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Escarpment

A new study has linked continental break-up to new topological like plateaus and 'escarpments' form.

- An escarpment (kilometre-high steep slopes) is an area of the Earth where ***elevation changes suddenly***.
- Escarpment usually refers to the bottom of a cliff or a steep slope. (Scarp) refers to the cliff itself.
- Escarpments separate two-level land surfaces.
- For example, an escarpment could be the area separating the lower parts of the coast from higher plateaus.
- An escarpment also usually indicates two different types of land, such as the area on a rocky beach where tall cliffs become rocky sand.
- One side of an escarpment could be rock from one geologic era, while the other side of the escarpment could be rock from a different geologic era.
- Escarpments are formed by one of 2 processes - erosion and faulting.
- **By Erosion -** Erosion creates an escarpment by wearing away rock through wind or water.
- One side of an escarpment may be eroded more than the other side.
- The result of this unequal erosion is a transition zone from one type of sedimentary rock to another.
- One example is the Niagara Escarpment, which runs in an arc from the U.S. state of New York, through the Canadian province of Ontario, and down to the U.S. state of Illinois.
- All along the Niagara Escarpment, hard, resistant rock sat on top of soft rock.
- As wind and water eroded the soft rock underneath, the hard rock tumbled down, creating cliffs and escarpments.
- The most dramatic example of this unequal erosion is the waterfalls at Niagara Falls.
- **By Faulting -** The other process by which escarpments are formed is faulting.
- Faulting is movement of the Earths top layer, or crust, along a crack called a fault. The same process often results in earthquakes.

- Faulting creates escarpments as it moves pieces of the Earth around.
- The Elgeyo Escarpment, part of Kenyas Great Rift Valley, was formed by faulting millions of years ago.
- The faulting that resulted in the Elgeyo Escarpment turned seabeds into nearly vertical cliffs.
  Escarpments are found on every continent, even Antarctica.
- **Rupes -**Rupes is the Latin word for cliff. Earth isn't the only place for escarpments.
- Rupes, created by faulting, erosion, or the impact of a meteorite, are escarpments on other planets or moons.
- There are rupes on Mercury, Mars, our moon, and the rocky moons of other planets.

References

1. Down to Earth | Escarpments
2. World Atlas | Escarpment

Perseid meteor shower

Recently, the Perseid meteor shower peaked, offering one of the best sky shows of 2024.

- The Perseid meteor shower is an ***annual event*** where meteors, debris from the comet Swift-Tuttle, streak across the sky.
- **Occurrence-** Active from ***July to late August*** every year.
- **Origin-** Debris from Comet ***Swift-Tuttle***.
- **Comet Swift**–Tuttle is a large periodic comet with a 1995 (osculating) orbital period of ***133 years*** that is in a 1:11 orbital resonance with Jupiter.
- **Meteor Rate-** Up to 60-100 meteors per hour during peak.
- **Location- *Northern Hemisphere***, some visibility in Southern Hemisphere Dark areas away from city lights.
- **Phenomenon**- Earth passes through the debris left by Swift-Tuttle, pulling the particles into its atmosphere where they burn up, creating the meteor shower.
- Meteors come from leftover comet particles and bits from broken asteroids.
- When comets come around the Sun, they leave a dusty trail behind them.
- Every year Earth passes through these debris trails, which allows the bits to collide with our atmosphere and disintegrate to create fiery and

colorful streaks in the sky.
- **Significance-** The Perseids can produce over ***60 meteors per hour*** at peak.
- Though the Swift-Tuttle comet poses no immediate threat, it was once thought to be a potential hazard for Earth.
- Further calculations, however, confirmed that Earth is safe from impact for at least two millennia.

References

1. The Hindu | Perseid meteor shower
2. NASA | Perseids

Harappan Drainage Systems

The Harappan cities like Dholavira and Mohenjodaro excelled in urban planning with advanced drainage, wastewater management, and rainwater harvesting systems.

- These cities were ingeniously designed with reservoirs, wells, and drains to manage water efficiently, ***even in arid conditions***.

Dholavira

- **Location-** Situated in the ***Kutch district of Gujarat***, India, on the Khadir Bet Island in the Great Rann of Kutch.
- **Historical Period-** Dholavira dates back to the Harappan Civilization (Indus Valley Civilization), flourishing between 3000 BCE and 1500 BCE.
- **Discovery-** Discovered in 1967-68 by archaeologist ***Jagat Pati Joshi.***
- **Urban Planning-** The city is divided into three main parts: the ***Citadel, the Middle Town, and the Lower Town***.
- **UNESCO World Heritage Site-** Dholavira was inscribed as a UNESCO World Heritage Site in 2021.

Mohenjodaro

- **Location-** Located in present-day Sindh, Pakistan, on the banks of the ***Indus River.***
- **Historical Period-** One of the major cities of the Harappan Civilization, flourishing between 2500 BCE and 1900 BCE.
- **Discovery-** Rediscovered in 1922 by ***R. D. Banerji.***

- **Urban Planning-** The city was laid out in a ***grid pattern***, with well-planned streets and drainage systems.
- **UNESCO World Heritage Site-** Mohenjodaro was designated as a UNESCO World Heritage Site in 1980.
- **Significance-** Both Dholavira and Mohenjodaro represent the advanced ***urban planning, architecture, and culture*** of the Harappan Civilization, though they differ in their geographical contexts and specific developments.

Reference

The Print | Harappan Drainage Systems

BHIM and NPCI

The National Payments Corporation of India (NPCI) plans to spin off its BHIM app into a subsidiary to boost its expansion in India, according to industry sources.

BHIM

- **Launch-** 2016.
- **Development-** It is developed by NPCI under the guidance of the Reserve Bank of India.
- **Payment platform-** Provides a fast, secure, and reliable way to make digital payments via UPI on mobile apps or through the USSD platform (*99#).
- **Purpose-** Facilitates direct e-payments through banks and encourages cashless transactions.
- **Bank support-** Supports all Indian banks using UPI, built on the IMPS infrastructure.
- **QR code-** Allows QR code scanning for faster payment entry.
- **Transaction limits-**
- Transfer between ₹1 to ₹100,000 with no fees.
- Single transaction limit: ₹10,000; Daily limit: ₹20,000 for personal use.
- Verified merchants can transact up to ₹100,000.

NPCI

- **About**- National Payments Corporation of India
- **Founded-** 2008.

- **Objective-** To develop and operate retail payment and settlement systems in India.
- **Structure-** NPCI is a not-for-profit organization, owned by a consortium of major banks in India.
- **Regulation-** It is an initiative of Reserve Bank of India (RBI) and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007.
- **Major initiatives**
  - Unified Payments Interface (UPI),
  - Bharat Interface for Money (BHIM),
  - RuPay,
  - Immediate Payment Service (IMPS),
  - National Automated Clearing House (NACH),
  - Aadhaar Payment Bridge (APB) System,
  - Aadhaar enabled Payment System (AePS),
  - National Financial Switch (NFS) and
  - National Electronic Toll Collection (NETC).
- **Scope-** NPCI's systems support a wide range of digital payment methods across the country, promoting financial inclusion.
- **Impact-** NPCI plays a crucial role in India's transition to a cashless economy by providing innovative, secure, and efficient payment solutions.

References

1. Business Standard | NPCI to level up UPI
2. GOI | Bharat Interface for Money (BHIM)

MSP Calculation

The ongoing protests over legalizing the Minimum Support Price (MSP) highlight the challenge of setting a fair price for farmers' produce.

- **MSP Framework-** The government provides MSP for 23 crops.
- **Calculation**- It is calculated by the ***Commission for Agricultural Costs and Prices (CACP)***.
- **Final decision**- The final decision on MSP levels and other recommendations is made by the ***Cabinet Committee on Economic Affairs (CCEA)*** of the Union government.
- **Need for Reassessment of MSP Calculation-** Consideration of

comprehensive costs (C2) as recommended by M S Swaminathan, rather than just A2 and FL costs.

- **Inadequacies in Current Cost Considerations-** CACP currently considers only A2 and FL costs, ignoring capital costs, lease rent for own land, own machinery, and post-harvesting costs.
- **Comparison with Industrial Costing Practices-** Industry calculates costs using accrual-based accounting, considering all costs, including opportunity costs.
- **Proposal for Formal Costing in Agriculture-** As India moves towards a $10 trillion economy, agriculture should be treated as a business, adopting formal costing and accounting mechanisms.
- **Comprehensive Cost List for Accurate MSP-** A2, FL, and all incurred costs should be considered, including seeds, fertilizers, labor, land rent, machinery, taxes, and more.
- Factors like environment, seasonality, supply-demand dynamics, and subsidies should also influence MSP.
- **Objective of MSP Reform-** The goal is to ensure reasonable returns on investment for farmers, providing them with a respectable livelihood.

References

Down to Earth | Cost of farming

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