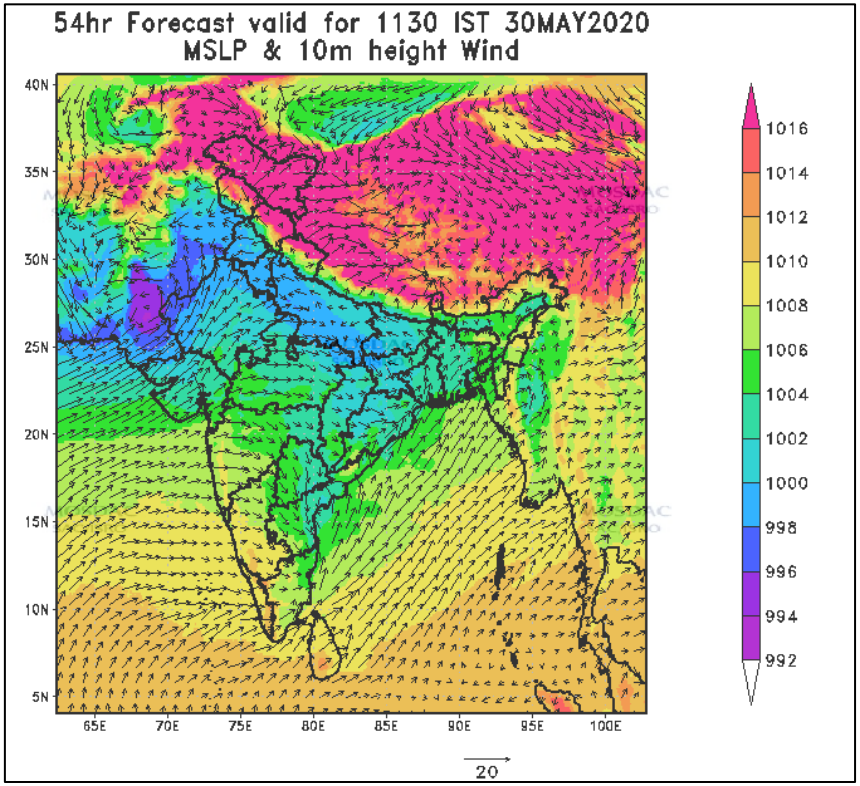
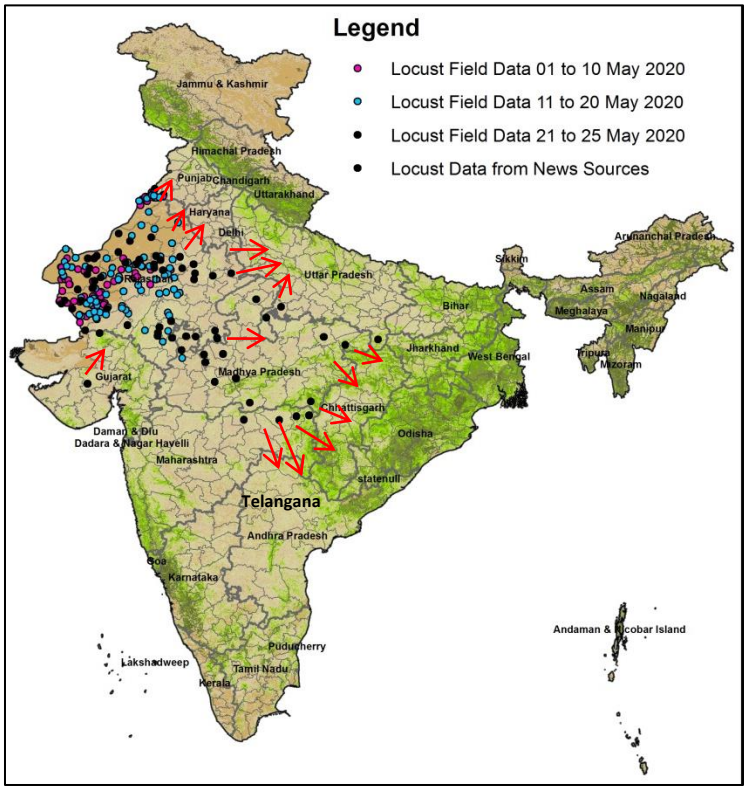
Tracking of Locust Migration in India

During May 2020





Regional Remote Sensing Centre –West

NRSC/ISRO - Jodhpur

Tracking of Locust Migration in India

During May 2020

- A study pertaining to the Locust Migration in India has been initiated as a part of Disaster Management Support Program (DMSP).
- Vegetation status, Soil Moisture, Wind direction and rainfall data along with Locust incidence reports are used in this study.
- The rainfall in the months of March-April in the parts of Thar desert and other deserts have favoured the breeding of Locust (FAO, 2020).

Tracking of Locust Migration in India

During May 2020

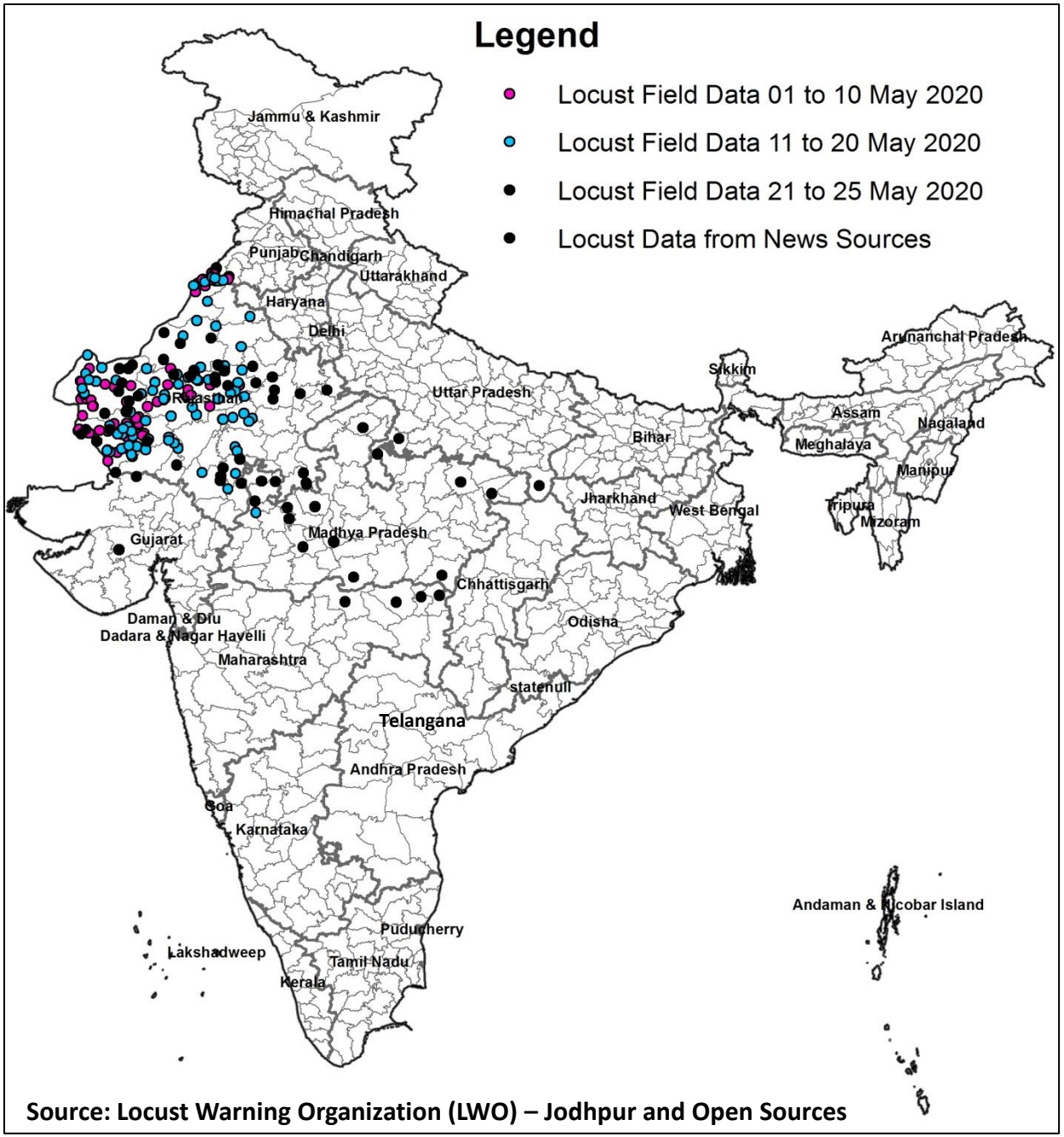
Data

- Vegetation status maps - Derived from MODIS
- Rainfall and Wind direction – MOSDAC
- Soil Moisture – ESA:SMOS
- Locust incidences – LWO, Jodhpur

It is observed that there is strong correlation exists for Locust migration with wind direction and vegetation during 21-28th May 2020.

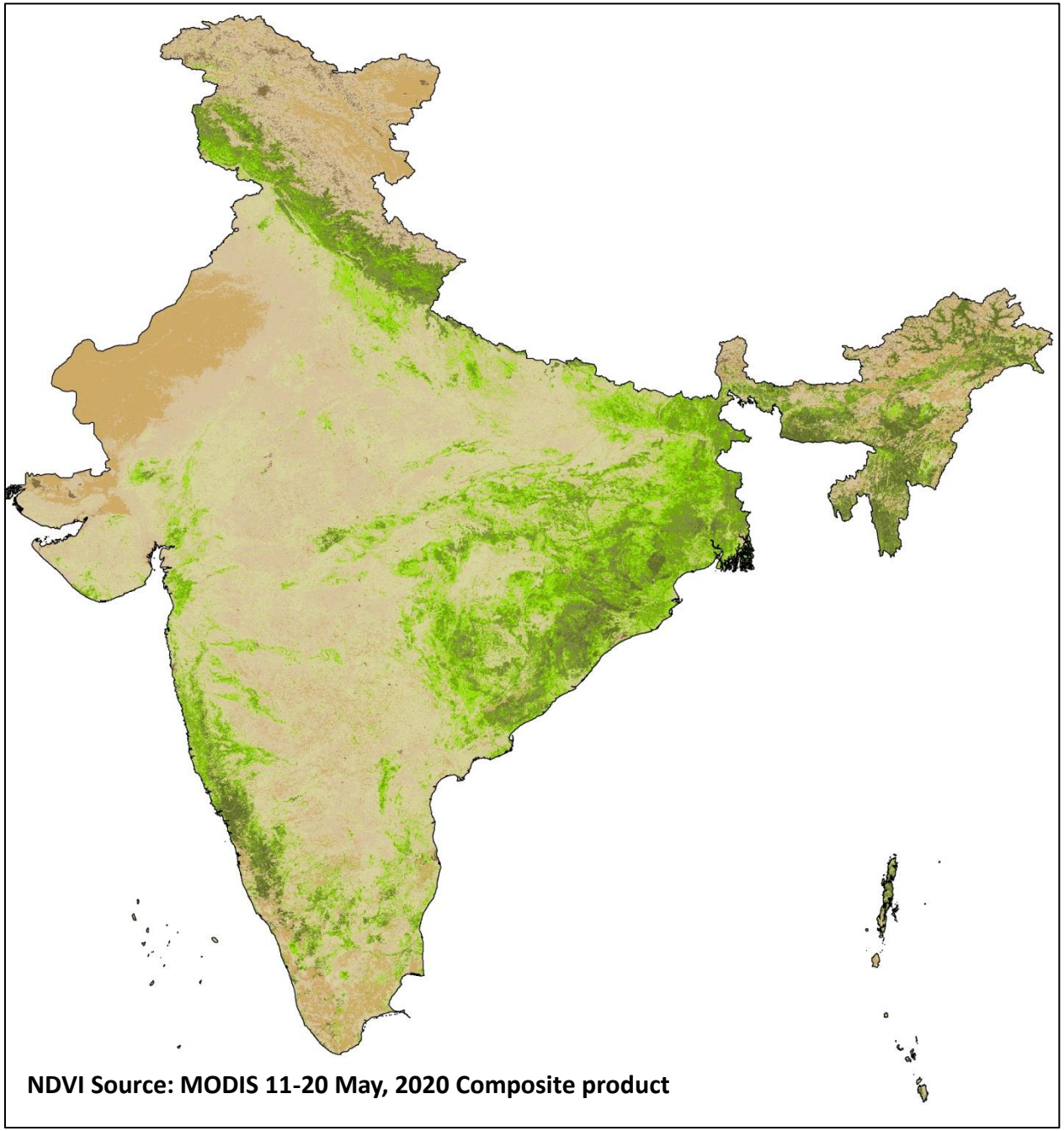
Based on the environmental conditions the probable migration of Locust has been mapped for May 30th and May 31st, 2020.

Locust spotted points in India during May, 2020



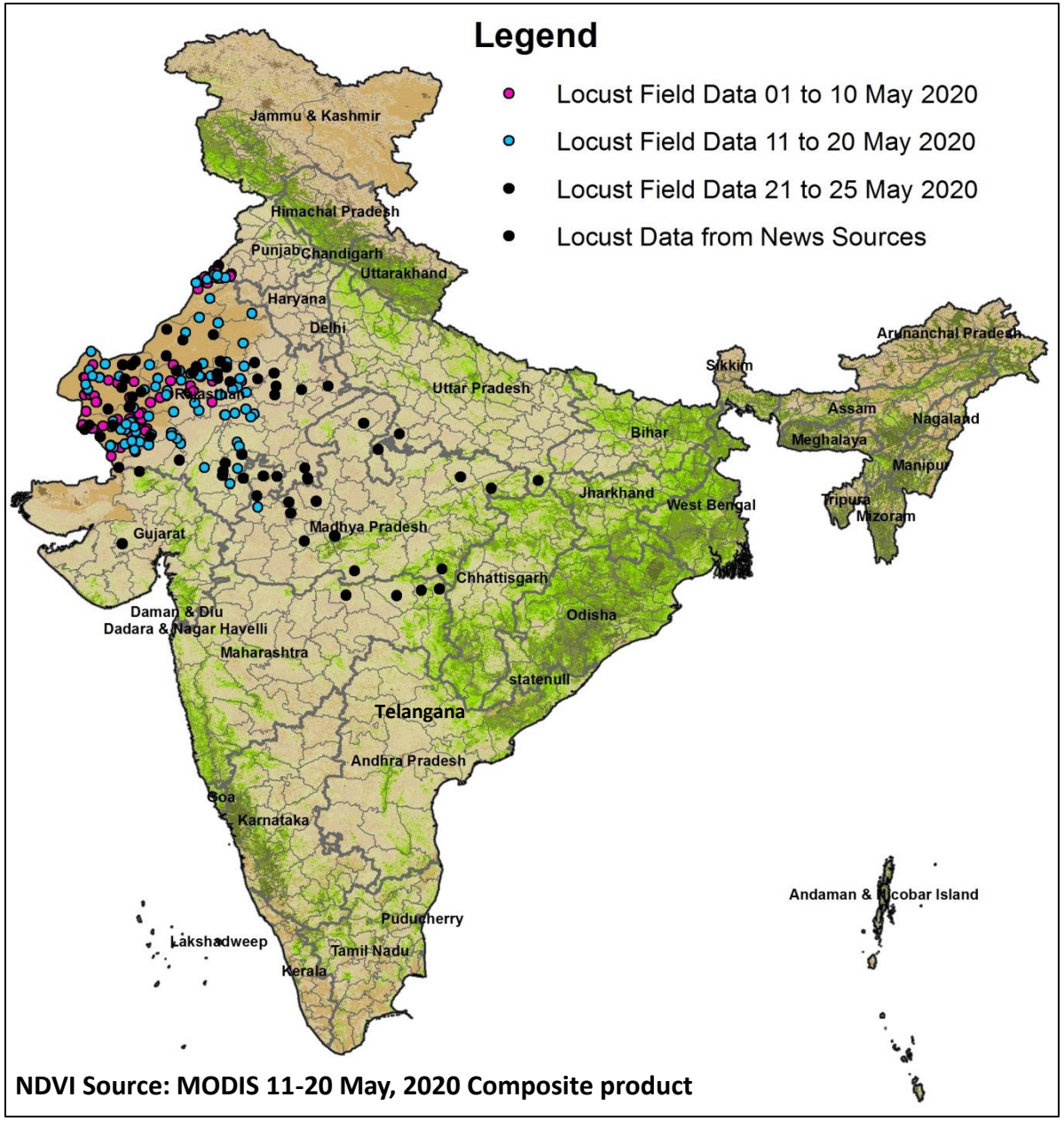
Source: Locust Warning Organization (LWO) – Jodhpur and Open Sources

NDVI Composite 11 to 20 May, 2020

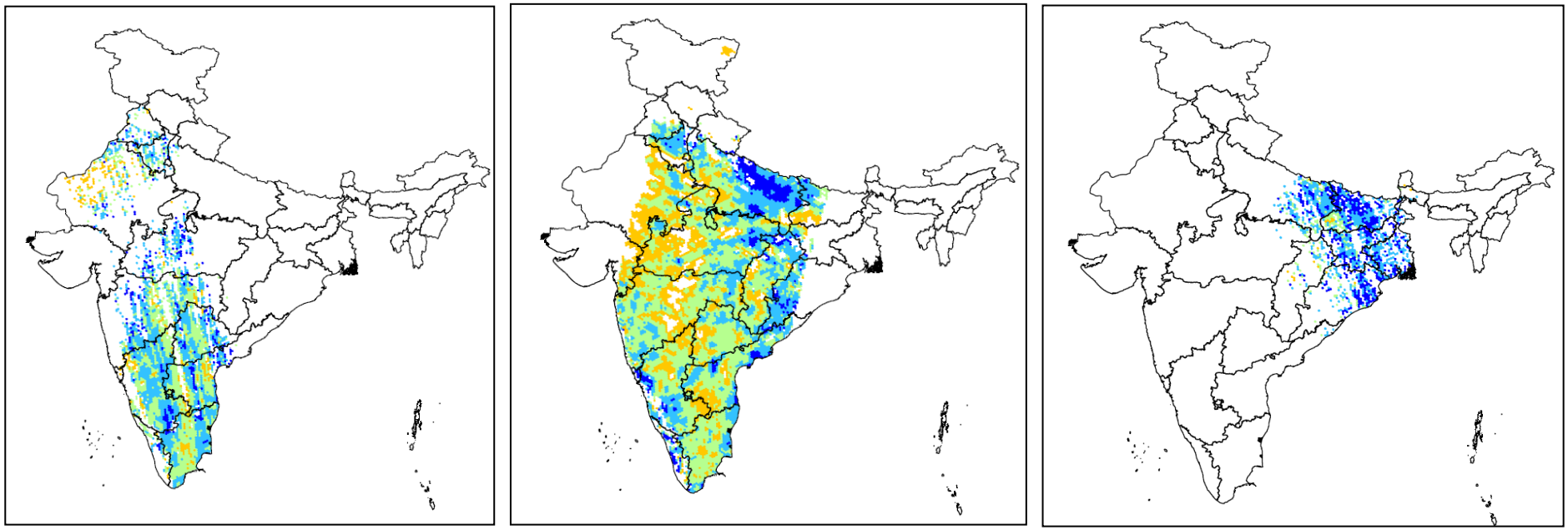


NDVI Source: MODIS 11-20 May, 2020 Composite product

Locust spotted points over NDVI Image



Surface Soil Moisture Variation during 05 May 2020

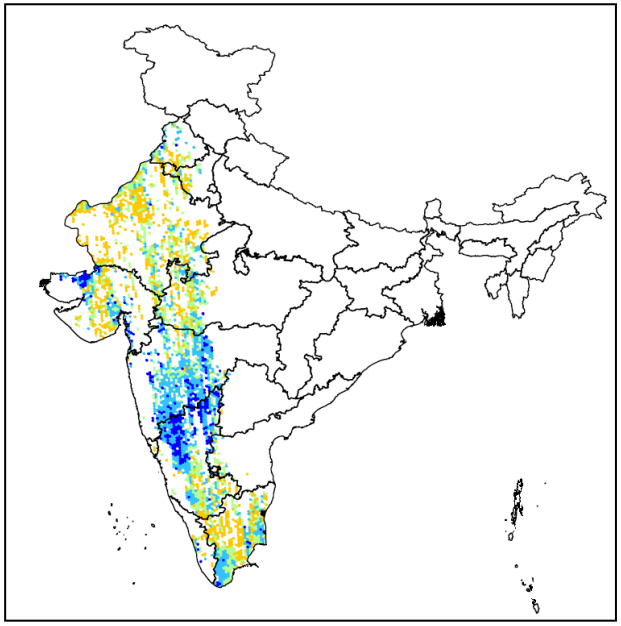


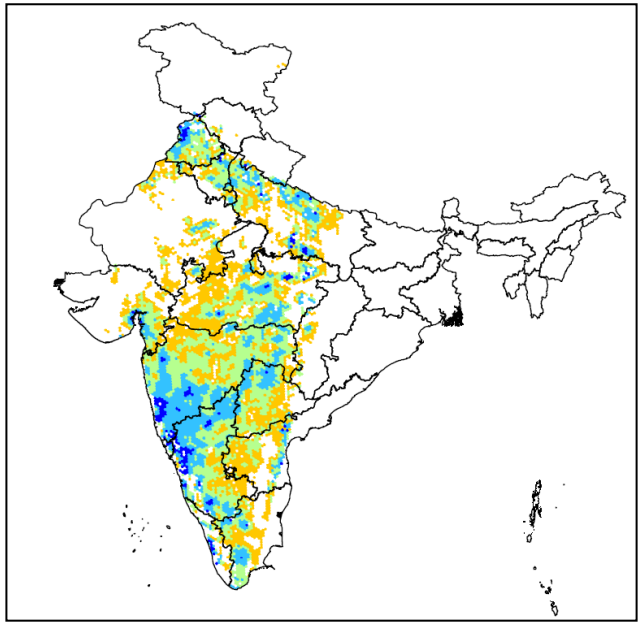
Soil Moisture %

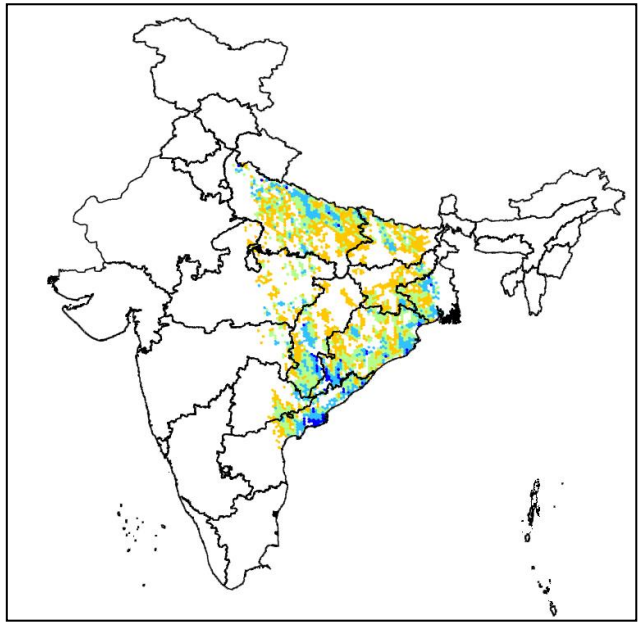
- 0 - 3
- 3 - 10
- 18 - 36
- 10 - 18
- > 36

(Source : SMOS L2 product)

Surface Soil Moisture Variation during 15 May 2020





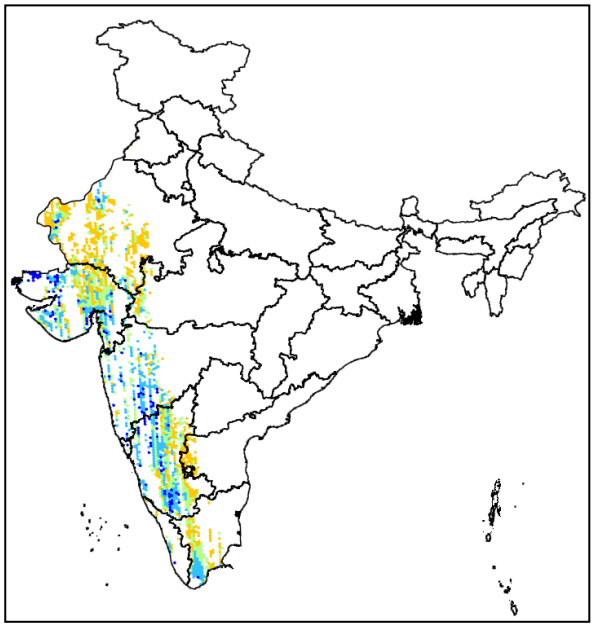


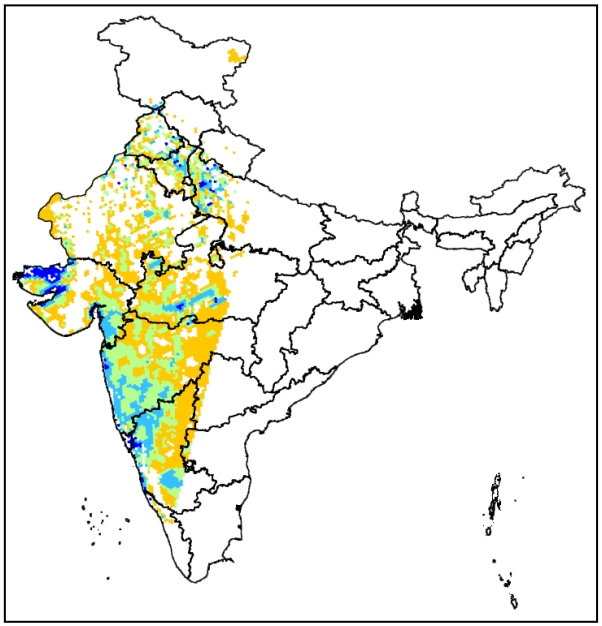
Soil Moisture %

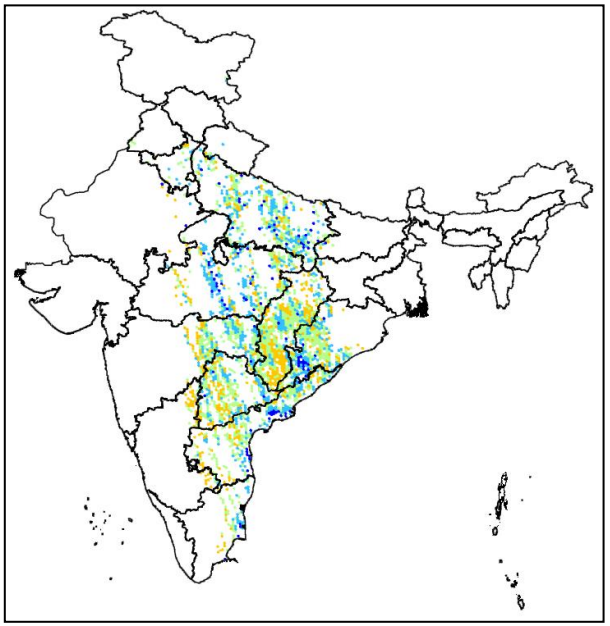
- 0 - 3
- 3 - 10
- 18 - 36
- 10 - 18
- > 36

(Source : SMOS L2 product)

Surface Soil Moisture Variation during 25 May 2020





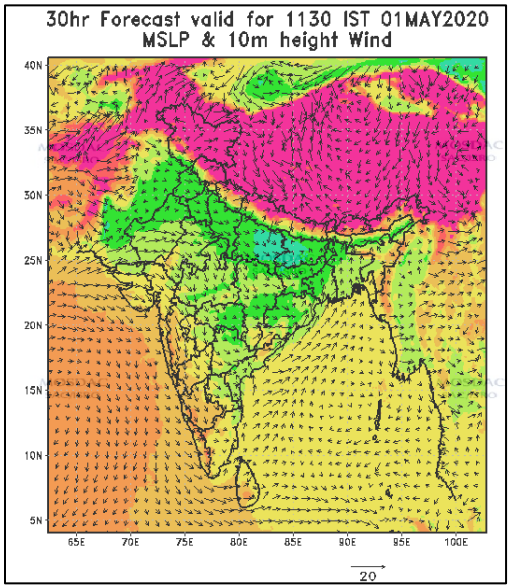


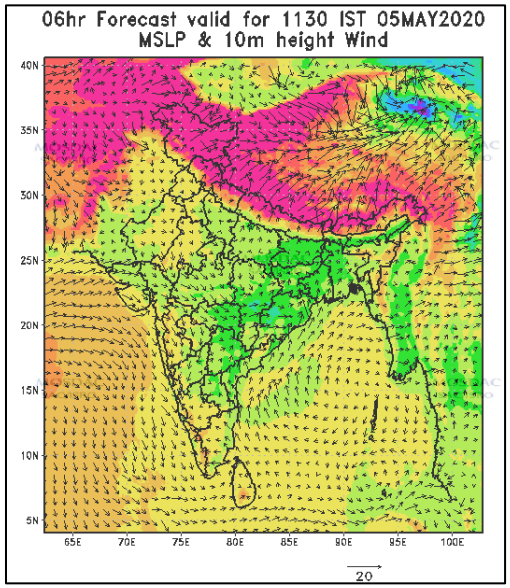
Soil Moisture %

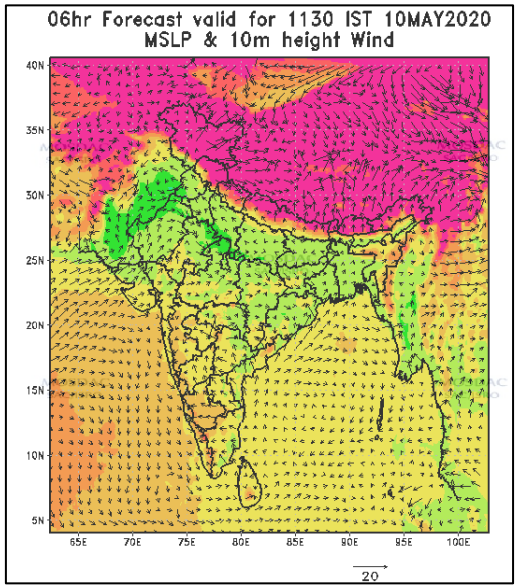
- 0 - 3
- 3 - 10
- 18 - 36
- 10 - 18
- > 36

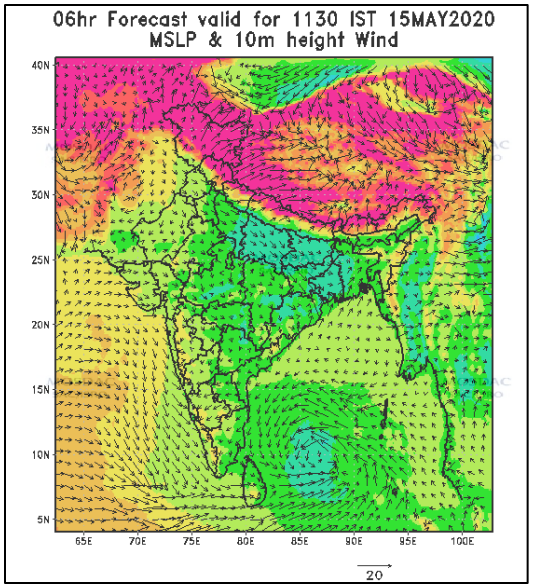
(Source : SMOS L2 product)

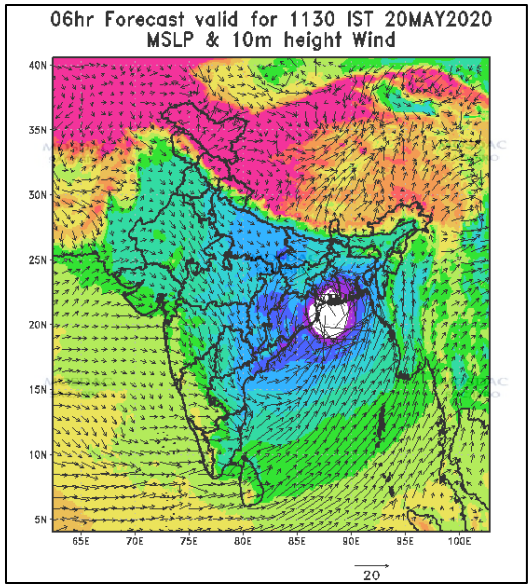
Wind direction in India during May, 2020

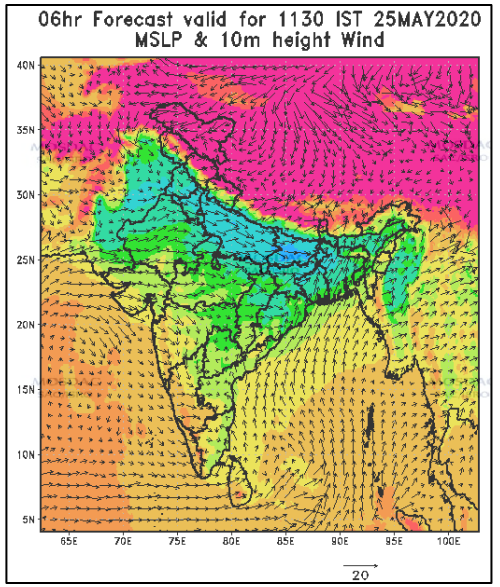


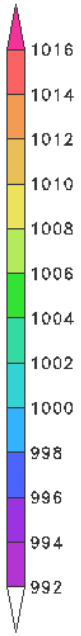




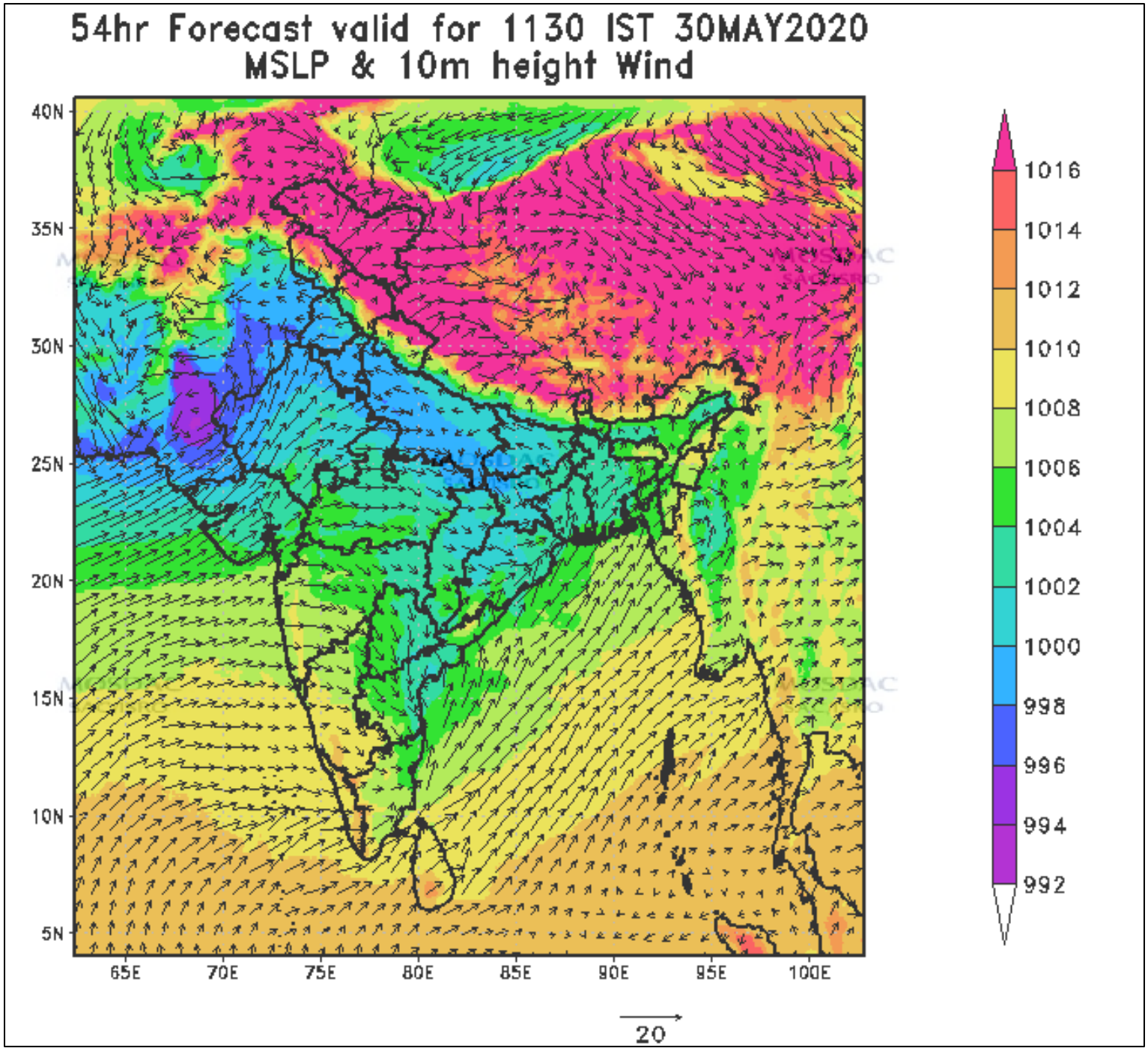




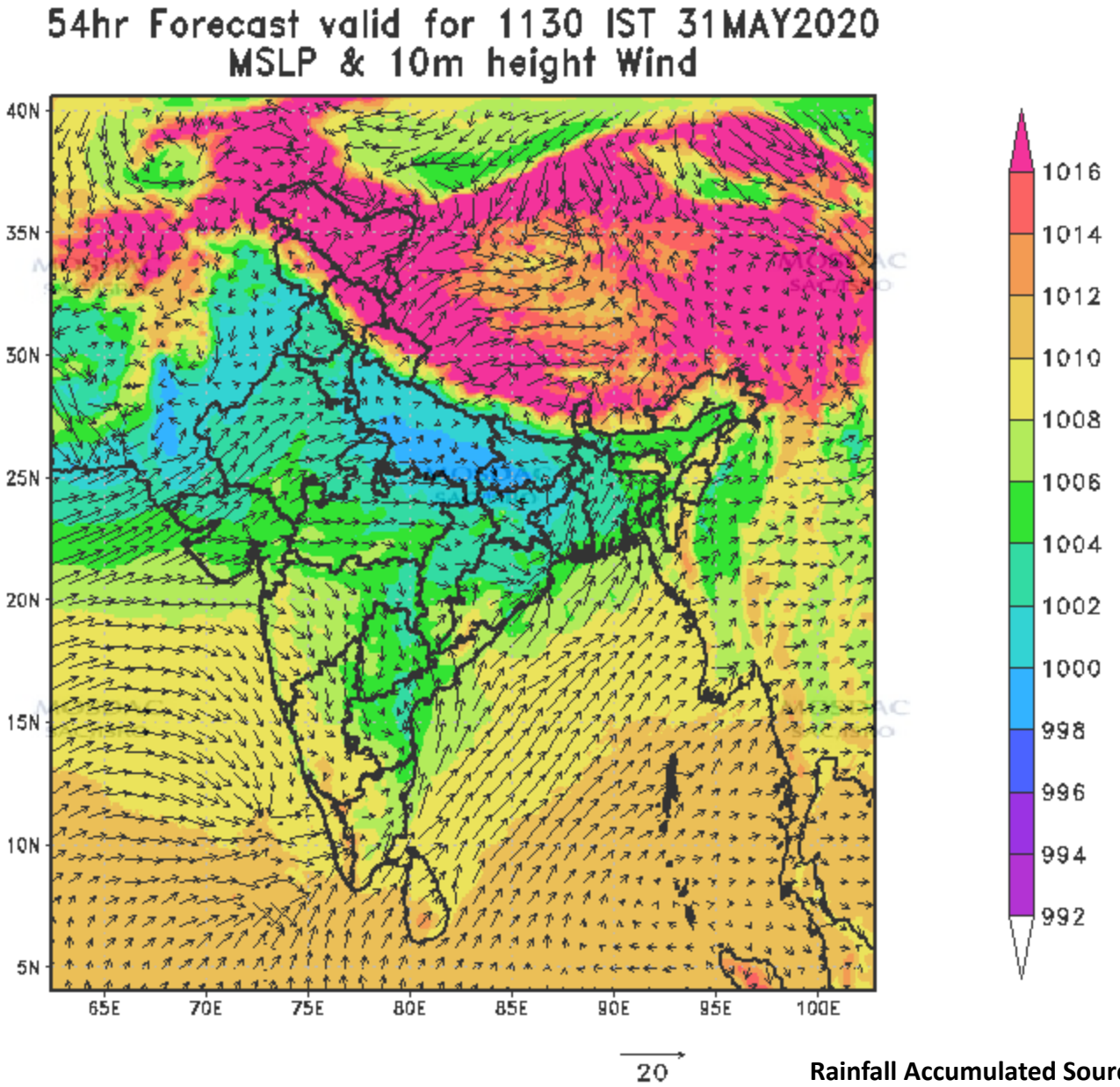




Rainfall Accumulated Source: MOSDAC

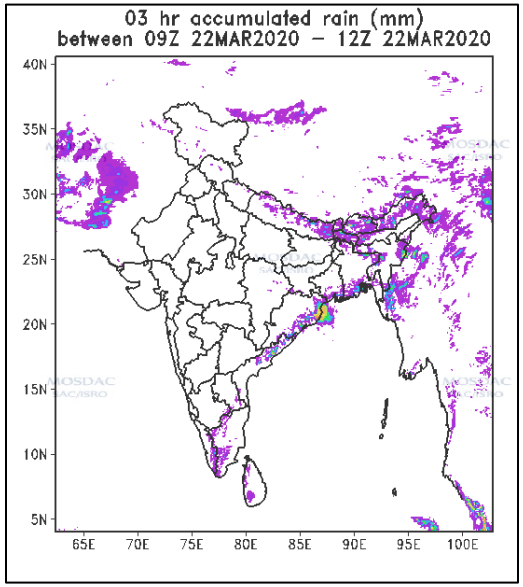

54hr Forecast valid for 1130 IST 30MAY2020
MSLP & 10m height Wind
40N
35N
30N
25N
20N
15N
10N
5N
65E
70E
75E
80E
85E
90E
95E
100E
1016
1014
1012
1010
1008
1006
1004
1002
1000
998
996
994
992
20

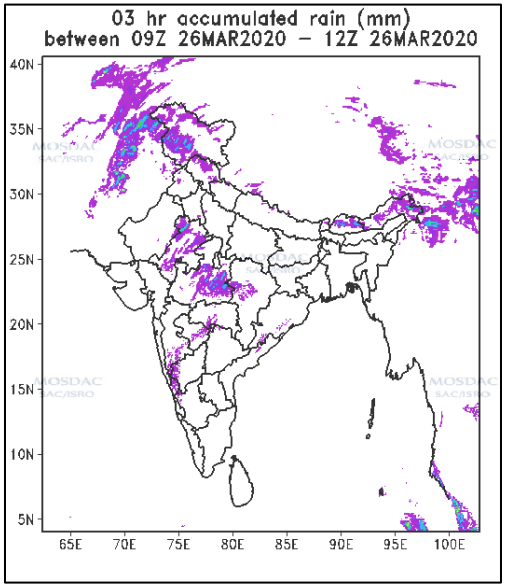
Wind direction in India Forecast for 31st May, 2020

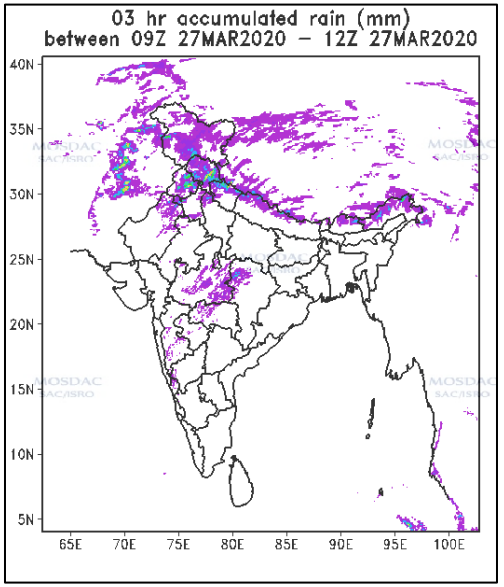


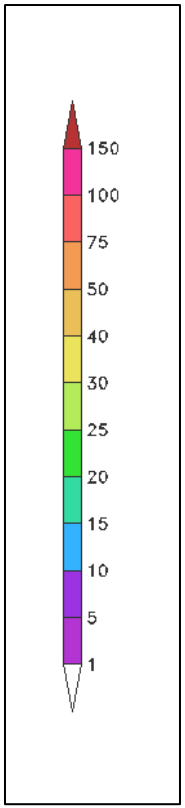
Rainfall Accumulated Source: MOSDAC

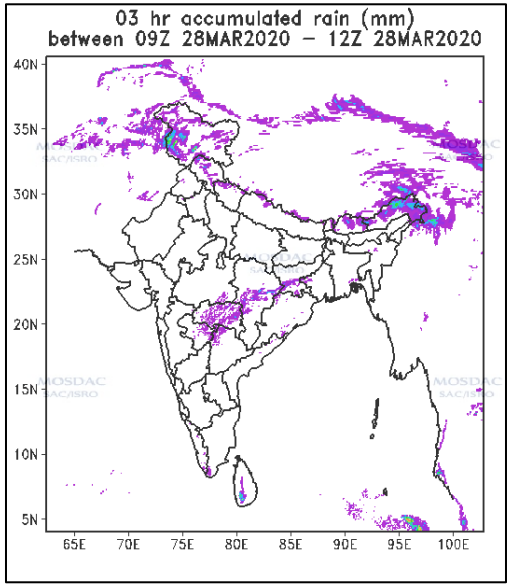
Rainfall Accumulated (mm) – March, 2020

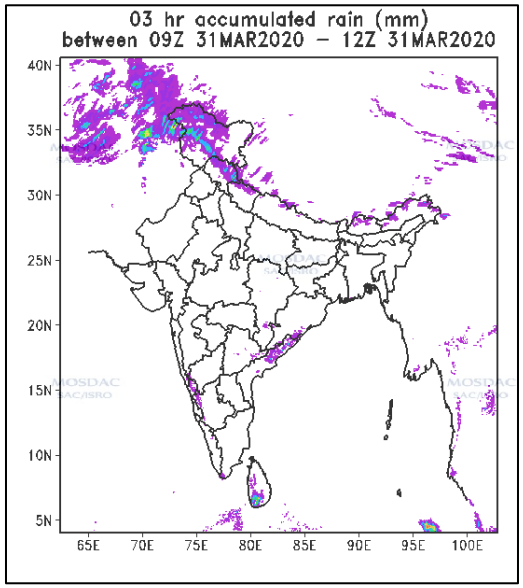






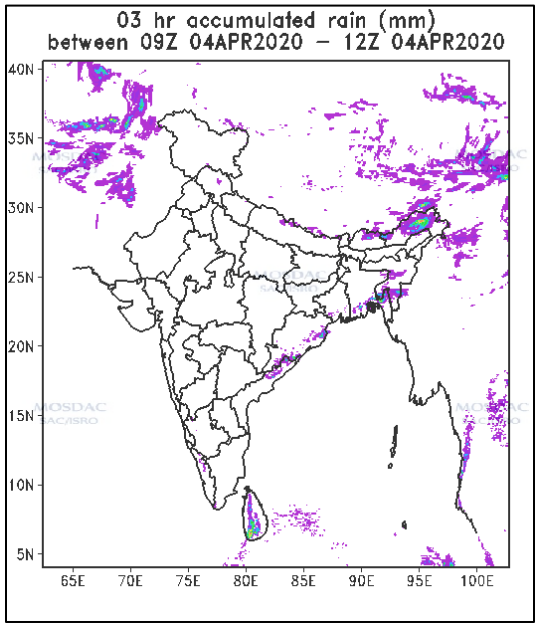


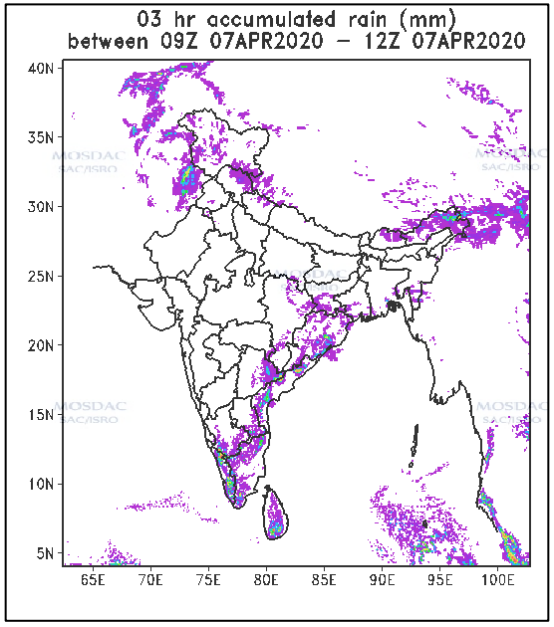


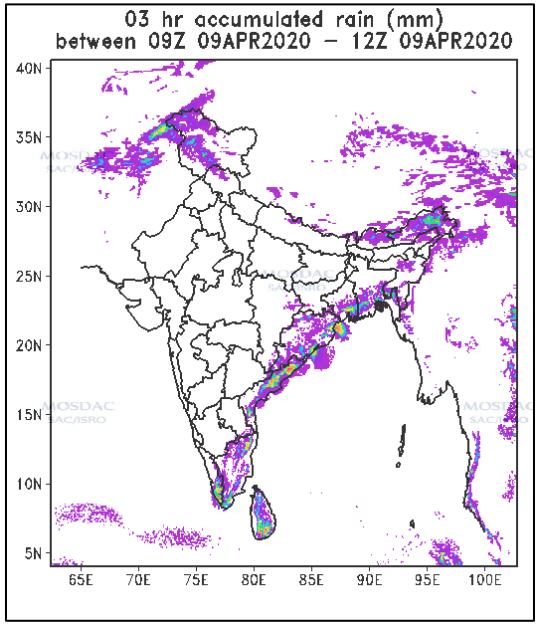


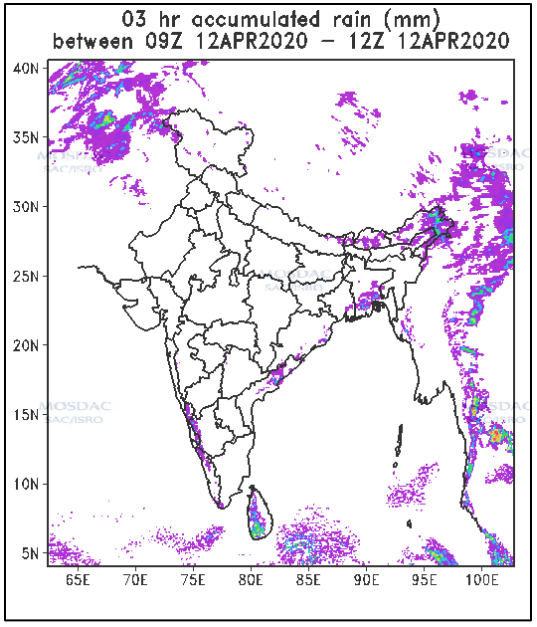
Rainfall Accumulated Source: MOSDAC

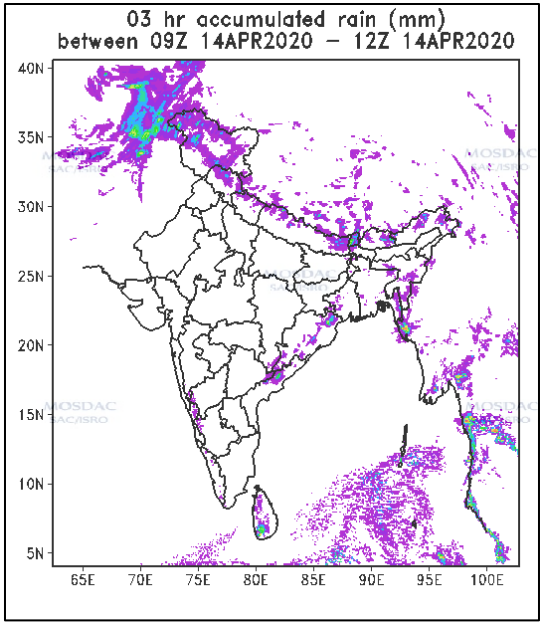
Rainfall Accumulated (mm) – April, 2020

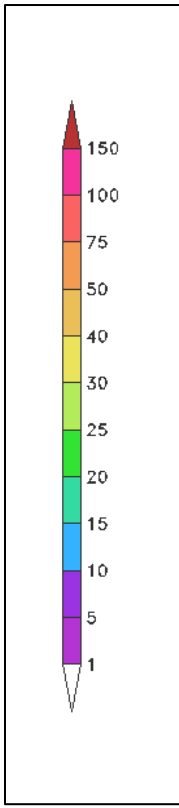




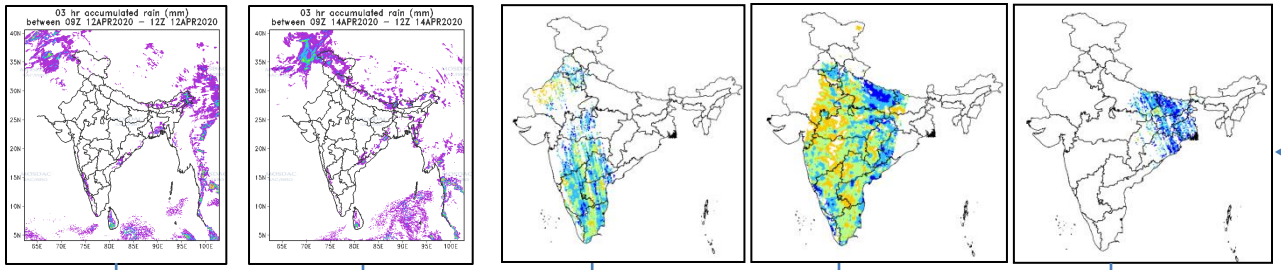








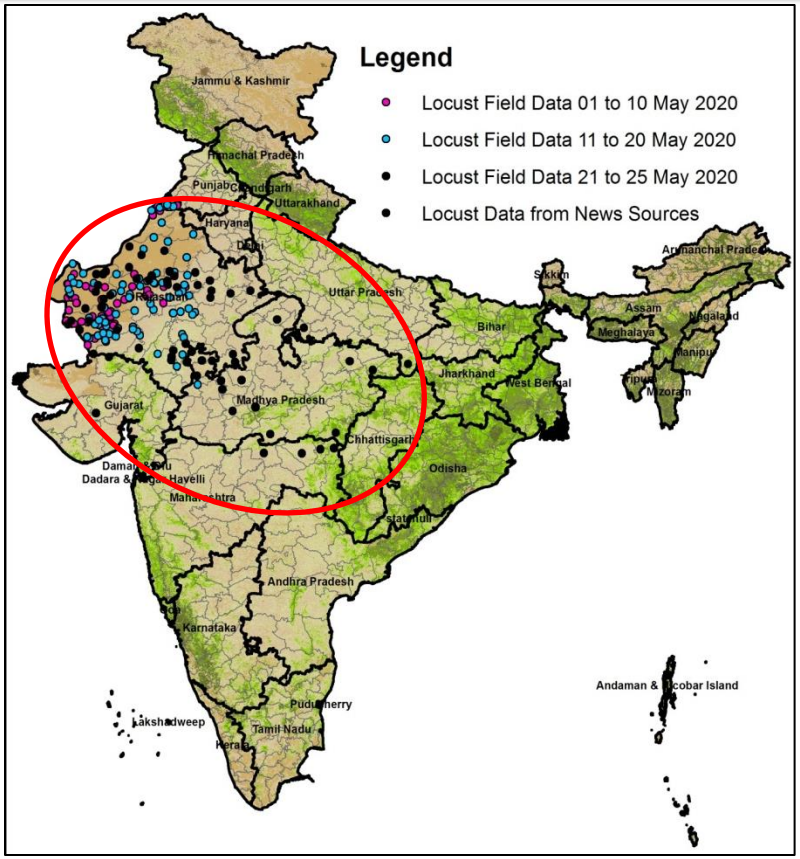
Rainfall Accumulated Source: MOSDAC

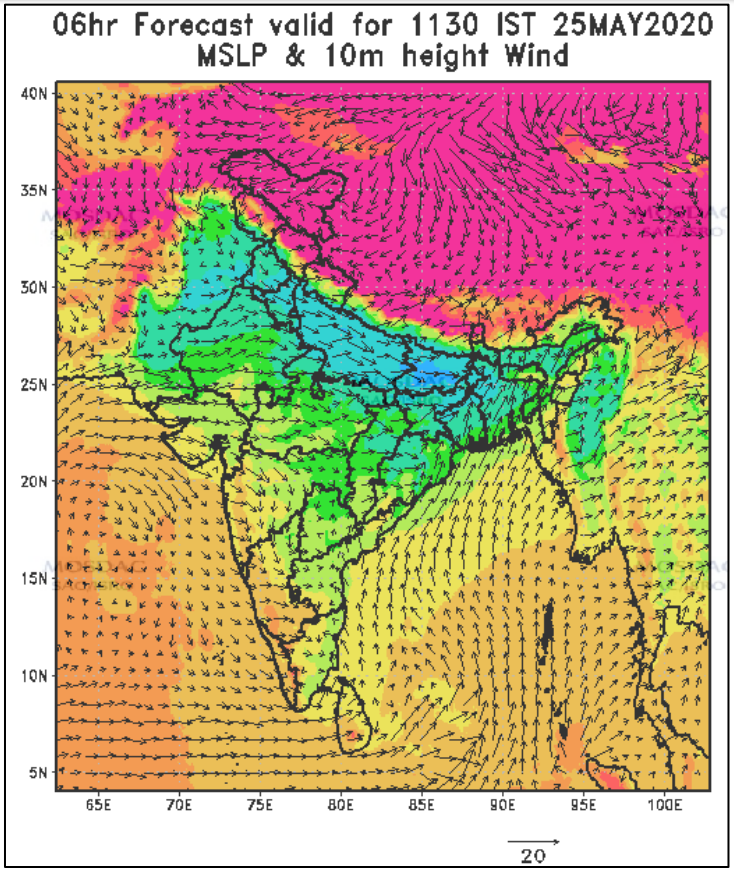


Intensified Breeding Sites

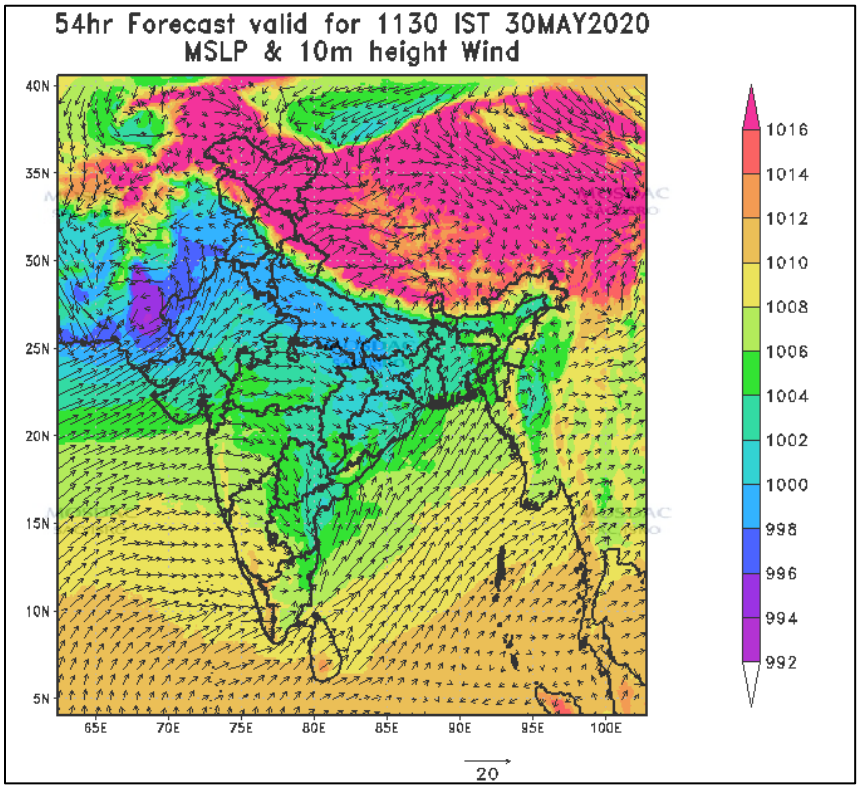
Recursive rainfall events in Thar desert and surroundings has created enough soil moisture and led to suitable conditions for breeding sites in Indo-Pak Border (FAO, 2020)

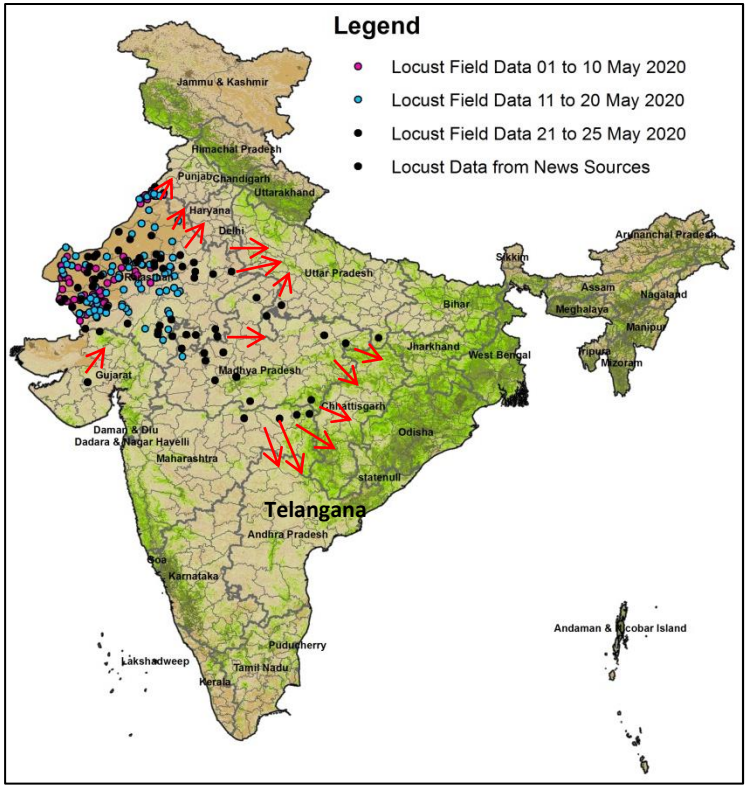
Map shows the progression of Locust in Rajasthan, Madhya Pradesh, Uttar Pradesh and Maharastra states during first fortnight of May, 2020



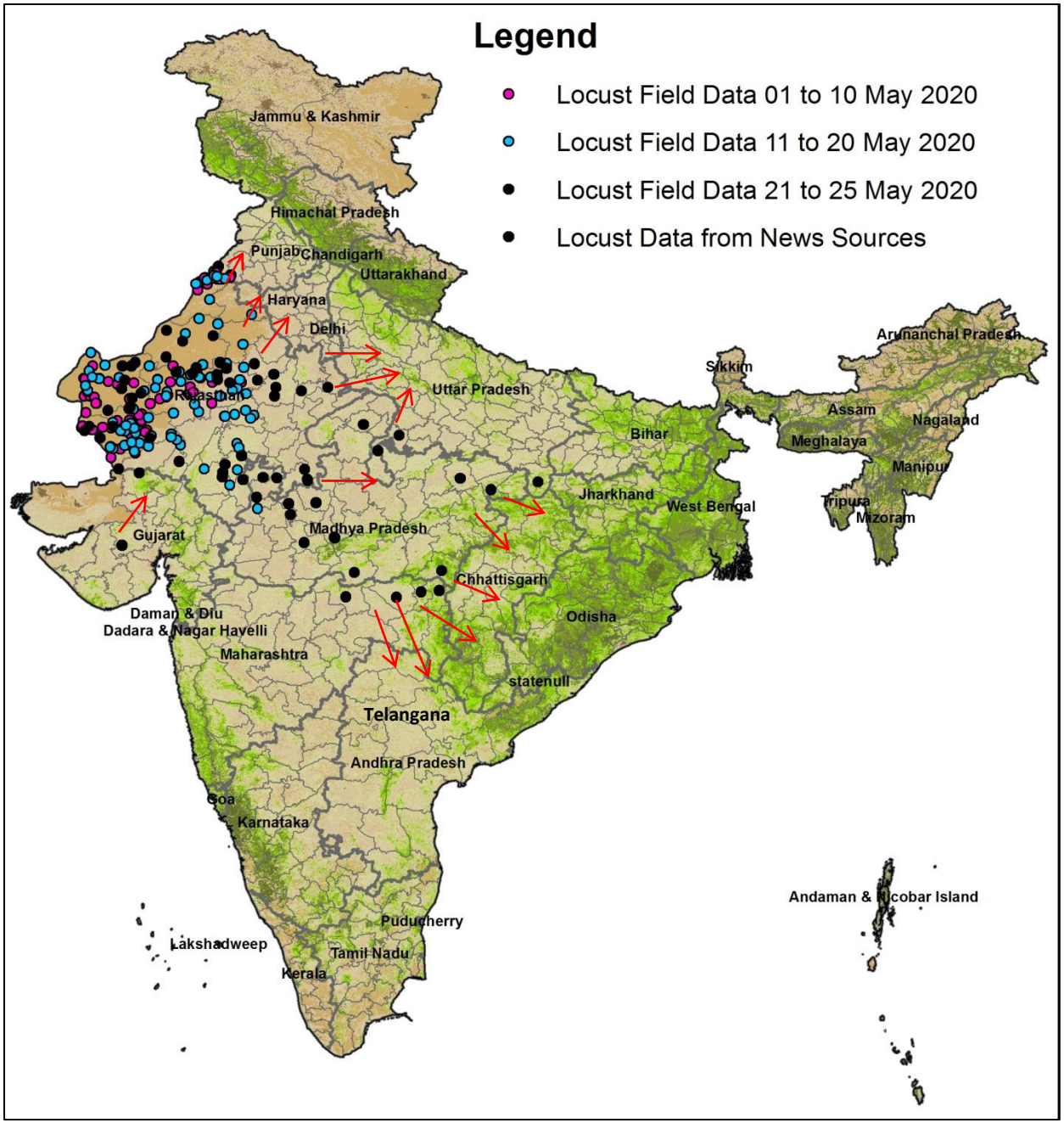


Probable Locust Migration based on Vegetation Status & Wind Direction (30th May, 2020)





Probable Locust Migration based on Vegetation Status & Wind Direction (30th May, 2020)



Thank you