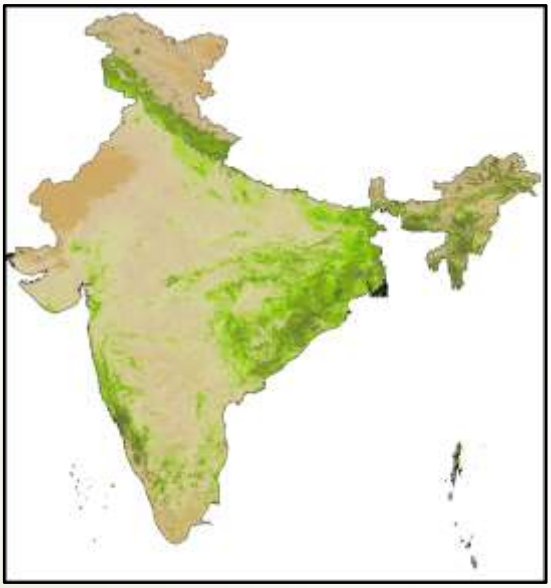
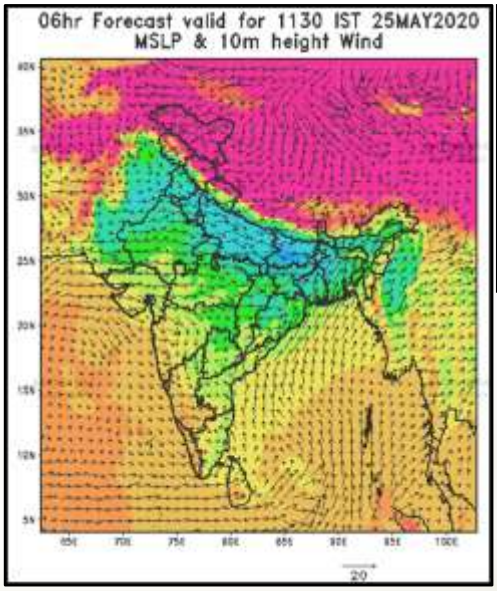
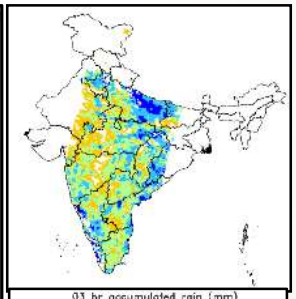
Locust Surveillance using Geospatial Technology

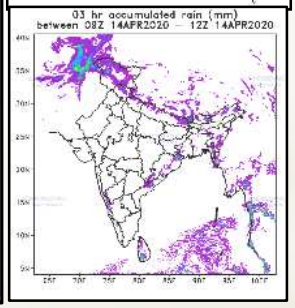
No. : 02 / 2020

Date : 05 June 2020



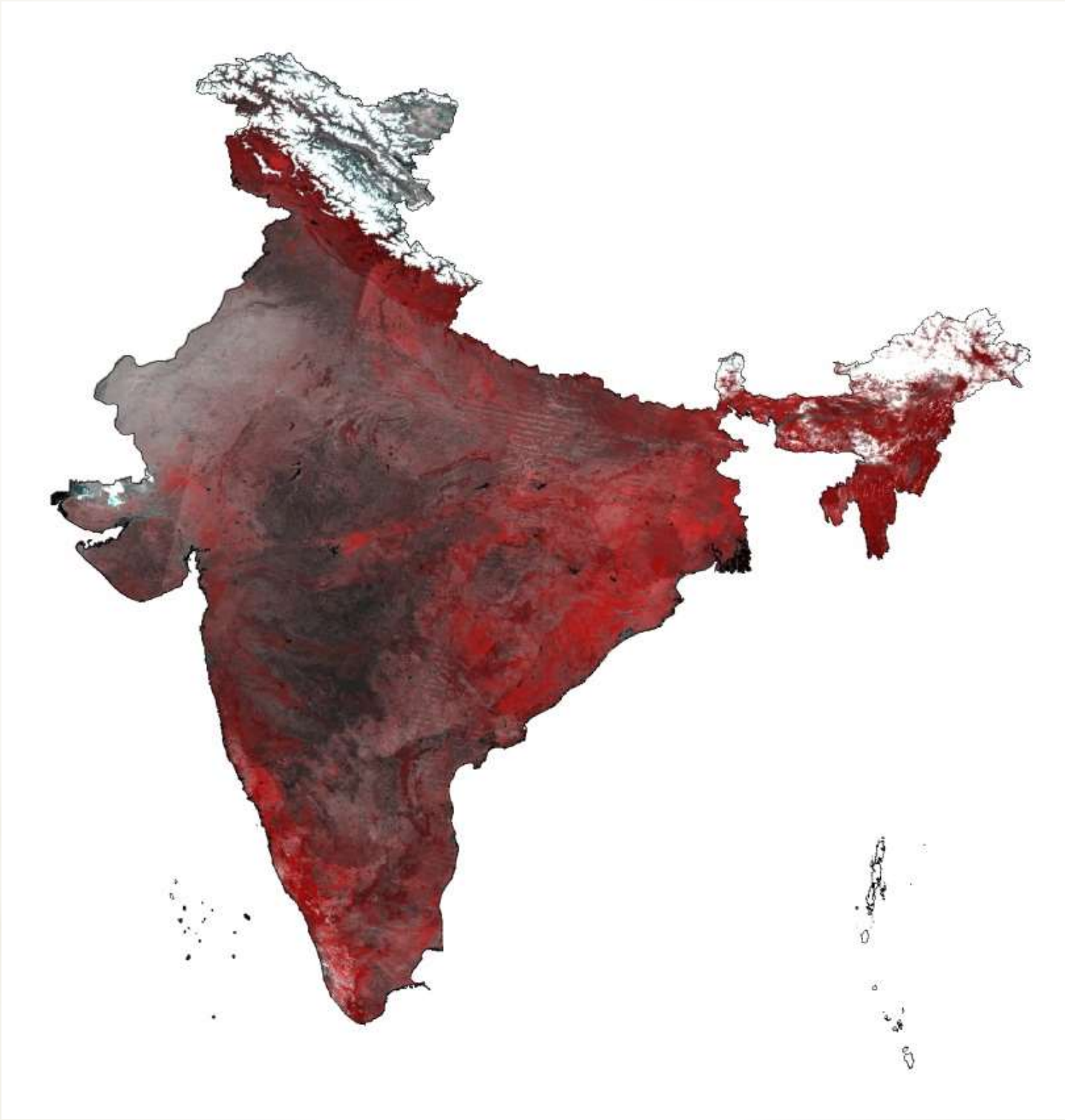






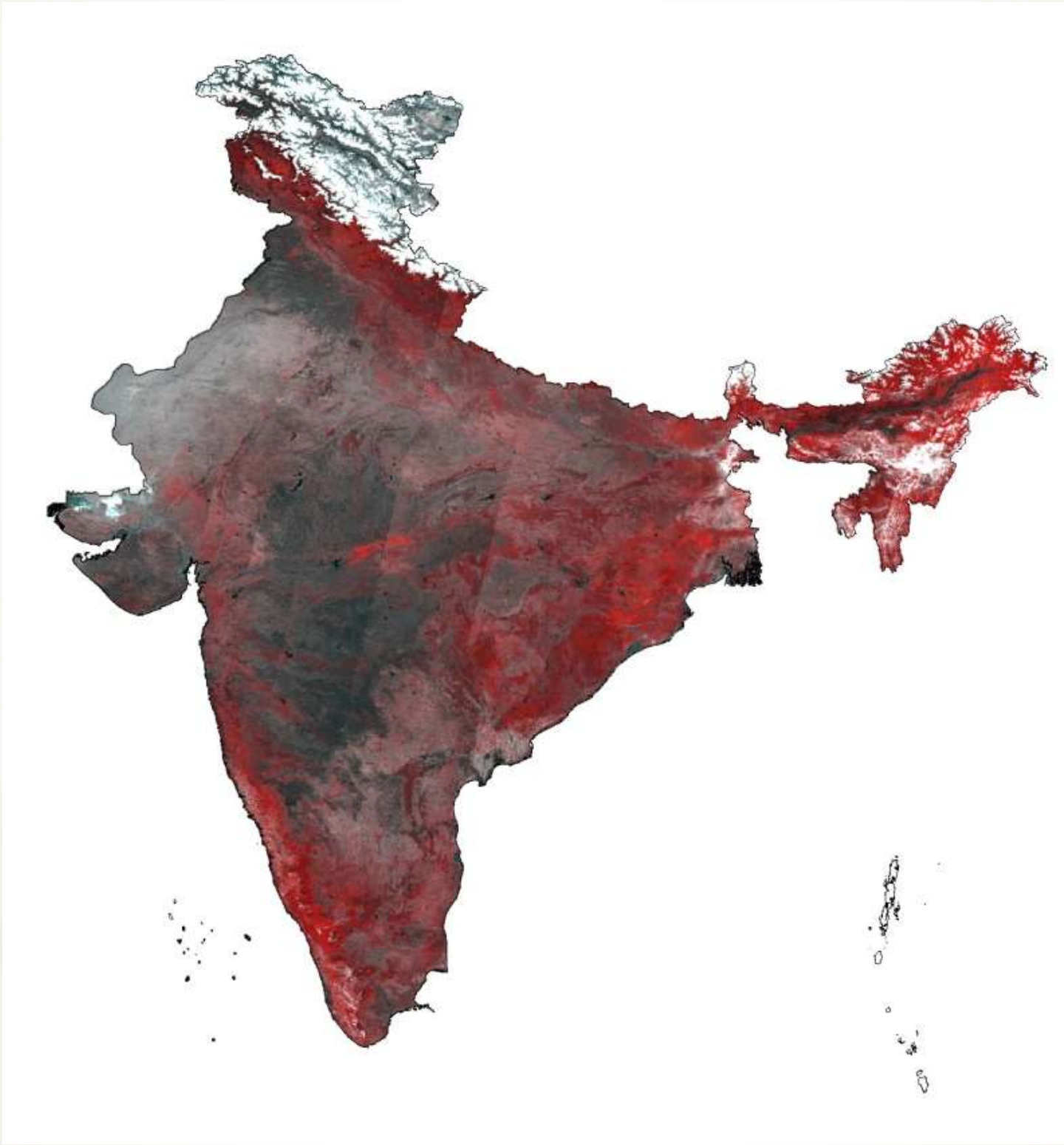
RRSC-West, NRSC/ISRO, Jodhpur

False Colour Composite



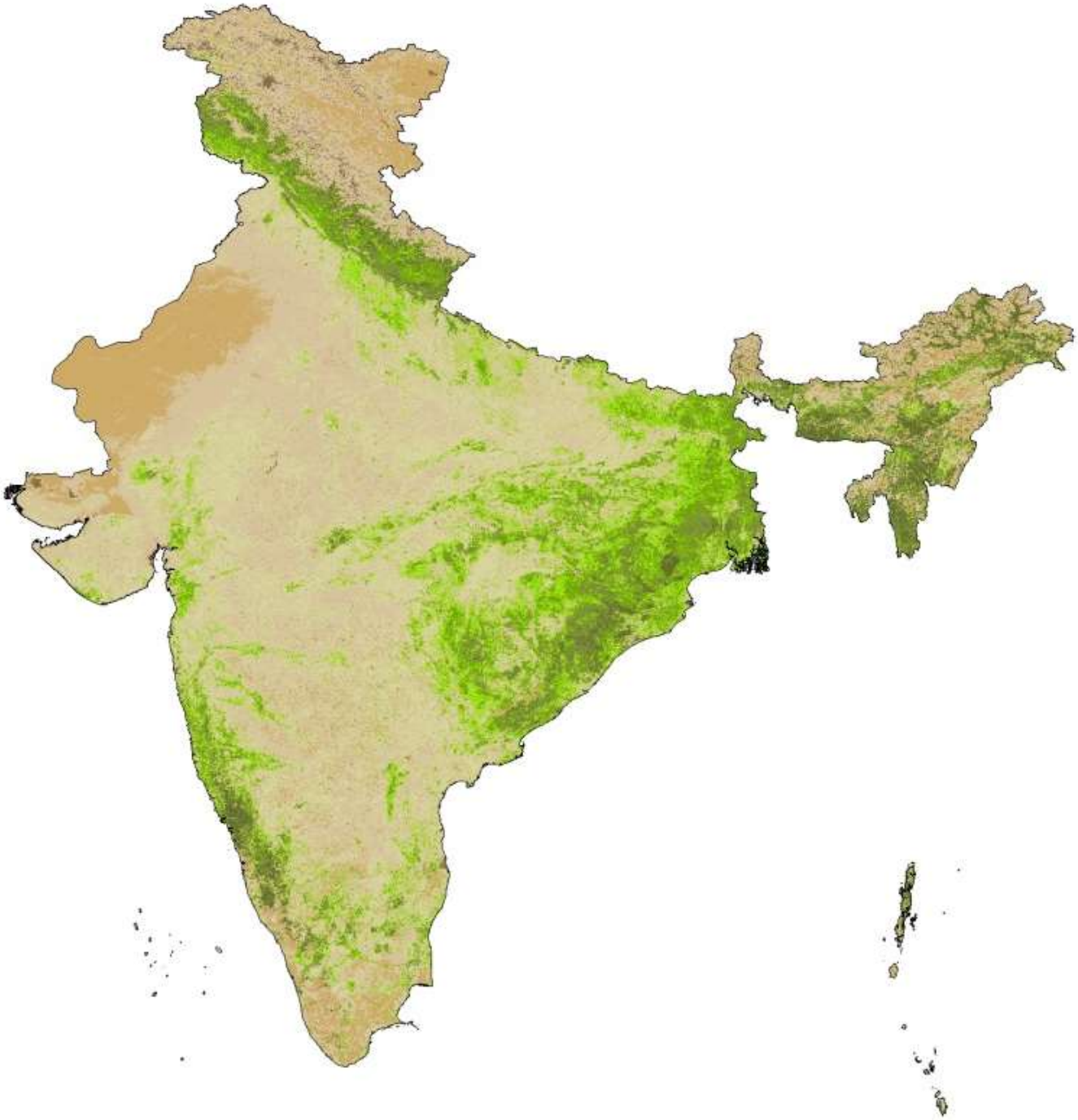
Source: MODIS 8day Composite
19-26 May, 2020

False Colour Composite



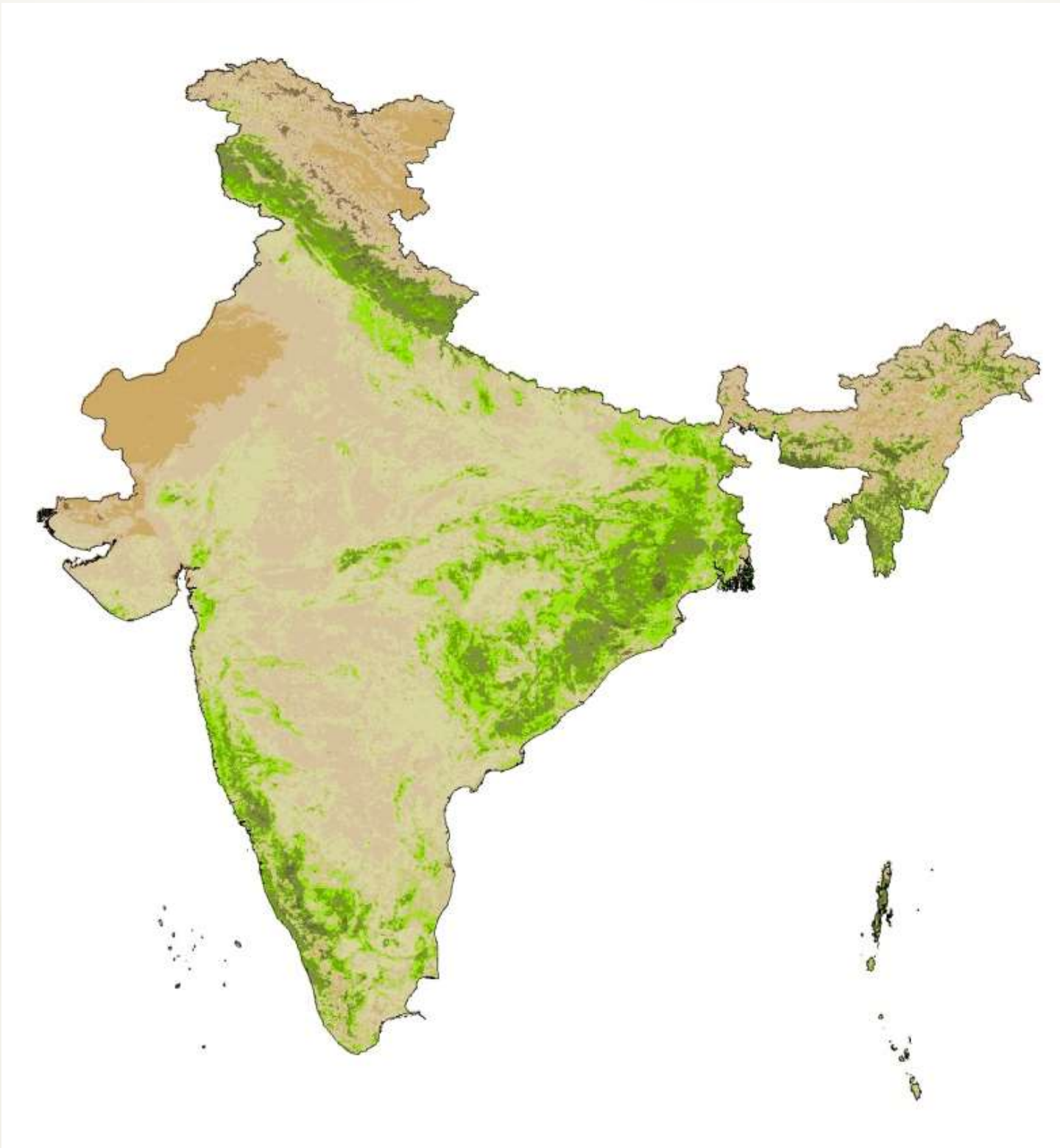
Source: MODIS 8day Composite
27 May: 02 June, 2020

Normalized Difference Vegetation Index Map



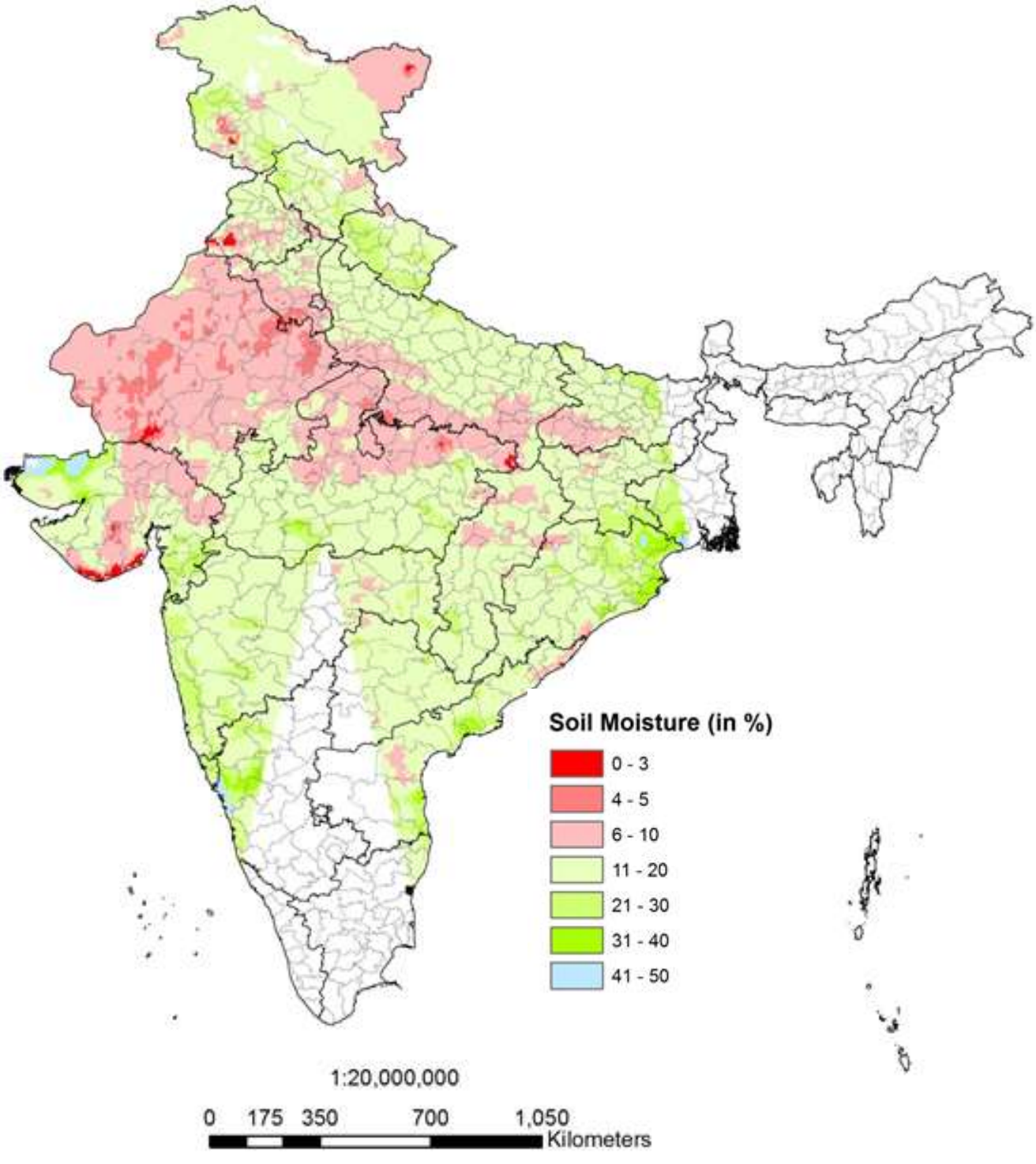
Source: MODIS 8day NDVI binned product
19-26 May, 2020

Normalized Difference Vegetation Index Map

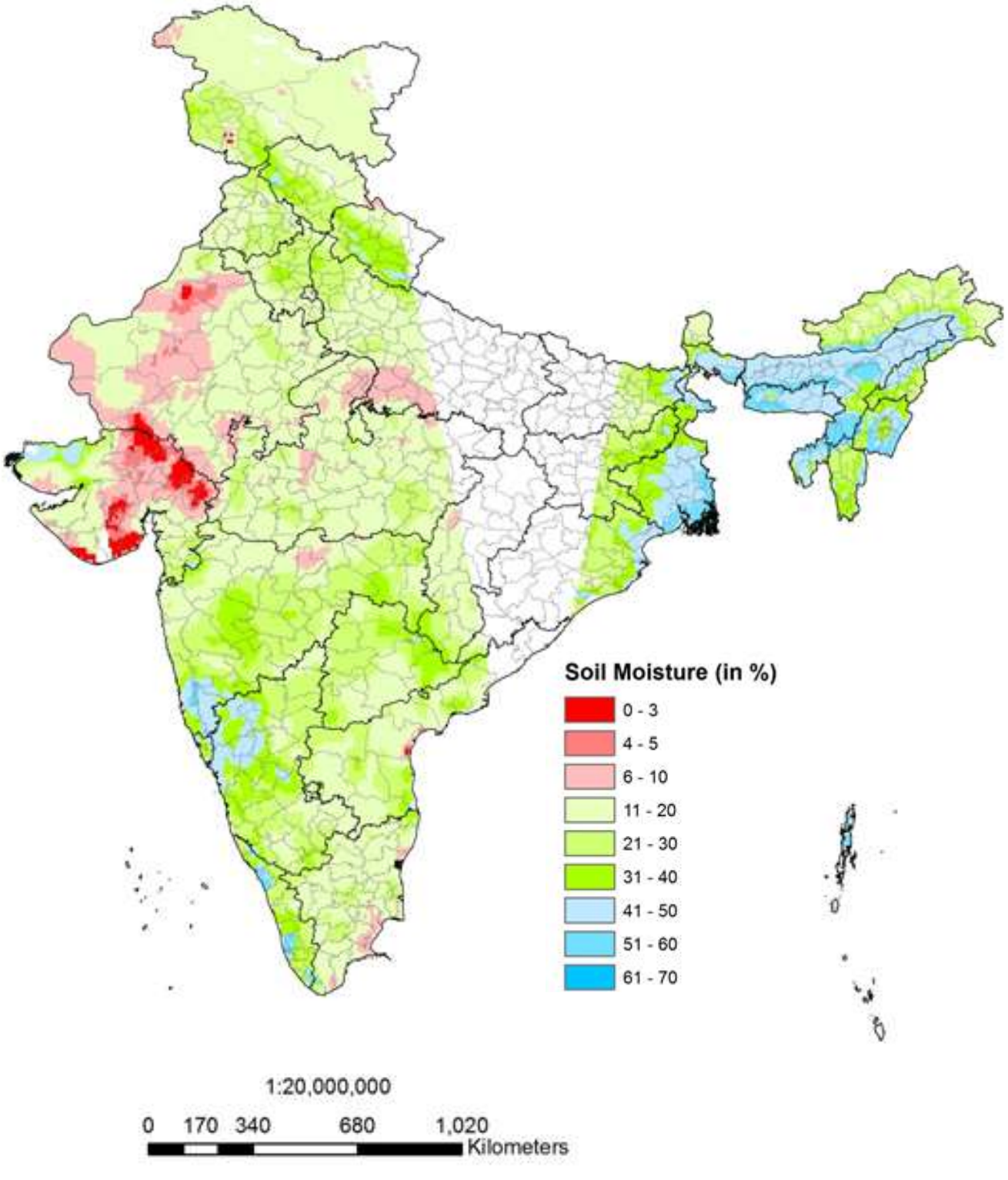


Source: MODIS 8day NDVI binned product
27 May: 03 June, 2020

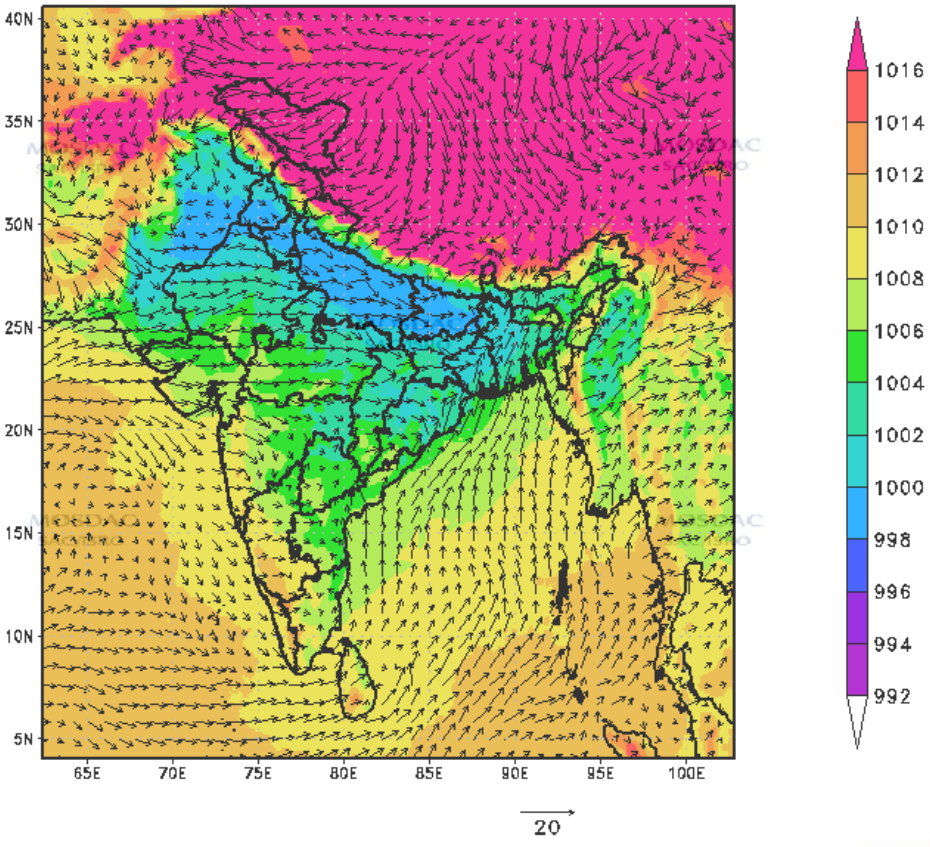
Soil Moisture Map of 26 May 2020 generated from SMAP Enhanced L3 Radiometer Global Daily 9 Km product



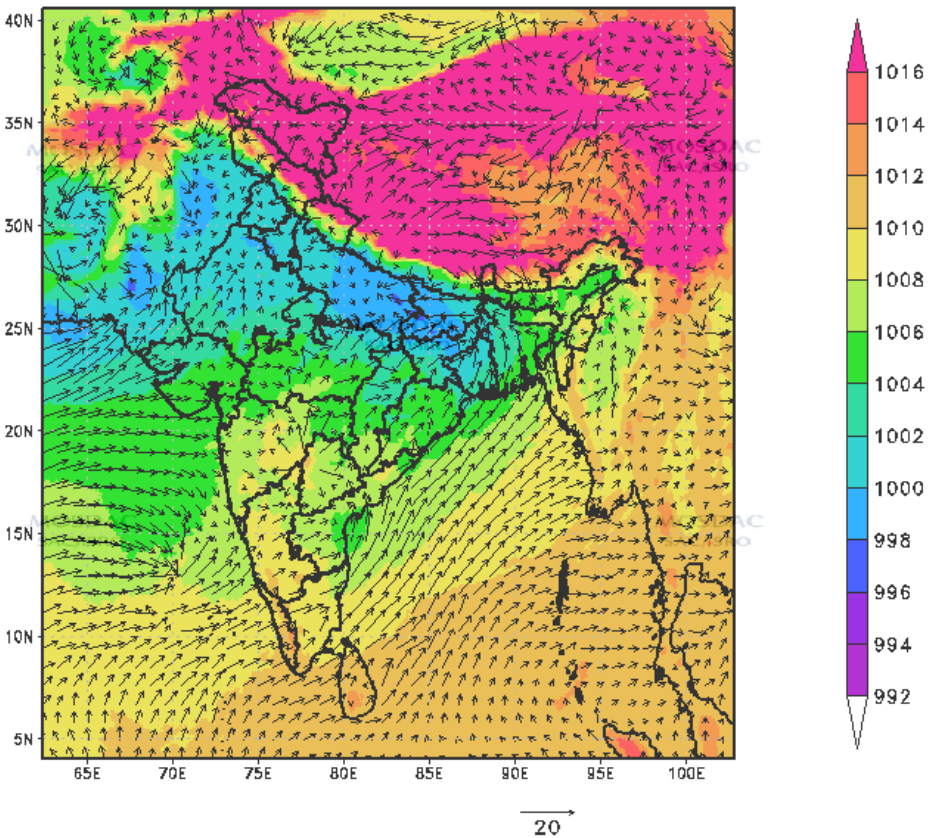
Soil Moisture Map of 01 June 2020 generated from SMAP Enhanced L3 Radiometer Global Daily 9 Km product



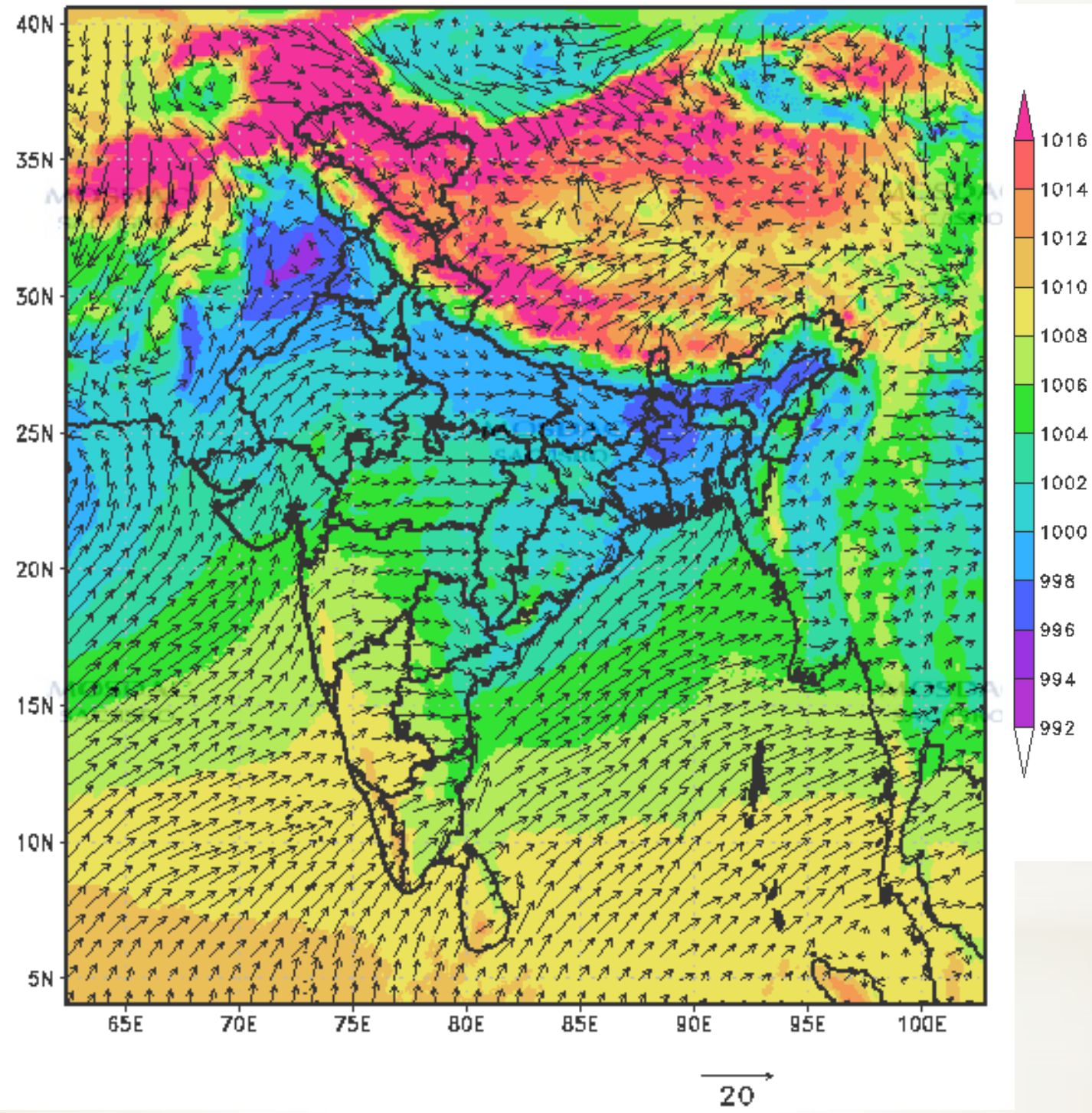
06hr Forecast valid for 1130 IST 26MAY2020
MSLP & 10m height Wind



72hr Forecast valid for 0530 IST 01JUN2020
MSLP & 10m height Wind



54hr Forecast valid for 1130 IST 06JUN2020
MSLP & 10m height Wind

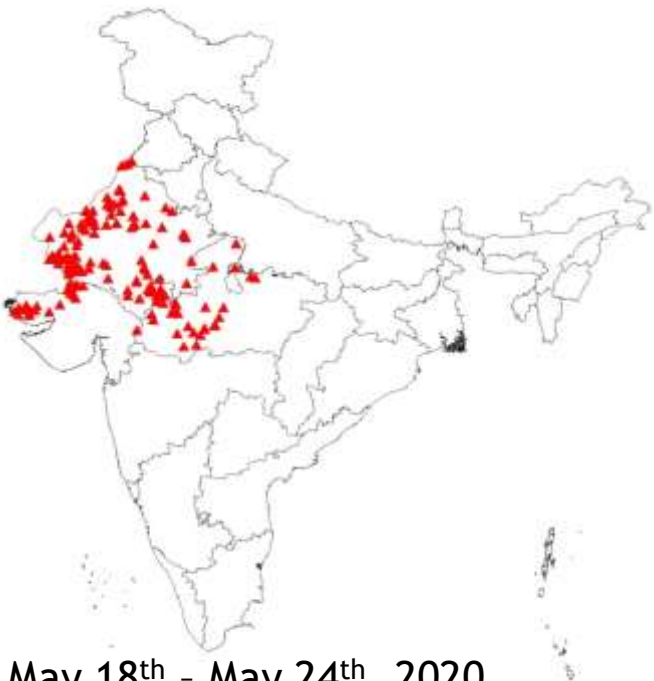


Progression of Locust in Rajasthan and adjoining States

April 1st – May 3rd 2020

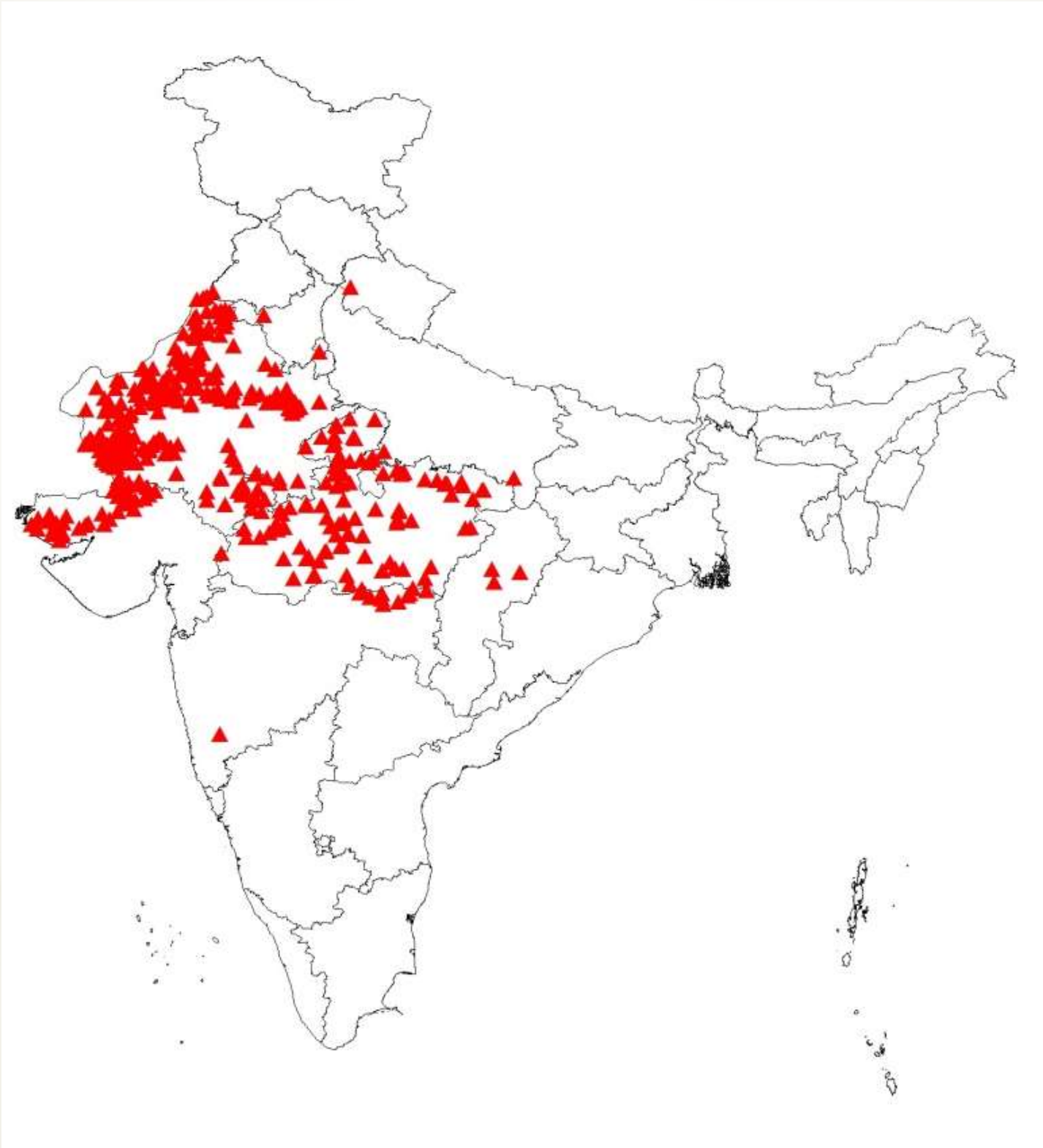
May 4th - May 10th, 2020

May 11th – May 17th, 2020



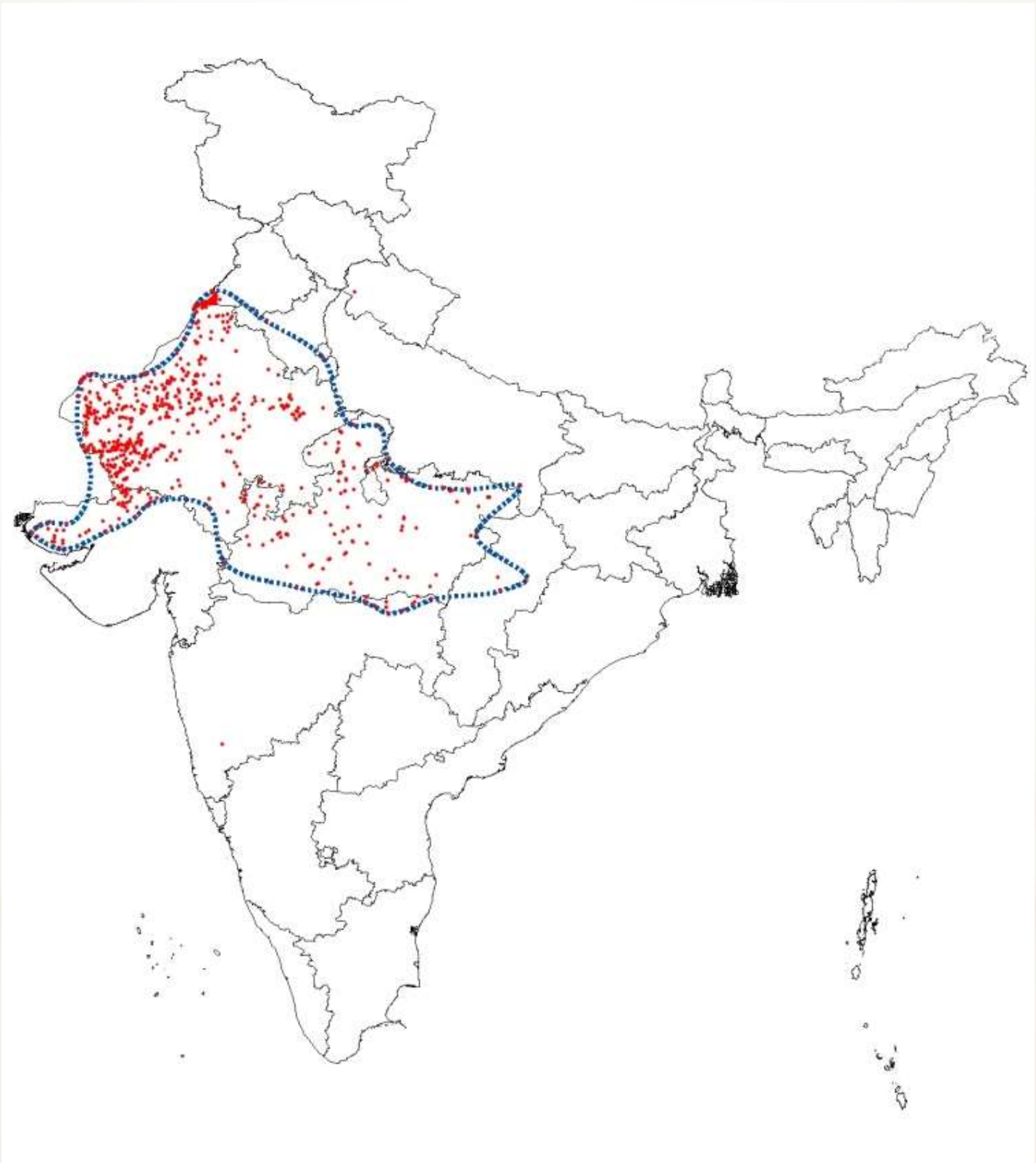
May 18th – May 24th, 2020

Recent Progression of Locust in Rajasthan and adjoining States



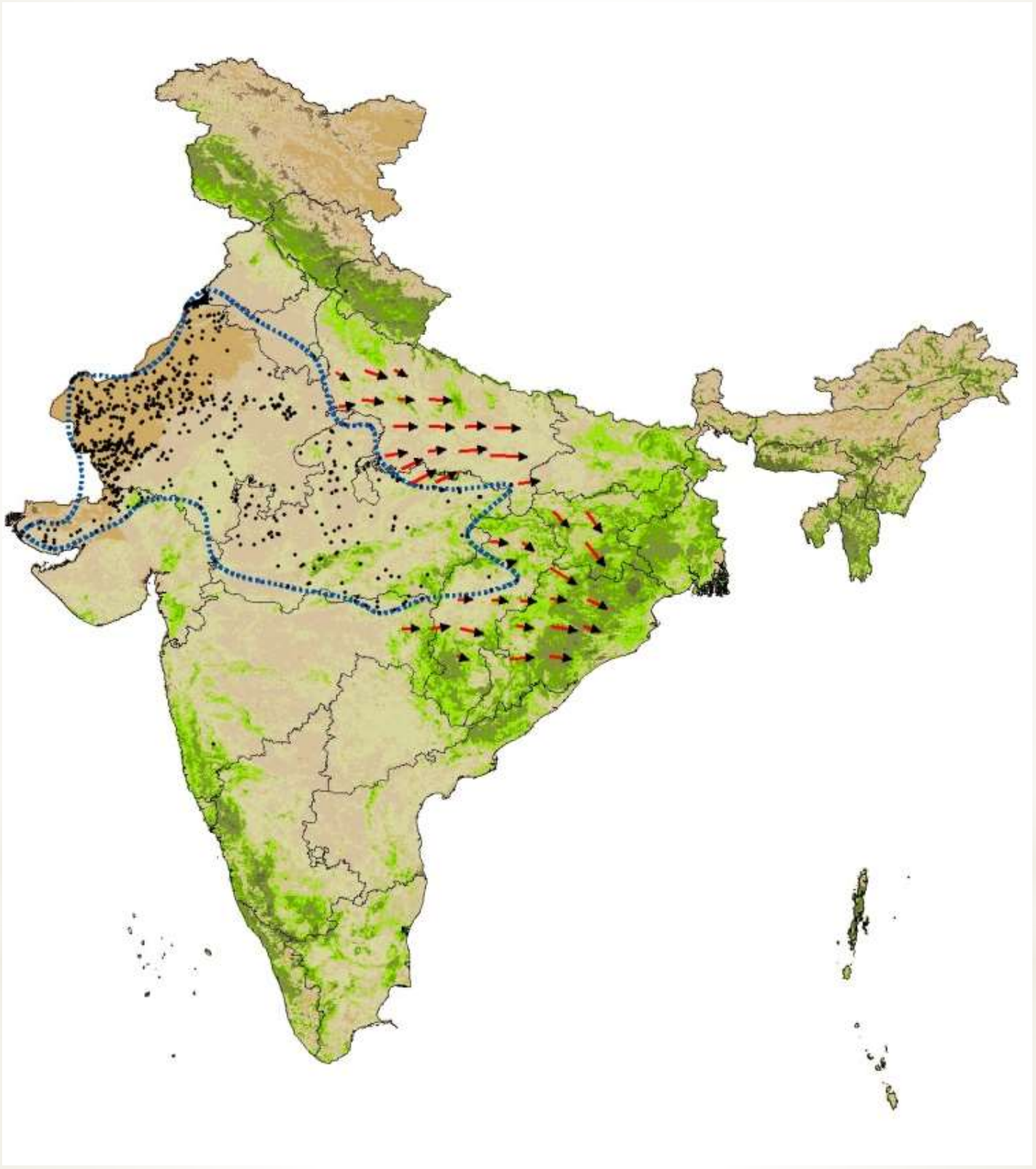
June 1st, 2020 onwards

Progression of Locust in Rajasthan and adjoining States since April 1st 2020



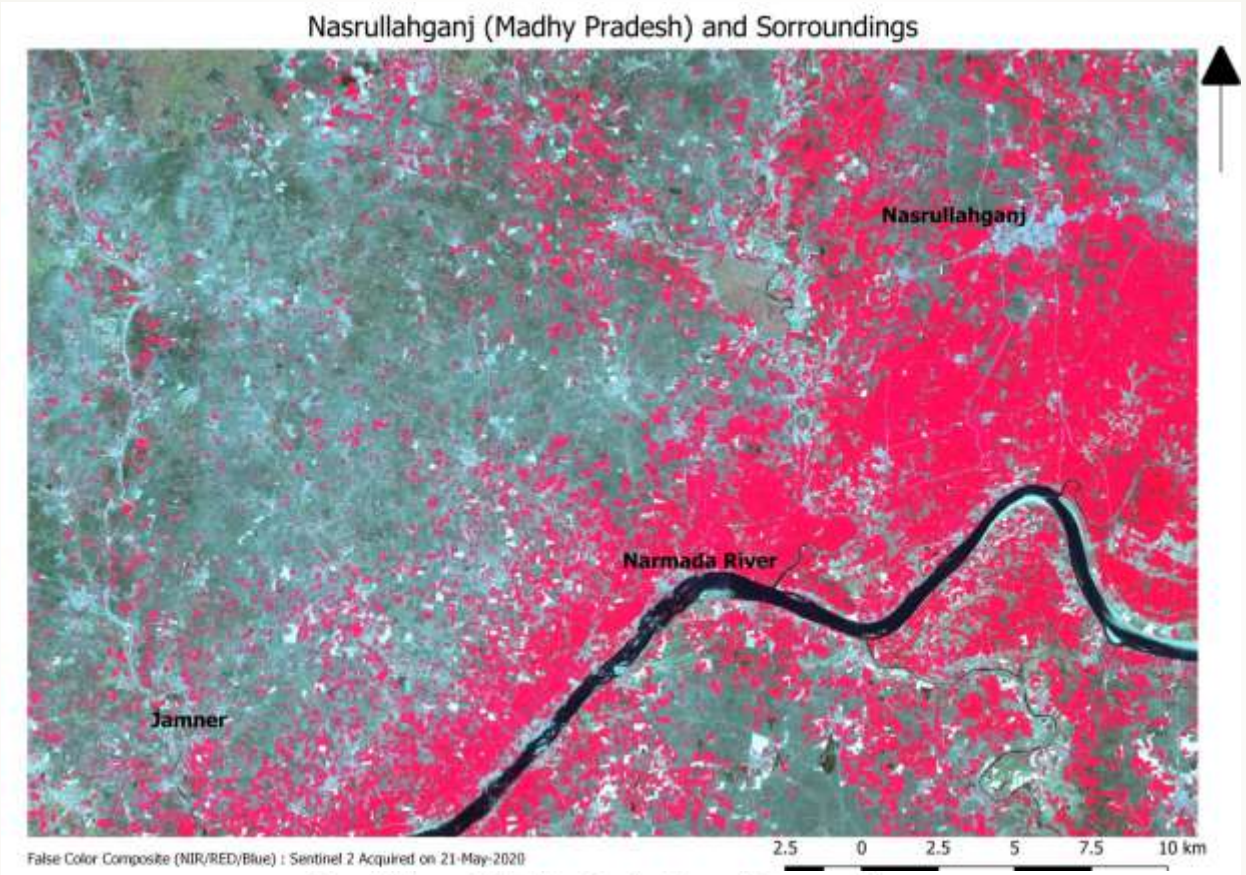
Locust Upsurge Scenario in India as on June 3rd, 2020

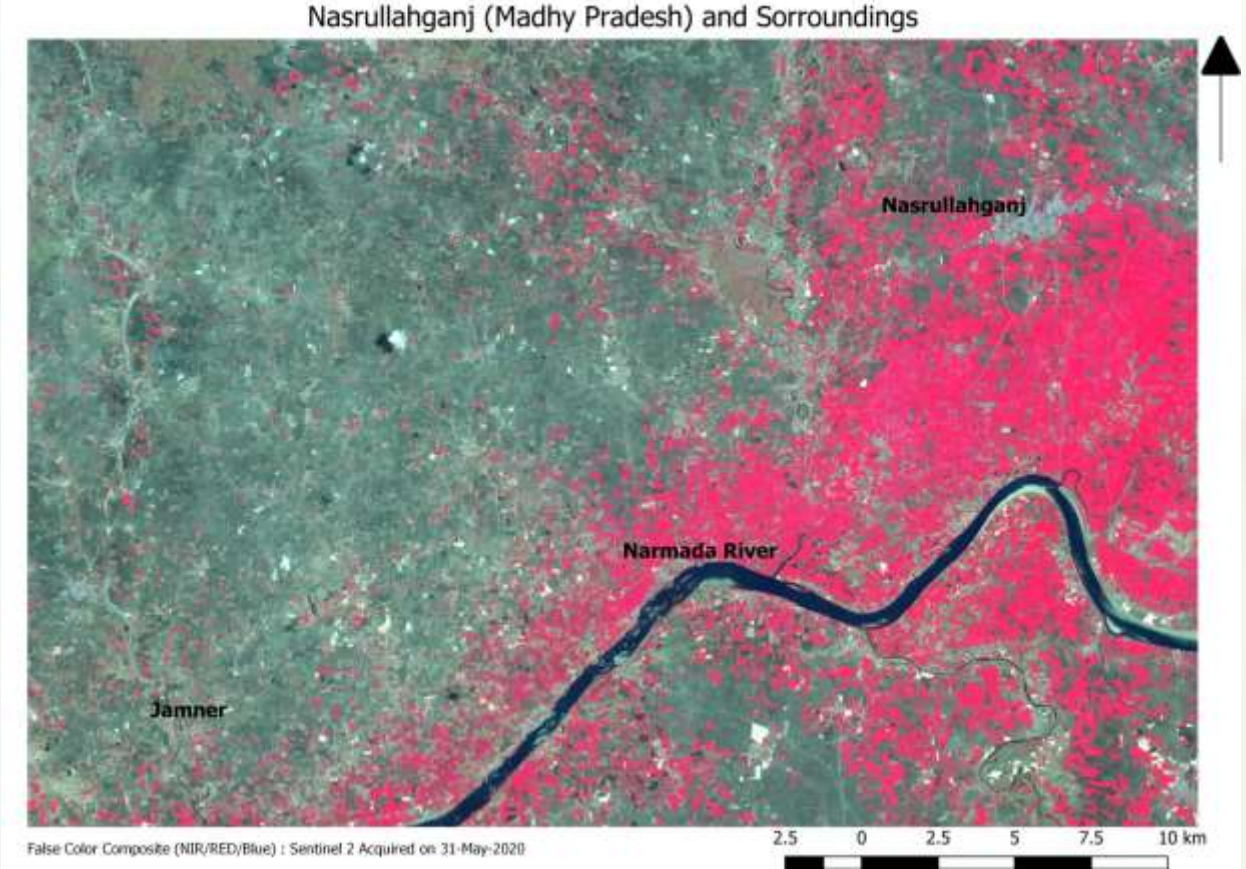
Probable Direction of Locust Migration Based on Vegetation Status & Wind Direction



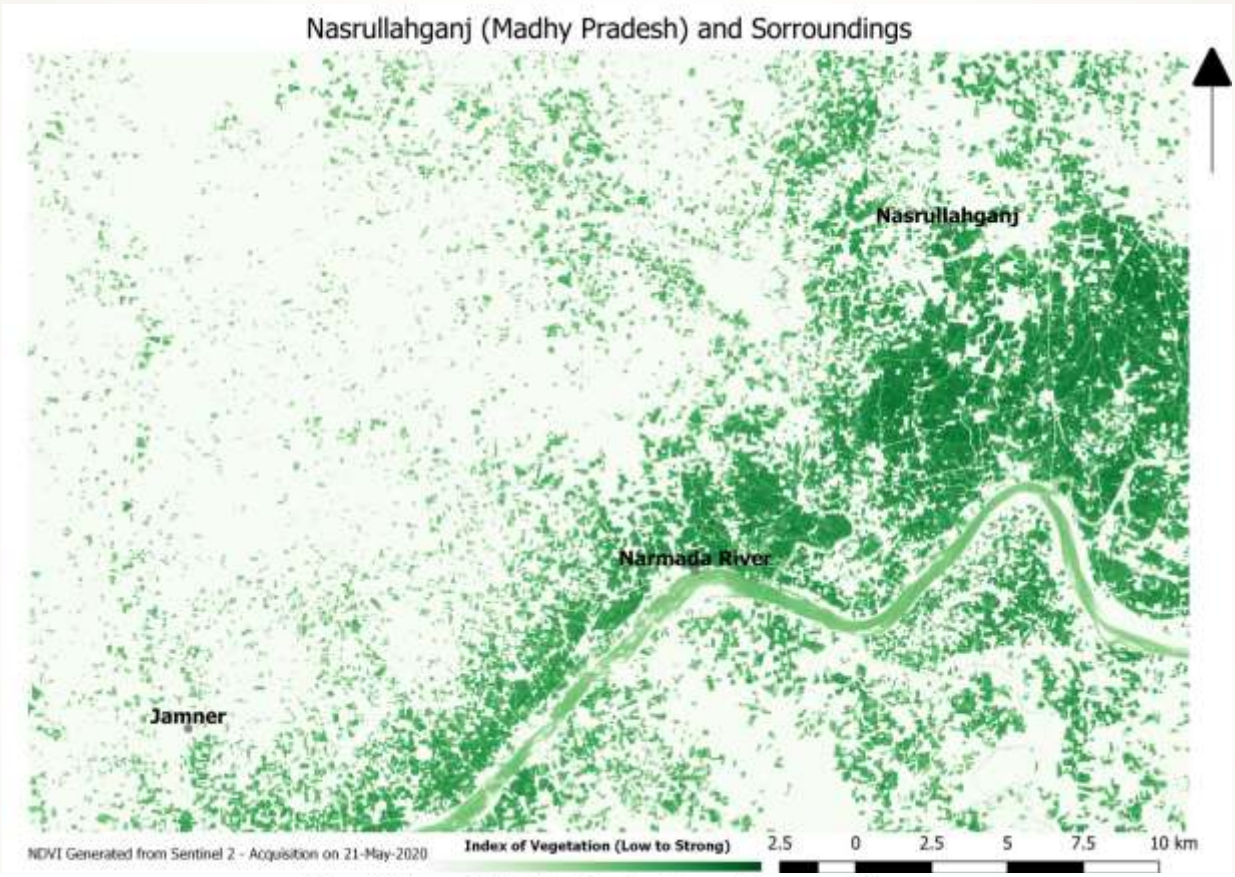
June 5th 2020

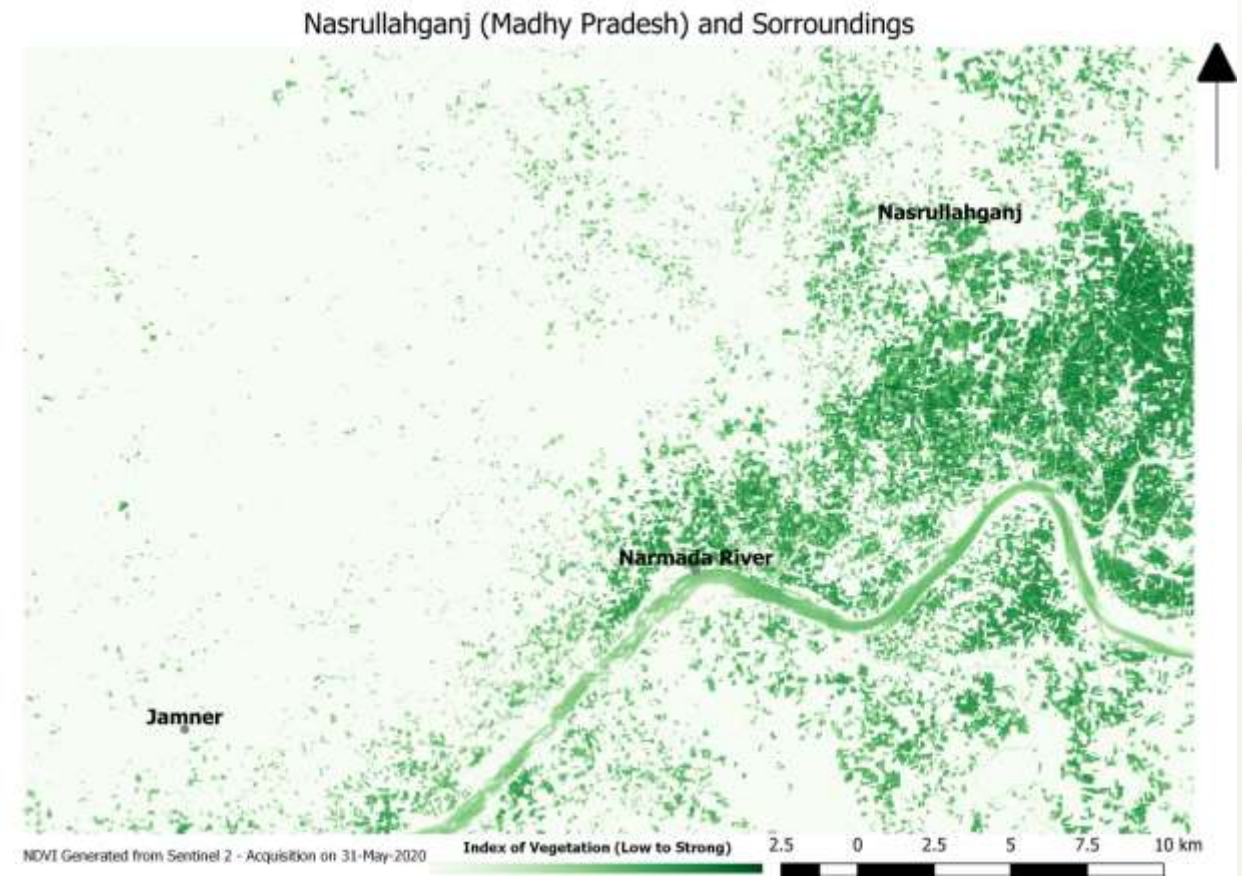
Damage Assessment of Locust Outbreak Near Nasrullahganj & Surroundings (Madhya Pradesh)





Damage Assessment of Locust Outbreak Near Nasrullahganj & Surroundings (Madhya Pradesh)





Data Used :

- Vegetation status maps (MODIS Level 1B product; 250 m spatial resolution)
- Soil moisture (SMOS Level 2 product; 43 km spatial resolution)
- Accumulated Rainfall (MOSDAC)
- Wind direction (MOSDAC; Experimental 24 hour, 48 hour and 72 hour forecast for India WRF model; 5 km X 5 km grid)
- Locust incidences location in the field (LWO, Jodhpur)

Analysis Results :

- Preliminary analysis results have revealed that there exist good relationship among key factors like vegetation cover, soil moisture and wind direction which directly and indirectly govern the movement of locust swarm.
- The locust swarm was first visible in Barmer district of Rajasthan during the month of early May 2020. It has then moved towards Jaisalmer and Bikaner districts with time in search of green vegetation cover during 2nd and 3rd week of May 2020.
- Vegetation cover status in terms of Normalized Difference Vegetation Index (NDVI) provides valuable information which could be the potential habitat of locust.
- Surface soil moisture variation is a very good indicator highlighting the potential breeding ground as locust females need moist area to lay their eggs.
- Wind directions show direct linkage to possible locust movement paths.
- Considering all the key factors, it has been suggested that desert locust swarms are likely to move areas other than the scheduled desert areas where conducive environment prevails

Forecast for India during 16 – 31 May 2020 (FAO) :

- According to FAO update dated 27 May 2020, there have been movements of adult groups and swarms in India, Oman, UAE and Uganda.
- As per global situation some adult groups and swarms are expected to arrive in India from spring breeding areas.
- Therefore, vigilance will remain continued towards expected invasionof locust in coming days.

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