Locust Surveillance Using Geospatial Technology

No. 2020/14
Period: 16-30 Sept.

nrsc

Image courtesy
www.agric.wa.gov.au

Locust Surveillance Using Geospatial Technology Bulletin is issued weekly by Regional Remote Sensing Centre (West), NRSC/ISRO – Jodhpur. RRSC-W continuously monitors the weather and ecology to provide early warning based on survey and control results from Locust Warning Organisation (LWO), Jodhpur combined with remote sensing inputs.

Contents

Please send your feedback to
rrsc_w@nrsc.gov.in or ssrao@nrsc.gov.in

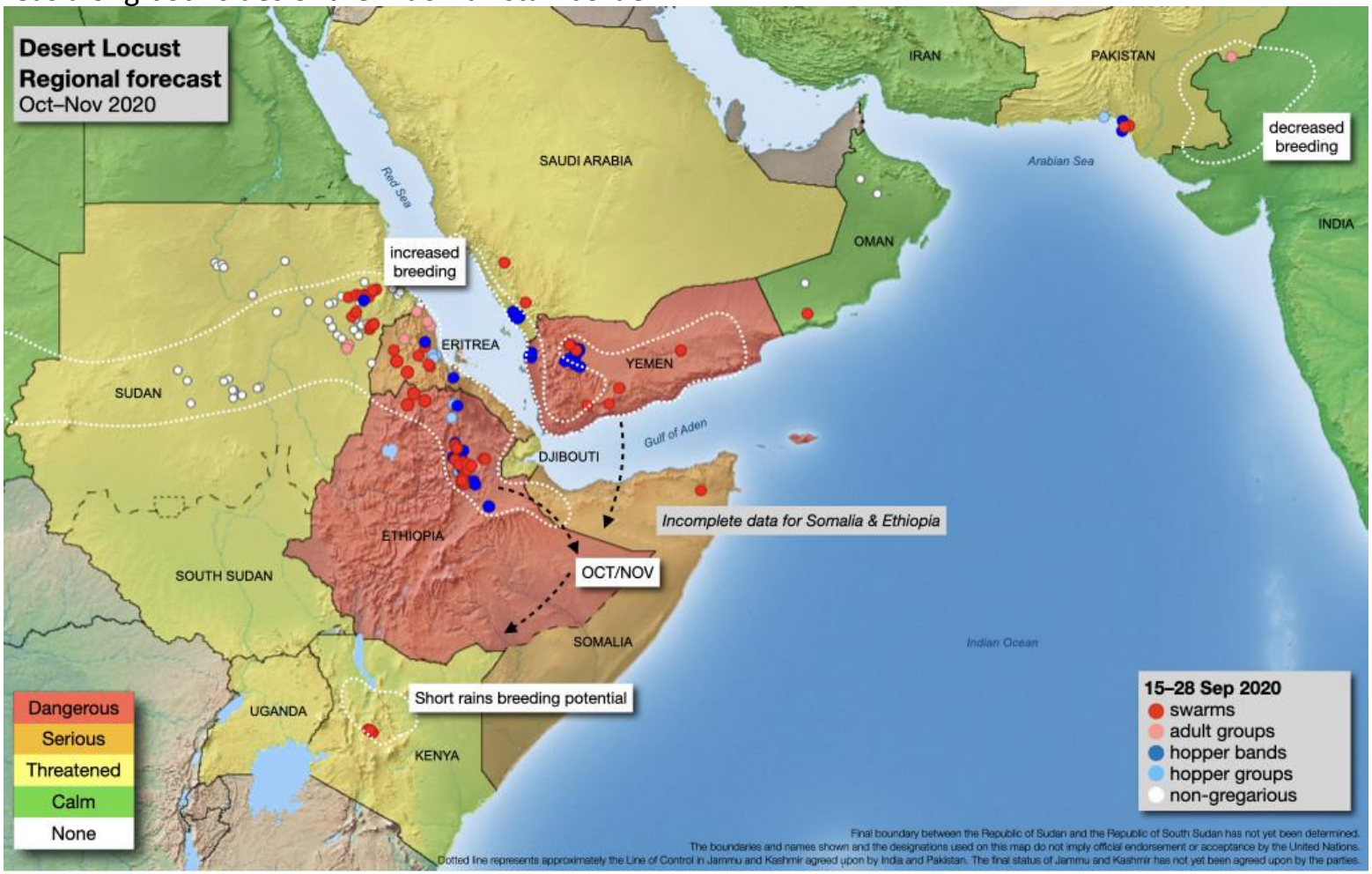
Locust Update

Status

While the Desert Locust situation continues to improve in Southwest Asia, it is deteriorating in parts of the Central Region due to swarm breeding in Eritrea, Ethiopia, Sudan, Yemen, and Saudi Arabia. In Southwest Asia, the situation continues to improve as the seasonal monsoon withdraws from the summer breeding areas along both sides of the Indo-Pakistan border.

Forecast

The current situation remains calm along both sides of the Indo-Pak border where locust numbers remain low and no significant developments are likely.



Source: FAO Locust Watch.

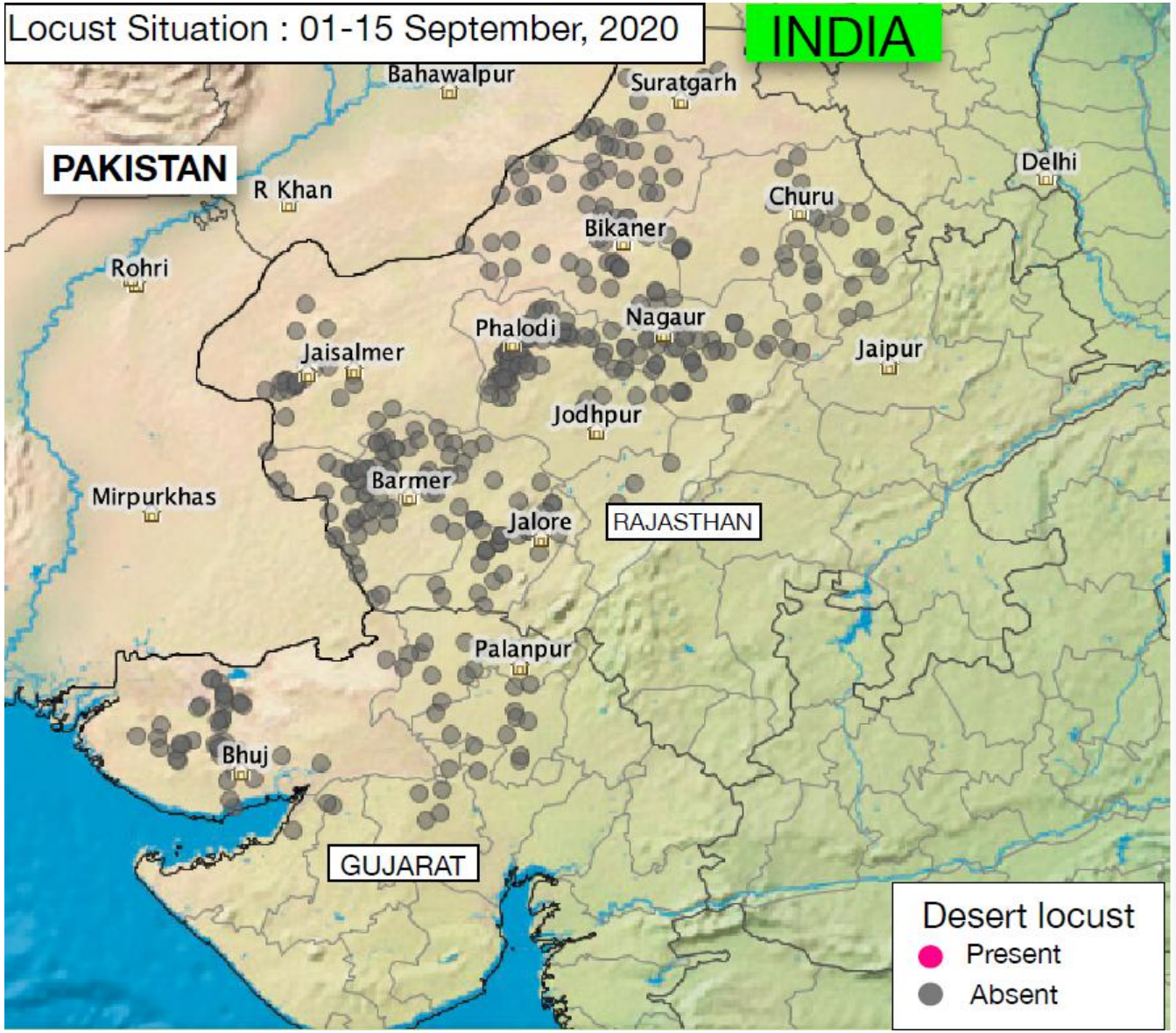
Locust Update

– Status –

It has been observed that India is free from gregarious as well as solitary desert locust activities during the 1st fortnight of September, 2020.

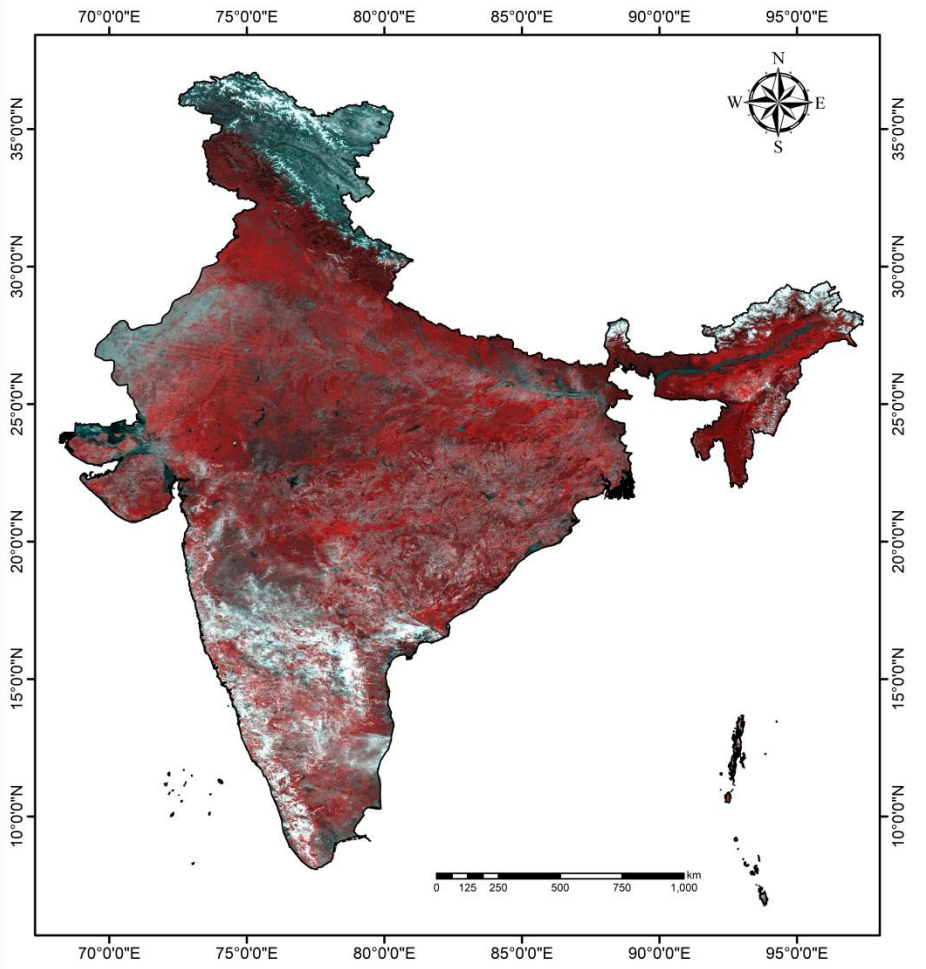
(Desert Locust situation Bulletin. 2020/17, Min. of Agri. & Farmer's Welfare, Govt. of India)

Swarm movement ..Nil
Breeding .....Nil
Hoppers .....Nil
Scattered / Isolated adult/Adult Groups ..Nil



Source: Desert Locust Situation Bulleting, 2020/17, *Min. of Agri. & Farmer's Welfare, Govt. of India*

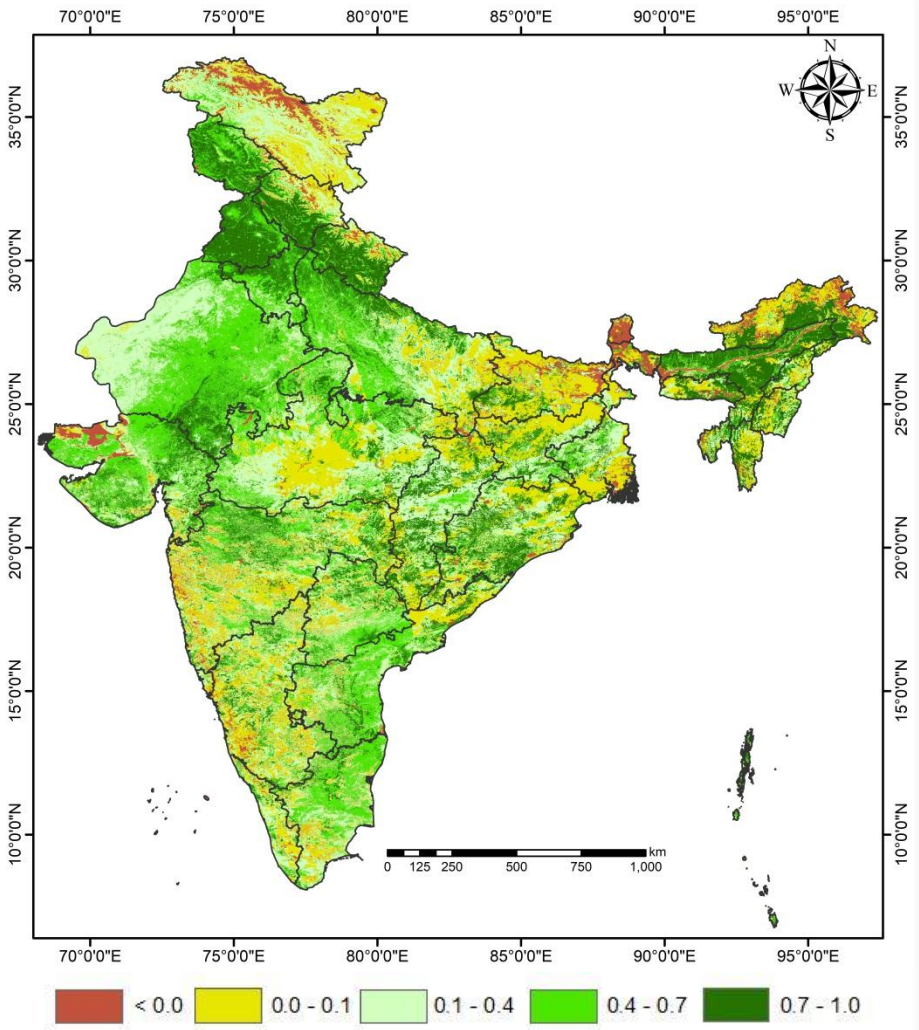
False Color Composite (FCC)



Source: MODIS 8 day Composite

15th – 23rd Sep, 2020

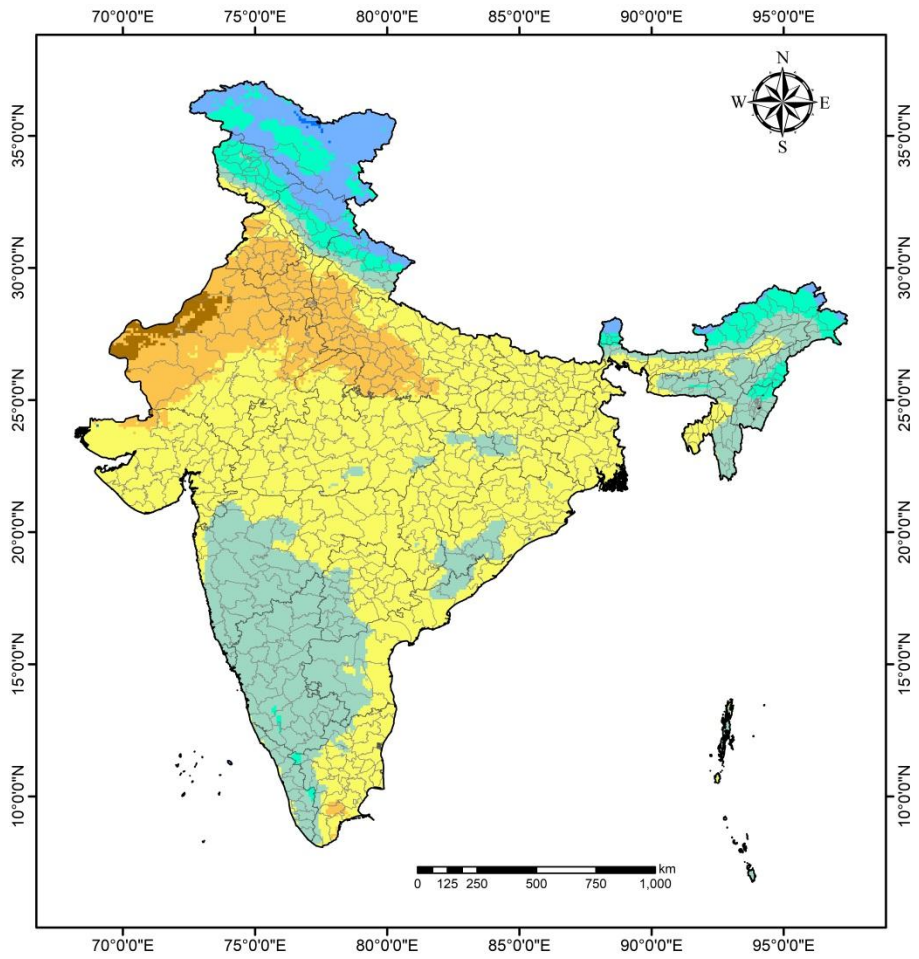
Normalized Difference Vegetation Index (NDVI)



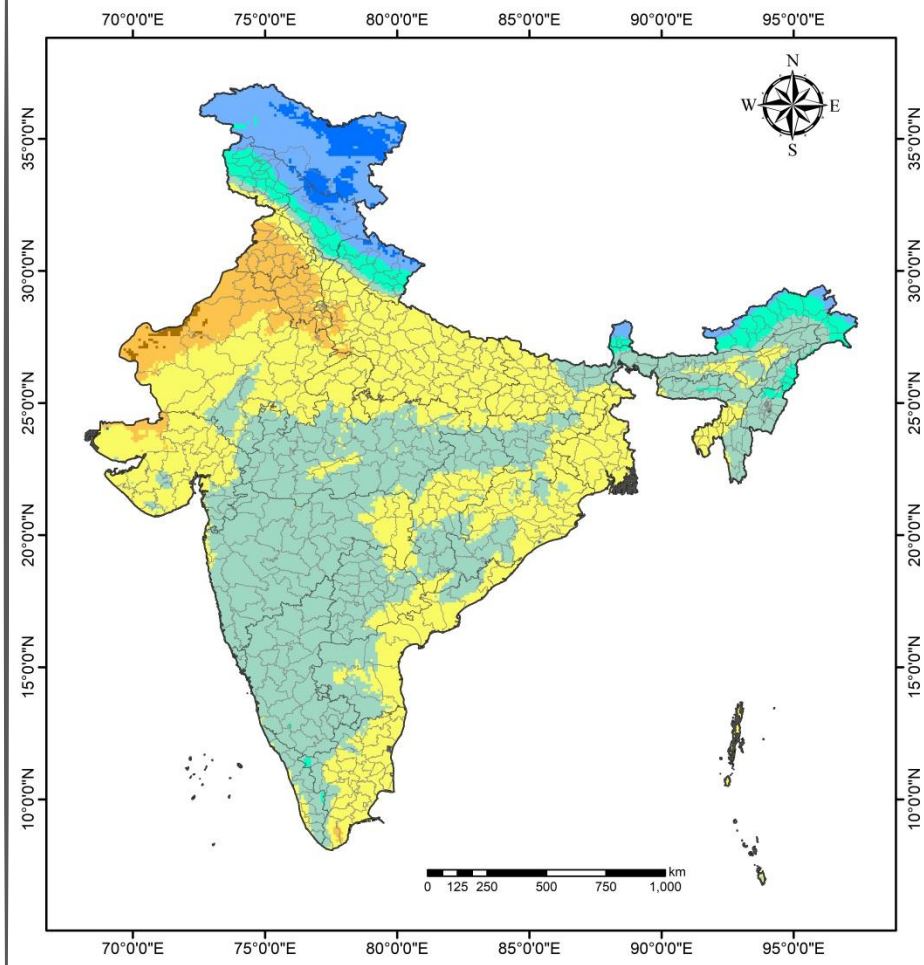
Source: eMODIS Ver. 6

16th Sep - 25th Sep, 2020

Land Surface Temperature (^{0}C)



19:00 Hrs. IST of 16th Sep - 2020

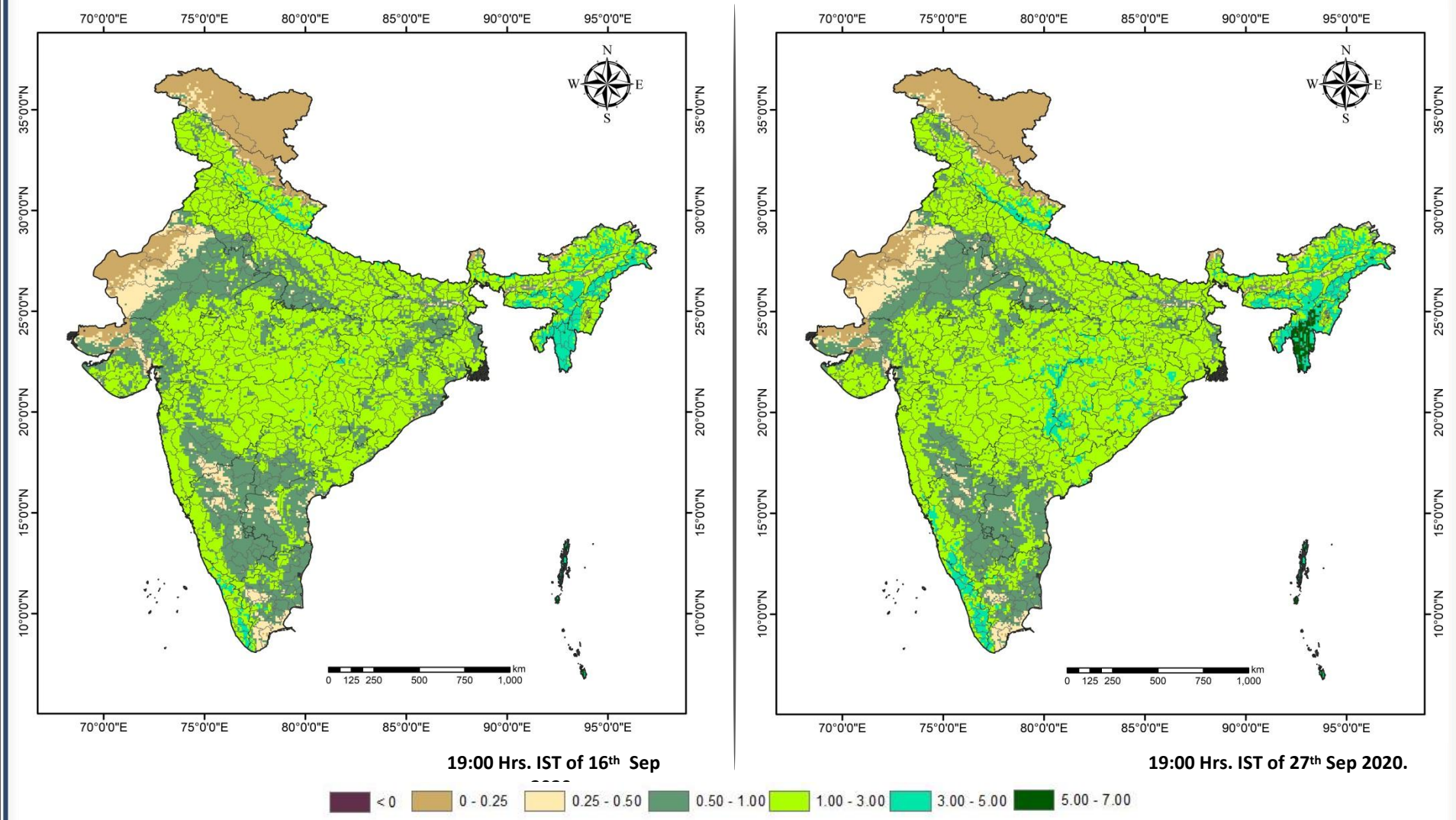


19:00 Hrs. IST of 27th Sep 2020.

< 0 | 0 - 10 | 10 - 20 | 20 - 25 | 25 - 30 | 30 - 35 | 35 - 40 | 40 - 45 | 45 - 50

Source: SMAP Enhanced L4 Global 3 Hourly 9 km Product

Leaf Area Index (LAI)

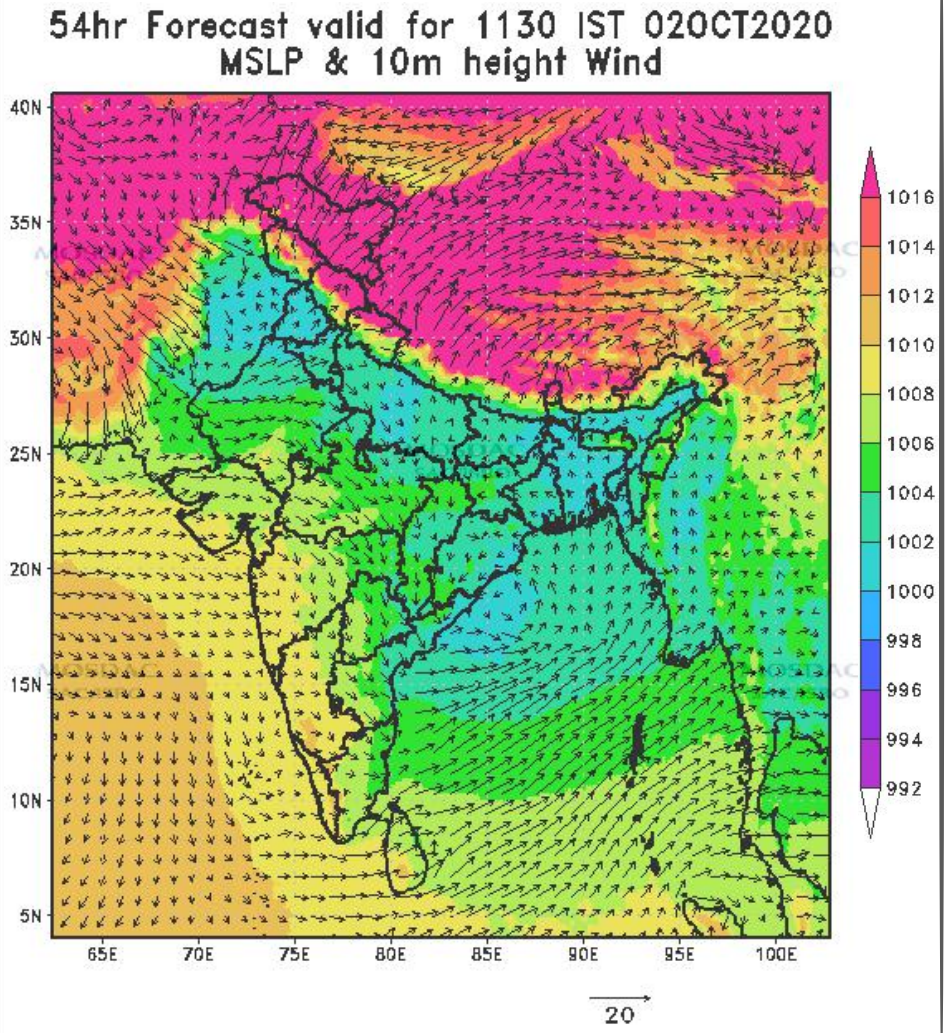


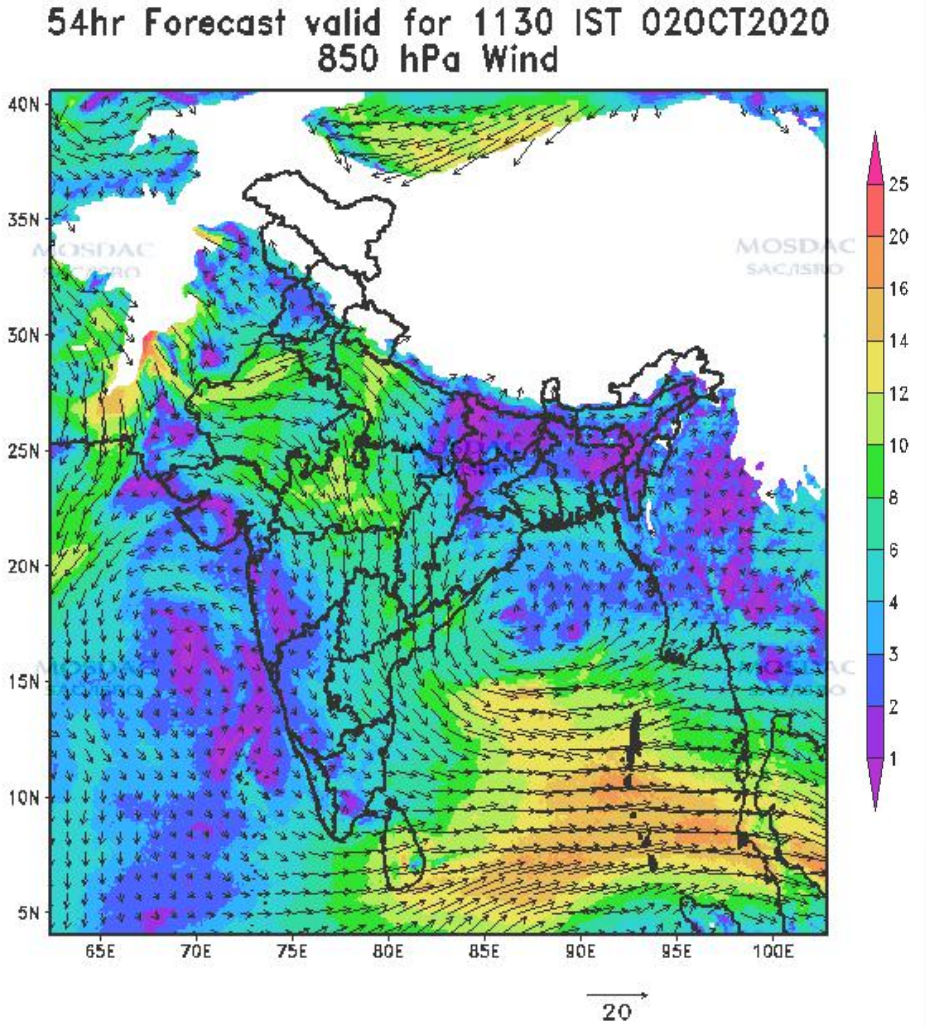
19:00 Hrs. IST of 16th Sep

19:00 Hrs. IST of 27th Sep 2020.

Source: SMAP Enhanced L4 Global 3 Hourly 9 km Product

Wind Vectors

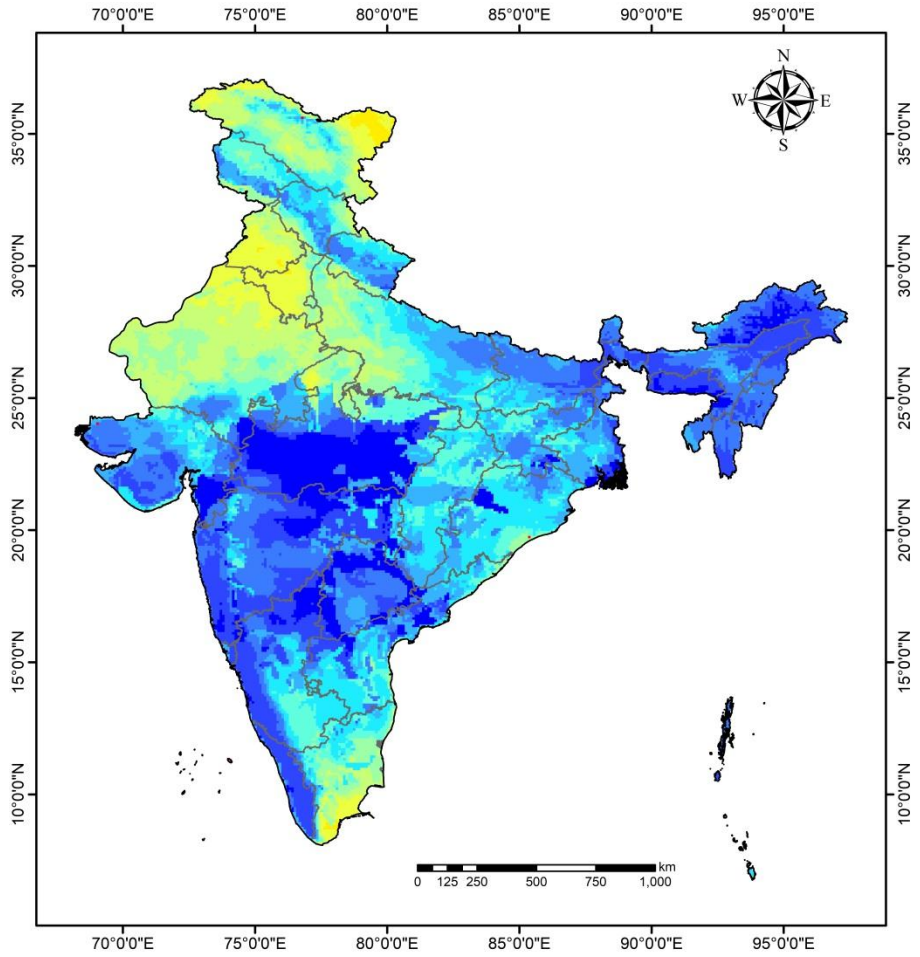




Source: MOSDAC web portal

Wind speed @ 1.46 km from msl.

Surface Soil Moisture Map (%)



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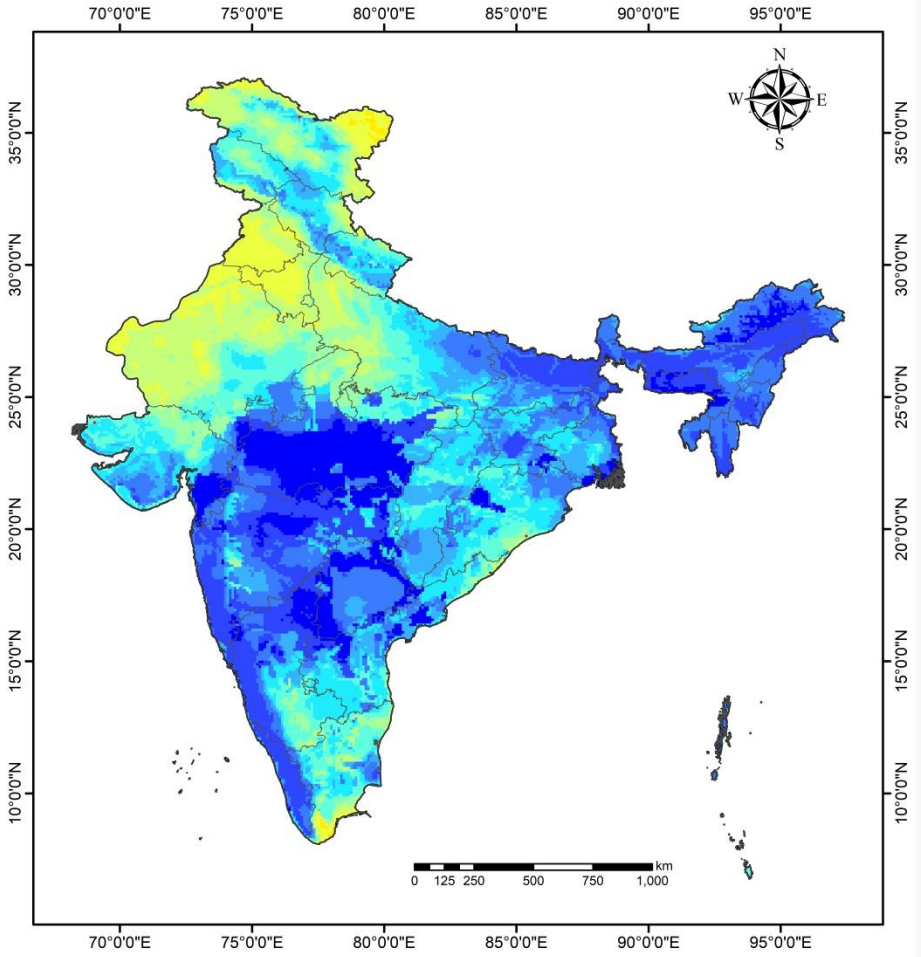
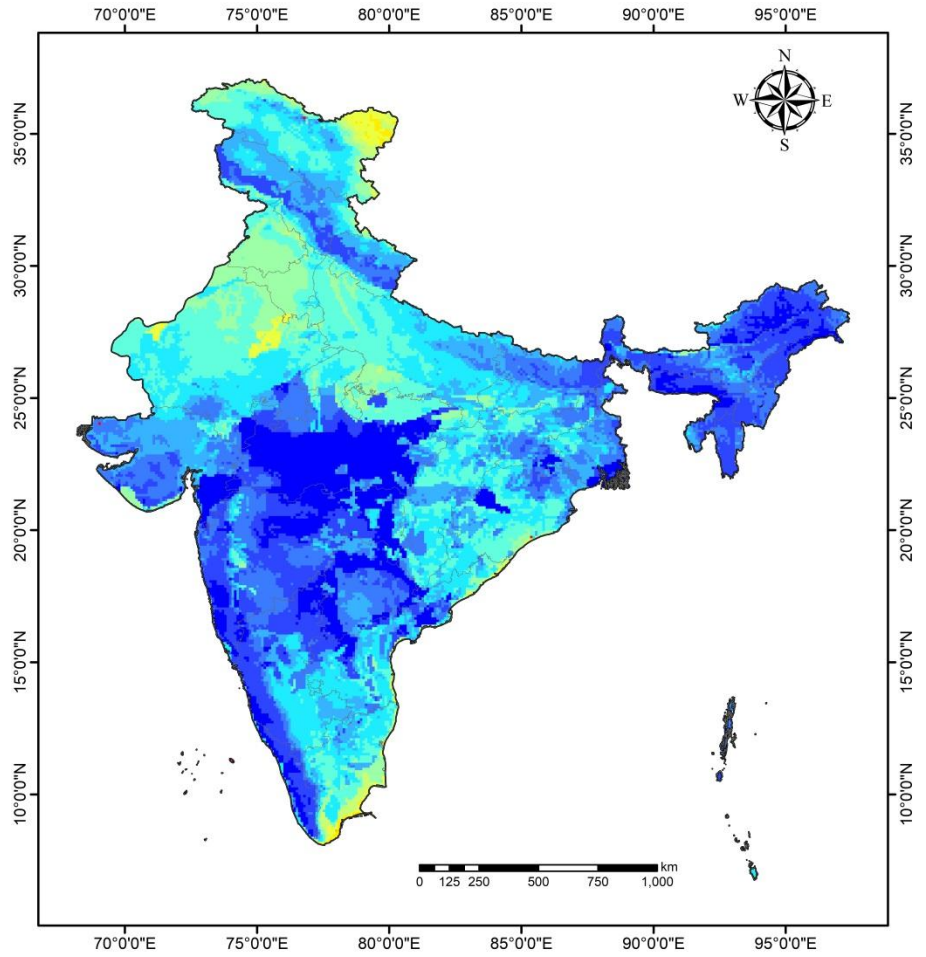


19:00 Hrs. IST of 27th Sep 2020.

Source: SMAP Enhanced L4 Global 3 Hourly 9 km Product

Root-Zone Soil Moisture Map (%)



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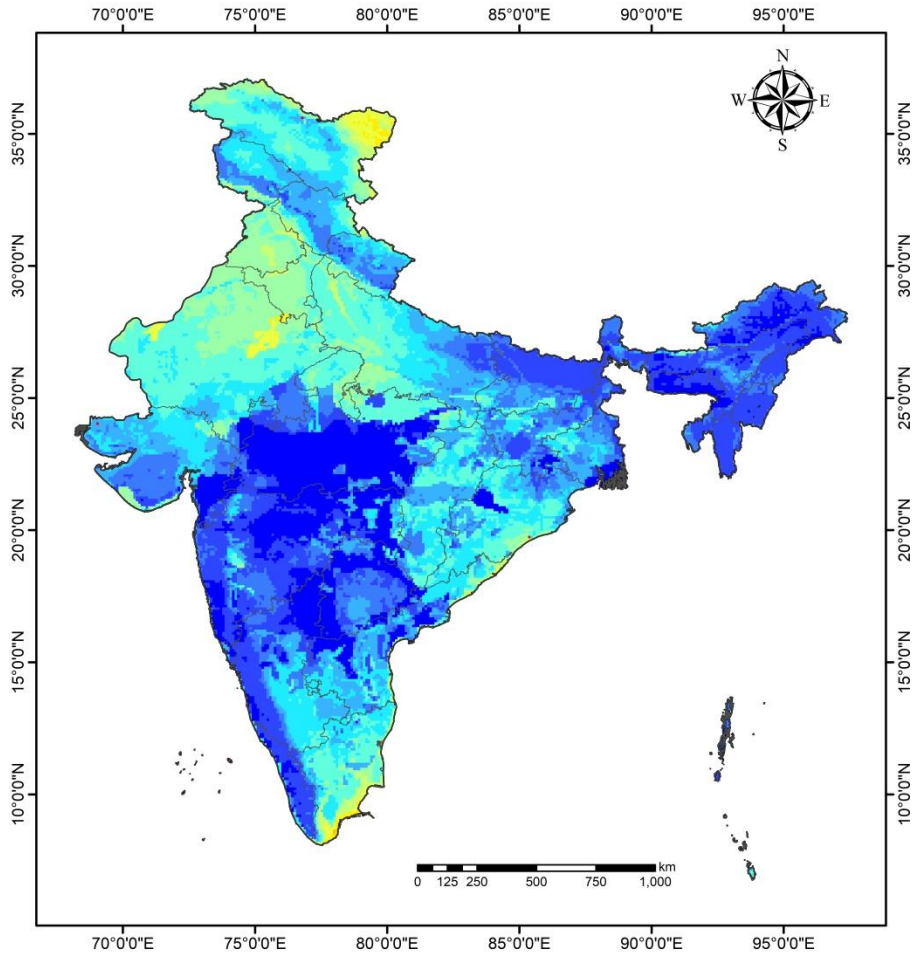
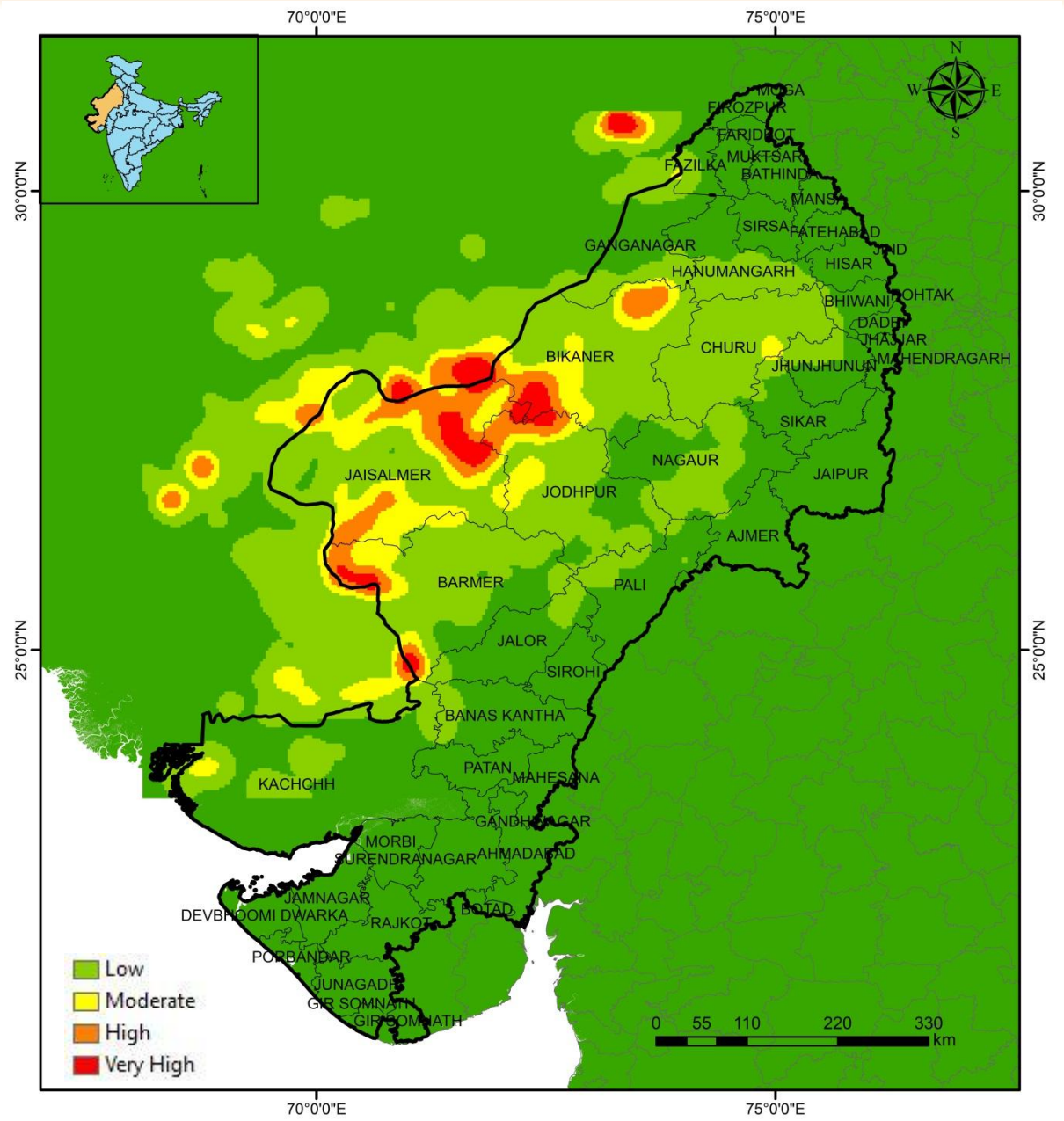


19:00 Hrs. IST of 27th Sep 2020.

Source: SMAP Enhanced L4 Global 3 Hourly 9 km Product

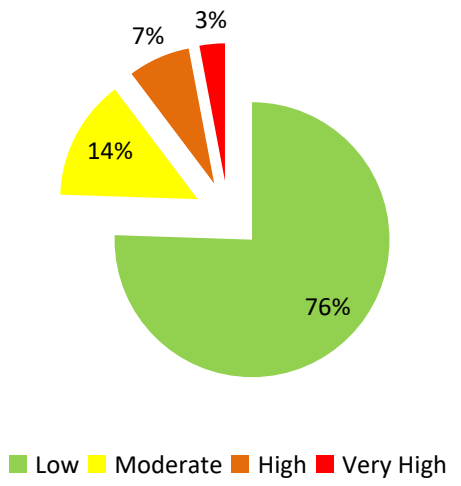
Hotspot Analysis of Locust Breeding in Thar Desert Region(1985-2020)



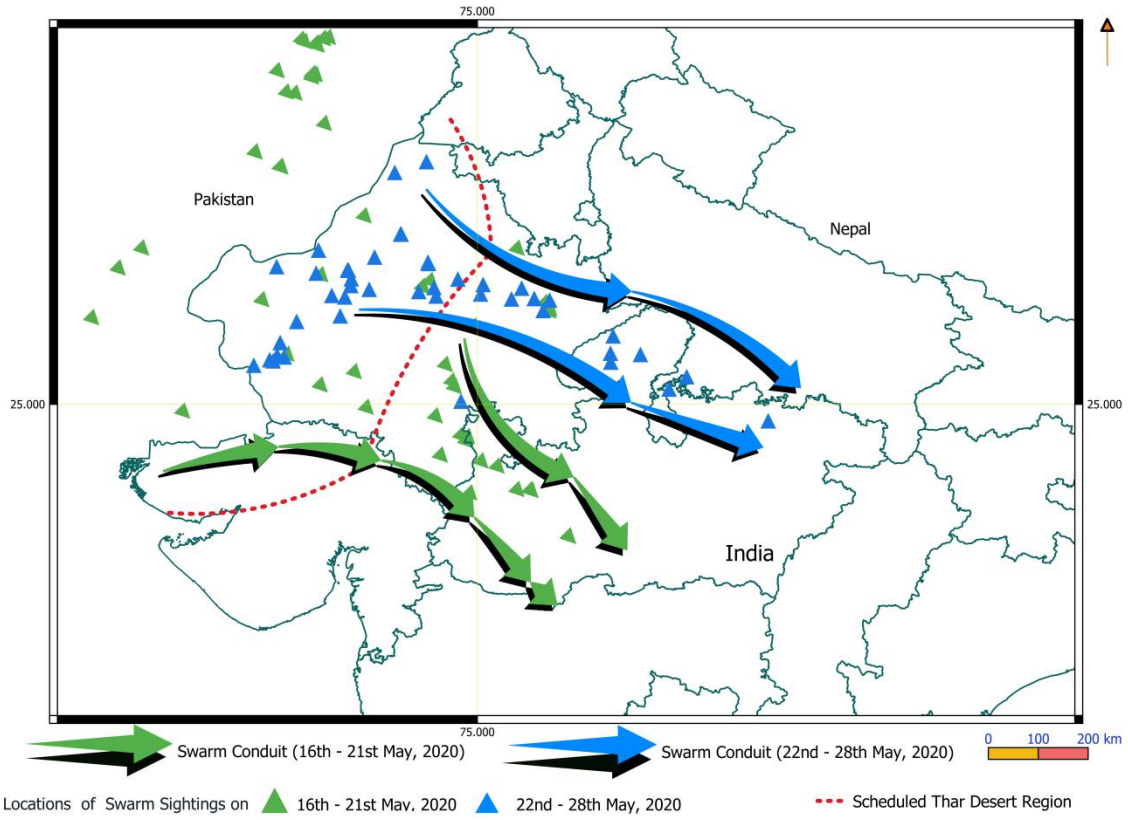
Hotspot analysis has been done using 7608 points representing the sighting of Hoppers during 1985 till 2020 in the scheduled Thar Desert region along Indo-Pak border region.

The analysis resulted in the below observations

a) Parts of North and Southwestern regions of Jaisalmer district are highly conductive for Hoppers
b) Southwestern region and Northern partrs of Bikaner district too is highly favourable for Hopper
c) Patches of areas belonging to Barmer, Jodhpur, and Churu moderately favours the habitat of Hoppers



Formation of Locust Swarm Conduits During Amphan Cyclone



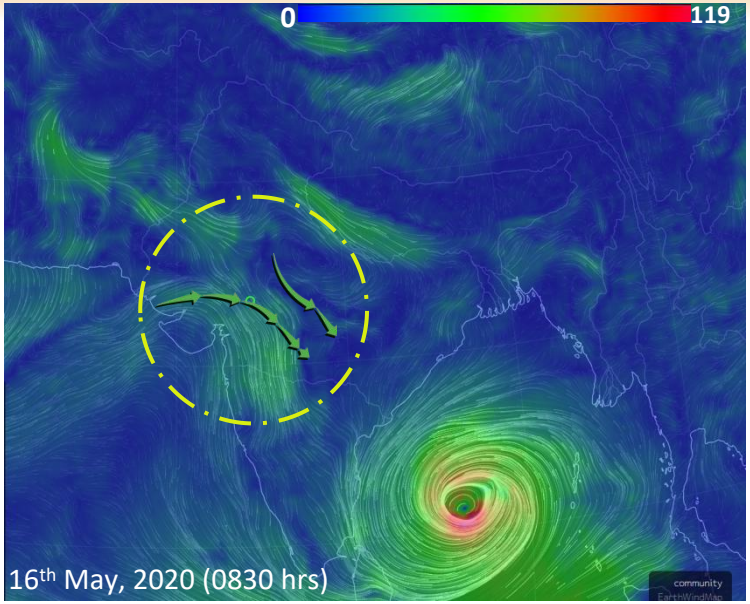
Time period	Oscillated swarms	Remark
1st Jan, 2018 – 9th May, 2020	2192	Oscillating in Indo-Pak border and the scheduled Thar Desert region of India
10th May, 2020 - 15th May, 2020	54	Oscillating in the scheduled Thar Desert region of India
16th May, 2020 – 21st May, 2020	36	Passed through first conduit
22nd May, 2020 – 28th May, 2020	49	Passed through second conduit

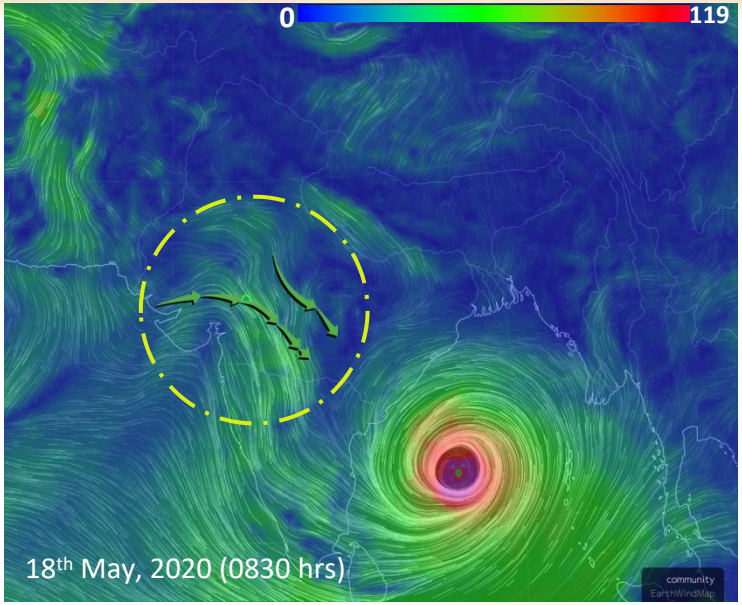
By virtue of Amphan Cyclone, two serial conduits at two different times (but in serial) were formed that favoured the migration of swarms from scheduled Thar Desert region to non-invasive parts of the country.

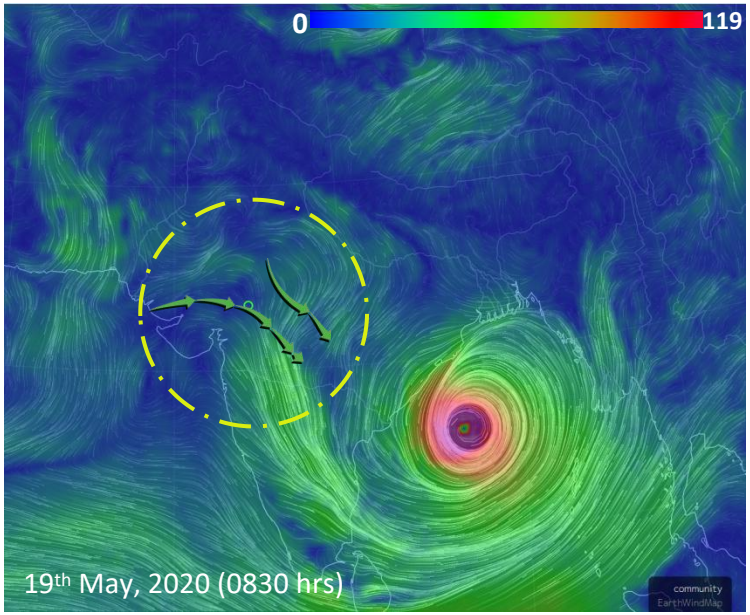
The first conduit favoured the migration of swarms from scheduled Desert region to the south central part of India during 16-21 May, 2020. Through this conduit swarms approached in and around of Ujjain (MP), Nagpur (Maharashtra) and finally unsustained at inhabitable conditions in Telangana state. During this period wind directions are oriented towards South-east for almost 6 days with mean wind speed of 30 kmph @ 850 hPa.

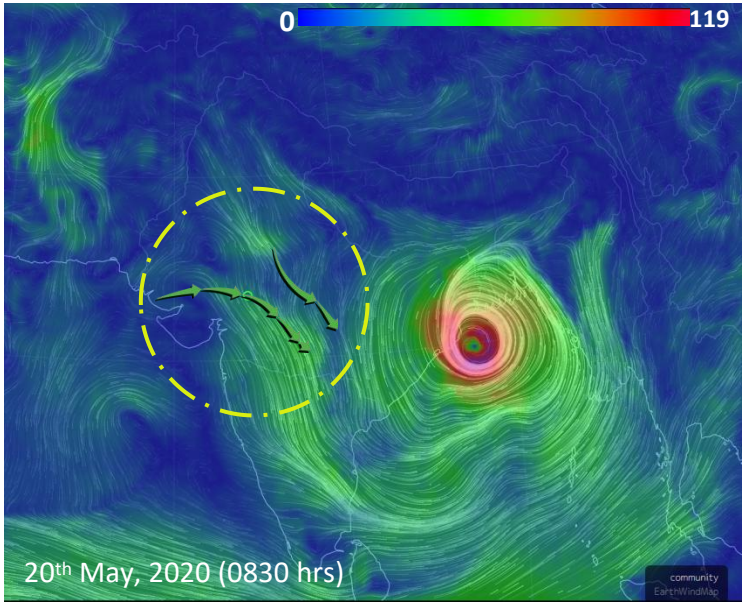
The second conduit favoured the migration of swarms from scheduled Desert region to the Uttar Pradesh state during 22-28 May, 2020. Through this conduit swarms approached districts like Jhansi, Chitrakoot, Prayagraj, Pratapgarh, Bhadohi, Azamgarh, Ambedkar Nagar. During this period wind direction are orentied towards Eastern side for almost 9 days with mean wind speed of 39 kmph @ 850 hPa. Post Nisargi cyclone, swarms steered towards Nepal and unsustained at cooler inhabitable conditions of Himalayan foothills.

Swarm Conduit During Amphan Cyclone (16th May, 2020 – 21st May, 2020)



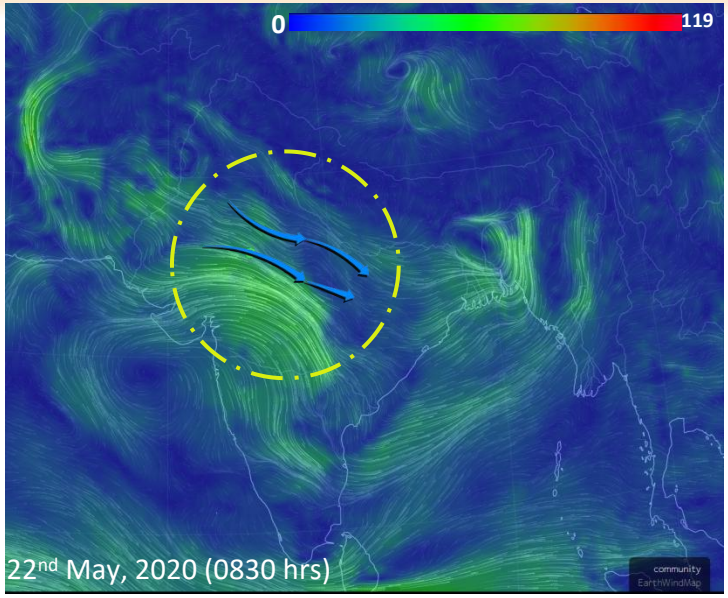


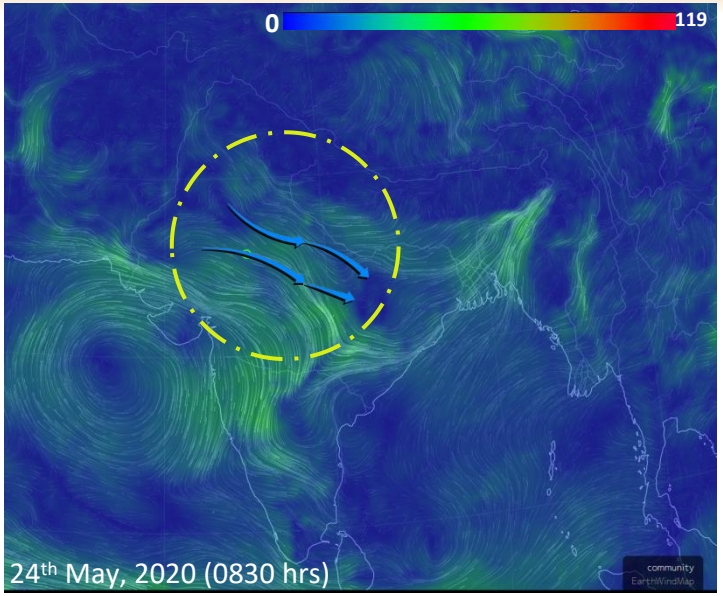


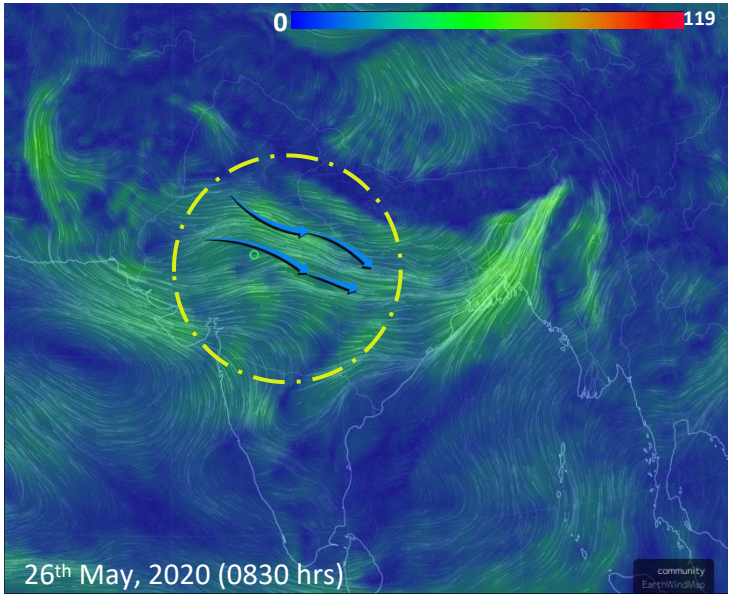


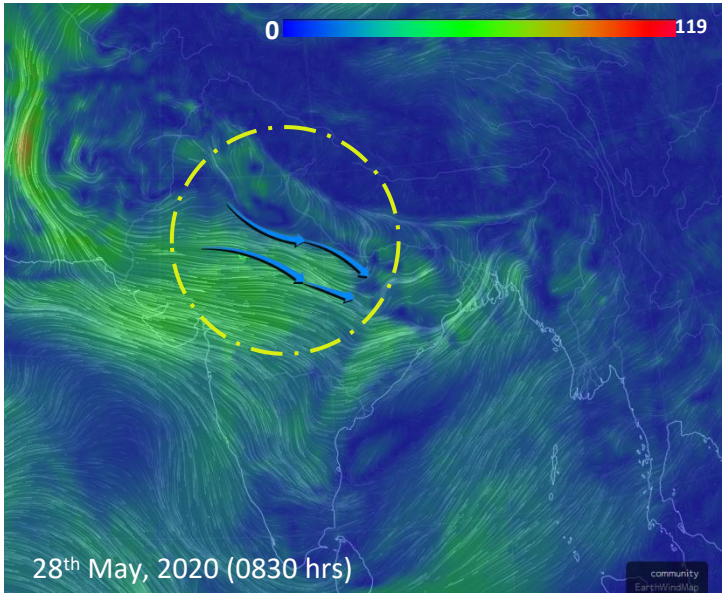
Swarm conduit (shown in green arrows) with mean wind direction/speed of 280° @30 kmph during 16-21 May, 2020.

Swarm Conduit Post Amphan Cyclonic Event (22nd May, 2020 – 28th May, 2020)









Swarm conduit (shown in blue arrows) with mean wind direction/speed of 280° @39 kmph during 22-28 May, 2020.