

Weather satellite and cloud pattern reading

Meteorological / weather satellite

Geostationary weather satellites orbit the Earth above the equator at altitudes of 35,880 km.

Polar orbiting weather satellites circle the Earth at 850 km in a north to south path, passing over the poles

- visible band in 0.55-0.90 μm
- infrared bands in 3.5-4.0 μm , 10.5-11.5 μm
- 11.5-12.5 μm wavelength are called atmospheric windows.
- 3.5-4.0 μm wavelength band is called a 3.7 μm image
- observation of reflected sunlight in the daytime and of brightness temperature at night.
- absorption takes place from water vapor in the 6.5-7.0 μm band

VIS image

Reflectance of a cloud depends on the amount and density of the cloud droplets and raindrops in the cloud. Low-level clouds contain a larger amount of cloud droplets and raindrops and appear brighter than high clouds.

Cumulonimbus and other thick clouds that have developed vertically contain a lot of cloud droplets and raindrops and they appear bright in a VIS image.

Texture of the cloud top surface of a stratiform cloud is smooth and uniform while the top surface of a convective cloud is rugged and uneven. The texture is easily observed when sunlight hits the cloud top obliquely.

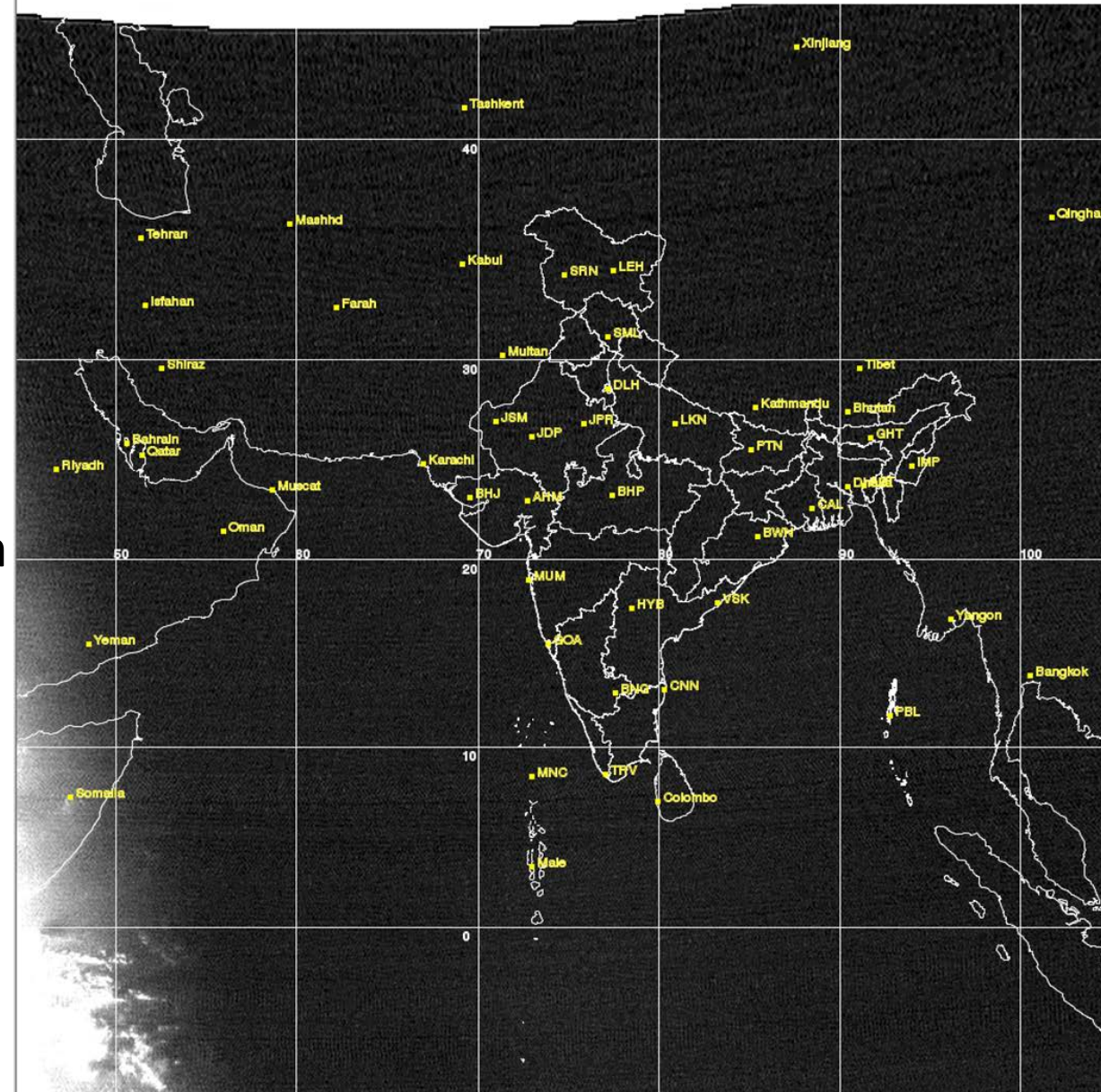
Projection : MER
ASI_VIS

23-11-2015 / 14:14Z

Sat: KALPANA-1



VIS Linear Stretch 1.0%

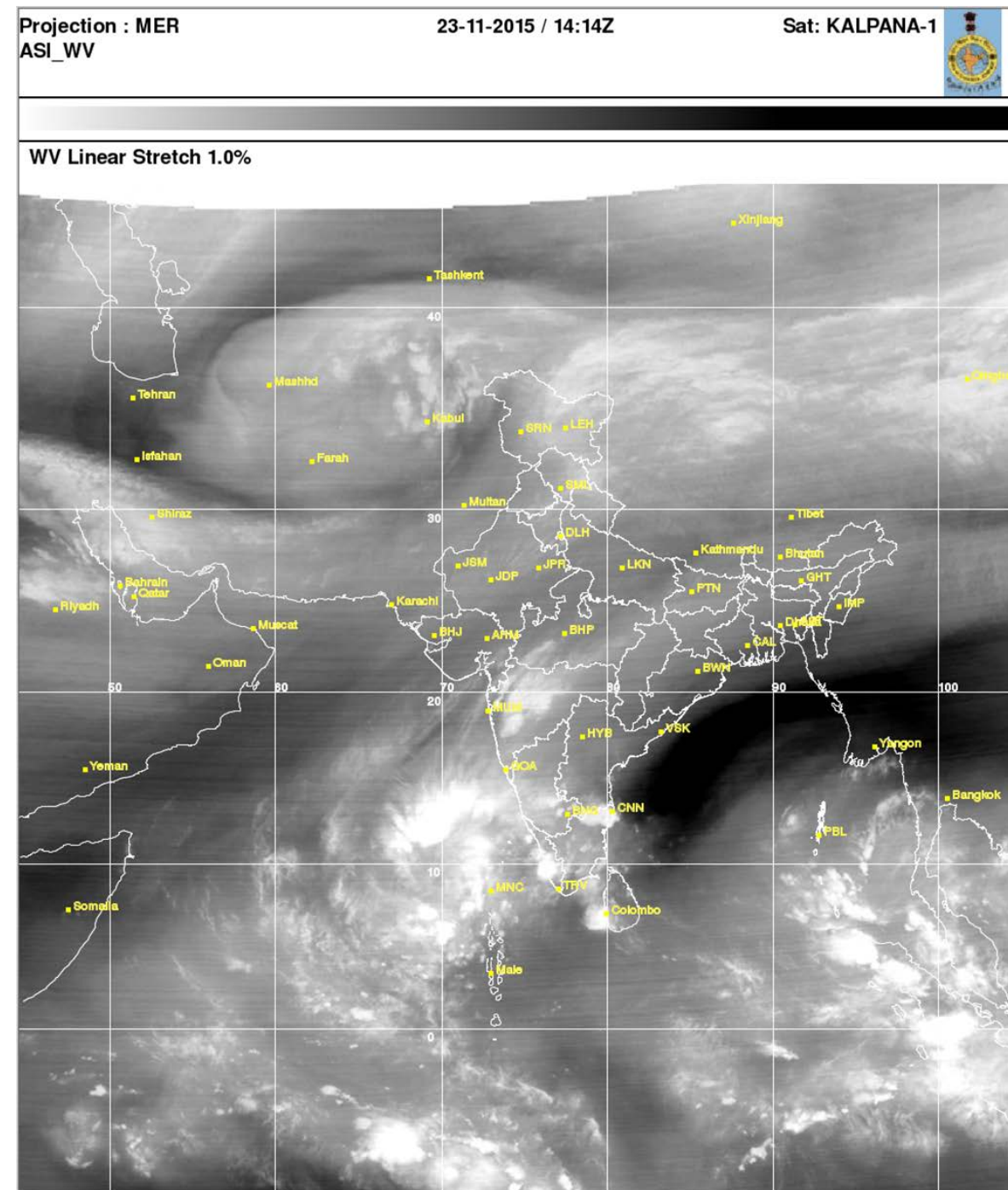


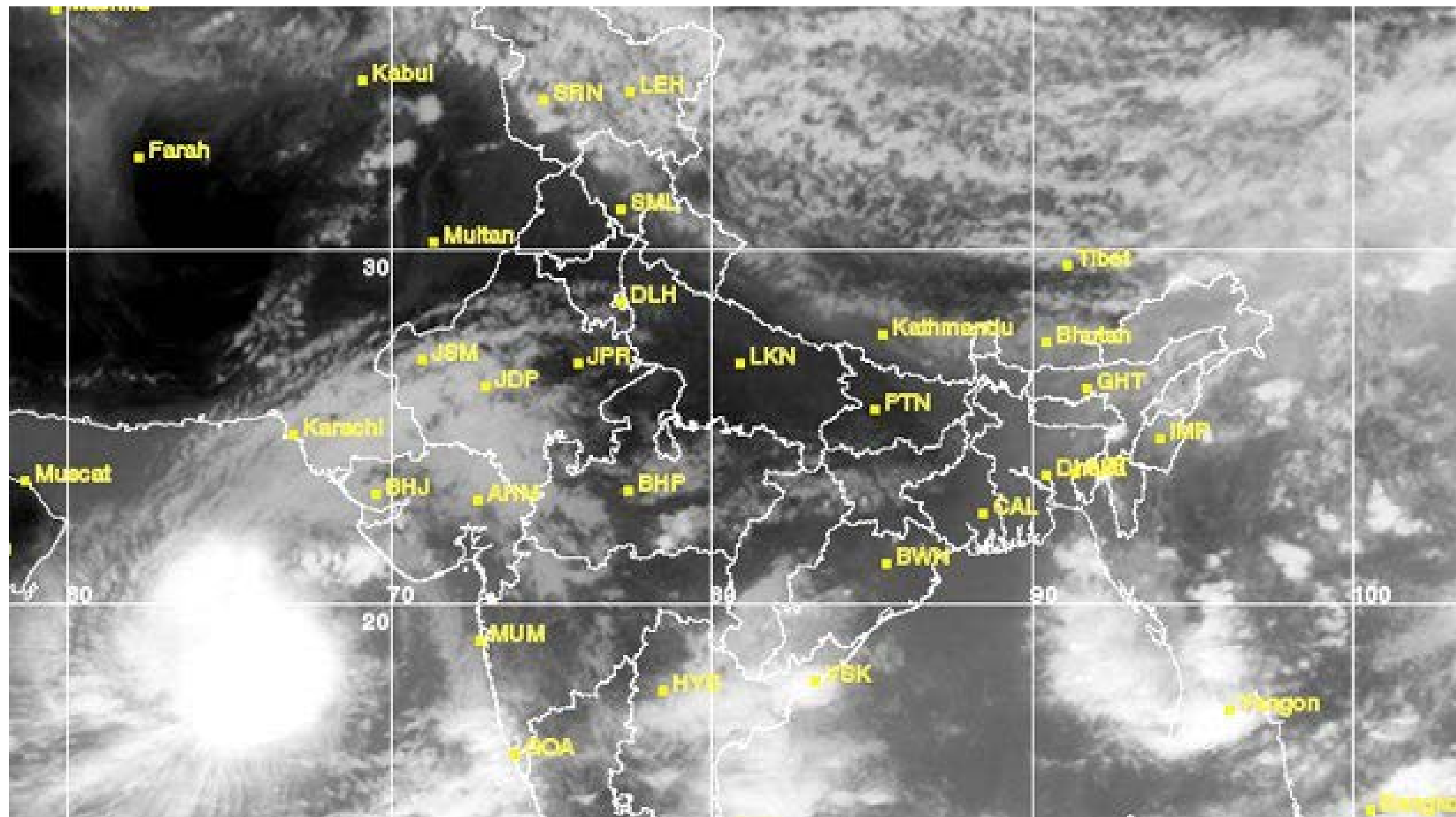
IR image

It represents a temperature distribution and can be observed day and night. In IR image, portions of low temperature are visualized bright and portions of high temperature dark.

It is possible to know the cloud top temperature with the IR image. In the troposphere, atmospheric temperature is generally lower at the upper layer, and therefore the lower cloud top temperature means a higher cloud top height. It is also possible to monitor the developing level of clouds in the vertical direction by referring to the cloud top temperature.

Water vapor (WV) image represents temperature distribution. In WV image, absorption by water vapor is dominant and this gives the feature that the brightness of an image corresponds to the amount of water vapor in the upper and middle layer.





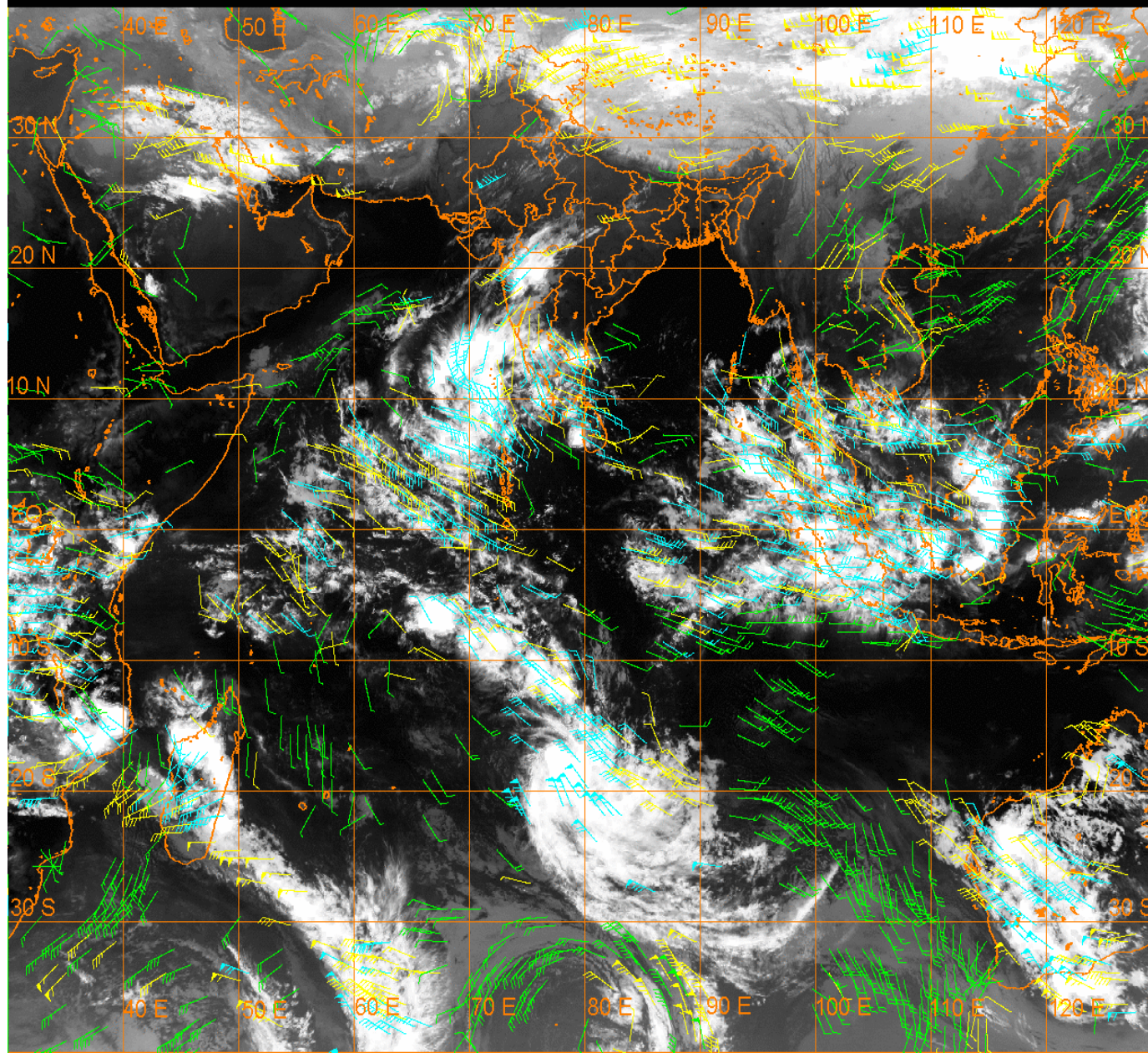


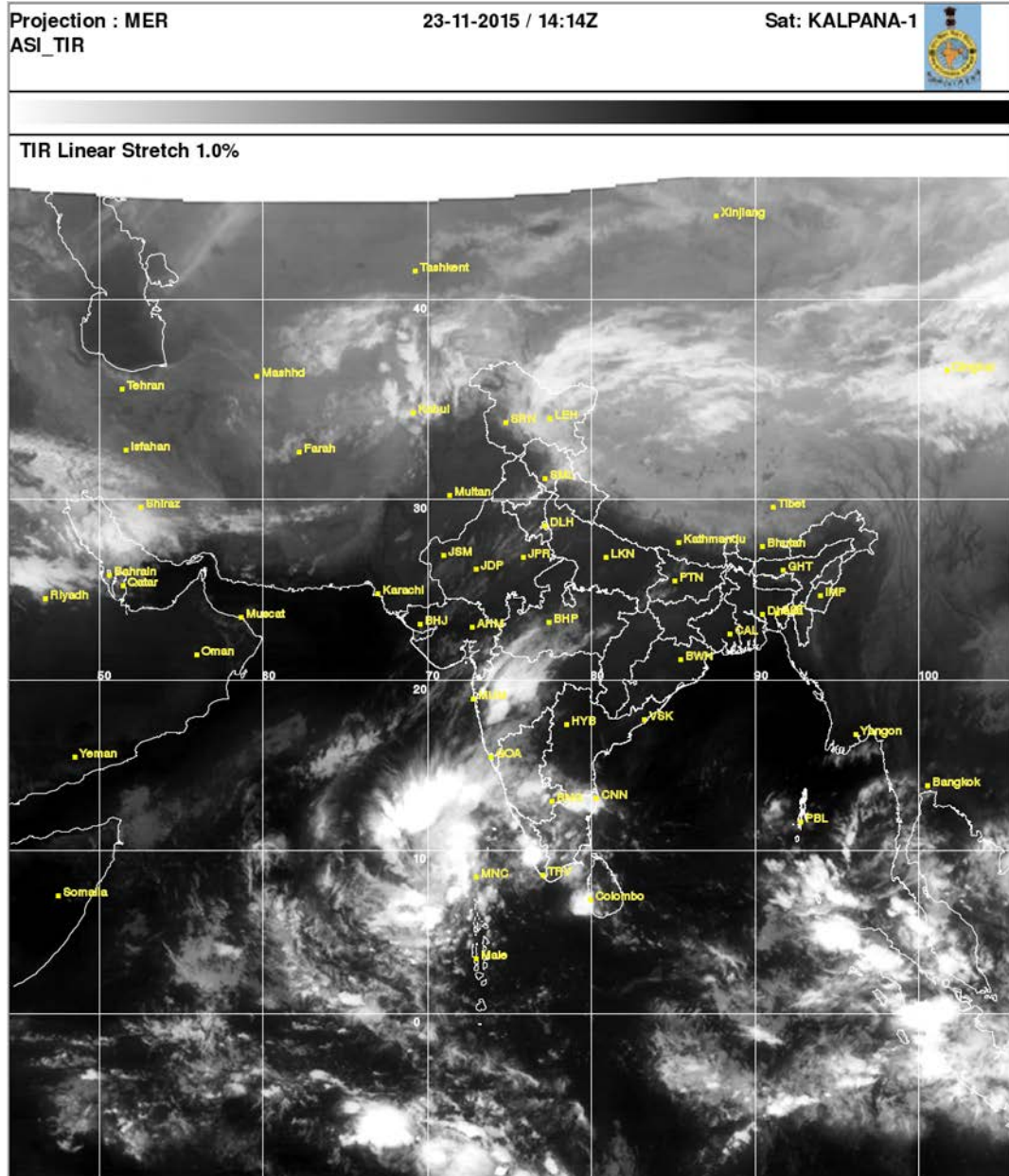
INSAT-3D 23-NOV-2015 14:30 TIR1 IMG

CLOUD MOTION WIND

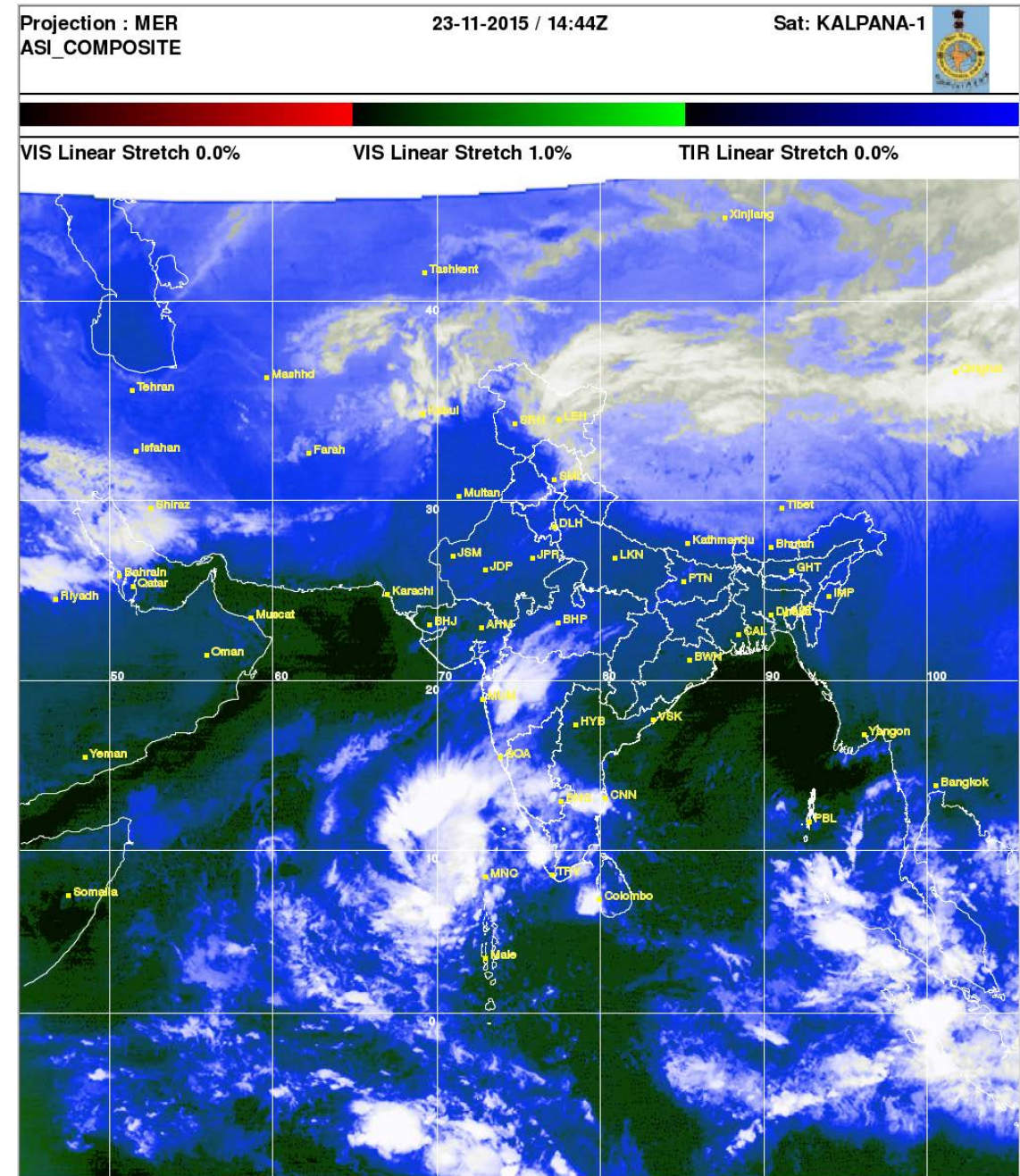
(1Kt = 0.5 m/s)
10 Kt 15 Kt 20 Kt 50 Kt

100-400 hPa
401-700 hPa
701-975 hPa

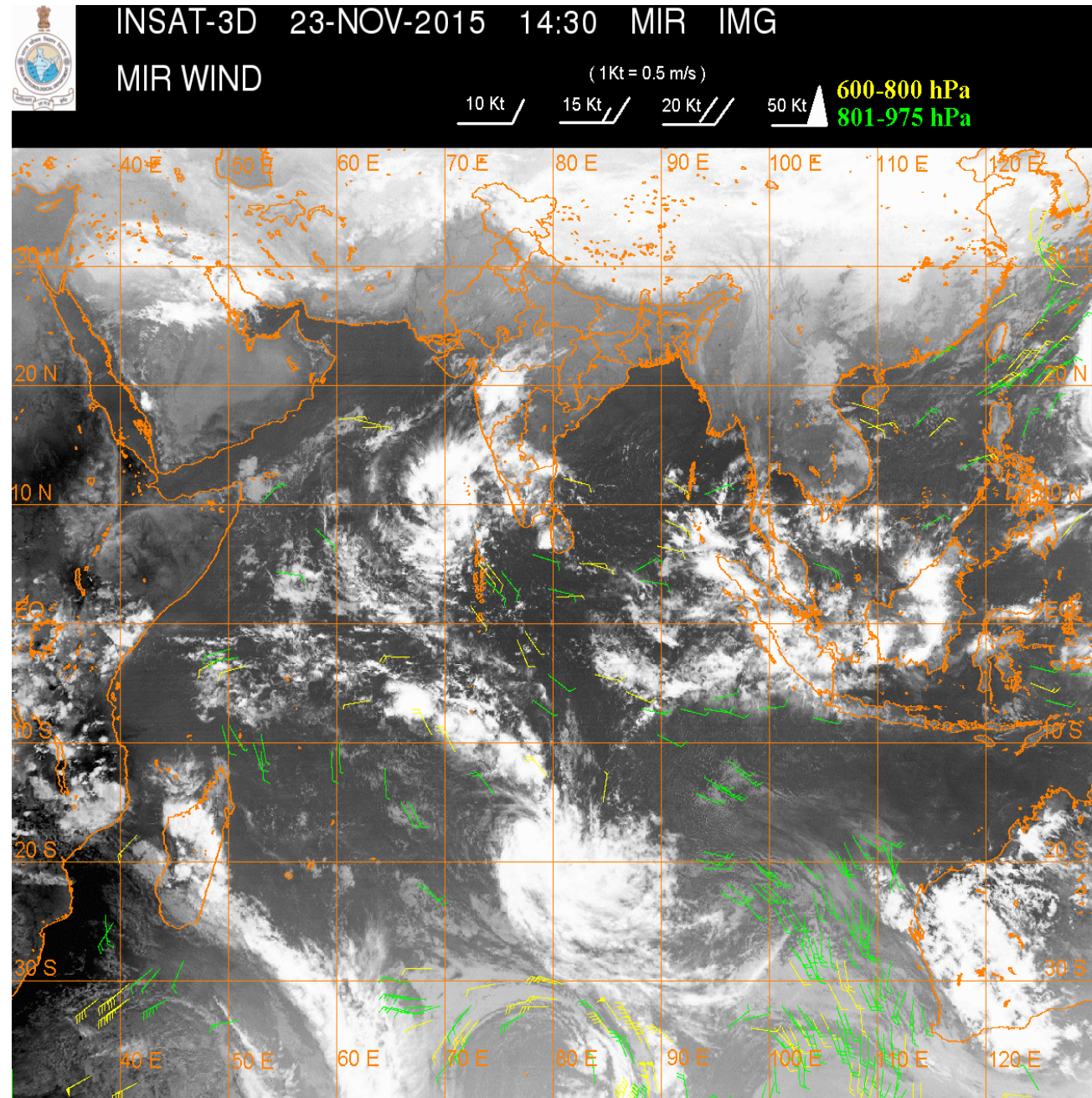
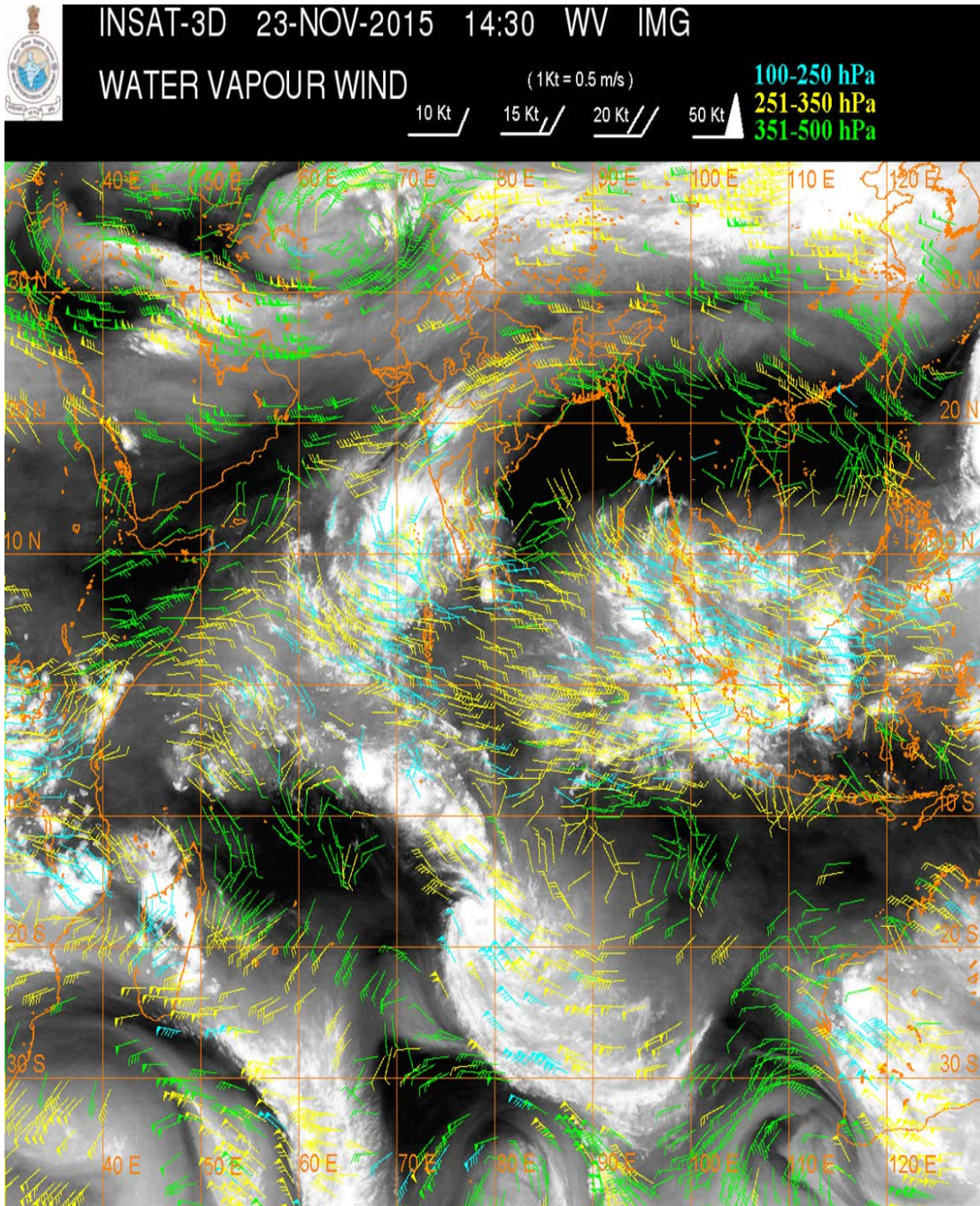


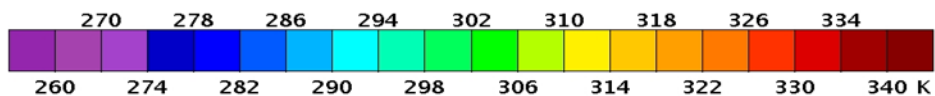
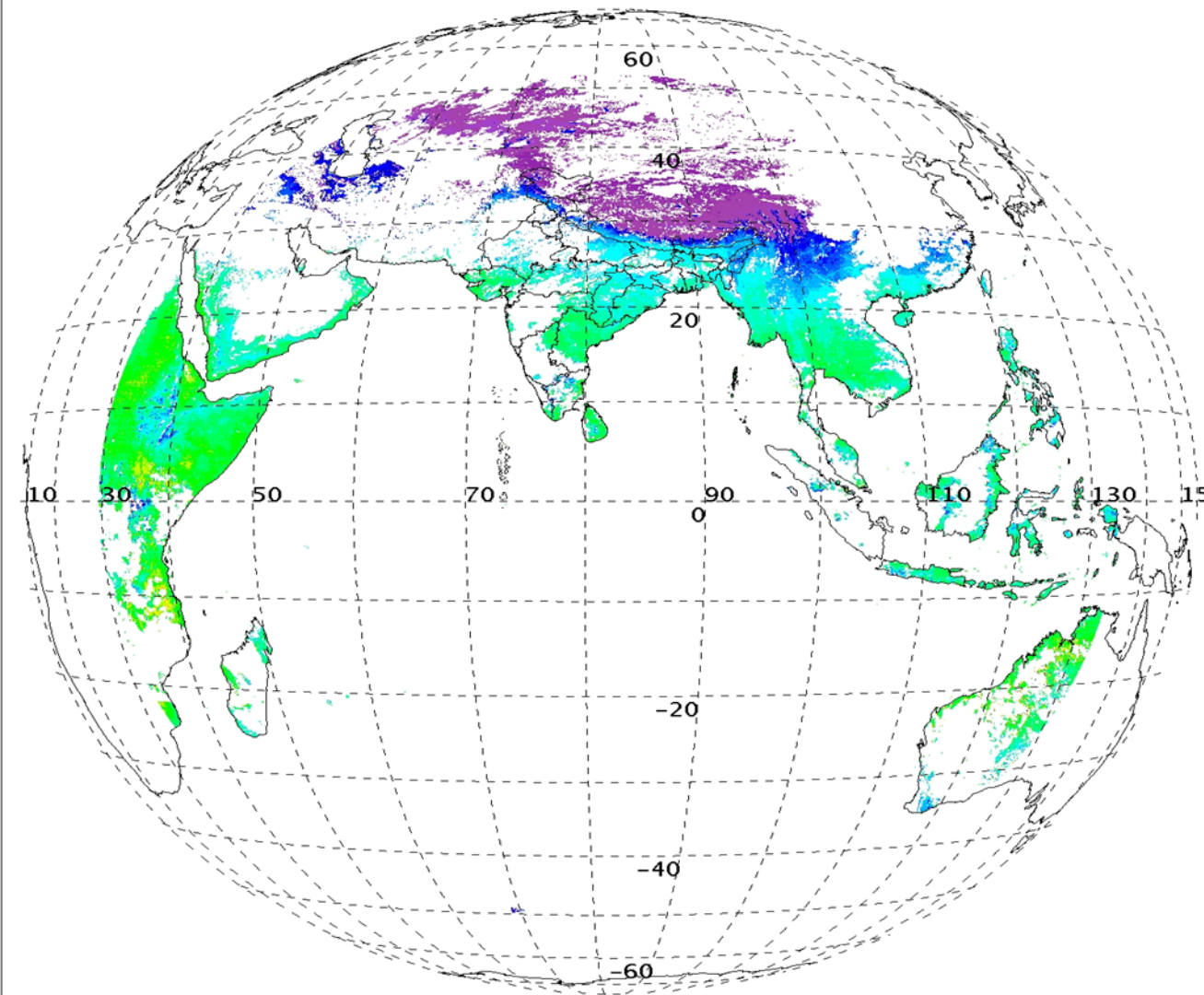


Thermal Infra red band -

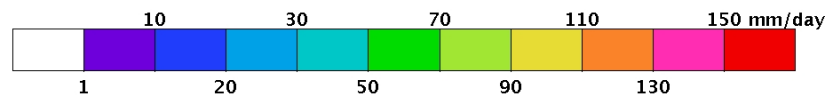
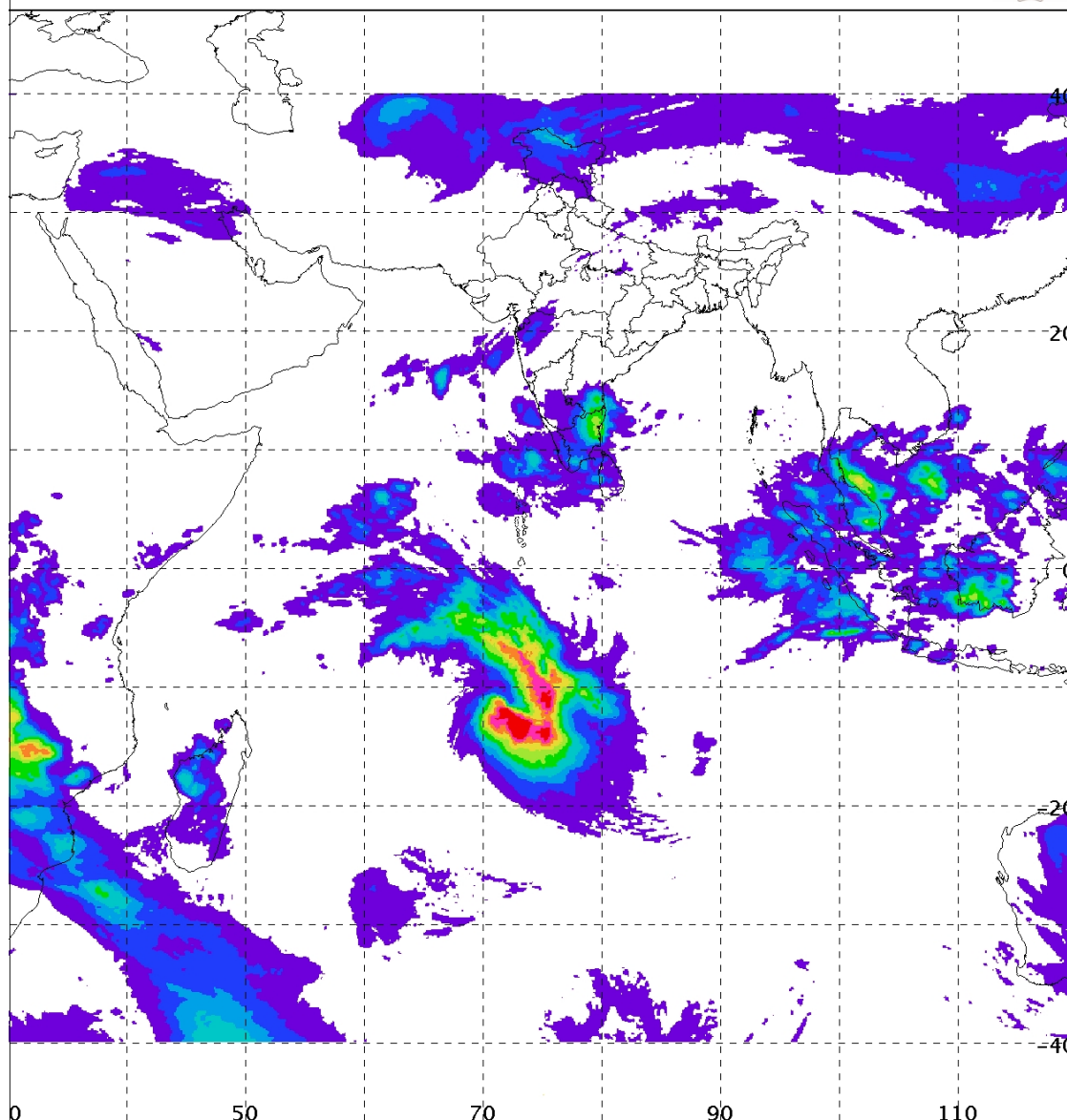


Color composite – VIS + TIR image





IMD/Delhi

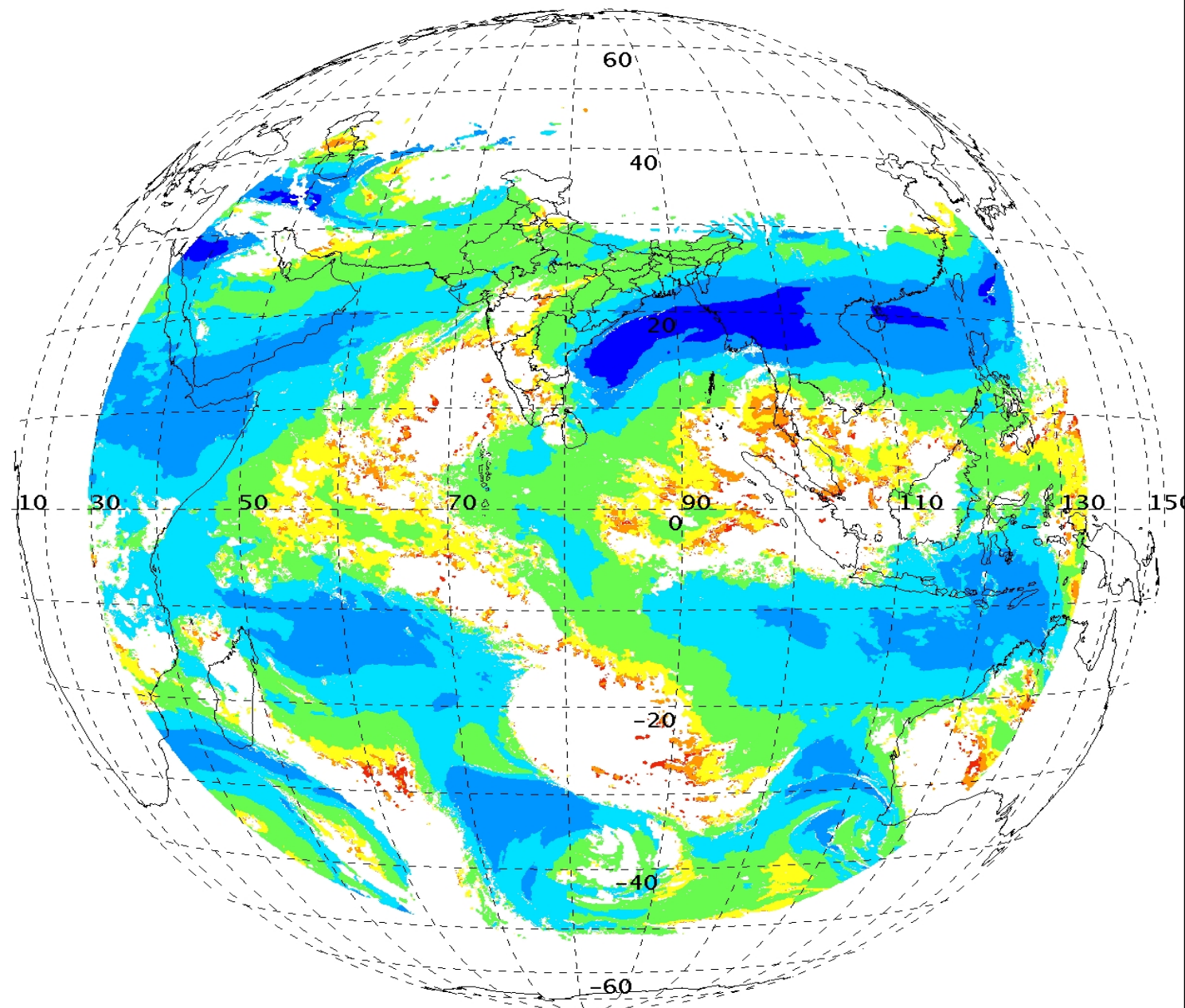


IMD/Delhi



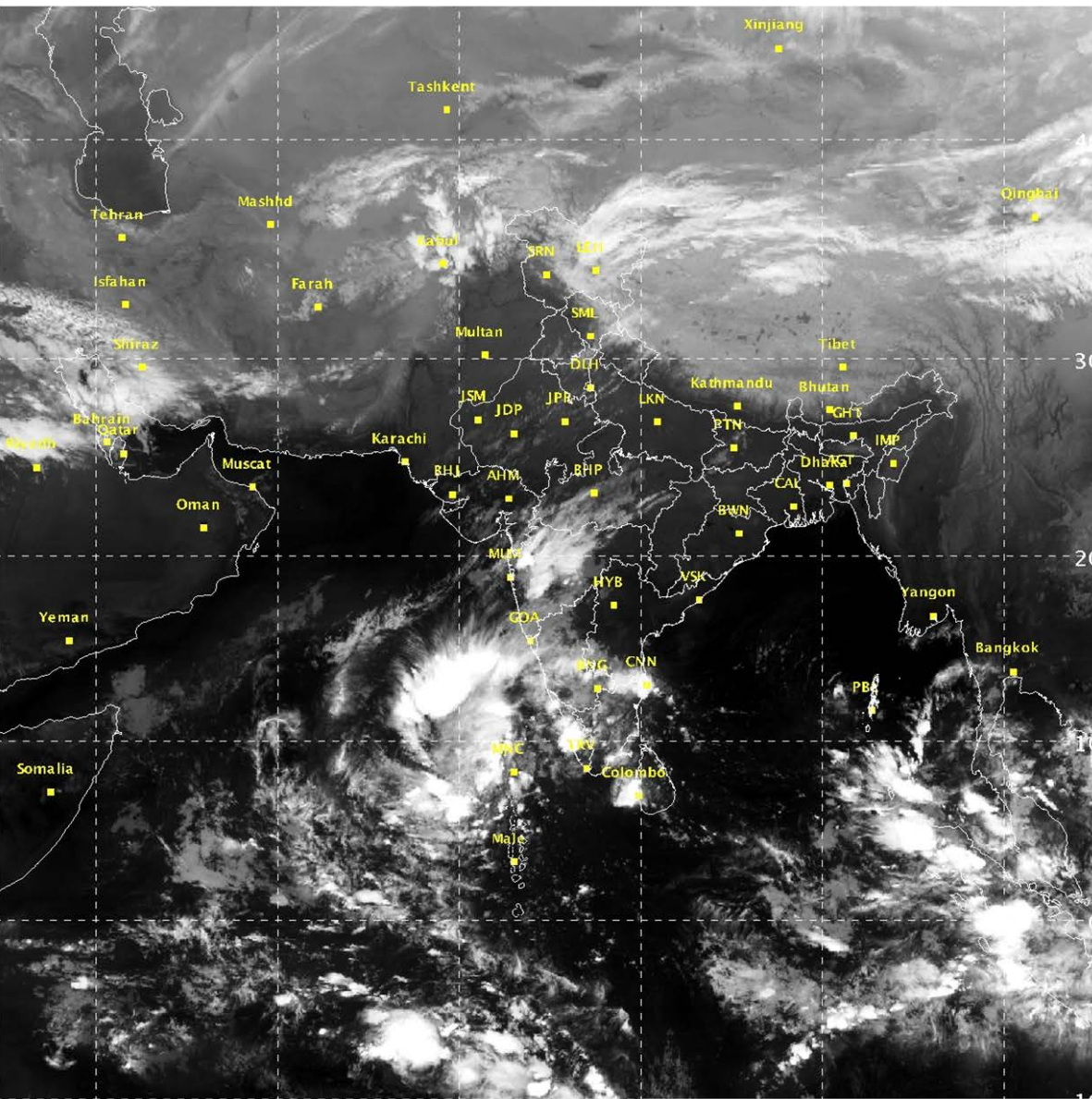
SAT :INSAT-3D IMG
Upper Troposphere Humidity
L2B GEOPHYSICAL PARAMETER FULL DISK

23-11-2015/(1500 to 1526) GMT
23-11-2015/(2030 to 2056) IST



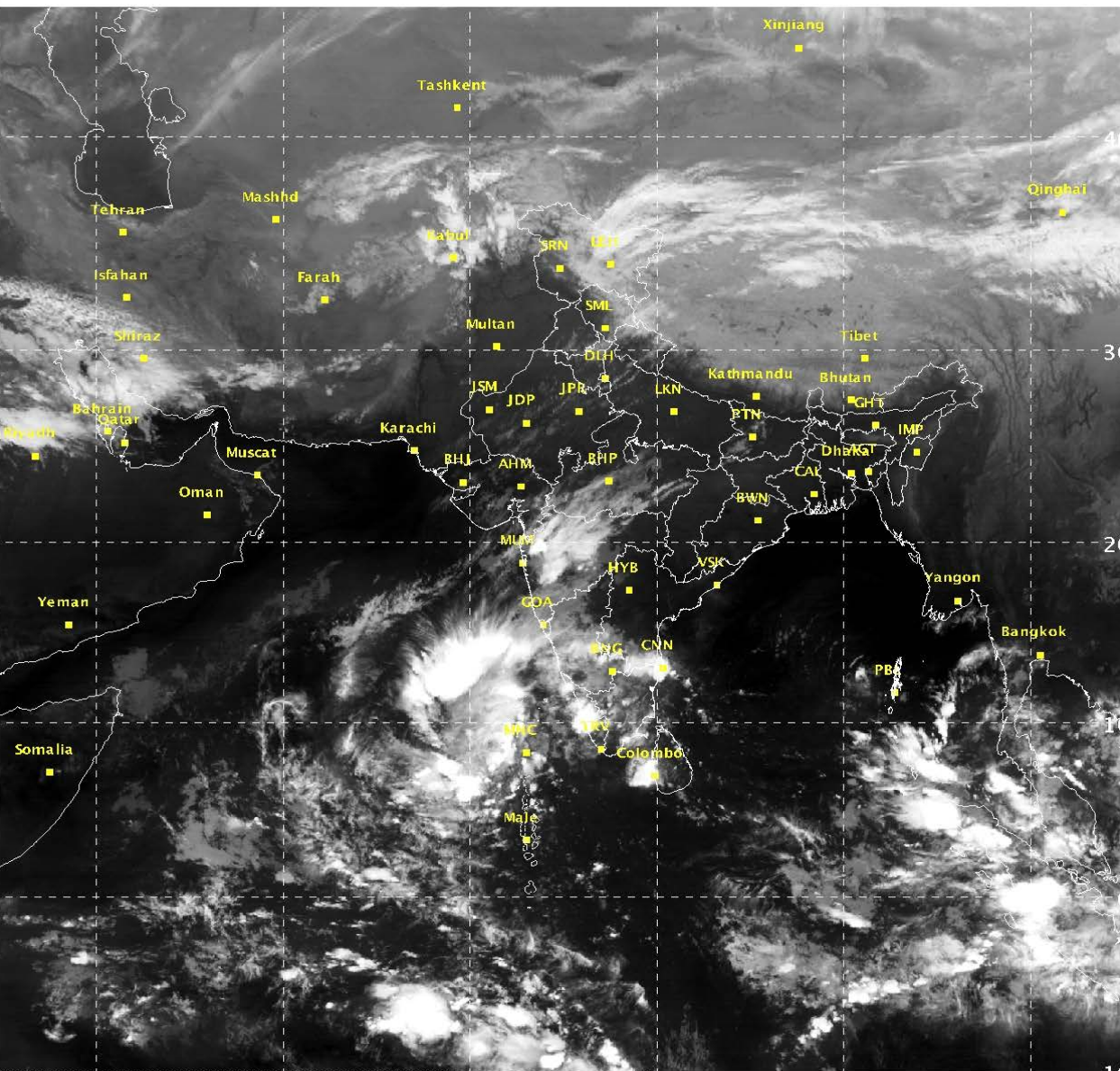
SAT :INSAT-3D IMG
IMG_TIR1 10.8 um
L1C Mercator (LINEAR STRETCH: 1.0%)

23-11-2015/15:00 GMT
23-11-2015/20:30 IST



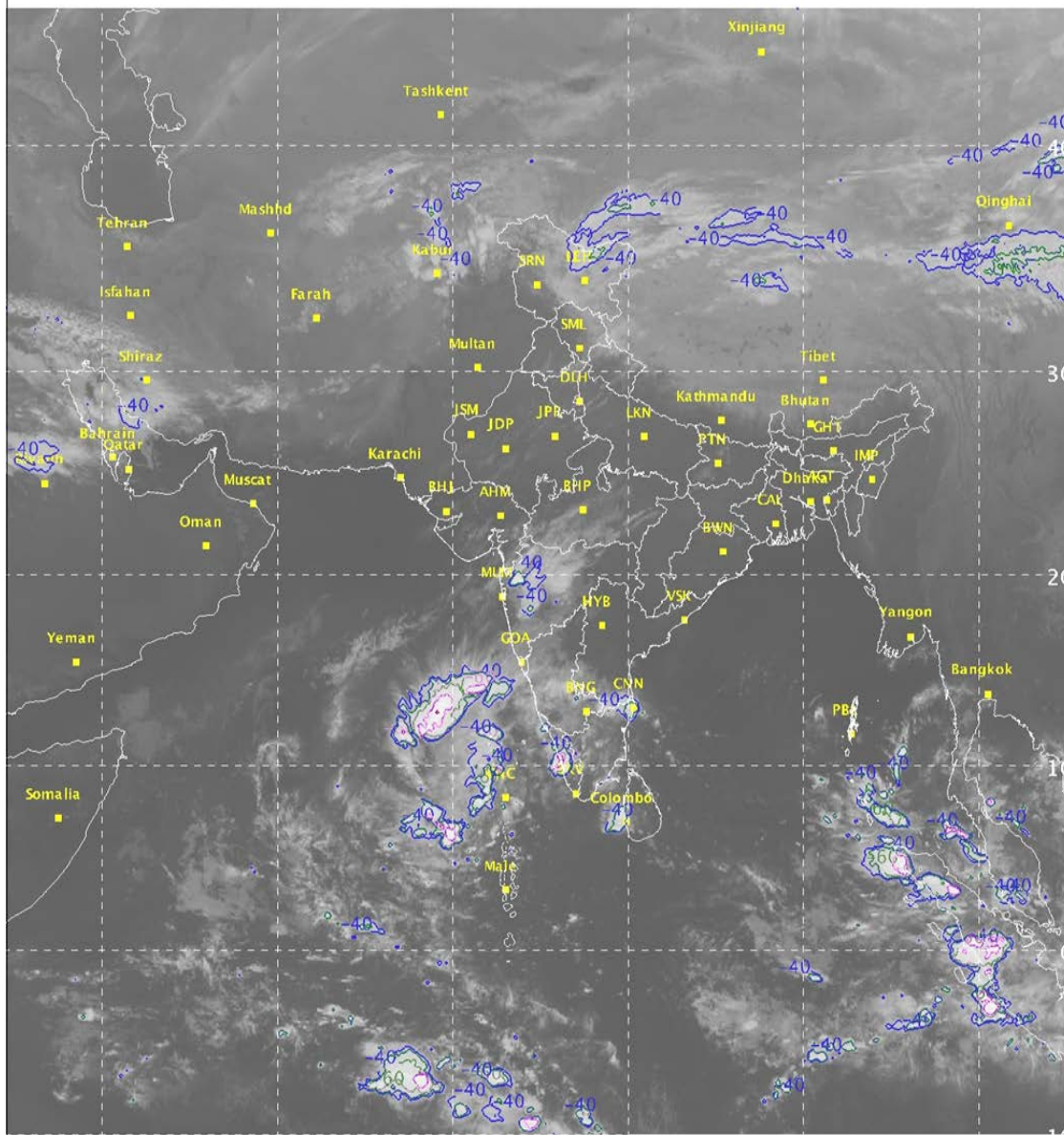
SAT :INSAT-3D IMG
IMG_TIR2 12.0 um
L1C Mercator (LINEAR STRETCH: 1.0%)

23-11-2015/15:00 GMT
23-11-2015/20:30 IST





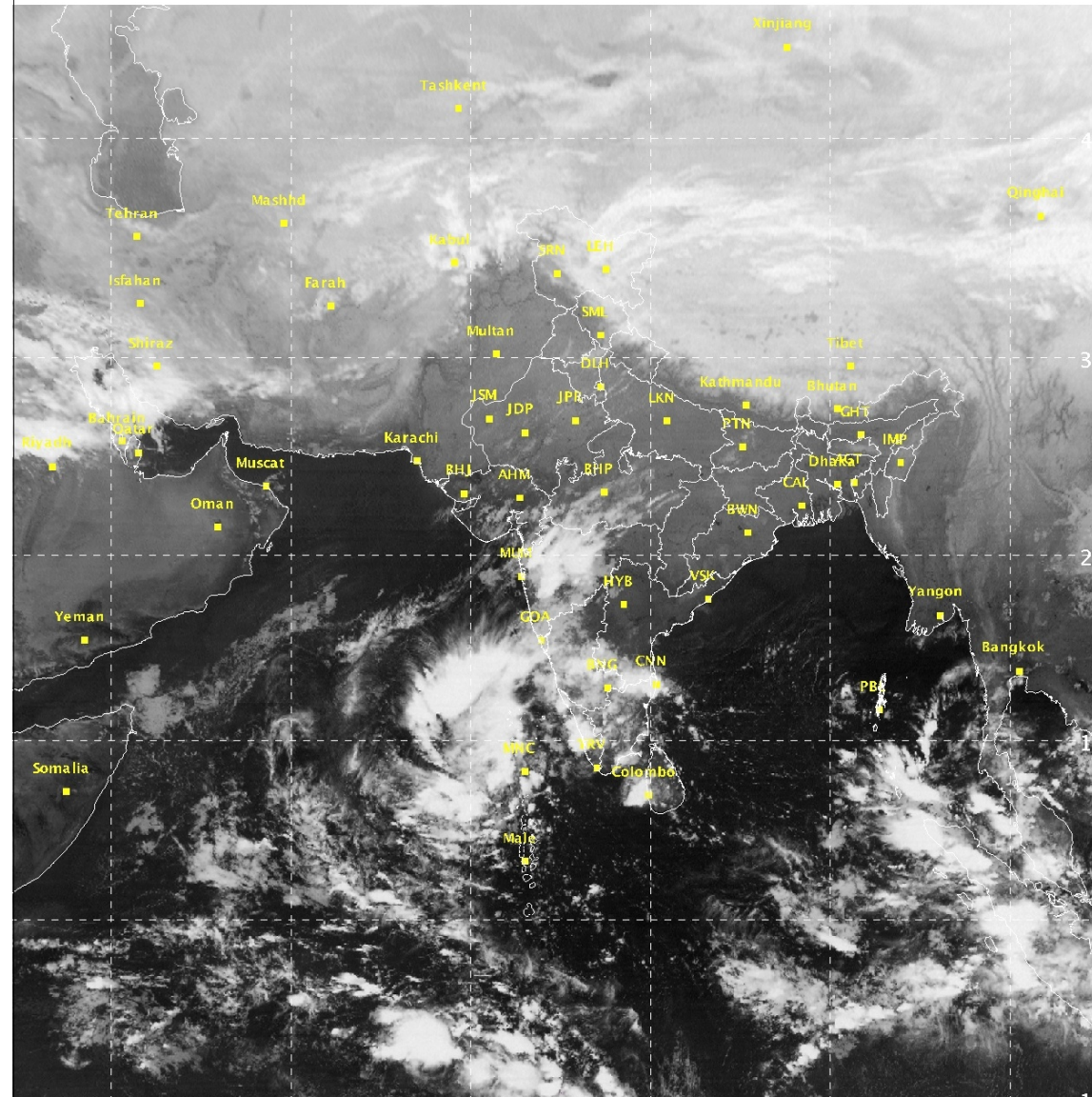
L1C Mercator



IMD/Delhi



L1C Mercator



IMD/Delhi

WEATHER

Cloudy



TEMP: 4°C (4°C)
WIND: S 12kph
HUM: 70%
DEW POINT: -1°C
PR: 101.4kPa
VISIB: 14 km
CLOUD COVER: 92%
UV INDEX: 0
S/M RISE: 7:54am/5:13am
S/M SET: 5:38pm/2:50pm

TODAY



8°C
(6°C)

TONIGHT



0°C
(-1°C)

cloudy to partly sun
Chance of Precip: 4%

periods of rain
Chance of Precip: 67%

SATURDAY



7°C
-6°C

SUNDAY



9°C
0°C

clouds giving way to

plenty of sunshine

MONDAY



9°C
3°C

clouds and sun

TUESDAY



6°C
3°C

rain and drizzle

WEDNESDAY



4°C
-1°C

rain

THURSDAY



2°C
-7°C

partly sunny

FRIDAY



2°C
-7°C

plenty of sunshine

SATURDAY



3°C
-6°C

plenty of sunshine

SUNDAY



3°C
-7°C

partly sunny

WEATHER

Light Snow



TEMP: -13°C (-22°C)
WIND: SE 17kph
HUM: 85%
DEW POINT: -15°C
PR: 101.8kPa
VISIB: 6 km
CLOUD COVER: 100%
UV INDEX: 0
S/M RISE: 9:44am/7:16am
S/M SET: 5:38pm/2:31pm

TODAY



-8°C
(-10°C)

a bit of snow

Chance of Precip: 60%

TONIGHT



-13°C
(-21°C)

occasional snow and
Chance of Precip: 55%

SATURDAY



-6°C
-11°C

occasional snow and

SUNDAY



-10°C
-14°C

colder

MONDAY



-12°C
-12°C

increasing clouds

TUESDAY



-9°C
-19°C

partly sunny

WEDNESDAY



-13°C
-16°C

sunny to partly clou

THURSDAY



-12°C
-14°C

plenty of sunshine

FRIDAY



-3°C
-14°C

snow

SATURDAY



-12°C
-15°C

snow

SUNDAY



-10°C
-11°C

partly sunny

WEATHER

Partly Sunny



TEMP: 32°C (37°C)
WIND: E 19kph
HUM: 55%
DEW POINT: 22°C
PR: 100.9kPa
VISIB: 16 km
CLOUD COVER: 35%
UV INDEX: 6
S/M RISE: 6:02am/3:10am
S/M SET: 8:08pm/5:55pm

TODAY



35°C
(39°C)

sunny to partly clou
Chance of Precip: 25%

TONIGHT



23°C
(23°C)

a shower or thunders
Chance of Precip: 30%

SATURDAY



34°C
23°C

a shower or thunders

SUNDAY



29°C
22°C

a couple of showers

MONDAY



31°C
22°C

a shower or thunders

TUESDAY



30°C
18°C

a shower or thunders

WEDNESDAY



26°C
17°C

cooler

THURSDAY



24°C
20°C

a couple of showers

FRIDAY



24°C
22°C

partly sunny

SATURDAY



27°C
22°C

mostly sunny

SUNDAY



27°C
18°C

perhaps a shower

WEATHER

Rain



TEMP: 5°C (-4°C)
WIND: WSW 30kph
HUM: 100%
DEW POINT: 5°C
PR: 101.6kPa
VISIB: 13 km
CLOUD COVER: 68%
UV INDEX: 0
S/M RISE: 8:14am/5:49am
S/M SET: 4:29pm/1:33pm

TODAY



6°C
(-2°C)

rain and drizzle
Chance of Precip: 100%

TONIGHT



4°C
(-2°C)

a couple of showers
Chance of Precip: 60%

SATURDAY



8°C
3°C

windy

SUNDAY



7°C
3°C

a shower

MONDAY



3°C
-1°C

clouds and sun

TUESDAY



4°C
3°C

periods of rain

WEDNESDAY



7°C
7°C

showers

THURSDAY



7°C
2°C

rain

FRIDAY



4°C
1°C

after a cloudy start

SATURDAY



6°C
3°C

cloudy

SUNDAY



8°C
0°C

showers

Thank you