DAILY CURRENT AFFAIRS 21-03-2024

GS-1

1. **Spring season 'disappearing' in many states: study**
2. **Democratic Republic of Congo (DRC)**

GS-3

3. **Private Placement of Securities**
4. **Fluoride contamination**
5. **IceCube neutrino observatory**

Spring season 'disappearing' in many states: study

Syllabus: GS-1: Climatology & GS-3: Climate change.

Context:

- **Climate Trends agency** *analyzed meteorological records from 1970 to present for 33 Indian States and Union Territories.*
- *The analysis focused on the period where global warming's impact is observed and consistent data is available.*

Warming Trends:

- *All regions experienced a net warming during winter.*
- **Manipur had the largest change in temperature** *since 1970 (2.3°C), while Delhi had the smallest (0.2°C).*
- **Winter is the fastest warming season** *for 12 out of 34 regions analyzed.*

Regional Variations:

- **Southern regions** *experienced strong warming in December and January.*
- **Northern regions** *had weaker warming and even cooling during December and January.*
- **All regions warmed in February**, *with Jammu and Kashmir experiencing the highest warming (3.1°C) and Telangana the lowest (0.4°C).*

Implications:

- *Northern India may* **experience abrupt transitions** *from cool winter-like temperatures to warmer conditions in March.*
- **Rajasthan showed the largest jump** *in warming rates from January to February (2.6°C higher).*
- **Nine States and territories,** *including Delhi and Uttar Pradesh, showed a significant January-February temperature difference, contributing to the disappearance of spring-like conditions.*

Meteorological Factors:

- *Meteorologists attribute warming in southern India and reduced rainfall in the north during winter to* **changes in Western Disturbances** *and the* **jet stream pattern.**

About jet streams:

- **Definition:** *Western disturbances refer to extratropical storm systems that originate in the Mediterranean region and move eastwards across the Middle East and into the Indian subcontinent.*
- **Impact on Weather:** *These disturbances bring precipitation, primarily in the form of rain or snow, to various parts of the Indian subcontinent, especially the northern and western regions, during the winter months.*
- **Winter Precipitation:** *In India, western disturbances are crucial for bringing winter rainfall to regions like northwest India, including Punjab, Haryana, Rajasthan, and parts of Uttar Pradesh and Jammu and Kashmir.*
- **Temperature Regulation:** *They often lead to a decrease in temperature, bringing relief from winter dryness and contributing to agricultural activities by replenishing soil moisture.*
- **Jet Stream Connection:** *Western disturbances are closely associated with changes in the polar jet stream, influencing their intensity and trajectory across the Indian subcontinent.*

Democratic Republic of Congo (DRC)

Syllabus: GS-1; Geography – Mapping

Context

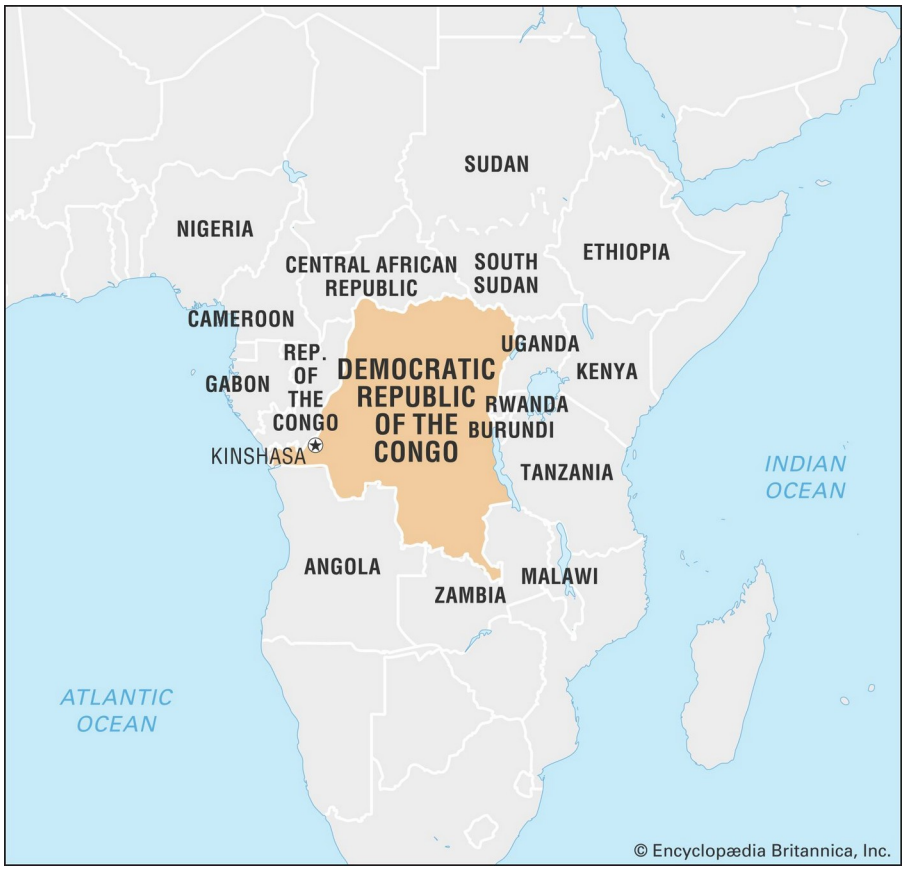
- *The* **UN chief** *condemned an attack which saw* **eight peacekeepers** *from the UN Mission in the Democratic Republic of the Congo, or DRC, wounded during clashes between the powerful* **M23 rebel movement** *and Government troops.*

About

- *The Democratic Republic of the Congo (DRC) is a country in* **Central Africa.**
- *It is the* **second-largest country in Africa** *and the 11th-largest in the world, with a population of around 112 million.*
- *The DRC is the largest country in Sub-Saharan Africa and has a tropical climate.*
- *The DRC's capital is Kinshasa, and its official language is French. The country's motto is "Justice -- Paix -- Travail" (French: "Justice -- Peace -- Work").*

Geography

- *The DRC's climate is tropical, with hot and humid conditions in the* **equatorial river basin.**
- *The southern highlands are cooler and drier, and the eastern highlands are cooler and wetter.*
- *The DRC's major topographical features include: a large river basin.*
- *The DRC's core region is the* **central Congo Basin**, *which has an average elevation of about 44 meters.*
- *The basin is drained by the* **Congo River** *and its tributaries, which provide the country with the most extensive network of navigable waterways in Africa.*



Borders

- *The DRC is bordered by:*
  - *Northwest: Republic of the Congo*
  - *North: Central African Republic*
  - *Northeast: South Sudan*
  - *East: Uganda, Rwanda, and Burundi*
  - *Tanzania: Across Lake Tanganyika*
  - *South and southeast: Zambia*

National Parks

- *The DRC has seven major national parks:*
  - *Virunga, Kahuzi-Biega, Garamba, Maiko, Kundelungu, Upemba, and Salonga.*

Natural Resources

- *The DRC is* **rich in natural resources**, *including: Minerals like cobalt and copper, Hydropower potential, Arable land, Biodiversity, and The world's second-largest rainforest.*

Conflict

- *However, the DRC has a long history of conflict,* **political instability**, *and authoritarian rule.*
- *This has led to a humanitarian crisis, with human rights violations including: Massacres, Abductions, Rape and sexual violence, Recruitment of children, and Other attacks on civilians.*

Private Placement of Securities

Syllabus: GS-3; Money Market

Context

- **Sebi** *decides to repeal certain circulars related to private placement of securities*
- *In respect of cases under the* **Companies Act, 1956**, *involving the issuance of securities to more than 49 persons but up to 200 persons in a financial year, Sebi had said that companies may avoid penal action, subject to certain conditions.*

What Is a Private Placement?

- *A private placement is a* **sale of stock shares or bonds to pre-selected investors and institutions** *rather than publicly on the open market.*
- *It is an alternative to an* **initial public offering (IPO)** *for a company seeking to raise capital for expansion.*

How Does a Private Placement Work?

- *The process takes place privately, hence the name, meaning that a company does not have to go through the regulatory hurdles of an IPO and being a public company but is still able to raise external funds to expand the business.*

What Is the Difference Between a PO and an IPO?

- *An IPO is an initial public offering; when a company sells shares publicly for the first time.*
- *A PO is a public offering; when a company sells shares publicly again after its IPO.*
- *A company can only have* **one IPO but many POs.**

Why Do Companies Go for Private Placements?

- *There are many benefits that would make a company choose a private placement.*
- *These include a faster process to selling shares than an IPO, having to meet fewer regulatory requirements than an IPO would require, having to meet fewer regulatory obligations on an ongoing basis than being public would require, and the ability to retain more control of the company.*

Advantages and Disadvantages of Private Placements

Advantage: A Speedier Process

- *Above all, a young company can remain a private entity, avoiding the many regulations and annual disclosure requirements that follow an IPO.*
- *The light regulation of private placements allows the company to avoid the time and expense of registering with the SEC.21*
- *That means the process of underwriting is faster, and the company gets its funding sooner.*
- *If the issuer is selling a bond, it also avoids the time and expense of obtaining a credit rating from a bond agency.*
- *A private placement allows the issuer to sell a more complex security to accredited investors who understand the potential risks and rewards.*

Disadvantage: A More Demanding Buyer

- *The buyer of a private placement bond issue expects a higher rate of interest than can be earned on a publicly-traded security.*
- *Because of the additional risk of not obtaining a credit rating, a private placement buyer may not buy a bond unless it is secured by specific collateral.*
- *A private placement stock investor may also demand a higher percentage of ownership in the business or a fixed dividend payment per share of stock.*
- *This puts pressure on the company to perform at a higher level, which could lead it to ignore the careful process of healthy growth.*
- *Additionally, there could be a loss of control if private placements result in increased ownership from investors.*

Fluoride contamination

Syllabus: GS-3: Water pollution

Context:

- *Fluoride contamination found beyond permissible limits in nine areas in Kerala: Palakkad, Malappuram, and Alappuzha districts.*

More about news:

- *Contamination likely originates from natural sources within the* **rock or soil, termed geogenic.**
- *The State Environment department reported this in a filing before the National Green Tribunal (NGT) on February 16, 2024.*
- *A report by the Union Ministry of Jal Shakti in December 2023* **highlighted arsenic detection in groundwater** *in parts of 230 districts across 25 states and fluoride detection in 469 districts across 27 states.*

Maximum permissible limits set by the Bureau of Indian Standards:

- *Arsenic: 0.01 mg/l*
- *Fluoride: 1.0 mg/l (can be extended to 1.5 mg/l if no alternative water source is available)*
- *Report by the State Groundwater department showed fluoride concentration exceeding 1.5 mg/l at various locations.*

State Groundwater department to implement remedial measures, including:

- *Setting up rainwater harvesting facilities.*
- *Establishing reverse osmosis plants.*
- *Utilizing surface water for drinking purposes.*
- *Involvement of* **Kerala Water Authority (KWA)** *and the* **Water Resources department** *in implementing these measures.*

Fluoride Sources:

Geogenic Sources:

- *Fluoride-bearing minerals like fluorite in rocks and sediments.*
- *Weathering and dissolution of these minerals release fluoride into groundwater.*
- *Volcanic activity and geothermal processes can also contribute.*

Anthropogenic Sources:

- *Industrial activities such as aluminum smelting, phosphate fertilizer production, and coal-fired power plants.*
- *Improper disposal of hazardous waste containing fluoride.*

Impacts of Fluoride Contamination:

- *Dental Fluorosis: Discoloration and mottling of teeth due to excessive fluoride intake.*
- *Skeletal Fluorosis: Damage to bones and joints, leading to pain, stiffness, and deformities.*
- *Other Health Effects: Possible links to neurological problems and gastrointestinal issues based on studies.*

Arsenic Contamination in Groundwater:

- *A significant global issue impacting millions relying on groundwater for drinking and cooking.*

Sources of Contamination:

Natural Sources:

- *Arsenic-rich rocks and minerals dissolving into groundwater, particularly prevalent in certain geological formations worldwide.*

Anthropogenic Sources:

- *Industrial activities such as mining, smelting, and the use of arsenic-based pesticides.*

Health Risks:

- *Long-term exposure to high arsenic levels in drinking water can lead to various health problems, including:*
- *Arsenicosis: A chronic disease causing skin lesions, pigmentation changes, and hardening of palms and soles.*
- *Increased risk of cancers (skin, bladder, lungs).*
- *Cardiovascular disease.*
- *Diabetes.*

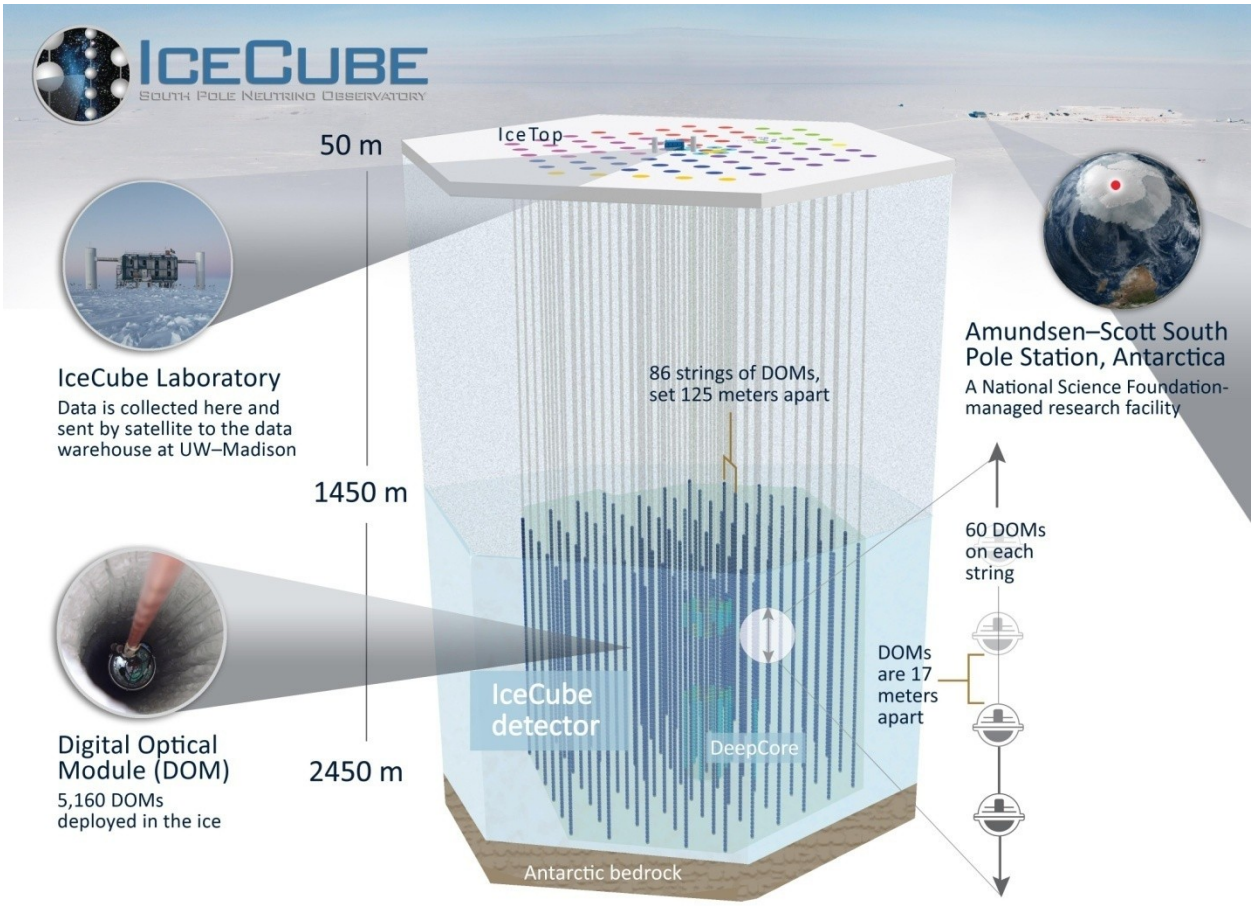
IceCube neutrino observatory

Syllabus: GS-3; Science and Technology

Context

- *Scientists using data from the IceCube Neutrino Observatory in Antarctica believe they have potentially found the first evidence for astrophysical tau neutrinos, called* **"ghost particles"** *because of how hard they are to find.*

About



- *The IceCube neutrino observatory is a device at the* **Earth's South Pole that detects subatomic particles called neutrinos.**
- *It was built and is maintained by the IceCube Collaboration, which consists of many universities worldwide led by the University of Wisconsin, Madison.*
- *IceCube consists of thousands of sensors buried more than 1.4 km beneath the ice plus multiple detectors above the surface.*

Neutrinos

- *Neutrinos are light particles that very rarely interact with matter.*
- *This is why they're called "ghost particles".*
- *By some estimates, a human-sized neutrino detector will have to wait for a century for a single neutrino to interact with a sensor.*
- *The larger the detector's collecting area, the higher the chances of spotting neutrinos.*
- **IceCube is the world's biggest 'neutrino telescope'; its** *sensors are distributed throughout a cubic kilometre of ice.*
- *When a neutrino interacts with the ice surrounding the sensors, it may produce some charged particles and some radiation.*
- *The sensors detect the radiation to infer the detection of a neutrino and use the radiation's properties to understand more about the particle.*
- *Neutrinos come in* **different types.**
- *IceCube can identify some of them in real-time.*
- *For others, IceCube collects data for many years and scientists then comb through them to find neutrino interaction events.*
- *In such an instance, scientists reported last week they had found instances in IceCube's data from 2011 to 2020 that matched the signature of tau neutrinos, with more than 99.999999% confidence.*