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Current affairs summary for prelims

06 November 2024

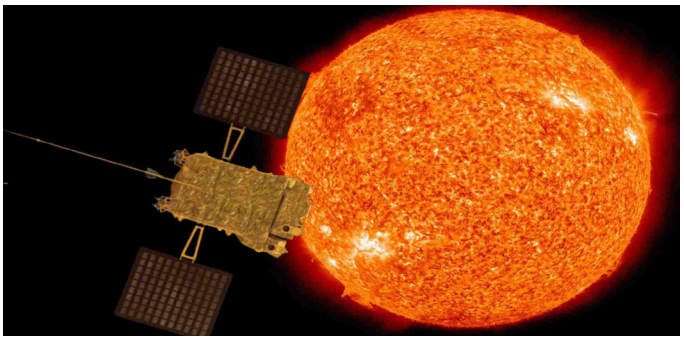
Crucial Data on Solar Eruptions from Aditya-L1 mission

Context: India's Aditya-L1 mission, launched in September 2023, has delivered its first significant scientific results through its primary payload, the Visible Emission Line Coronagraph (VELC), developed by the Indian Institute of Astrophysics (IIAp).

- VELC has enabled precise measurements of coronal mass ejections (CMEs), massive solar eruptions that can disrupt Earth's technological systems, including satellite communications and electronics.

Implications for Space Weather Forecasting:

- The data gathered by Aditya-L1 will not only enhance our understanding of solar activity but also help in predicting space weather events with greater accuracy.
- CMEs, when directed toward Earth, can interfere with satellite systems, GPS networks, and even power grids. With VELC's ability to observe these eruptions in their infancy, space weather predictions can be made with much greater precision, providing a lead time for mitigating potential disruptions to Earth's technological systems.



About Aditya-L1 mission:

- The Aditya-L1 mission is India's pioneering space-based solar observatory, launched on September 2, 2023, by the Indian Space Research Organisation (ISRO).
- It aims to study the Sun's upper atmospheric dynamics, coronal heating, and solar wind acceleration. Aditya-L1, stationed at the Earth-Sun Lagrange point (L1), is ideally positioned to monitor solar phenomena continuously.

Key Objectives:

- Understand Coronal Heating and Solar Wind Acceleration
- Study initiation of Coronal Mass Ejection (CME) and solar flares
- Analyze coupling and dynamics of the solar atmosphere
- Investigate solar wind distribution and temperature anisotropy

Payloads:

- Visible Emission Line Coronagraph (VELC)
- Solar Ultra-violet Imaging Telescope (SUIT)
- Solar Low Energy X-ray Spectrometer (SoLEXS)
- High Energy L1 Orbiting X-ray Spectrometer (HEL1OS)
- Aditya Solar Wind Particle Experiment (ASPEX)
- Plasma Analyser Package for Aditya (PAPA)
- Advanced Tri-axial High-Resolution Digital Magnetometers (MAG)

Significance:

- India's first space-based solar mission
- Expands ISRO's scientific capabilities beyond Earth's orbit
- Enhances space weather prediction capabilities
- Advances India's expertise in solar physics and space technology
- Positions ISRO among leading space agencies globally

Lagrangian Point 1 (L1):

- Gravitationally stable point between Earth and Sun
- Provides uninterrupted view of the Sun
- Ideal for solar observations and space weather monitoring

First Asian Buddhist Summit (ABS) 2024

Context: The First Asian Buddhist Summit (ABS) held on November 5-6, 2024, in New Delhi, India.

- **Organizers:** Ministry of Culture, Government of India, and the International Buddhist Confederation (IBC).
- **Theme:** "Role of Buddha Dhamma in Strengthening Asia."
- **Key Attendee:** The Hon'ble President of India attended as the Chief Guest.

Historical Context of Buddha Dhamma:

- **Origin:** Buddha Dhamma began in the 6th century BCE with Siddhartha Gautama, who attained enlightenment and shared his teachings.

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- Mauryan Emperor Ashoka (268-232 BCE) spread Buddha Dhamma across Asia, exemplifying its societal impact through peace and harmony.
- **Evolution:** The split into Theravada, Mahayana, and Vajrayana led to Buddhism spreading north through Central Asia (Northern branch) and east to Southeast Asia (Southern branch).

Key Themes of the Summit:

- **Buddhist Art, Architecture, and Heritage:** Focus on preserving and celebrating the cultural and spiritual significance of Buddhist landmarks like Sanchi Stupa and Ajanta Caves.
- **Buddha Cārikā (The Buddha's Wandering):** Discusses how the Buddha's travels across India helped disseminate his teachings.
- **Role of Buddhist Relics:** Relics are sacred symbols that inspire devotion, preserve cultural heritage, and contribute to local economies.
- **Significance in Scientific Research and Well-Being:** Exploring how Buddha Dhamma's teachings on mindfulness and compassion contribute to modern scientific and psychological well-being.
- **Buddhist Literature and Philosophy:** Continuing relevance of ancient Buddhist texts and their philosophical insights for the modern world.

Special Exhibition:

- **Exhibition Title:** "India as the Dhamma Setu (Bridge) Connecting Asia," celebrating India's role in the transmission of Buddhist teachings across the continent.

India's Initiatives to Promote Buddhist Culture and Heritage:

- **Buddhist Tourism Circuit:** Promoting key Buddhist sites in India as part of the Swadesh Darshan Scheme for tourism development.
- **Global Buddhist Summit 2023:** Focused on disseminating universal values and addressing global challenges through Buddha Dhamma.
- **International Conference on Shared Buddhist Heritage (2022-2023):** Explored commonalities in Buddhist art and archaeological sites among SCO member states.
- **Symposium on Vipassana Meditation:** Discussed meditation's significance for well-being and global peace.
- **Classical Status to Pali Language:** On October 4, 2024, Pali was granted classical status, highlighting its importance in preserving Buddha Dhamma.
- **International Abhidhamma Divas:** A major event in October 2024, addressing the relevance of Abhidhamma teachings.

India's Role in Promoting Buddhism:

- India is actively fostering global interest in Buddha Dhamma, both as a spiritual practice and as a cultural asset.
- By hosting the ABS 2024, India reinforces its position as the birthplace of Buddhism and a leading advocate for spiritual dialogue and cross-cultural understanding.

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India Launches Updated National Biodiversity Strategy and Action Plan at COP 16 in Colombia

Context: On November 3, 2024, India unveiled its updated National Biodiversity Strategy and Action Plan (NBSAP) during the 16th Conference of the Parties (COP 16) to the Convention on Biological Diversity (CBD) in Cali, Colombia.

- This significant initiative was announced by Union Minister of State for Environment, Forest and Climate Change, Shri Kirti Vardhan Singh, at a special event titled "Roadmap for achieving the Kunming-Montreal Global Biodiversity Framework (KMGBF) targets and release of India's updated NBSAP."

Key Objectives of the Updated NBSAP:

- The updated NBSAP outlines several critical objectives:
  - **Alignment with KMGBF:** Focused on halting biodiversity loss by 2030 and promoting a sustainable relationship with nature by 2050.
  - **Whole-of-Government and Whole-of-Society Approach:** This integrated strategy encourages collective action across various sectors to address environmental challenges.

Key Features of the Updated NBSAP:

- **Ecosystem Restoration:** The plan prioritizes restoring degraded ecosystems, protecting wetlands, and ensuring sustainable management of marine and coastal areas.
- **Species Recovery Programs:** Targeted conservation efforts are aimed at enhancing the survival of threatened and endangered species.
- **Community-Driven Conservation:** Local communities are empowered to lead conservation initiatives, fostering grassroots participation and stewardship.
- **Transformative Approach:** The NBSAP adopts a holistic perspective, recognizing the interconnections between different ecosystems and their inhabitants.
- **Ecosystem-Based Management:** Emphasizing the management of ecosystems as a whole, rather than focusing solely on individual species, to ensure ecological health.
- **Mainstreaming Biodiversity:** Integrating biodiversity considerations into all sectors of development ensures that conservation efforts are central to national policy.

Collaborative Development Process:

- The updated NBSAP was developed through a comprehensive consultative process that engaged 23 central ministries, state-level organizations, communities, and various stakeholders. This collaborative effort resulted in the establishment of 23 national biodiversity targets that align with the KMGBF, demonstrating India's commitment to contributing to global biodiversity goals.

Governance Framework:

- The governance structure for biodiversity conservation is reinforced by the Biological Diversity Act of 2002 and its amendments in 2023. It includes:
  - National Biodiversity Authority
  - State Biodiversity Boards
  - Local Biodiversity Management Committees
- This three-tier structure ensures effective implementation of biodiversity strategies at all levels, with the Ministry of Environment, Forest and Climate Change (MoEFCC) acting as the central coordinating agency.

Emphasis on Transformative Approaches:

- The updated NBSAP stresses several transformative approaches:
  - **Ecosystem-Based Management:** Prioritizing the management of ecosystems holistically.
  - **Bottom-Up Implementation Strategies:** Ensuring local involvement and ownership of conservation efforts.
  - **Mainstreaming Biodiversity:** Incorporating biodiversity considerations into all sectors of national development.
  - **Enhancing Inter-Agency Cooperation**: Facilitating collaboration among different governmental agencies for effective biodiversity management.

The DANA Phenomenon

Context: Southern and eastern Spain has recently experienced severe torrential rain, leading to significant flooding and widespread disruption. This deluge has submerged villages and towns, cut off roads, and resulted in numerous fatalities in the eastern region of Valencia. This

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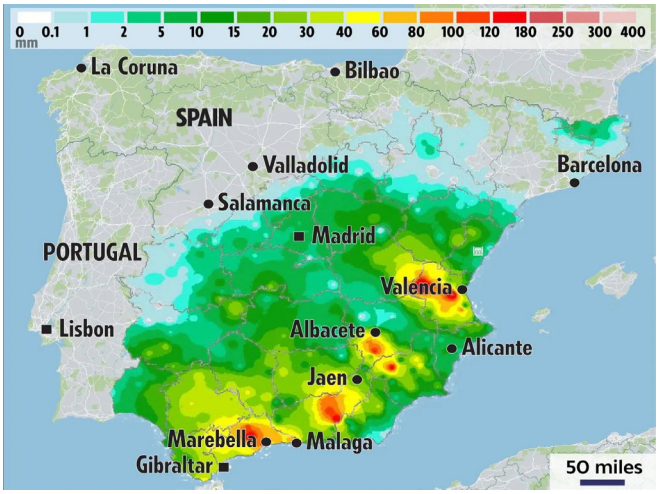
devastation is attributed to phenomenon called DANA.

- The rainfall has been extraordinary, with some areas receiving more than a month's worth of precipitation in a single day. In Andalusia, the southernmost region, rainfall levels were reported to be four times greater than the typical average for October.
- The national meteorological agency indicated that between 150 and 200 liters per square meter fell in certain locations within just two hours. Such intense precipitation poses a serious risk to infrastructure and public safety.



Understanding DANA:

- Depresión Aislada en Niveles Altos (DANA), commonly referred to as a "cold drop," is a significant meteorological phenomenon in the western Mediterranean region, particularly affecting Spain and Portugal, although it can also impact Italy, France, and other areas around the Mediterranean Sea.
- The term "DANA" was coined by Spanish meteorologists to specifically describe this weather pattern, which is characterized by intense rainfall and flooding.
- DANA occurs when cold air from the Polar Regions separates from the polar jet stream and descends over the warmer Mediterranean Sea. This interaction creates a contrast between the cold air aloft and the warm, moist air near the surface, leading to atmospheric instability.
- Consequently, this instability fosters the rapid formation of cumulonimbus clouds and intense thunderstorms, often resulting in significant precipitation.

Conclusion:

The flooding in Spain serves as a critical reminder of the complexities of climate change and its profound impact on weather systems. As extreme weather events become more prevalent, it is imperative for policymakers and communities to develop adaptive measures to mitigate the risks associated with such phenomena.

Power Packed News

Exercise Vajra Prahar

15th edition of the joint military exercise Vajra Prahar, conducted by the special forces of India and the United States is being take place from November 2 to 22, 2024, at the Orchard Combat Training Center in Idaho, USA. The previous edition was held in December 2023 at Umroi, Meghalaya. This will be the second exercise of the year between the Indian and US armies, the first being Exercise Yudh Abhyas 2024, which took place in Rajasthan in September 2024.

About Exercise Vajra Prahar:

- **First Edition:** The first edition of this joint exercise was conducted in 2010.
- **13th Edition:** The 13th edition of the India-US joint special military exercise was held at the Special Forces Training Center in Bakloh, Himachal Pradesh.

Other Military Exercises Between India and the US:

- **Army:**
  - Vajra Prahar (Joint Special Forces Exercise)
  - Yudh Abhyas (War Exercise)
- **Air Force:**
  - Cope India

- **US Multinational Air Force Exercise:**
  - » Red Flag
- **Navy:**
  - » Passage Exercise
- **Trilateral Exercise:**
  - » Malabar Exercise - between India, the US, and Japan.

Exercise Garuda Shakti

- The ninth edition of this exercise is being held from November 1 to 12, 2024, at Cijantung in Jakarta, Indonesia. It involves 25 personnel from the Indian Army's Parachute Regiment (Special Forces) and 40 personnel from the Indonesian Special Forces, Kopassus.
- Exercise Garuda Shakti is a bilateral joint special forces exercise aimed at enhancing military cooperation between India and Indonesia.

Objectives:

- » Increase Mutual Understanding: Promote collaboration between the special forces of India and Indonesia.
- » Share Best Practices: Exchange experiences in counter-terrorism operations.
- » Improve Interoperability: Conduct joint operations and exercises.

- This exercise is a significant milestone in defense cooperation between India and Indonesia, which began in 2012. By participating in this joint exercise, both countries aim to promote peace and stability in the region.

International Solar Alliance (ISA)

- India has been elected President of the International Solar Alliance (ISA) for a two-year term until 2026, with France as Co-President. This milestone underscores India's remarkable progress in solar energy, having expanded its capacity from under 2 GW in 2014 to 90 GW today.
- India's leadership in ISA will help promote global solar energy efforts, fostering collaboration among nations to share technology and best practices. Ashish Khanna will succeed Dr. Ajay Mathur as ISA Director General in 2025, strengthening ISA's global impact.
- ISA was established by Prime Minister Narendra Modi and President of France Francois Hollande on November 30, 2015, ISA's objective is to scale up solar energy, reduce the cost of solar power generation through aggregation of demand for solar finance, technologies, innovation, research and development, and capacity building. The ISA is headquartered in Haryana, India.