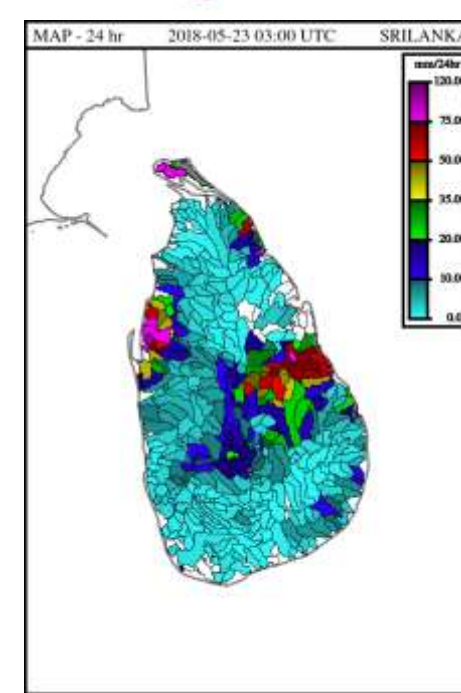
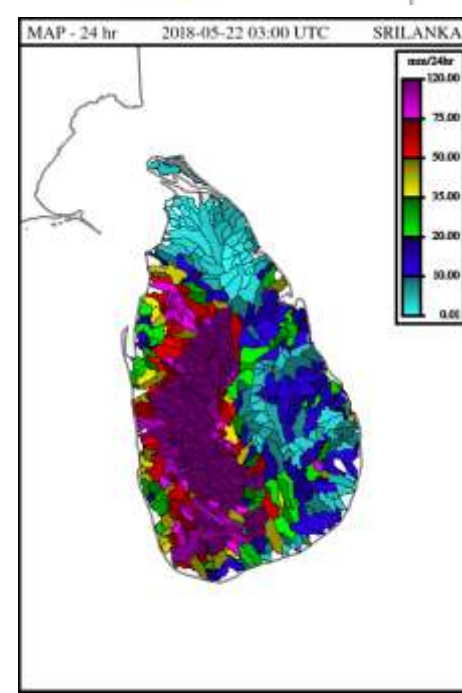
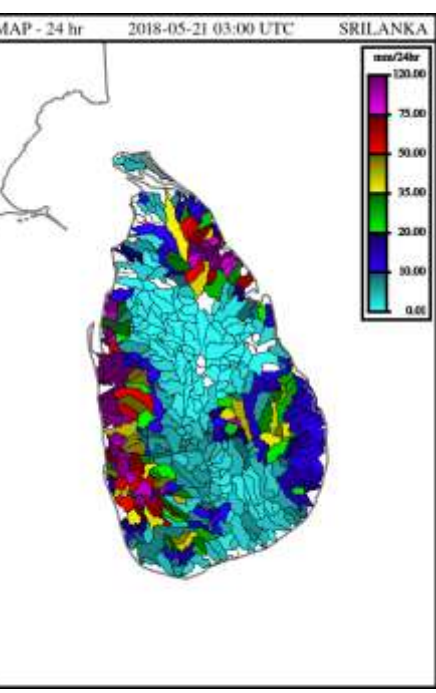
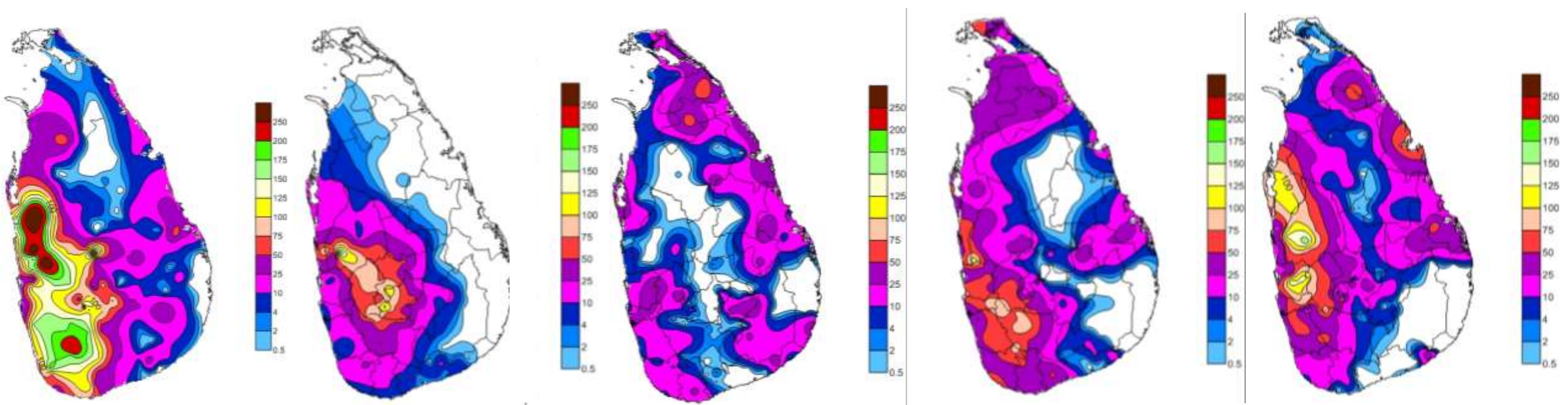
Parameter: Precipitation Increment Select Value: Total Rain Select Interval: Daily

Date: 2018-05-21



2018-05-21

Source: Irrigation Department



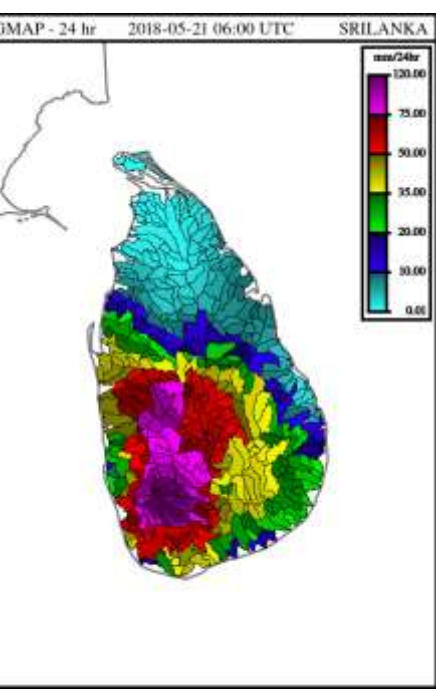
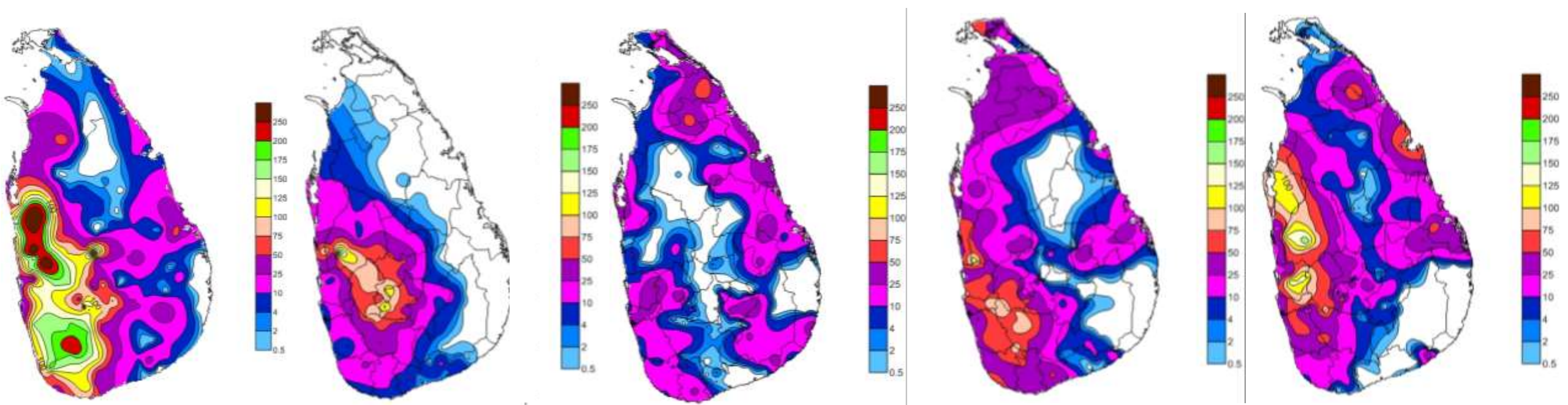
2018-05-20

2018-05-21

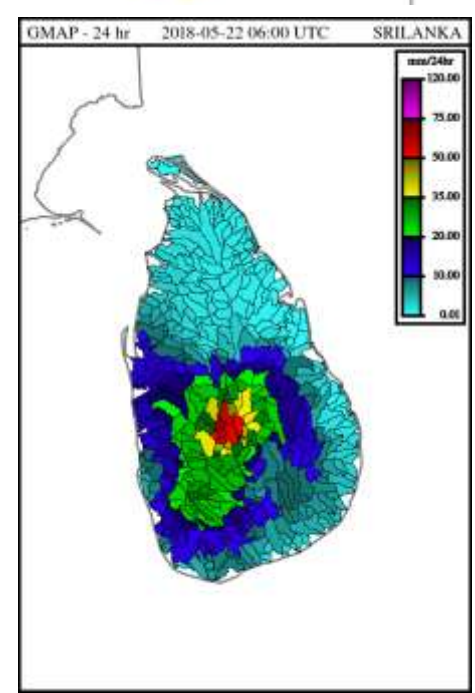
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2018-05-23

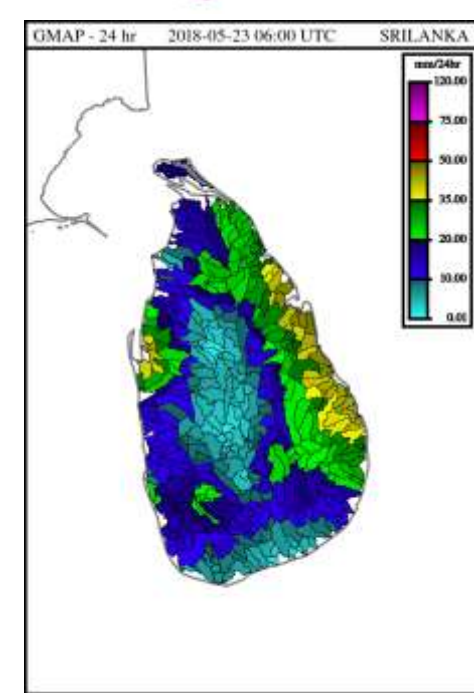
2018-05-24



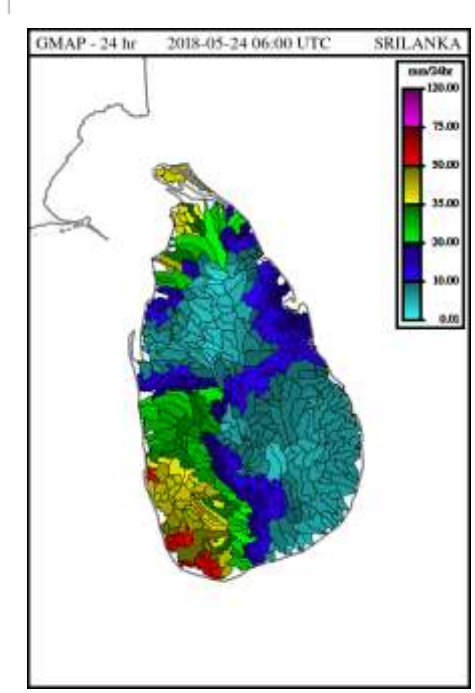
2018-05-20



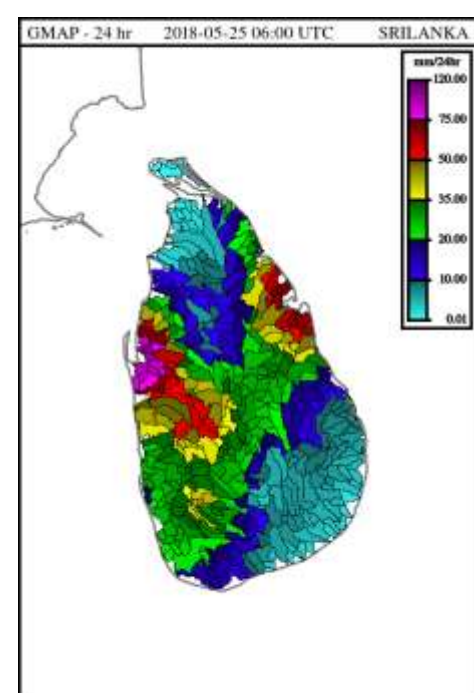
2018-05-21



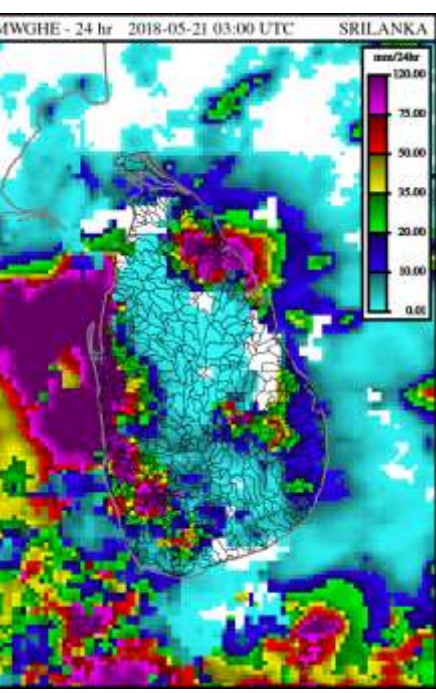
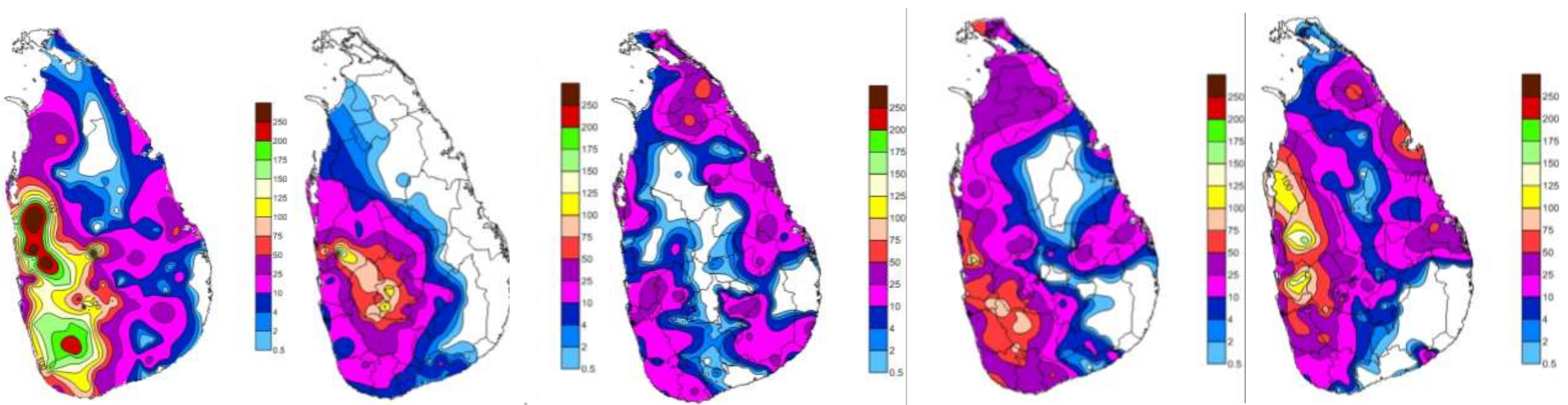
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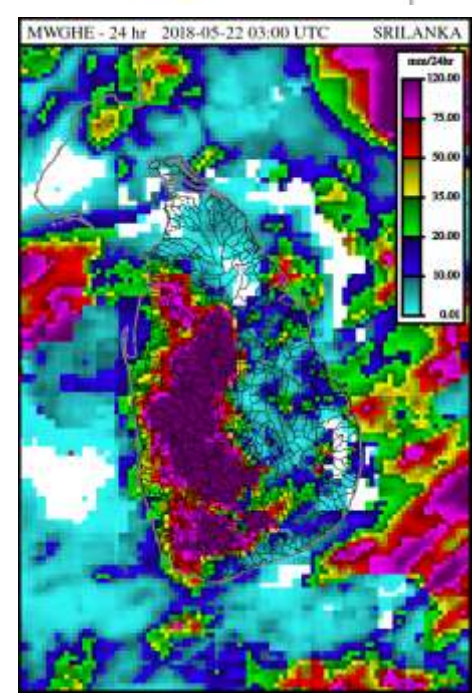
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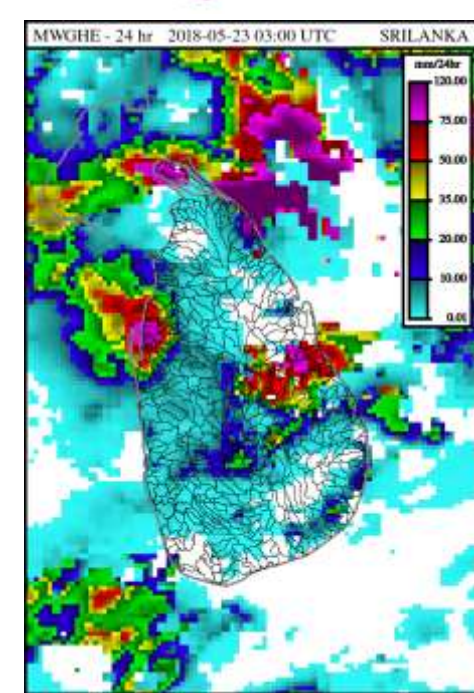
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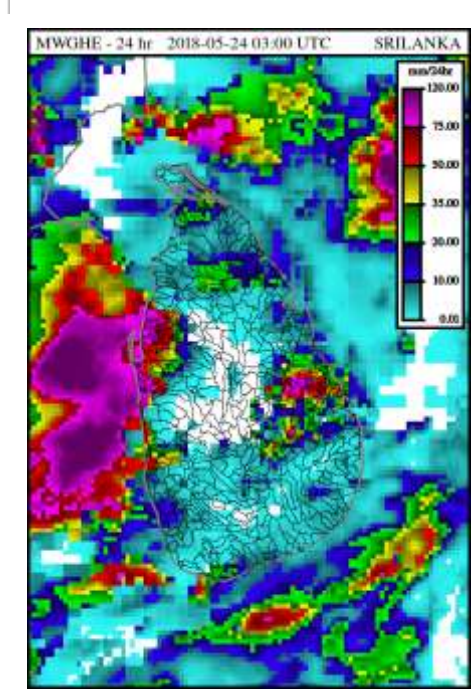
2018-05-20



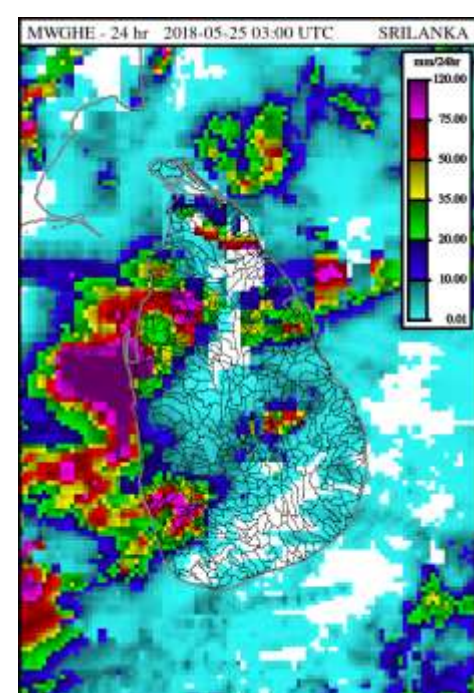
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2018-05-22

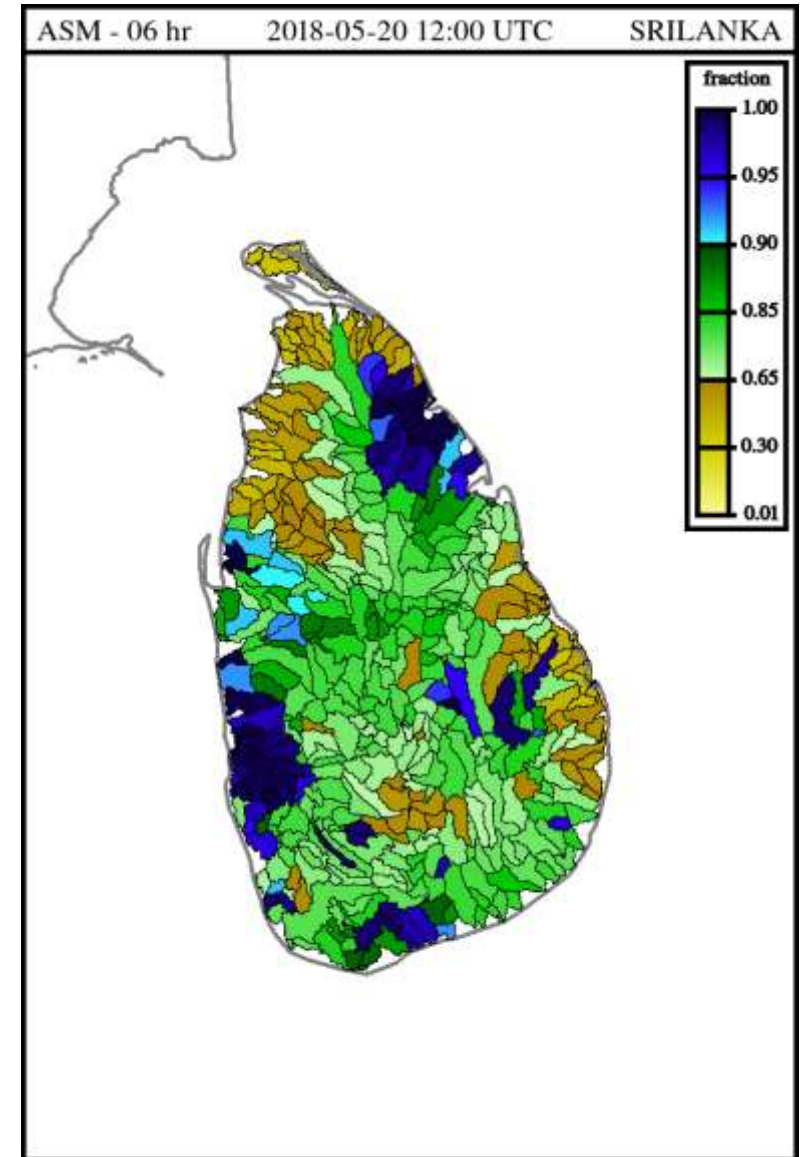
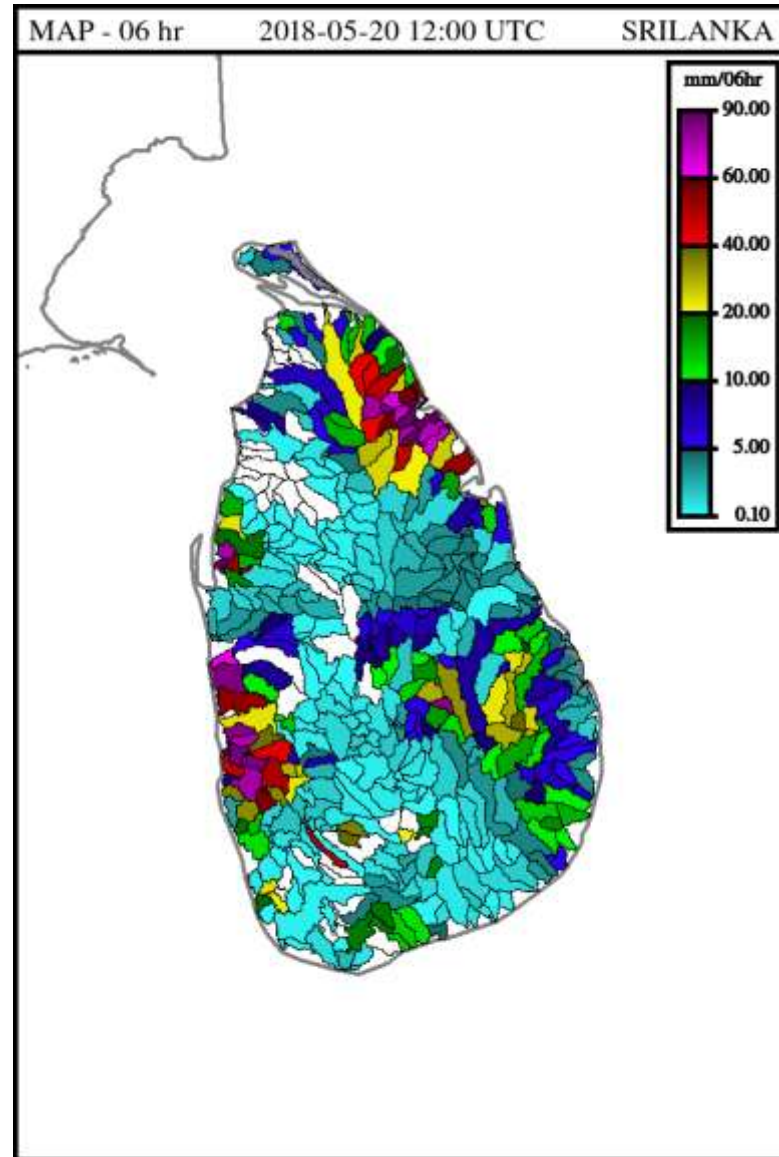
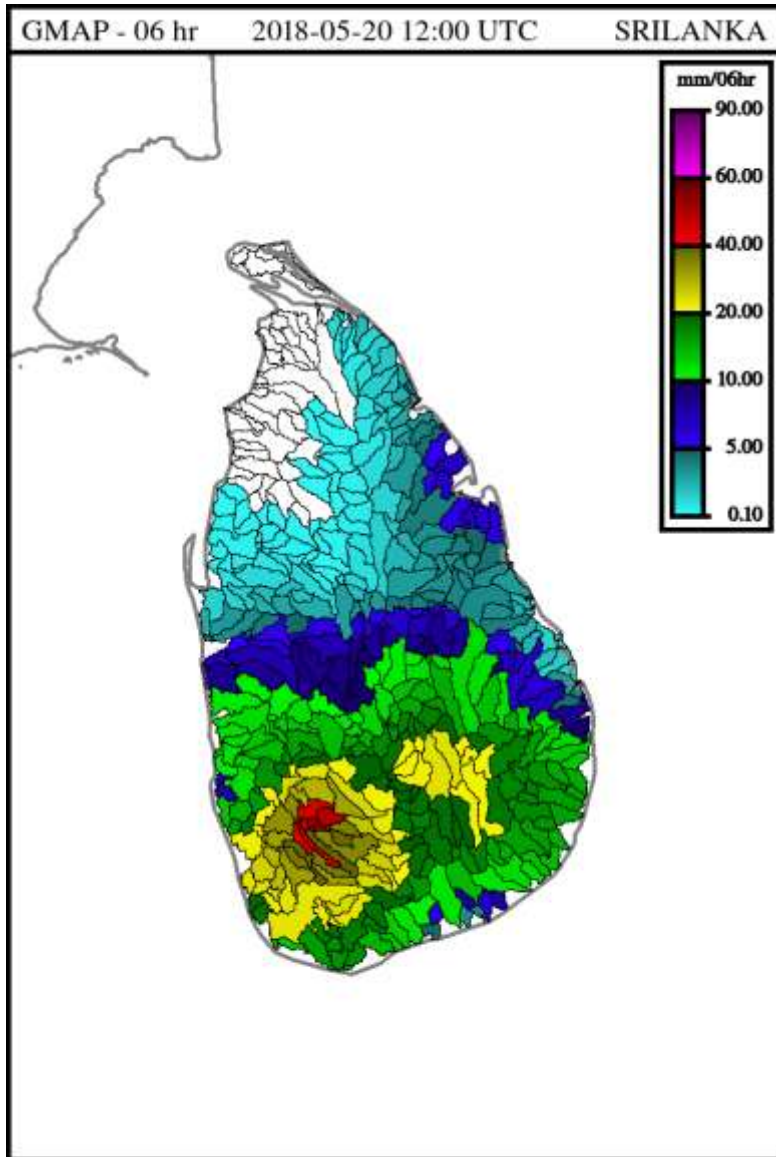


2018-05-23

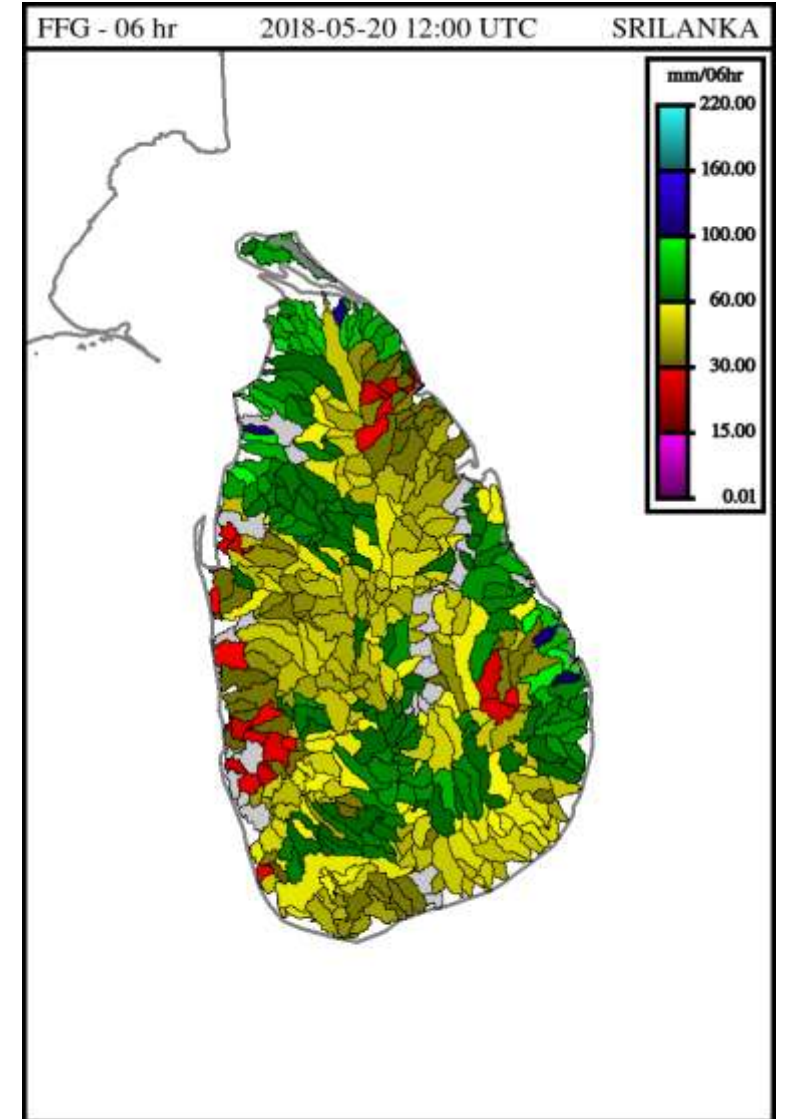
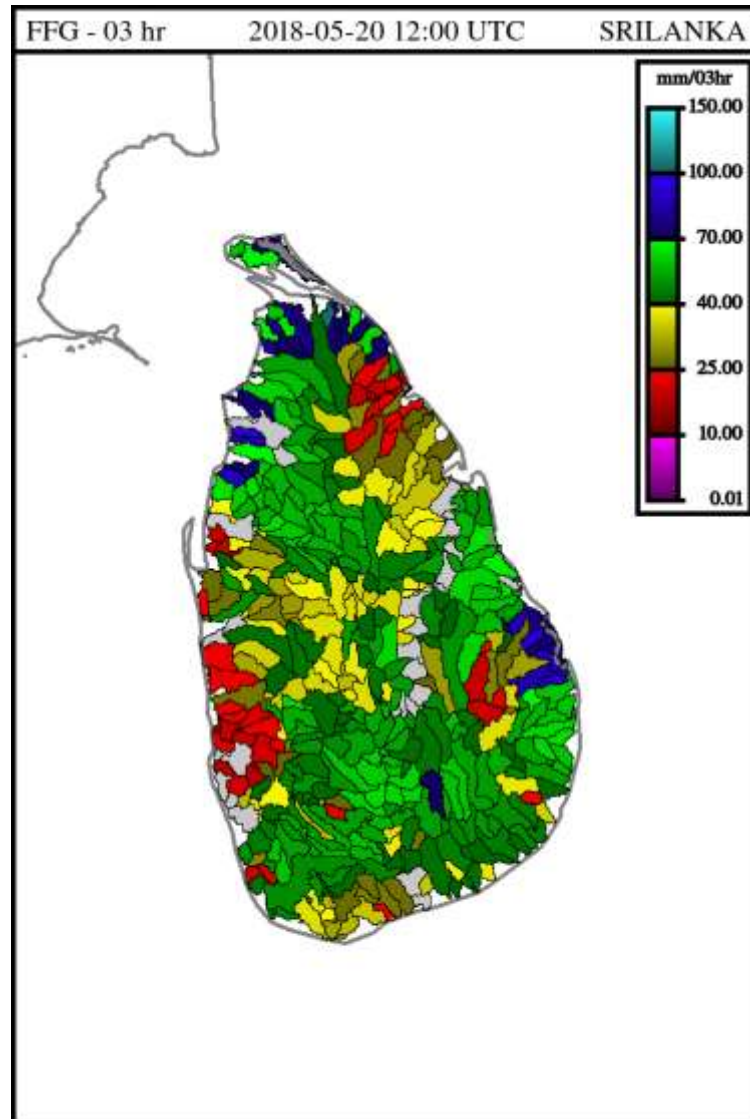
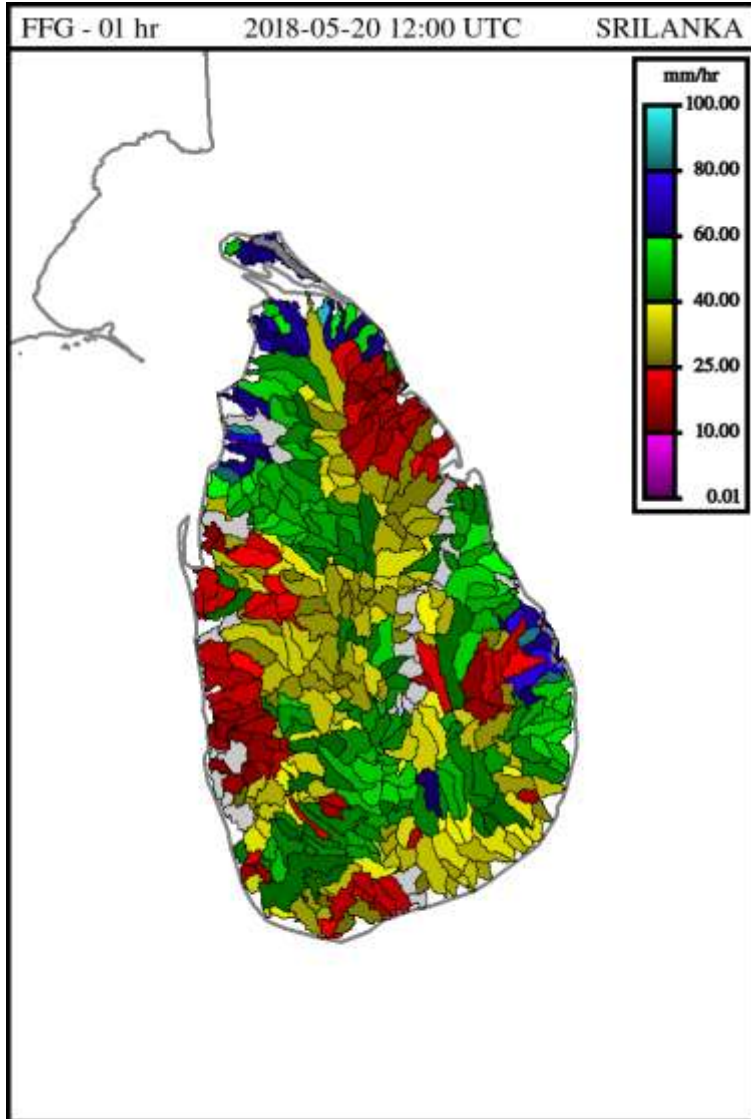


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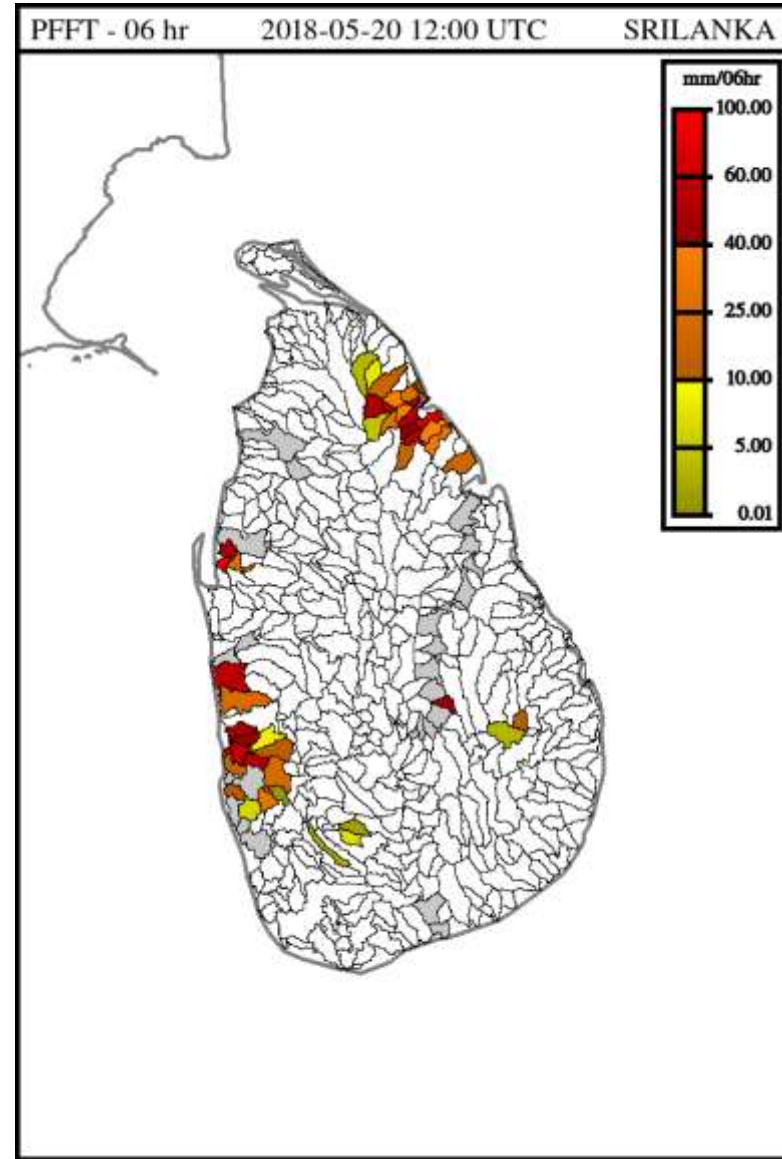
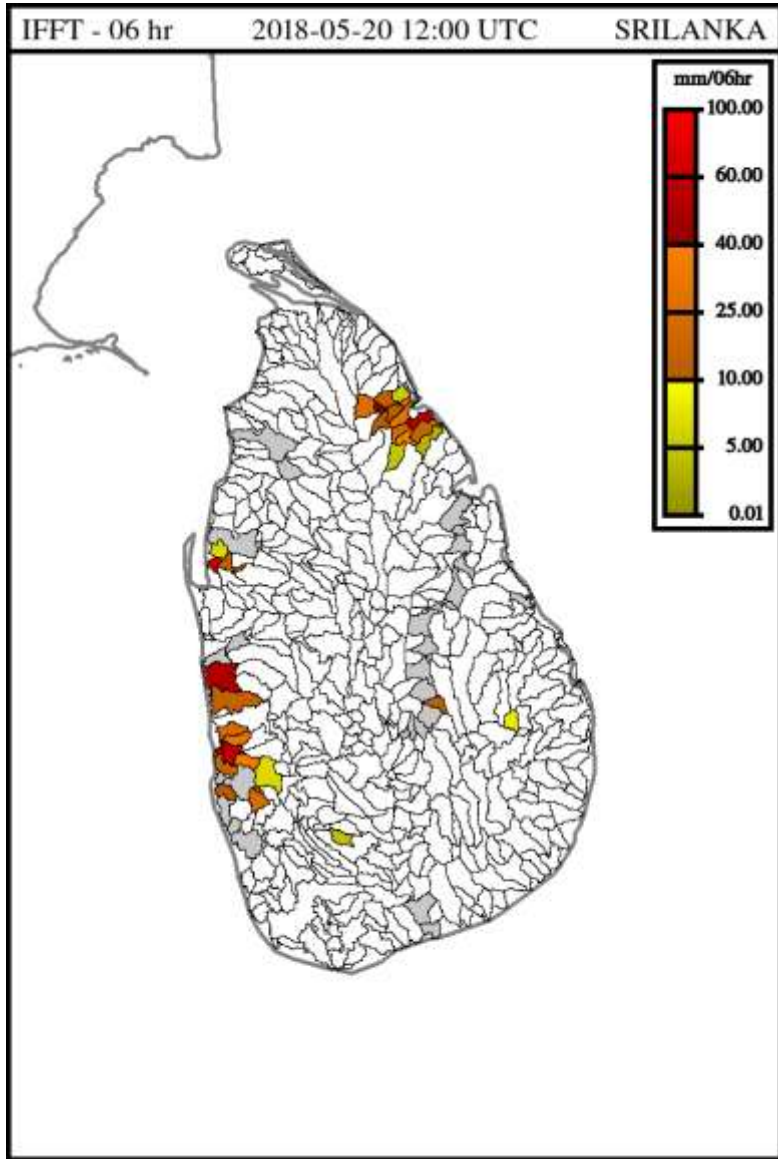
Situation on 20 May 2018 at 1200UTC (1730LT)



Situation on 20 May 2018 at 1200UTC (1730LT)



Situation on 20 May 2018 at 1200UTC (1730LT)



Updated Warning issued at 2200LT on 20 May 2018



කාලගුණ විද්‍යා දෙපාර්තමේන්තුව
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Bulletin No: 03
COLOR: Amber

WW/L/18/05/20/03

Heavy Rain and lightning Advisory

Issued by the Natural Hazards Early Warning Centre
At 10.00 p.m. 20 May 2018 for the period until 10.00 a.m. 21 May 2018

For Western, Sabaragamuwa, Uva, Central, North-western provinces and Galle and Matara districts

PLEASE BE AWARE

Heavy showers are expected during next 12 hours at some places in Sabaragamuwa, Central, Western and Northwestern provinces and in Galle and Matara districts.

Fairly strong gusty winds up to 40-45 kmph are also likely.

There may be temporary localized strong winds during thundershowers. General public is kindly requested to take adequate precautions to minimize damages caused by lightning activity.

SITUATION AT 09.30 p.m.

Showers or thundershowers are occurring in the South western part of the island and in North-Western province.

Following rainfalls were recorded from 08.30a.m. to 09.30 p.m.

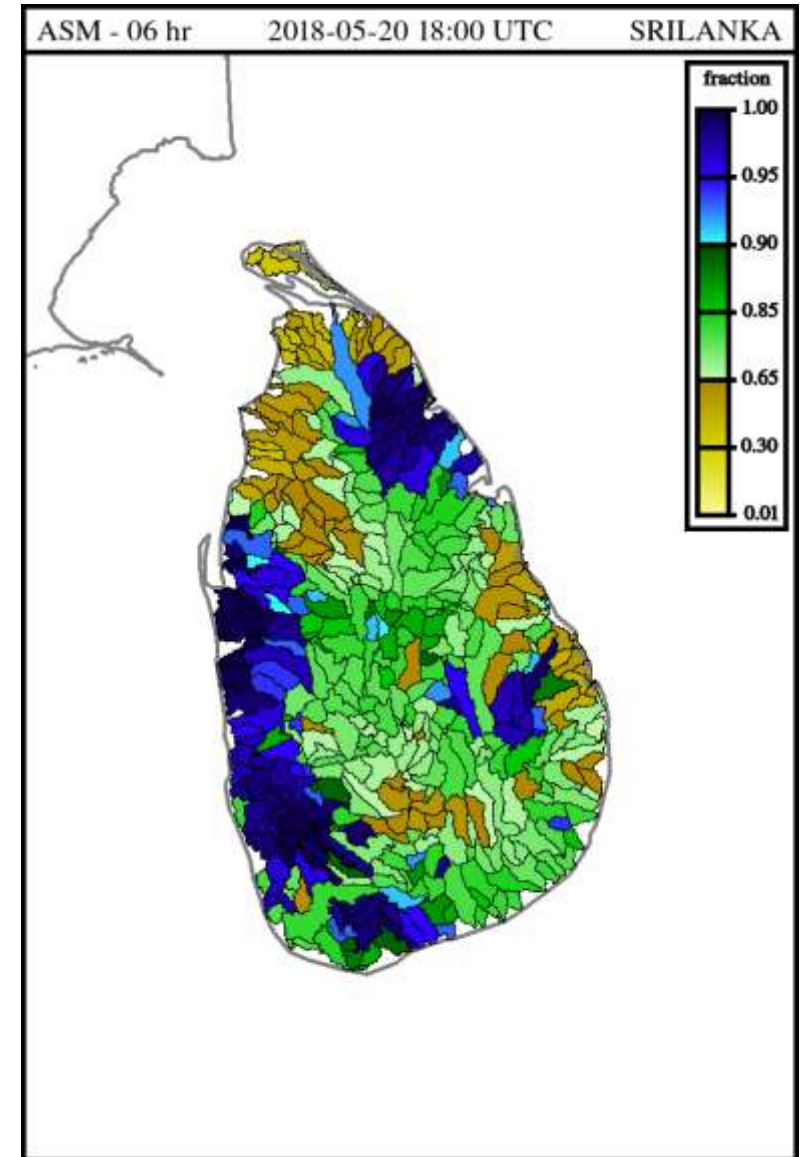
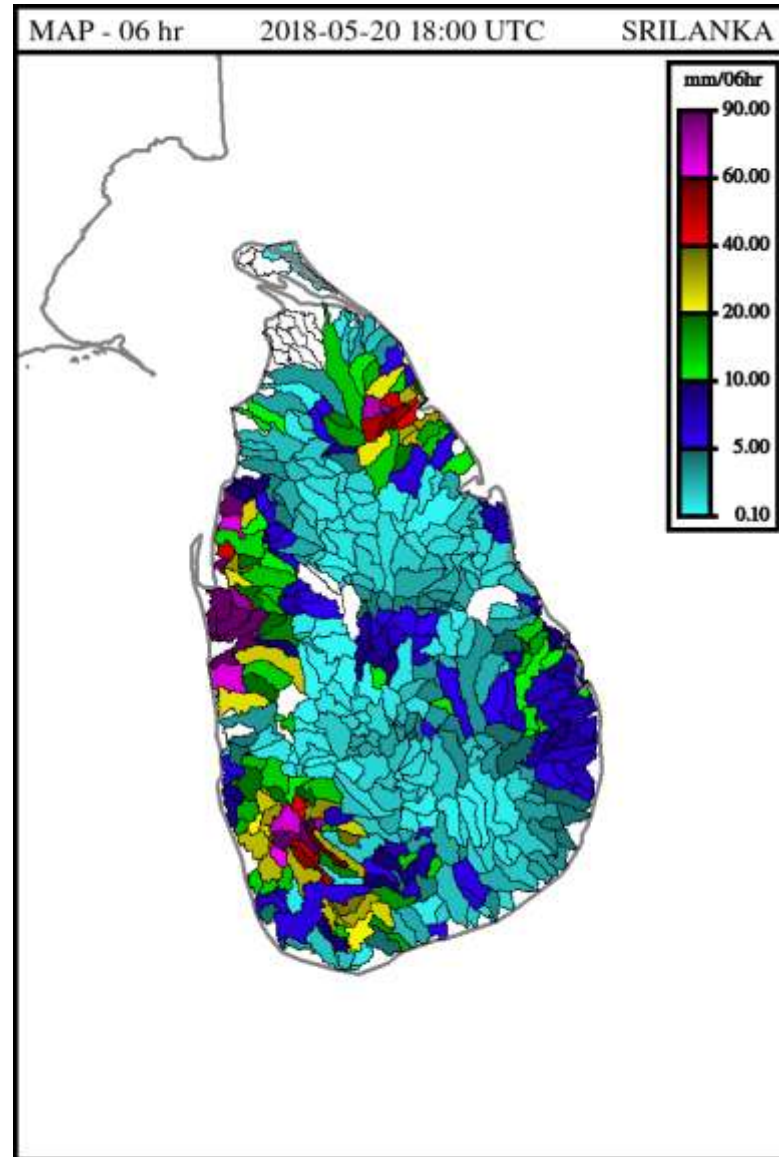
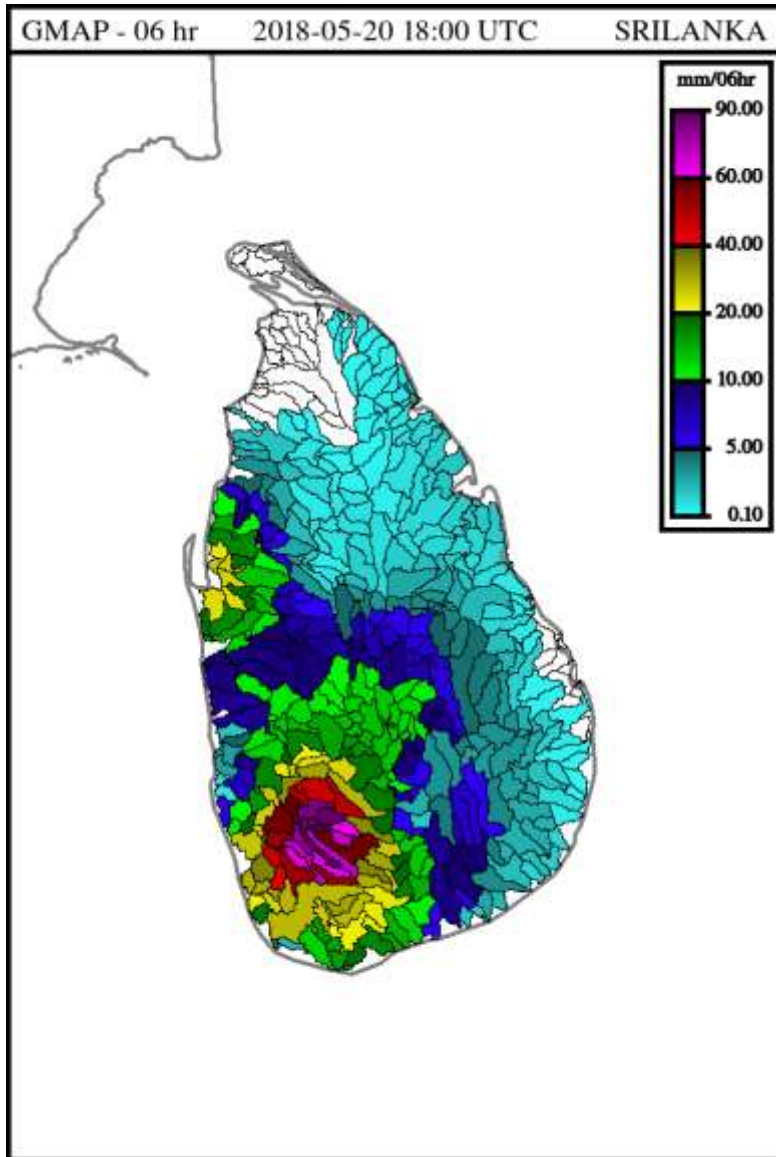
station	Rainfall(mm)
Rathnapura (NBRO rain gauges)	222.5
Ehaliyagoda (NBRO Rain gauges)	201.5
Rathnapura (Met station)	155.5
Dehiowita (NBRO rain gauges)	153.8
Aranayaka (NBRO rain gauges)	108.0

FORECAST

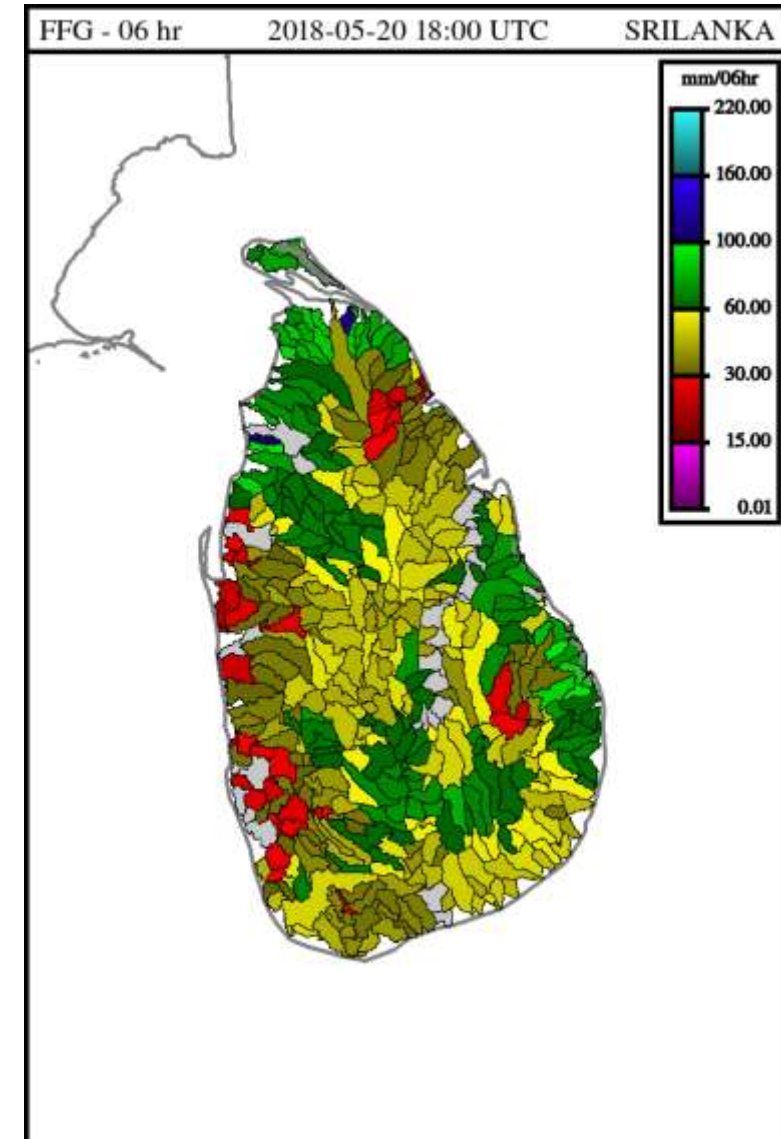
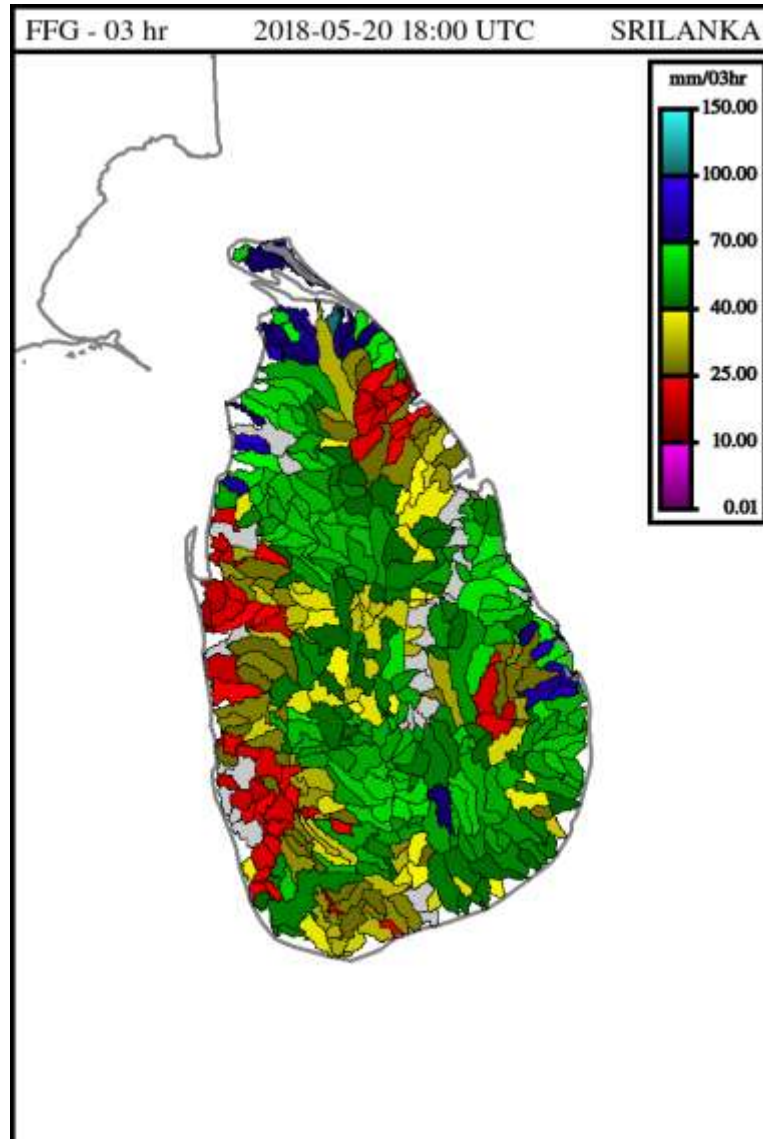
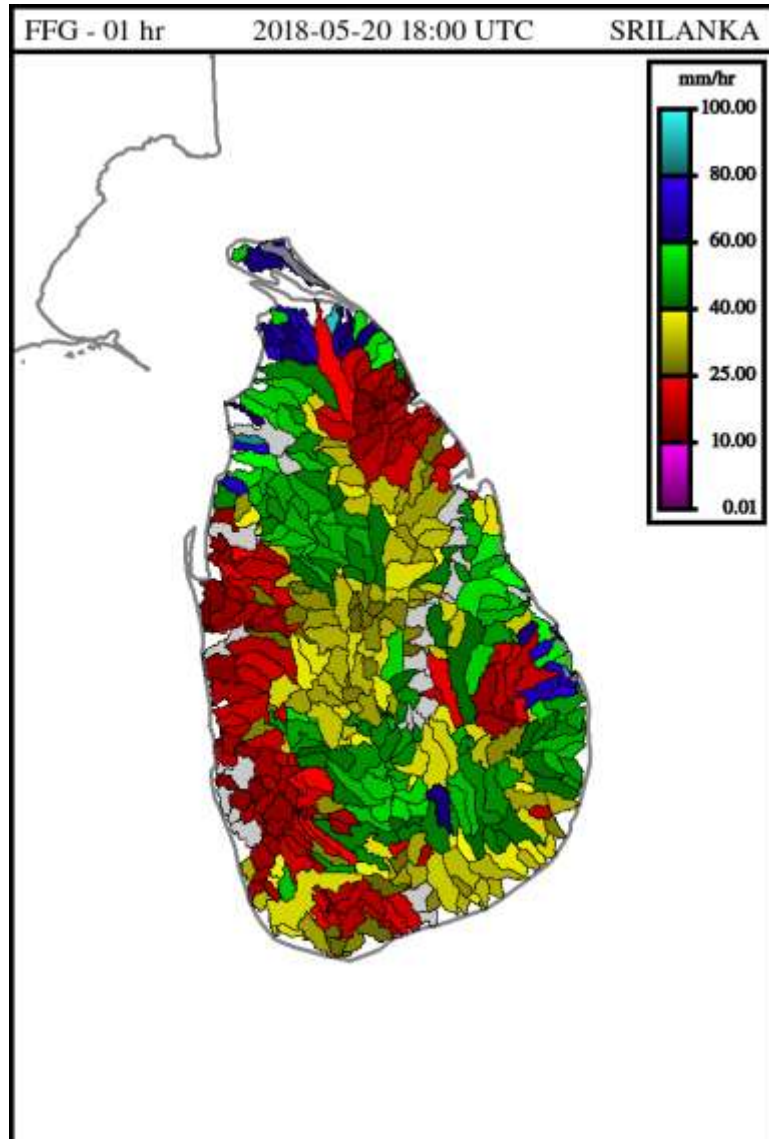
Prevailing showery condition is expected to continue during next 12 hours in Sabaragamuwa, Central, Western and Northwestern provinces and in Galle and Matara districts.

Rainfall amount (mm): Fairly Heavy rain: 50 -100, Heavy rain: 100 – 150, Very heavy rain: 150 or more.
State of Sea: Clam: {0-5} Kmph Smooth: {05-15} kmph, Slight: {16-28} kmph, Moderate: {29-37} kmph, Fairly rough: {28-46} kmph, Rough: {47-55} kmph, Very rough: {56-74} kmph, High: {75-102} kmph, Very high: above 103kmph

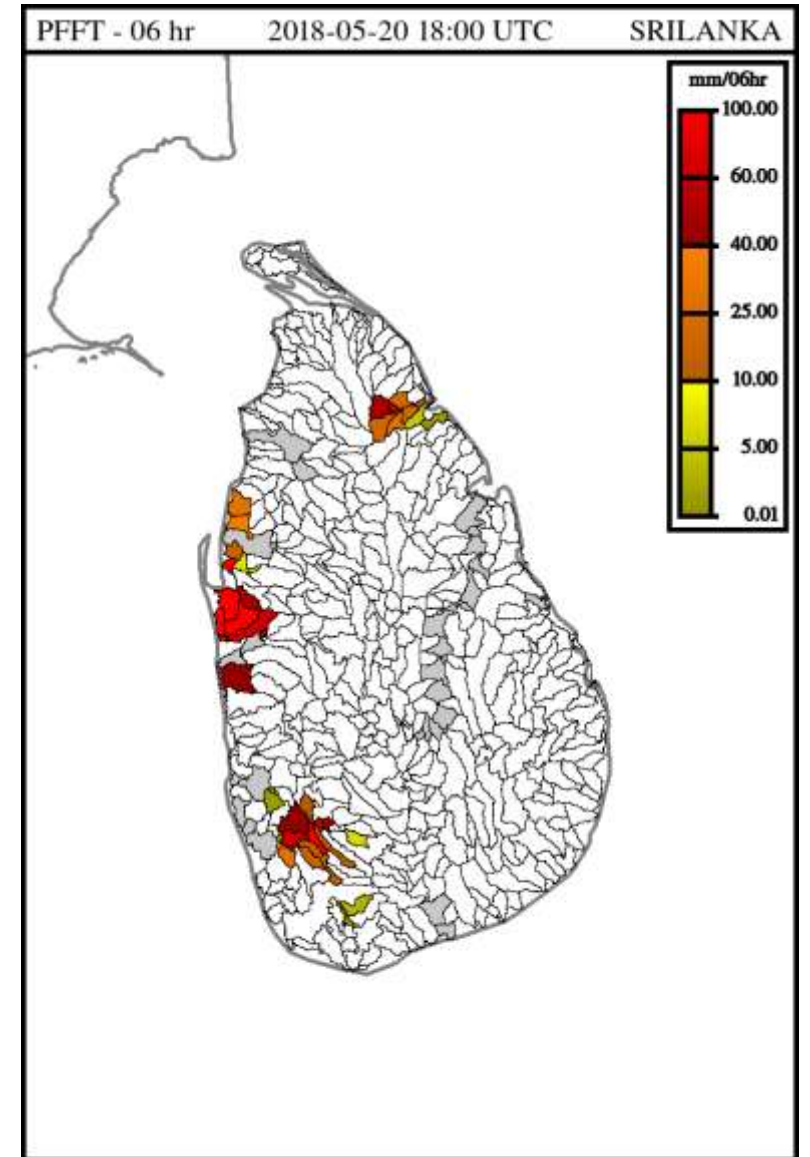
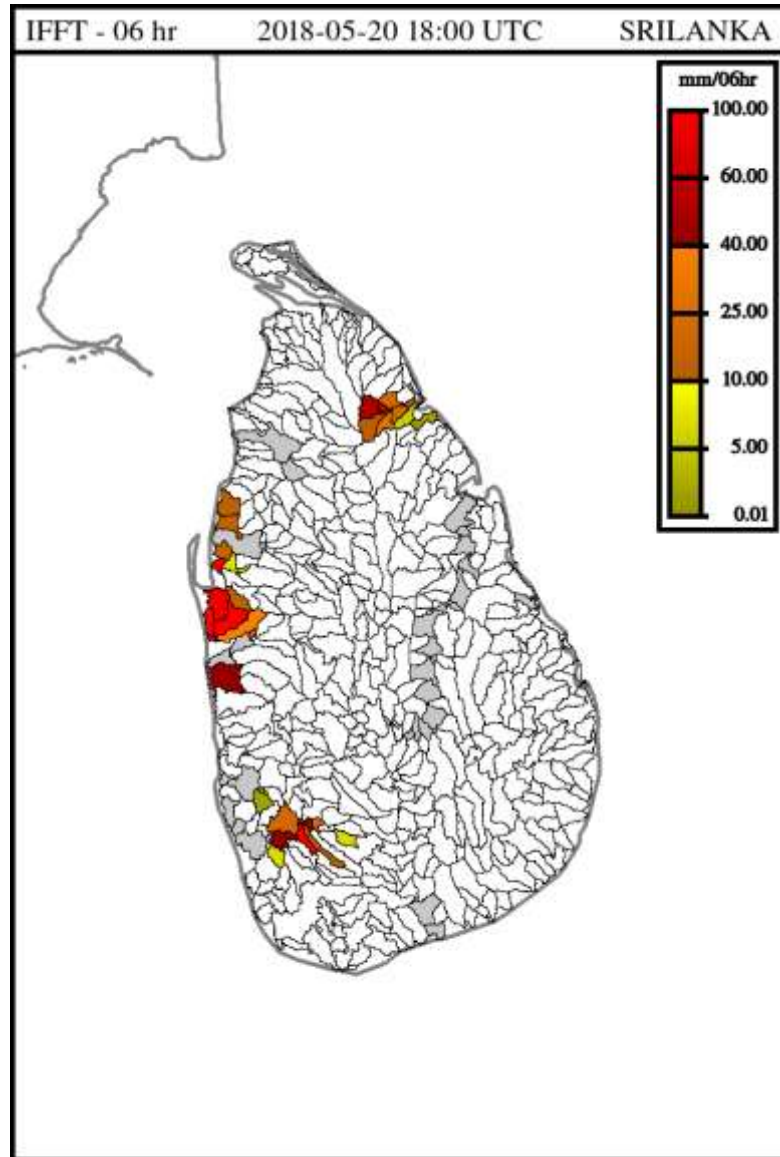
Situation on 20 May 2018 at 1800UTC (2330LT)



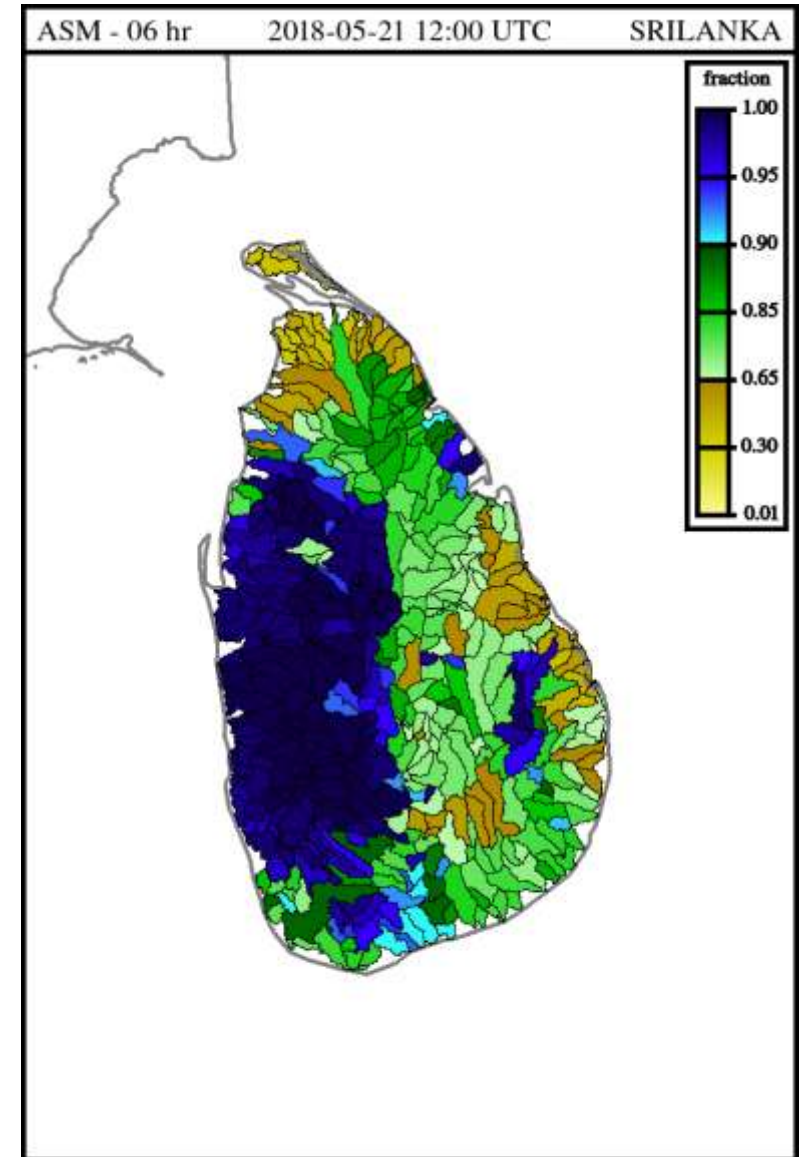
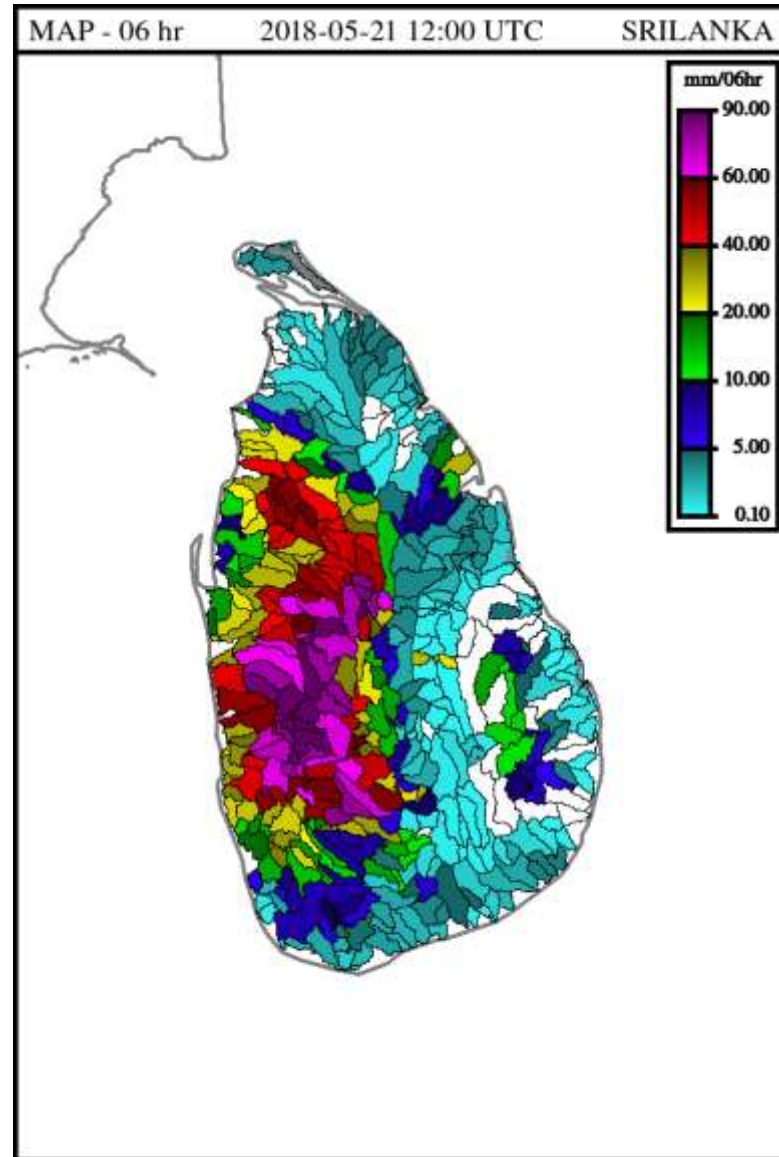
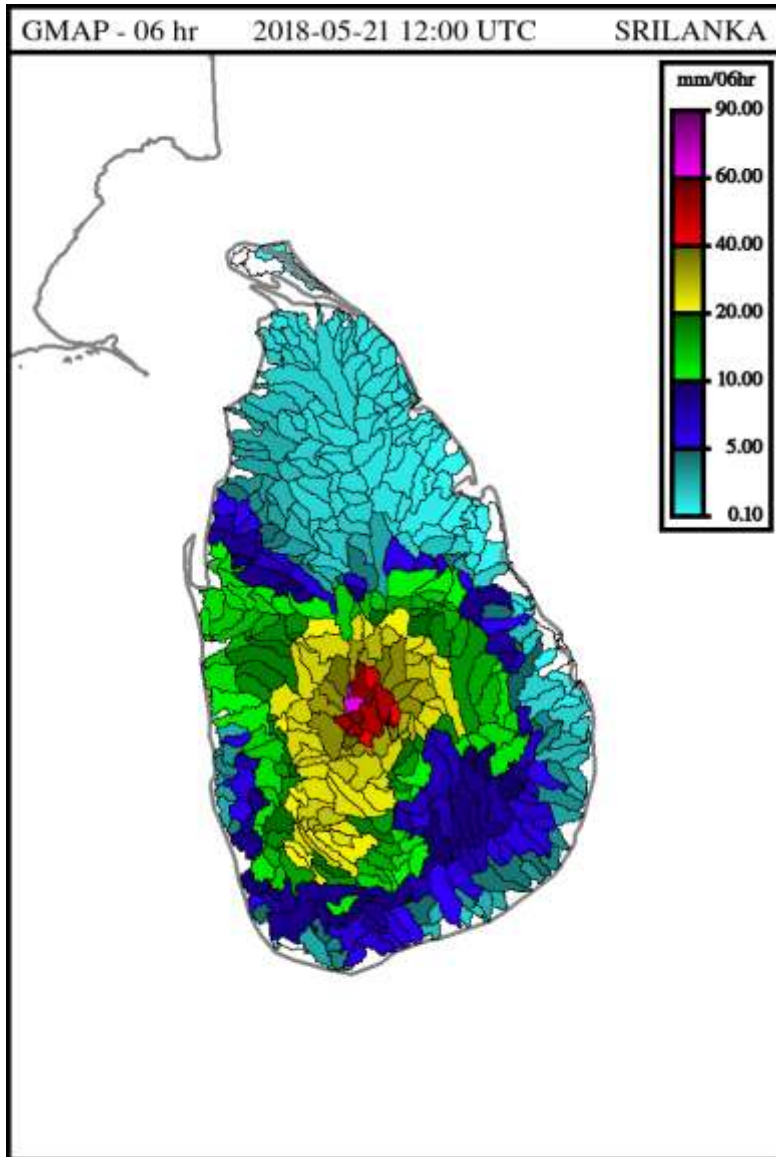
Situation on 20 May 2018 at 1800UTC (2330LT)



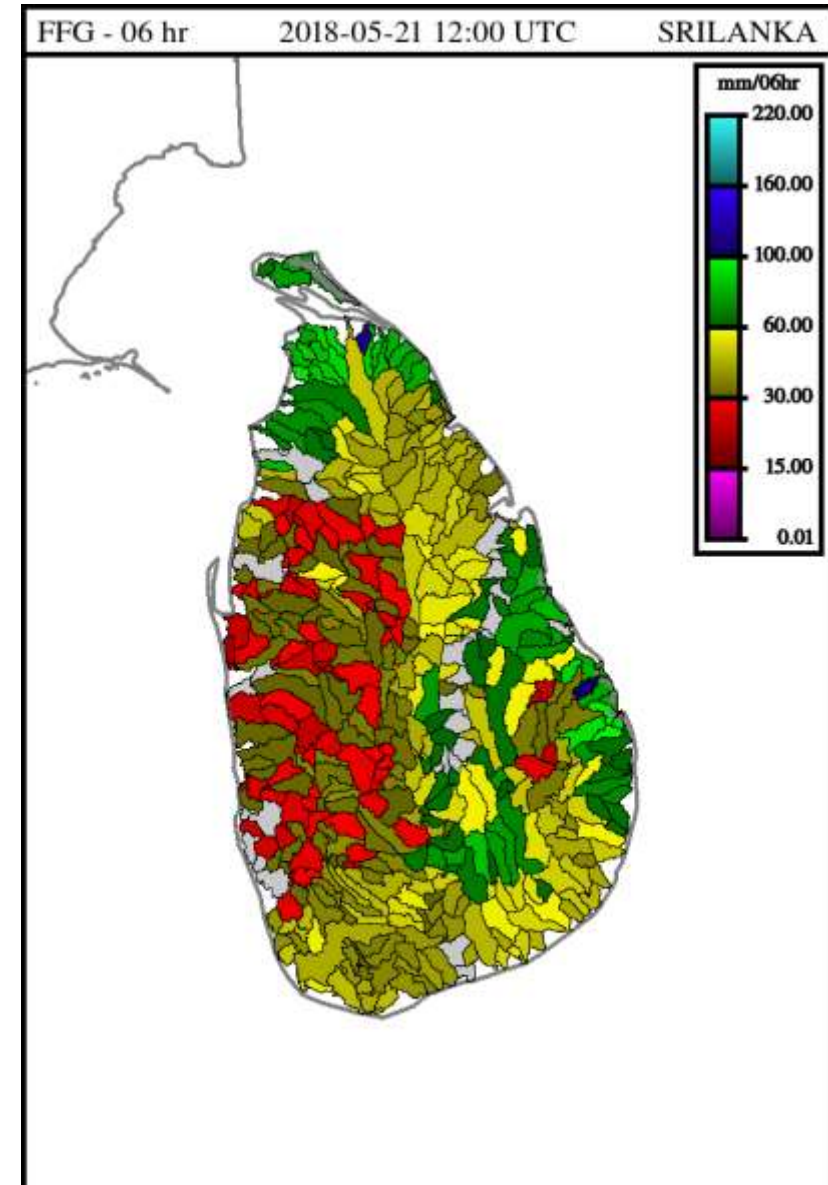
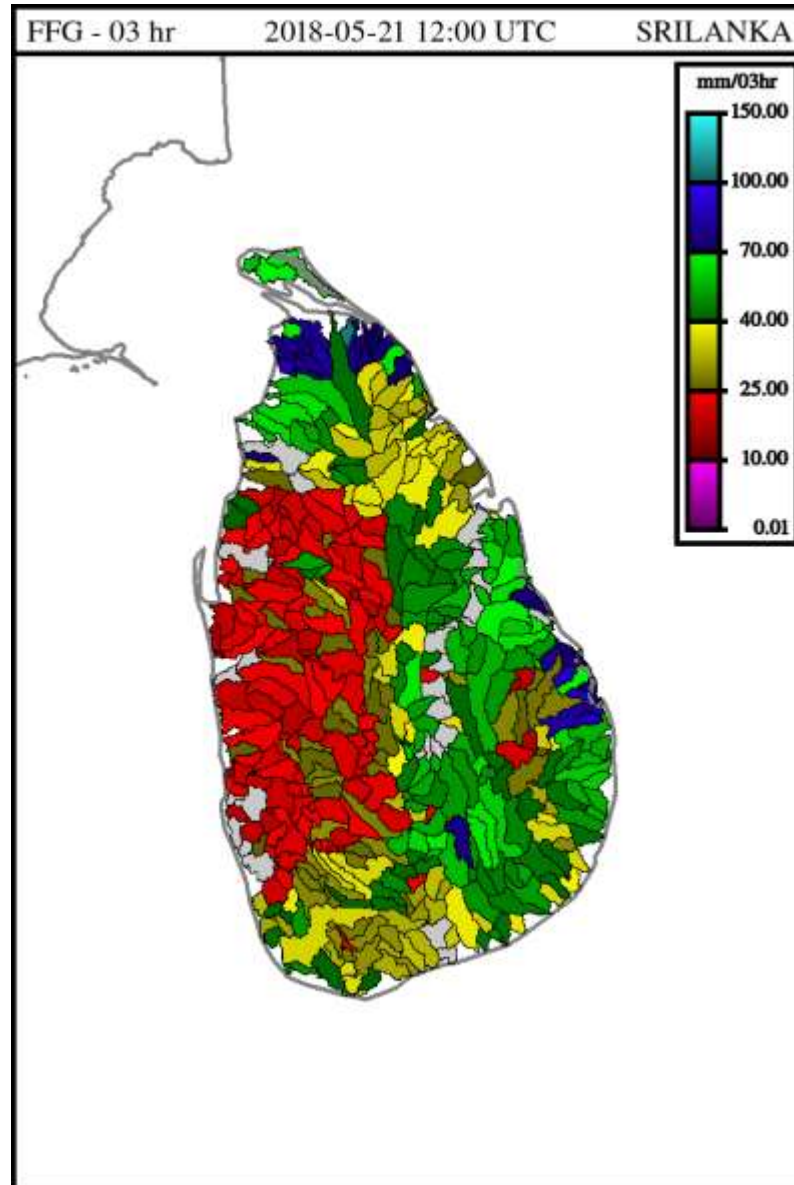
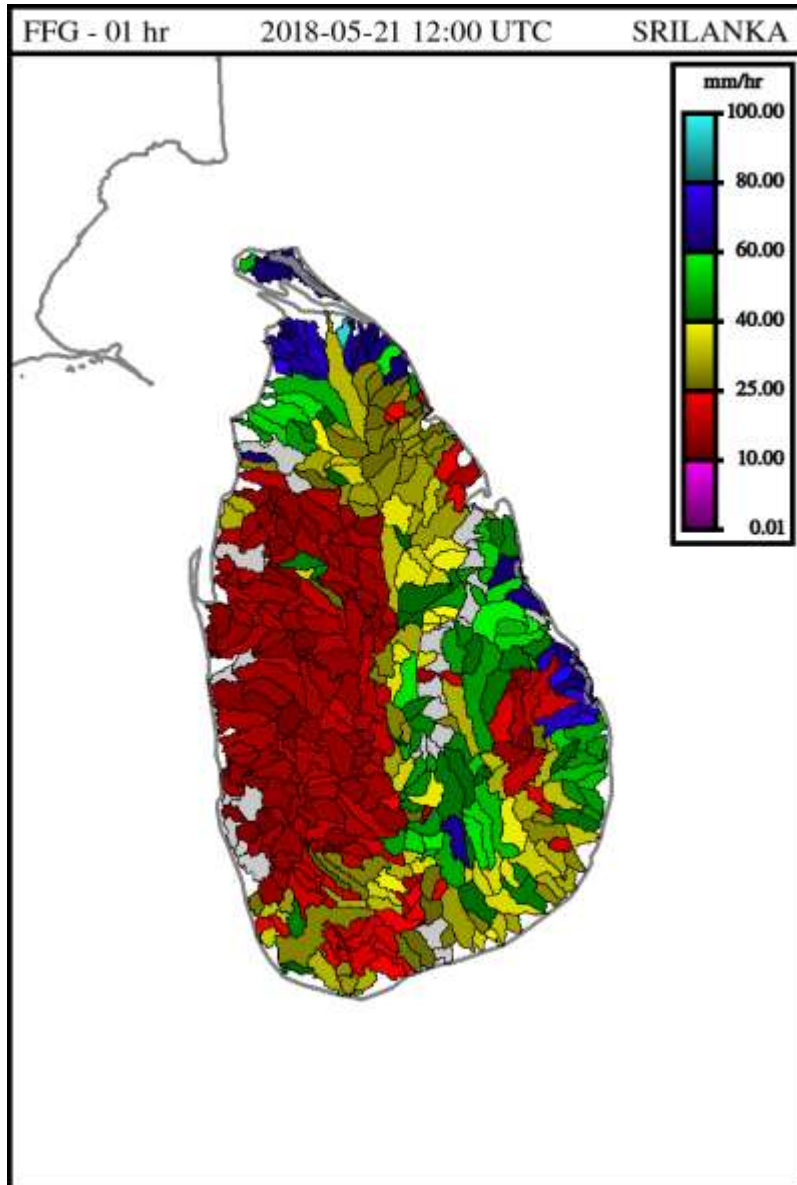
Situation on 20 May 2018 at 1800UTC (2330LT)



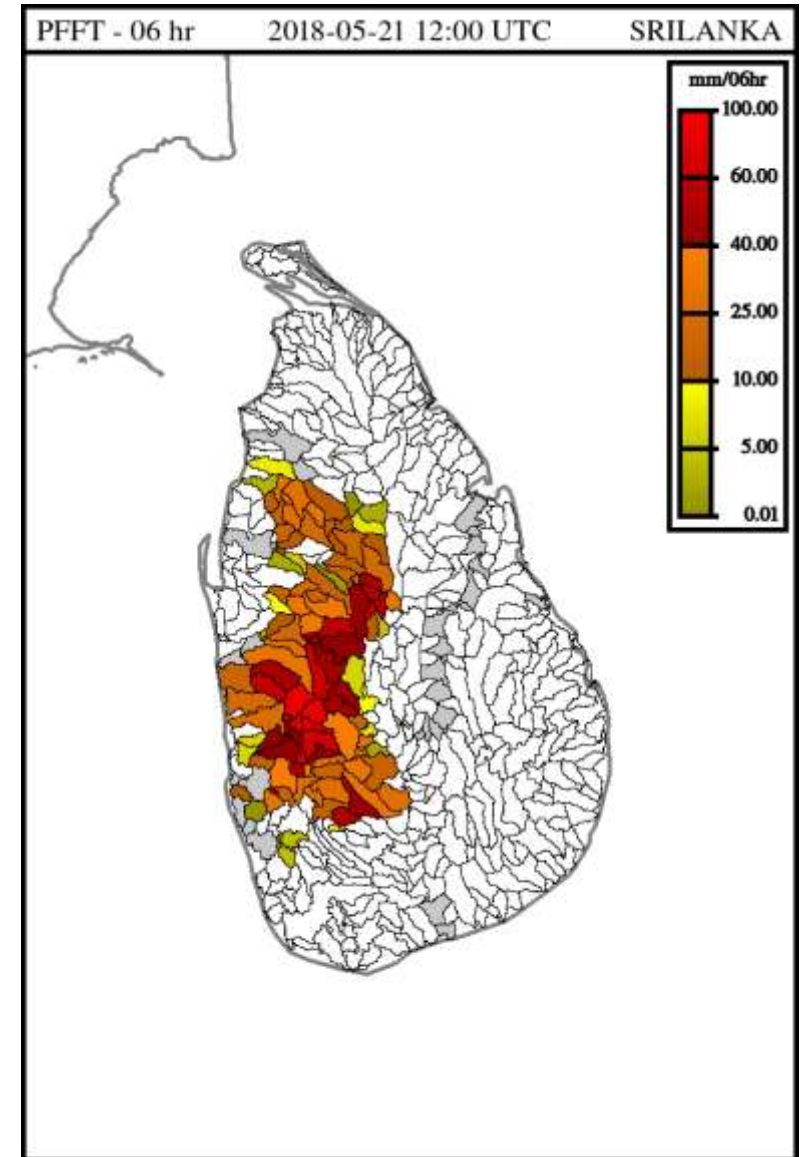
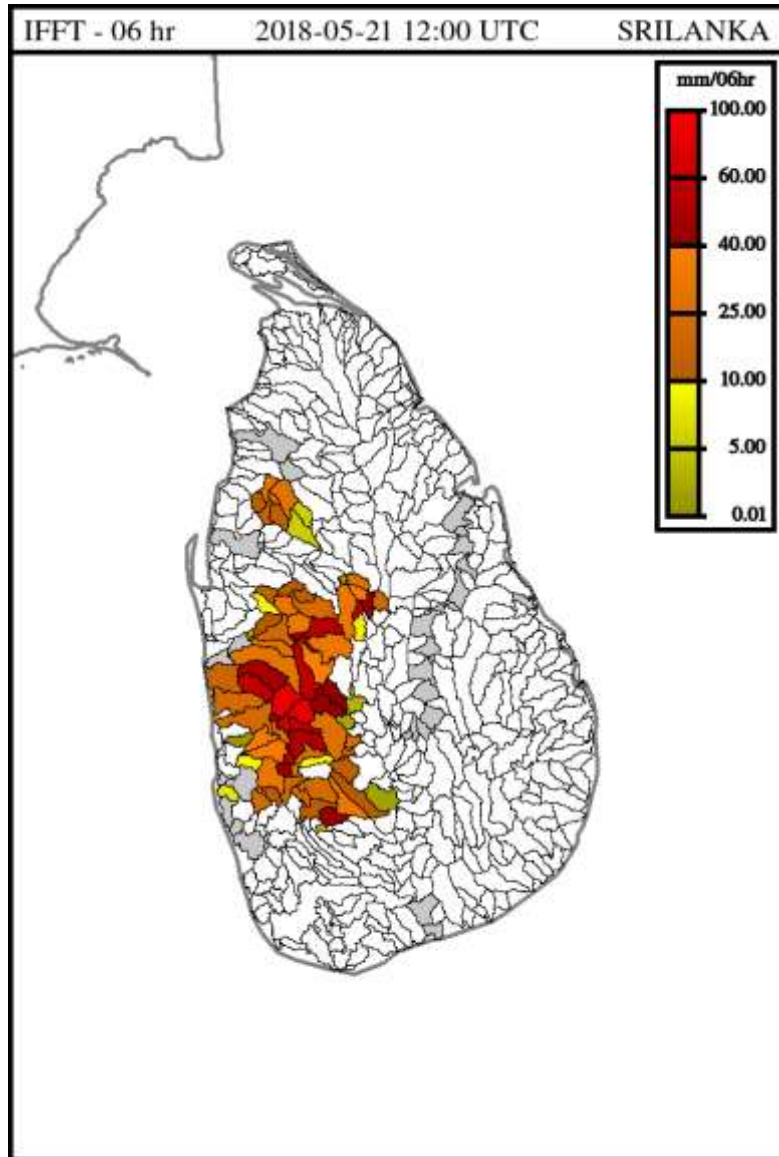
Situation on 21 May 2018 at 1200UTC (1730LT)



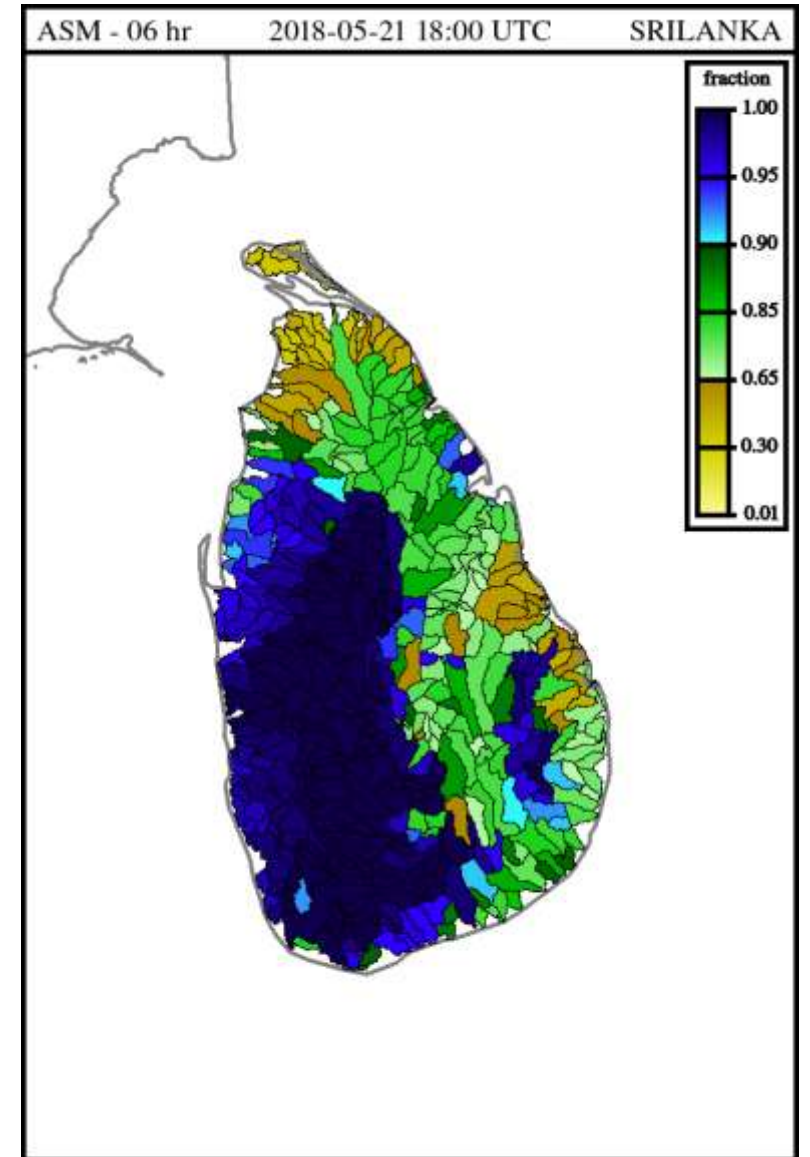
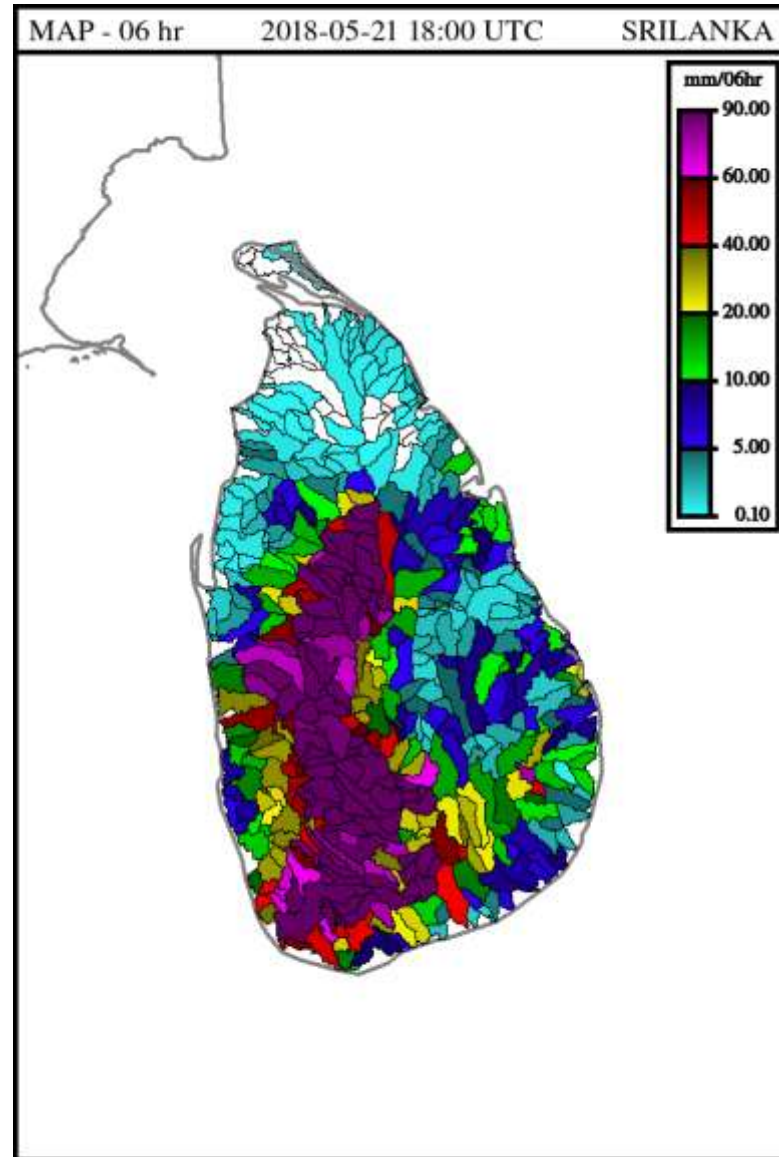
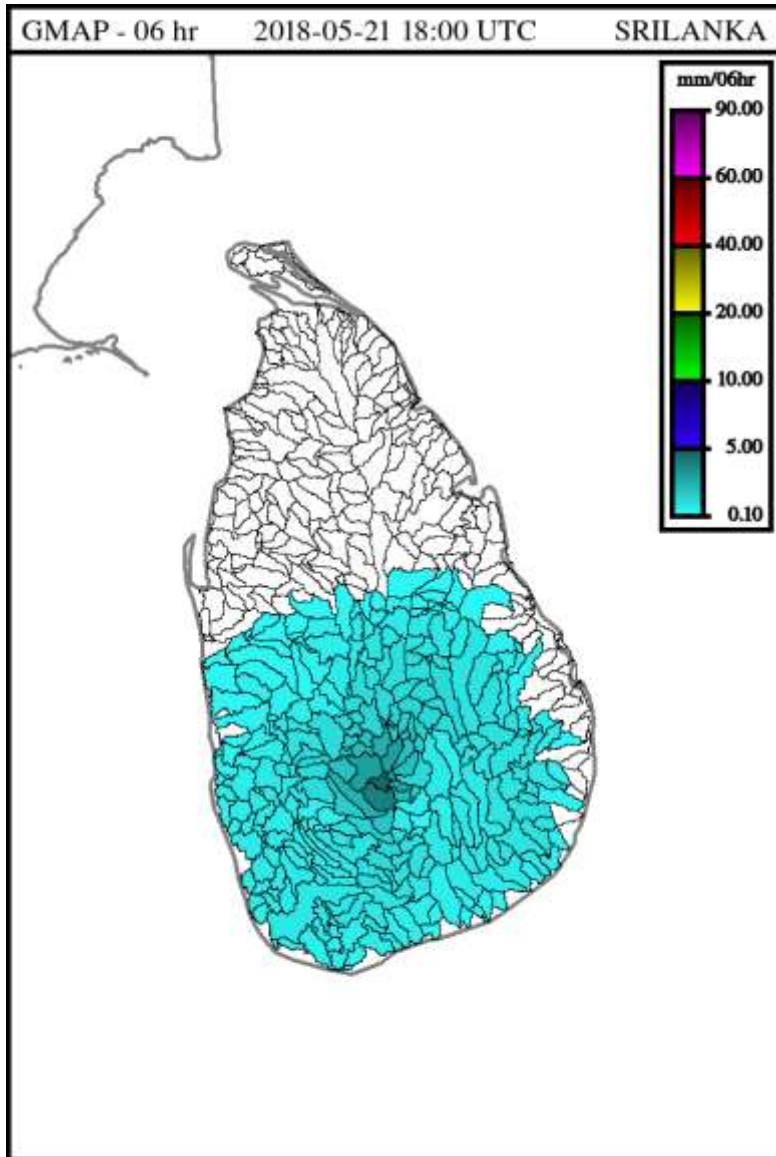
Situation on 21 May 2018 at 1200UTC (1730LT)



Situation on 21 May 2018 at 1200UTC (1730LT)

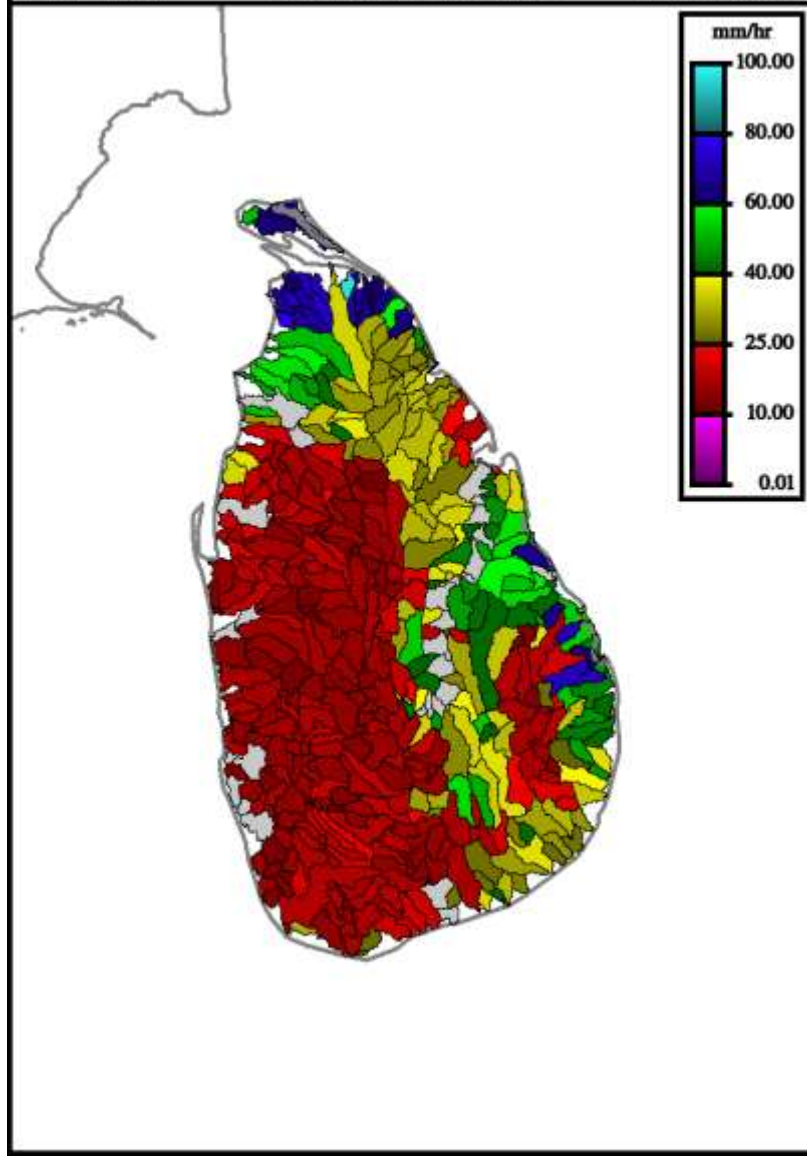


Situation on 21 May 2018 at 1800UTC (2330LT)

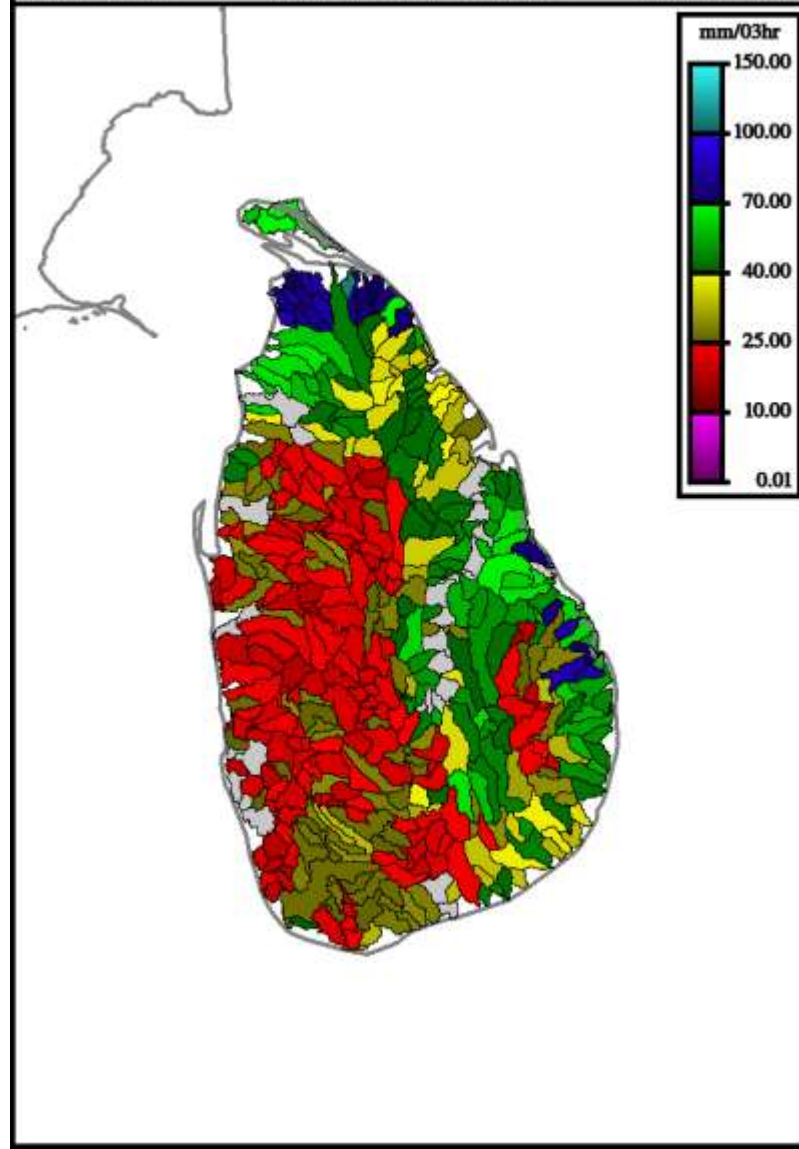


Situation on 21 May 2018 at 1800UTC (2330LT)

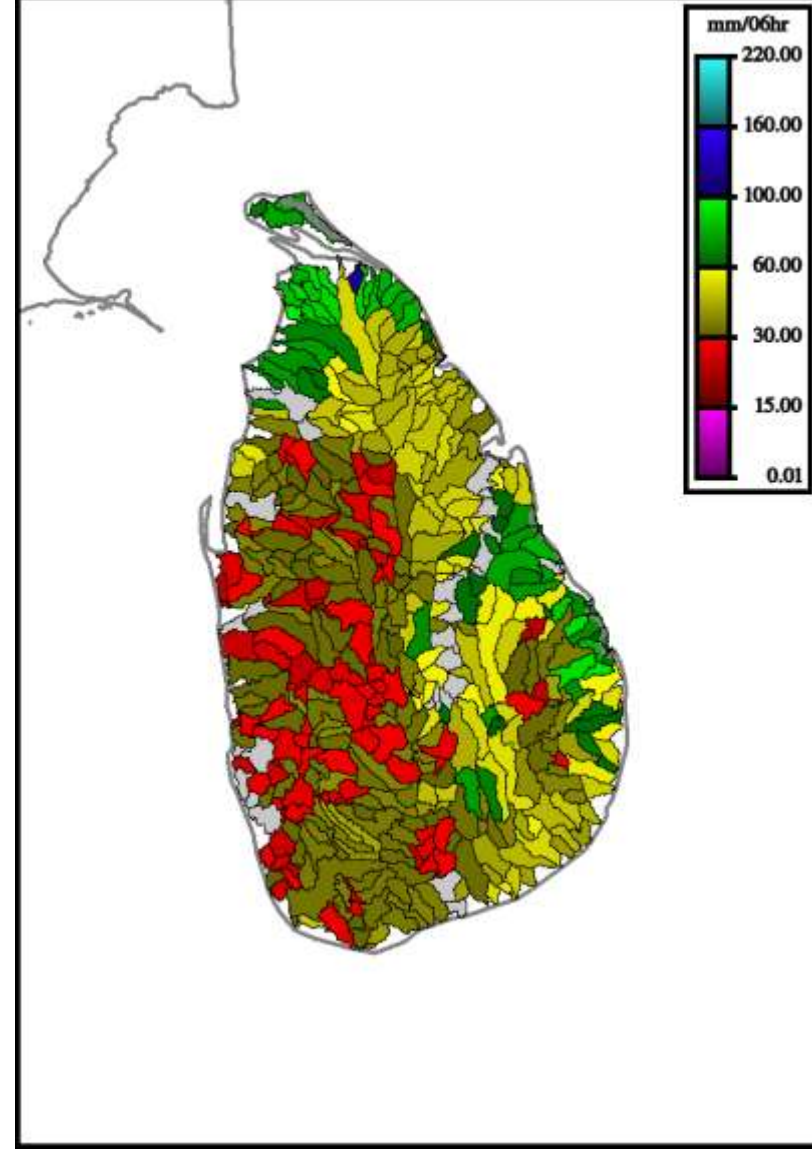
FFG - 01 hr 2018-05-21 18:00 UTC SRILANKA



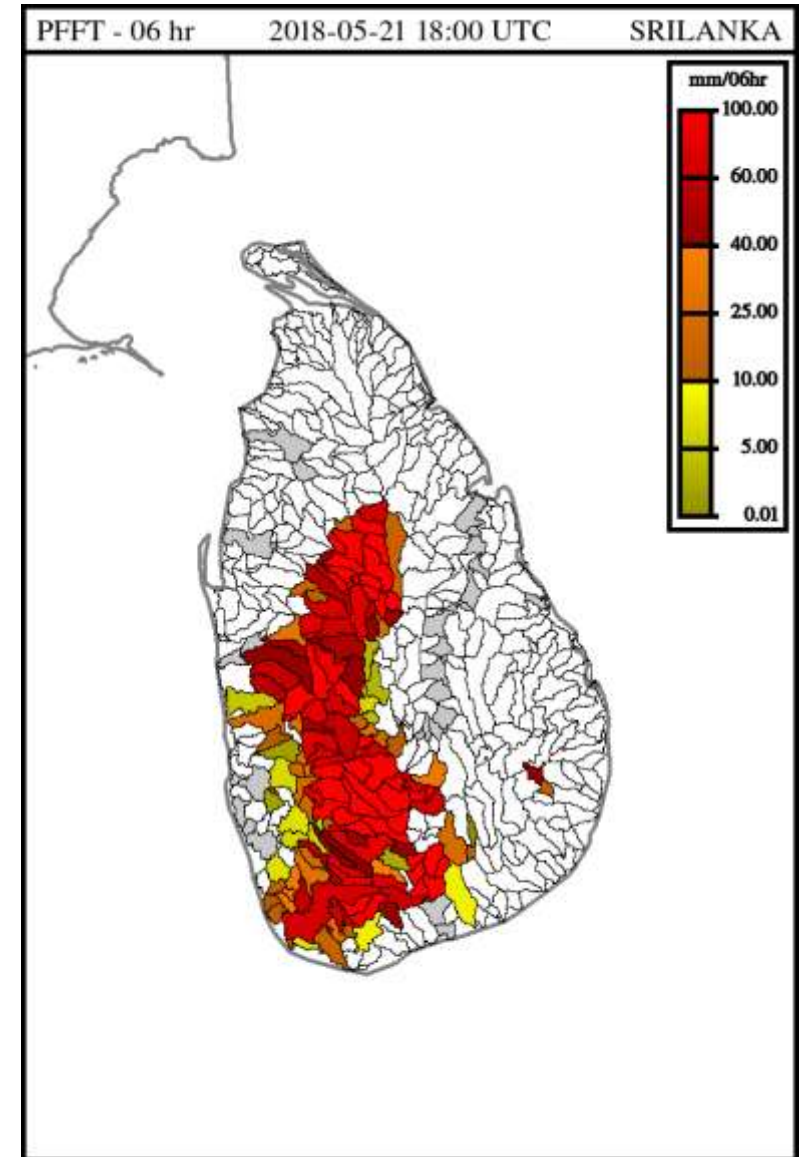
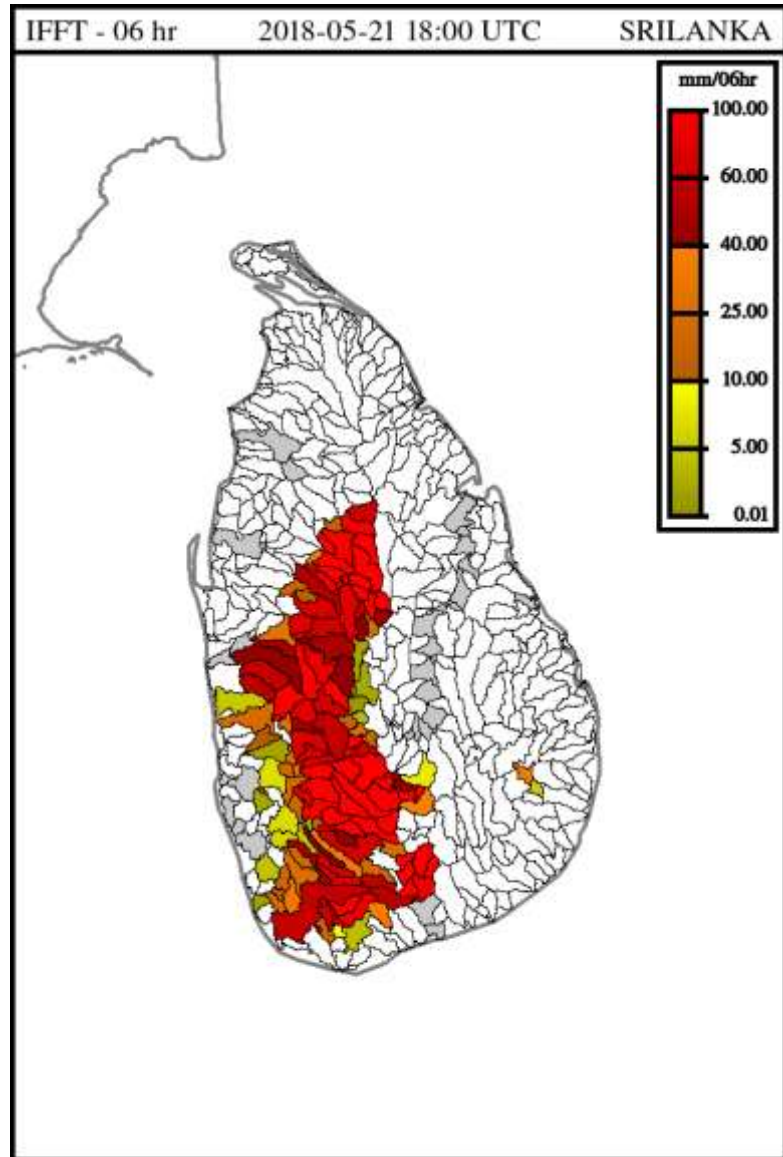
FFG - 03 hr 2018-05-21 18:00 UTC SRILANKA



FFG - 06 hr 2018-05-21 18:00 UTC SRILANKA



Situation on 21 May 2018 at 1800UTC (2330LT)



Warning issued by Irrigation Department at 1530LT on 20 May 2018

ගංවතුර අනතුරු ඇඟවීමේ නිවේදන අංක - 01
 2018.05.20 දින පස්වරු 3.30 නිකුත් කරන ලදී.

අධ්‍යක්ෂ ජනරාල්,
 අපාදා කළමනාකරණ මධ්‍යස්ථානය.

ගංවතුර අනතුරු ඇඟවීමේ නිවේදනය - ගිං ගඟ ධාරා ප්‍රදේශය

ගිං ගඟ ධාරා ප්‍රදේශයට මේ වන විට ලැබෙමින් පවතින අධික වර්ෂාපතනය හේතුවෙන් ගඟ ගිං ගඟහි ජල මට්ටම පිටාර මට්ටමට ආසන්න වෙමින් පවතී. කාලගුණ විද්‍යා දෙපාර්තමේන්තුවේ අනාවැකි අනුව ඉදිරි පැය කිහිපය තුළ වැසි තත්ත්වයේ වර්ධනයක් අපේක්ෂා කරන අතර, ඒ අනුව ගිං ගඟ හත ඊට සම්බන්ධ අතු ගංඟා වල දෙපස පහත් සිමි වල වාසය කරන ජනතාවට ගංවතුර තත්ත්වය පිළිබදව දැඩි අවධානයෙන් සිටින ලෙස මෙයින් දැනුම් දෙනු ලැබේ.

02. ඒ අනුව පහත සඳහන් ප්‍රදේශය ලේකම් කොට්ඨාශ වල ගංඟා ආශ්‍රිත පහත් සිමිවල වෙසෙන ජනතාවගෙන් හදිසි ගංවතුර තත්ත්වයකින් ආරක්ෂාවීම සඳහා දැඩි විමසිල්ලෙන් සිටින ලෙස ඉල්ලා සිටිනු ලැබේ.

අංකය	තර්ජනයට ලක්විය හැකි ප්‍රදේශය ලේකම් කොට්ඨාශය	ගමනාගමනයට බාධා එල්ලවිය හැකි ප්‍රධාන මාර්ග
01.	බද්දේගම, බෝපේ පෙරදිදල, වැලිවිටිය දිවුතුර, නාගොඩ, නිගම, තවලම, හෙළව	උඩුගම - අතුරැ ස්භ මාර්ගය අල්පිටිය - තවලම මාර්ගය පිටිගල - ගවලම මාර්ගය උකත්විටිය - මාපලගම මාර්ගය

03. අද පස්වරු 3.00 වන විට වාර්මාර්ග දෙපාර්තමේන්තුවේ ජලවිද්‍යා අංශය විසින් ගිං ගඟ ආශ්‍රිතව නඩත්තු කරනු ලබන ජල මිණුම් ස්ථාන වල ජල මට්ටම් පහත පරිදි වේ.

අංකය	ජල මිණුම් ස්ථානය	ගංඟාව/අතු ගංඟාව	දැන් පවතින ජල මට්ටම	ඒකකය	විමසිලීමක් විය යුත් මට්ටම	සුළු ගංවතුර මට්ටම	වෙනත්
01.	බද්දේගම	ගිං ගඟ	2.15	මීටර්	3.50	4.00	
02.	තවලම	ගිං ගඟ	4.67	මීටර්	4.25	4.50	

04. එළඹෙන තත්වයන් පිළිබදව වාර්මාර්ග දෙපාර්තමේන්තුව නිරන්තර විමසිල්ලෙන් පසුවන අතර, ගංඟාවල ජල මට්ටම් ඉහල ගාම සම්බන්ධයෙන් සුදුසු පරිදි කල්වේලා ඇතිව දැනුවත් කිරීමට කටයුතු කරනු ලැබේ.

ඉංජි. ආර්.එම්.එම්.ආර්. අලවතුගොඩ
 වාර්මාර්ග අධ්‍යක්ෂ (ජල විද්‍යා)

- පිටපත -
1. වාර්මාර්ග අධ්‍යක්ෂ ජනරාල් - දැ.පි. හා අ.ක.ස.
 2. අතිරේක වාර්මාර්ග අධ්‍යක්ෂ ජනරාල් (විමර්ශණ ක්‍රම සැලසුම් හා සැලසුම්) - දැ.පි. හා අ.ක.ස.
 3. ප්‍රවාහන අධ්‍යක්ෂ, ශ්‍රී ලංකා ගුවන් විදුලි සංස්ථාව / ශ්‍රී ලංකා රාජවාහිනී සංස්ථාව / ස්වාධීන රාජවාහිනිය / සිරස / ස්වර්ණවාහිනී / දෙරණ / හිරු / සිටි F.M. / හිරු F.M. / රිදම F.M.

Conclusion

Considering this case, FFG system was able to capture flood events in the south western/western parts of Sri Lanka.

The FFG systems identification timeline was synonymous with the real events.

Although the ASM was close to saturation and FFG values were low there was no floods in certain areas (over estimation).

Thank you!