

## Prelim Bits 19-01-2024 | UPSC Daily Current Affairs

### Day and Night Microphysics

Indian Meteorological Department (IMD) has been issuing alerts with maps from various weather monitoring satellites.

#### Day and Night Microphysics RGB Imager

- It is image created by combination of Red, Green and Blue colours.
- **Aim** - To study various *atmospheric characteristics*.
- **Radiometer** - A device that measures the properties of radiation by studying the radiation's interaction with matter.
- **Atmospheric sounders** - A devices that measure temperature, humidity and study water vapour as a function of their heights from the ground.
- **Factors determining RGB imager** - Solar reflectance and brightness temperature.
- **Applications** - It helps in analysis of different *cloud types*, initial stages of *convection*, maturing stages of a *thunderstorm*, identification of *snow area*, and the *detection of fires*.
- It also helps in tracking the formation, evolution and depletion of *cyclones* and other weather events.

**Solar reflectance** is a ratio of the amount of solar energy reflected by a surface and the amount of solar energy incident on it.

**Brightness temperature** is the relationship between the temperature of an object and the corresponding brightness of its surface.

- **Daytime Microphysics (DtMicro) RGB** - It is the data formed by combining information about the cloud brightness, cloud particle phase and size, and cloud top temperature.
- **Aim** - To *distinguish ice from water* phase and to monitor the *development of convection, fog and low clouds*.

#### Solar Reflectance Recorded by INSAT 3D

| Wavelength                                 | Colour beam  | Relates to  |
|--|--------------|---|
| 0.5 $\mu\text{m}$ (visible radiation)      | Red colour   | Cloud thickness and amount of cloud water and ice |
| 1.6 $\mu\text{m}$ (shortwave IR radiation) | Green colour | Cloud particle size and phase                     |
| 10.8 $\mu\text{m}$ (thermal IR radiation)  | Blue colour  | Temperature                                       |

- **Observations** - *Water cloud is more reflective than ice cloud* and have a stronger red beam, *smaller water or ice particles have a higher reflectivity*, resulting in a stronger

green beam and *warm surface corresponds to strong blue beam* component.

- **Night microphysics** - It is designed for *monitoring the evolution of night time fog and stratus clouds*.

| Colour band | Determining factors                           |
|-------------|---|
| Red         | Difference between 2 Thermal IR               |
| Green       | Difference between Thermal IR and a middle IR |
| Blue        | Strength of 1 Thermal IR signal               |

- **Observations** - A strong *red beam for thick clouds, strong green beam for water clouds with small droplets* and a *strong blue beam for warm surfaces*.

*The Kalpana 1 and INSATs 3A, 3D, and 3DR satellites have bolstered India's weather monitoring and warning services.*

## References

1. [The Hindu| IMD maps for weather alerts](#)
2. [IMD| INSAT 3D's Day and Night Microphysics](#)

## Pakke Paga Hornbill Festival

*The 9th edition of the 3-day Pakke Paga Hornbill Festival (PPHF) commenced in Arunachal Pradesh in 2024.*

**Theme for 9th Edition** is '*Domutoh Domutoh, Paga hum Domutoh*', translates to '*Let Our Hornbills Remain*' in Nyishi, *emphasising the critical need to preserve the iconic birds.*

- **1st Edition** - In 2015
- In 2019, it was declared as a **state festival** of Arunachal Pradesh.
- **Aim** - To recognise the role played by the ***Nyishi community in conserving hornbills*** in Pakke Tiger Reserve (PTR).
- To ***raise alternative sources of income*** for the region and to create awareness in the rest of India about the wonders of PTR and its surrounding areas.

*Nyishi is the largest tribal group in Arunachal Pradesh.*

- **Pakke Tiger Reserve** - It is ***home to 4 species of hornbills*** namely Wreathed, Great Indian, Oriental Pied and the endangered Rufous-necked.
- **Activities** - It includes bird-watching, butterfly walks, bear walks, hornbill roost site visits, cultural programs, food stalls, sightseeing tours, river walks, as well as displays of local tribal sports and dances

- **Positive Impact** - It unites people from diverse backgrounds to combat pollution, protect wildlife, and address environmental degradation.

[Hornbill festival in Nagaland](#) is also called as 'festival of festivals'.

## Reference

[Down To Earth| 9<sup>th</sup> Edition of Pakke Paga Hornbill Festival](#)

## Prehistoric Rock Paintings in Tamil Nadu

The Tamil Nadu government has planned to declare the entire hillocks of Alampadi, Melvalai, and Sethavarai a protected monument.

- All 3 sites are located in Villupuram district of Tamil Nadu.
- **Melvalai** - A nondescript village whose **paintings dates back to 3000 B.C.** and majority of etchings was in **red ochre**.

The word, **Rattapparai**, has become synonymous with the rock art painted in red ochre.

- There are **4 sets of paintings** that includes human figurines, animals, and symbols.
- **1<sup>st</sup> set** - There are **3 persons**, with a man mounted on a horse; another is pulling the horse with a rope fastened to the animal, while the 3<sup>rd</sup> man is depicted with hands stretched, welcoming others.
- **4<sup>th</sup> set** - **6 men standing** and a few others with hands stretched out.
- **Link with IVC** - Painting depicting a group of men rowing a boat, indicates a link between the Indus Valley and the southern region.

| Alampadi   | Sethavarai  |
|--|---|
| <ul style="list-style-type: none"> <li>• The paintings are in <u>red and white ochre</u>.</li> </ul> | <ul style="list-style-type: none"> <li>• It has paintings of animals, especially a <u>deer and a fish</u>.</li> <li>• The outlines are in <u>red ochre</u>, while the inner portion is filled with <u>white ochre</u>.</li> </ul> |

- **Challenges** - There have been instances of unregulated entry of people and they also face threats from quarrying and vandalism.
- **Measures** - Tamil Nadu Ancient and Historical Monuments and Archaeological Sites and Remains **Act, 1966** and Tamil Nadu Ancient and Historical Monuments and Archaeological Sites and Remains **Rules, 1971**.

## References

[The Hindu| Prehistoric Rock Paintings in Villupuram District](#)

## Boundary Committee in Mizoram

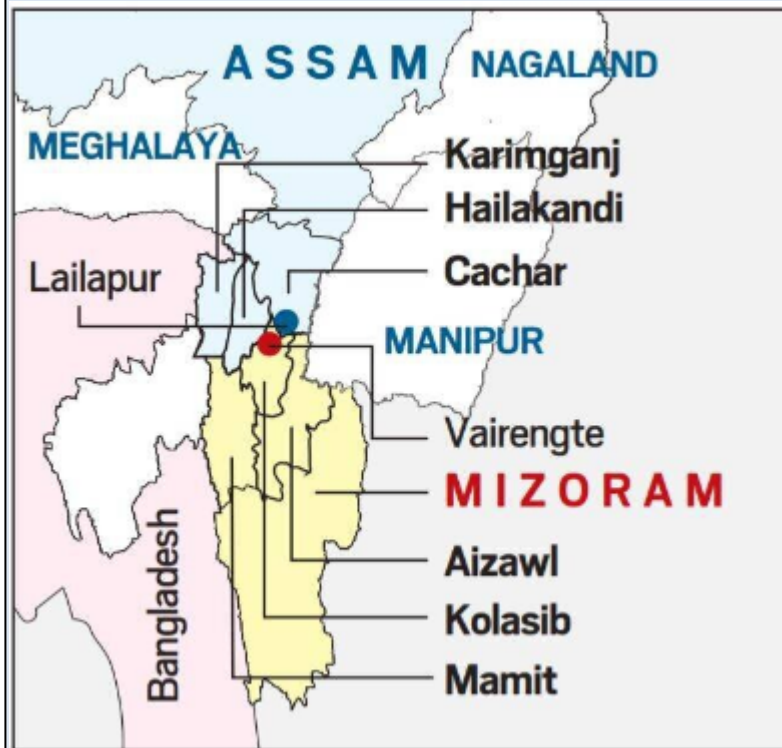
Mizoram forms panel to resolve border dispute with Assam.

Mizoram, once was part of Assam became a union territory in 1972 and later became a full-fledged state in 1987.

- **Boundary Committee** - It has been *constituted by the Zoram People's Movement (ZPM) government* of Mizoram.
- **Aim** - To **resolve the 165-km border disputes** between Mizoram and Assam shared across 3 districts on each side.
- **Panel members** - It will have the Minister for Environment, Forests and Climate Change, the state Home Department Commissioner, the advisor to the Chief Minister, the Chief Secretary and the state DGP along with 1 member each from the recognised parties in the state.
- **Mizoram's Border** - It shares boundaries with *Assam, Manipur and Tripura* in India and also share border with *Bangladesh*.

### Assam-Mizoram Border Dispute

- **Historical background** - It dates back to colonial era when inner lines were demarcated as per administrative needs of British Raj.
- **1875 notification** - It differentiated *Lushai hills (Mizoram)* from the plains of Cachar.
- **1933 notification** - It demarcated a boundary between Lushai hills and Manipur.
- **Dispute** - While *Mizoram follows 1875 notification, Assam follows 1933 notification.*
- **Recent issue** - It turned *violent in 2021* when 6 Assam cops were killed after the forces of the 2 states clashed.



### Reference

## Global Carbon Project (GCP) Report

The Global Carbon Project report for 2023 was released during the recent COP28 summit held in Dubai, UAE.

- It is a Global Research Project of Future Earth and a research partner of the World Climate Research Programme.
- **Established in** - 2001
- It is prepared **every year** by a *global consortium of scientists*.
- **Aim** - To develop a complete **picture of the global carbon cycle**, including both its biophysical and human dimensions together with the interactions and feedbacks between them.
- **Focus** - On the global biogeochemical cycles which govern **3 greenhouse gases (GHGs)** like carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), including their natural and human drivers, and opportunities for low carbon pathways.
- **Significance** - It produces [Global Carbon Budget](#) annually which provides an in-depth look at the amount of fossil fuels that nations around the world burn and where it ends up.
- **2023 report** - It projects fossil CO<sub>2</sub> emissions of 36.8 billion tonnes in 2023, up 1.1% from 2022.
- Global emissions from coal, oil and gas are all projected to increase with most steep increase from oil.
- Atmospheric CO<sub>2</sub> levels are projected to average 419.3 ppm in 2023, 51% above pre-industrial levels.
- **In India** - *CO<sub>2</sub> emissions will cross 3 gigatons (gt)* by the end of 2023, about 8% higher than the figure of 2022.
- India's per capita emissions is only about 1.9 tonnes (against a world average of almost 5 tons) and its cumulative emissions is only 3% (as against 25% for US) of the global emissions.

### India's Third National Communication (2023) Report

- India's total greenhouse gas emissions (GHGs) was 3.1 gt of CO<sub>2</sub>eq (2019).
- Almost 76% of GHGs were emitted by the energy sector followed by agriculture and industrial process sectors.
- About 92% of the CO<sub>2</sub> emissions is from the energy sector.
- Among energy sectors, power generation contributes about 39% in the total CO<sub>2</sub> emissions followed by transport and iron and steel.

## References

1. [Down To Earth| Global Carbon Project Report 2023](#)
2. [The Indian Express| India's GHG Emission Scenario](#)
3. [GCP| Global Carbon Project](#)



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