

## Prelim Bits 12-03-2023 & 13-03-2023 | UPSC Daily Current Affairs

### Humayun (1530-1540, 1555-1556)

Historian Ebba Koch's book 'The Planetary King: Humayun Padshah, Inventor and Visionary on the Mughal Throne' was launched in New Delhi on Humayun's birth anniversary.

- Nasiruddin Humayun (1530-1540, 1555-1556) is the second Mughal padshah.
- He was the successor of Babur, the founder of the Mughal dynasty and father of Akbar.
- He lost to his rival Sher Shah Suri in Battle of Chausa (1539) and Battle of Kanauj (1540), forcing him to flee to Iran.
- In Iran Humayun received help from the Safavid Shah and regained his throne in Delhi in 1555.
- A year later he died in an accident.
- **Accounts** - His biography is *Qanun-i Humayuni* was written by historian **Khwandamir**, it is also known as *Humayun Nama of Khwandamir*.
- **Humayun-Nama** is an account of his life written by his sister **Gulbadan Begam** during Akbar's reign.
- Shah Jahan's court poet Abu Talib Kalim Kashani wrote a poem on Humayun's tomb.
- **Tomb** - Akbar erected Humayun's tomb in Delhi. It is near the Purana Qila, the palace fortress, and other Mughal buildings.
- **Interests** - Humayun had immense knowledge and interest in astronomy and astrology.
- Humayun himself wrote scientific treatises including 'an introduction to the science of astronomy and some other unusual matters'.
- Humayun even planned to construct an observatory in India.

### References

1. [The Hindu - Humayun: the most intriguing ruler of the dynasty](#)

### Tsuchinshan-ATLAS - Comet C/2023 A3

Astronomers have spotted a comet which could be an exceptionally bright comet in the night sky in 2024.

- Comet C/2023 A3 (Tsuchinshan-ATLAS) was discovered by Purple Mountain Observatory in China and the Asteroid Terrestrial-impact Last Alert System, ATLAS in South Africa.
- The comet is currently between the orbits of Jupiter and Saturn, a billion kilometres from Earth.

- It is moving on an orbit that will bring it to within 59 million kilometres of the Sun (perihelion) in September 2024.
- The brightness of the comet could be nearly as bright as Sirius, which is the brightest star in the night sky.
- The brightness of the comet could be nearly as bright as Sirius, which is the brightest star in the night sky.
- Currently, only the most powerful telescopes on the planet can actually observe it, but in September 2024, it could potentially be visible even to the naked eye.
- **Similar Topic** - [Green Comet - C/2022 E3 \(ZTF\)](#)

## References

1. [The Hindu - A comet brighter than most stars we see](#)
2. [IE - Another exceptionally bright comet in 2024](#)

## Landslide Atlas of India

*The Indian Space Research Organisation (ISRO) has released the Landslide Atlas of India, a detailed guide identifying landslide hotspots in the country.*

- **Landslides** - A sudden movement of rock, boulders, earth or debris down a slope is termed as a landslide.
- They are natural disasters occurring mainly in mountainous terrains where there are conducive conditions of soil, rock, geology and slope.
- **Causes**
  1. Natural causes - includes heavy rainfall, earthquakes, snow-melting and undercutting of slopes due to flooding.
  2. Anthropogenic causes - activities such as excavation, cutting of hills and trees, excessive infrastructure development, and overgrazing by cattle.
- **Factors of influence** - lithology, geological structures like faults, hill slopes, drainage, geomorphology, land use and land cover, soil texture and depth, and weathering of rocks.

### Types of Movement

**Falls:** Falls are rapid movements of rocks and boulders detached from steep slopes or cliffs along fractures, joints, and bedding planes.

**Topple:** It is the forward rotation of a mass of debris or rock out of a slope. The slope failure generally occurs at point near the base of the block of rock.

**Slides:** A slide is a downslope movement of material that occurs along a slip surface.

**Rotational slide:** In this slide the slide movement is roughly rotational about an axis which is parallel to the ground surface and transverse across the slide.

**Translational slide:** In this slide the landslide mass moves along a planar surface with rotation or backward tilting

### Types of flows

**Debris flow:** It is a form of rapid mass movement in which a combination of loose soil, rock, organic matter, slurry that flows downslope. They are commonly caused by intense precipitation or rapid snow melt.

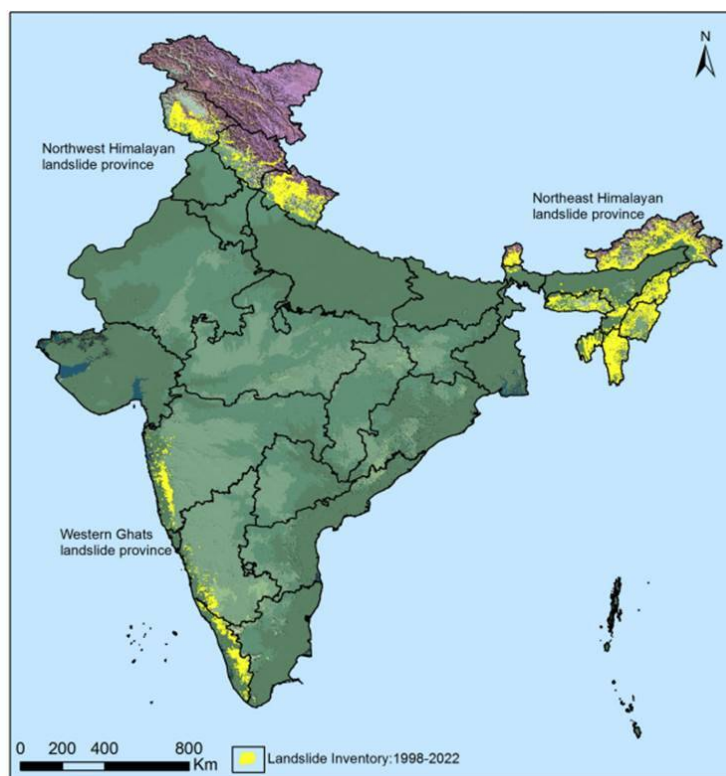
**Earth flow:** It is down slope viscous flow of fine grained material saturated with water.

**Mudflow:** A mudflow is wet or viscous fluid mass of fine and coarse grained material flows rapidly along drainage channels.

**Creep:** Creep is the slow, steady, downward movement of material under gravity occurs in large area.

**Lateral Spreads:** It is the lateral movement usually occur on very gentle slopes or flat terrain. The failure is caused by liquefaction due to earthquake.

- **Landslide Atlas of India** - ISRO's National Remote Sensing Centre (NRSC), Hyderabad, has created 'Landslide Atlas of India'.
- It is a database of landslide-prone regions of India based on events during 1998 - 2022, primarily along the Himalayas and the Western Ghats.
- India is among the top 4 countries with highest landslide risk, where for every year the estimated loss of life per 100 km<sup>2</sup> is greater than one.
- Excluding snow covered areas, approximately 12.6% of the country's geographical land area (0.42 million sq. km) is prone to landslides.



- **Database and analysis** - The pan-India landslide database classifies landslides into - seasonal (2014, 2017 monsoon seasons), event-based and route-based (2000 - 2017).
- The NRSC carried out Landslide exposure analysis in the mountainous areas for their exposure to landslides in terms of key socio economic parameters in 17 states and 2 UTs of India.
- **Mizoram** recorded 12,385 landslide events highest number of landslide events in the

past 25 years.

- **Rudraprayag** in Uttarakhand has the highest landslide density and topped the list of all 147 districts in 17 states and 2 UTs.
- Department of Space had also undertaken the preparation of Landslide Susceptibility Zonation (LSZ) and Management maps in the Himalayas of Uttarakhand and Himachal Pradesh states.
- The inventory database of landslides is available in a web GIS platform in the Bhuvan portal.

*According to the Statement of Climate of India 2022 released by the India Meteorological Department, heavy rain, floods and landslides claimed 835 lives in the country in 2022.*

## References

1. [IE - ISRO releases the Landslide Atlas of India](#)
2. [NRSC - Landslide Atlas 2023 - pdf](#)

## Fluorescence Microscopy

*Researchers at Winona State University, have created a design for a 'glowscope', a device that could democratise access to fluorescence microscopy.*

*An optical microscope views an object by studying how it absorbs, reflects or scatters visible light.*

- **Principle** - A fluorescence microscope views an object by studying how it reemits light that it has absorbed, i.e. how it fluoresces.
- **Working** - The object is infused with fluorophores before being placed under the microscope.
- The object is illuminated with light of a specific wavelength.
- Fluorophores are particles in the object that absorb this light and reemit it at a higher wavelength (i.e. different colour).
- Different fluorophores are used to identify and study different microscopic entities.
- **Advantages** - A fluorescent microscope can track fluorophores as they move inside the object, revealing the object's internal shape and other characteristics.
- Affordable for students as well as researchers in resource-poor labs.
- A glowscope requires access to fluorophores, clip-on macro lens, LED flash lights and lighting filters.
- **Different versions** - epifluorescence and confocal laser-scanning microscopes.

**Foldscope** - *The Foldscope is a handheld microscope made mostly of paper. (costs around Rs 400)*

*It has a magnification of around 140x and can identify objects just 2 micrometres wide.*

*It was created by researchers at Stanford University in 2014.*

*Researchers from the Indian Institute of Science (IISc), Bengaluru, have found that a foldscope that can be easily linked to a smartphone camera*

## References

1. [The Hindu - Scientists devise 'glowscope' for fluorescent microscopy](#)
2. [The Hindu - Foldsopes linked to a smartphone camera](#)

## UPI for in-bound travellers

*The Reserve Bank of India (RBI) has allowed in-bound travellers into India to use UPI.*

- The Reserve Bank of India (RBI) recently has opened up the UPI channel of payments to non-resident Indians.
- To take this ahead by a step, it has allowed UPI for all foreign travellers entering India.
- A prepaid payment instrument (PPI) is issued for travellers from foreign countries in the form of wallets linked to UPI.
- **Issuer** - Authorised banks and NBFCs can issue **rupee-denominated wallets** to in-bound foreign travellers.
- Also be issued under co-branding arrangements with those permitted to deal with foreign exchange under FEMA.
- Currently, ICICI Bank, IDFC First Bank and two non-bank PPI issuers, Pine Labs Private Limited and Transcorp International are issuing UPI linked wallets.
- The regulator allows a fully KYC compliant wallet to hold up to Rs.2 lakh and this amount is extended to the travellers also.
- **Usage** - The wallet can be used only to make merchant payments for goods and services and not for transfer money.
- The unutilised money can be repatriated back to the customer from the wallet.
- The wallet can be loaded against cash or by swiping a credit card at the kiosk.
- **Limitations for now** - As a test case, the facility is open only to travellers from G20 countries as India is holding the G20 presidency.
- Only in-bound passengers in select international airports (Bengaluru, Mumbai and Delhi) can avail of the facility for now.

***UPI for NRIs** - [UPI for NRIs](#) is tagged to fully KYC compliant NRO/NRE accounts linked to their non-Indian mobile phone number and every time UPI is used, money is directly debited from their bank accounts.*

## References

1. [Business Line - Extending access to UPI for in-bound travellers](#)
2. [Economic Times - Foreign travellers in India can now use UPI](#)