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ARTIFICIAL INTELLIGENCE (AI) IN ELECTIONS

Context:

- Recently, it was found that the widespread application of Artificial Intelligence (AI) is likely to cause a paradigm shift in almost every aspect of an election.

About

- AI has been transforming various sectors globally, and the political landscape is no exception. In India, AI has started to play a pivotal role in elections, reshaping campaign strategies and voter engagement.

Potential Benefits of AI in Election

- **Campaign Strategies:** AI can analyse vast amounts of data to identify key issues, predict voter preferences, and develop targeted campaign messages.
 - ♦ AI can also help political parties understand voter behaviour, tailor their messages to specific demographics, and optimise their campaign strategies.
- **Monitoring Misinformation:** AI can analyse vast amounts of data to identify patterns and flag potential misinformation.
 - ♦ It is particularly useful in monitoring social media platforms for fake news during election periods.
- **Voter Registration and Identification:** AI can help in the voter registration process and in identifying voters, ensuring that each citizen gets their rightful vote.
- **Preventing Election Meddling:** AI companies are taking steps to ensure that their technology does not interfere with elections.
 - ♦ For instance, **OpenAI** has made commitments to develop tools for detecting misleading AI-generated content and to take action on such content on their services.
- **Regulatory Measures:** The Union Ministry of IT has issued **advisories to AI companies** to ensure that their services do not generate responses that are illegal under Indian laws or threaten the integrity of the electoral process.
- **Collaboration with Tech Platforms:** There is a call for more coordination between the **Election Commission of India (ECI)** and major tech platforms **to combat misinformation and disinformation.**

- **Addressing AI-Driven Misinformation:** AI companies are working on making it more obvious when images are AI-generated and are planning to put an icon on images to indicate it was AI-generated.

Election Integrity

- It refers to the assurance that the processes of an election are conducted in a fair and impartial manner. It is a **fundamental aspect of democratic governance** and involves various elements such as:
 - ♦ Free and Fair Election; Transparency; Voter's Right to Information; Protection Against Misuse of Technology; Regulatory Framework; and Independence of Election Commission.
- The **Election Commission of India** is responsible for ensuring the integrity of the electoral process.
- The Supreme Court of India has emphasised that **free and fair elections** are a part of the **basic structure** of the Constitution.

The Dark Side of AI in Elections

- **Spread of Disinformation:** However, the use of AI in elections also raises concerns about the spread of disinformation.
 - ♦ The rapid growth of **generative AI**, which can create convincing text, images, and videos, has heightened fears that this technology could be used to sway major elections.
 - ♦ It includes the creation of deep fakes or realistic-looking images that are fabricated.
- **Lack of Transparency:** Another concern is the inscrutability of AI models. The inner workings of these models are often opaque, making it difficult to understand how they make decisions.
 - ♦ It can lead to issues of accountability and fairness.
- **Undermining Democratic Ethos:** The ugly side of AI in elections is its potential to undermine democratic processes.
 - ♦ Dishonest actors can use AI to manipulate public opinion, spread fake news, and even influence election outcomes.
- **Privacy and Data Security:** With AI systems collecting and analysing vast amounts of data, there are legitimate concerns about how this data is used and who has access to it.

- **Regulatory Concerns:** The Indian government has issued advisories to generative AI companies. These advisories mandate that AI systems must not generate responses that are illegal under Indian laws or threaten the integrity of the electoral process.
 - ◆ Platforms that currently offer 'under-testing/unreliable' AI systems to Indian users must explicitly seek prior permission from the central government.
- **Ethical Considerations:** AI algorithms can potentially perpetuate and amplify existing biases.
 - ◆ Regulatory frameworks must prioritise developing and deploying unbiased AI systems to prevent this.
- **Potential for Misuse:** There are concerns about AI being used to influence politics and even convince people not to vote.
 - ◆ For instance, a robocall using fake audio of a political figure circulated to voters, urging them to stay home during an election.
- **Accountability:** The accord signed by tech companies to fight AI election interference did not specify a timeline for meeting the commitments or how each company would implement them.
 - ◆ It raises questions about accountability and enforcement.

Regulating AI

- Recognising the potential misuse of AI in elections, the Indian government has **issued advisories to generative AI companies**, mandating that AI systems must not generate responses that are illegal under Indian laws or threaten the integrity of the electoral process.
 - ◆ Furthermore, companies offering 'under-testing/unreliable' AI systems to Indian users must seek prior permission from the government.
- **Global Tech Giants' Efforts:** Major technology companies have signed a pact to voluntarily adopt 'reasonable precautions' to prevent artificial intelligence tools from being used to disrupt democratic elections around the world.
 - ◆ It includes commitments to collaborate on developing tools for detecting misleading AI-generated images, video, and audio, creating public awareness campaigns to educate voters on deceptive content, and taking action on such content on their services.

Conclusion

- While **AI** holds immense potential in **ensuring election integrity**, and can play a transformative role in ensuring election integrity, it is equally important to address the **associated challenges such as data privacy, algorithmic bias, and the digital divide**.
 - ◆ It is crucial to have a **robust regulatory framework** to guide the use of AI in elections, and need to ensure that the use of AI **does not compromise the democratic values of fairness and transparency**.

Source: TH

90 YEARS OF THE RESERVE BANK OF INDIA (RBI)

Context:

- Recently, the Prime Minister and RBI Governor attended a ceremony **marking 90 years of the RBI** in Mumbai.

About the Reserve Bank of India (RBI):

- It is the central bank of India, established on April 1, 1935, in accordance with the provisions of the **Reserve Bank of India Act, 1934**.
- Over the years, the RBI has played a pivotal role in the development of India's economy.
 - ◆ It has witnessed both the pre and post-Independence eras and has created an identity around the world based on its professionalism and commitment.

Role and Functions:

- **Monetary Policy and Inflation Control:** One of the primary roles of the RBI is to control inflation and stabilise the country's financial system.
 - ◆ It does this by setting the overnight interbank lending rate, known as the **Mumbai Interbank Offer Rate (MIBOR)**.
 - ◆ It serves as a benchmark for interest rate-related financial instruments in the Indian market.
- **Regulation and Supervision:** The RBI is responsible for the regulation and supervision of the country's financial sector.
 - ◆ It includes commercial banks, non-banking financial companies, and other financial institutions. The RBI's regulatory oversight ensures the stability and integrity of the financial system.

- **Management of Foreign Exchange:** The RBI manages the country's foreign exchange reserves.
 - ♦ It involves regulating the foreign exchange market, controlling capital flows, and maintaining the stability of the exchange rate.
- **Financial Inclusion and Innovation (Digital Economy):** The RBI has been instrumental in promoting financial inclusion and fostering innovation in the financial sector.
 - ♦ For instance, the introduction of the **Unified Payments Interface (UPI)** has revolutionised the payments ecosystem across the country.
- **Digital Currency:** RBI launched the **digital rupee, or the e-rupee**, that can be used for both person-to-person and person-to-merchant transactions.
 - ♦ It is a central bank digital currency issued by the RBI.
- Other challenges include the **impact of new technologies** on the financial sector, and navigating the economic disruptions caused by events such as the **global financial crisis, the taper tantrum of 2013, demonetisation, and the COVID-19 pandemic**-induced disruptions to economic activities.

Key Initiatives of RBI

Challenges

- **Managing Inflation and Interest Rates:** The RBI has to strike a balance between controlling inflation and promoting economic growth.
 - ♦ It involves adjusting the policy repo rate, which can have wide-ranging effects on the economy.
- **Regulating the Banking Sector:** The RBI faces the challenge of regulating the banking sector, particularly in dealing with the **issue of non-performing assets or bad loans**.
 - ♦ The RBI has been working towards resolving this issue, but it remains a significant challenge.
- **Dealing with Global Economic Uncertainties:** The global economy is facing increased uncertainty due to banking fragility in certain countries and geopolitical tensions.
 - ♦ The RBI has to navigate these uncertainties while managing India's foreign exchange reserves.
- **Digital Currency:** Managing this new form of currency and ensuring its smooth integration into the Indian economy is a new challenge for the RBI.
- **'Impossible Trinity' or 'Trilemma':** The RBI faces the challenge of managing the 'impossible trinity' or 'trilemma', which refers to the **difficulty of having a stable foreign exchange rate, free capital movement (absence of capital controls), and an independent monetary policy** all at the same time.
- **Liquidity Boosting Measures:** The RBI has announced a series of measures to enhance liquidity and cushion the economy.
 - ♦ It includes cutting the reverse repo rate by 25 basis points to 3.75% to discourage banks from parking excess liquidity under the Liquidity Adjustment Facility (LAF) window.
 - ♦ The RBI is also providing a ₹50,000-crore special refinance facility for financial institutions.
- **Enabling the Market Economy:** The RBI has transitioned from being primarily concerned with the allocation of scarce resources to an enabler for the market economy.
 - ♦ It has implemented several reforms, including the **Insolvency and Bankruptcy Code (IBC)** and the adoption of flexible inflation targeting, which have bolstered the banking system and helped rein in consumer price pressures.
- **Initiatives in the Budget:** It includes **privatisation, asset monetisation, new initiatives on long-term financing of infrastructure, and clean-up of the non-performing assets** in the banking system.
 - ♦ The **IBC Framework** ushered in by the government provided a more **effective mechanism for resolving bad loans**. As a consequence, **bad loans fell from 11.25% in 2018 to below 3% by September 2023**, and credit growth has been healthy.
- **Stabilising the Rupee:** The RBI has taken several steps to stabilise the rupee. It includes imposing a number of export restrictions, lowering taxes on petrol and diesel, raising subsidy support for farmers, while the RBI has raised policy rates by 90 basis points (bps) and raised its inflation target by 100 basis points.

Conclusion and Road Ahead:

- The RBI's role in the Indian economy is multifaceted and critical. It has a significant influence on the country's economic trajectory.

- As the RBI continues to evolve and adapt to the changing economic landscape, it remains committed to ensuring stability and growth for the Indian economy.
- As the RBI enters its 90th year, it must learn from its past, adjust and adapt, and plan for the challenges it could encounter on its journey towards its centenary.
- From dealing with changes in payment mechanisms, and the central bank digital currency, to new sources of risk and ensuring effective regulation and supervision, the central bank must be ready for unforeseen events.

Source: IE

HAVANA SYNDROME

In News

- According to a joint media investigation, Havana Syndrome is linked to a Russian intelligence unit.

About Havana syndrome

- Havana syndrome refers to a **set of mental health symptoms** that are said to be experienced by United States intelligence and embassy officials in various countries.
 - ♦ Generally, the word 'syndrome' simply means a set of symptoms.
- **Origin and Symptoms : It** was first reported in 2016 when U.S. diplomats in Cuba's capital (Havana) reported falling ill and **hearing piercing sounds** at night, sparking speculation of an attack by a foreign entity using an unspecified sonar weapon.
 - ♦ **Other symptoms** including bloody noses, headaches and vision problems were later reported by embassy staff in China and Europe.
 - ♦ However, the joint investigation suggests the first cases of Havana Syndrome may have occurred in Germany two years earlier than the cases reported in Havana.
- **Causes :** After the Havana incident, there was a suspicion that the syndrome was a "sonic attack", which was carried out by Cuba — a country that had been hostile to the US for over five decades.
 - ♦ However, further study by scientists in the US and medical examination of the victims began to suggest that they may have been subjected to **high-powered microwaves** that either damaged or interfered with the nervous system.

- ♦ The use of microwaves as a counter-intelligence tactic has been experimented with since the Cold War and both Russia and the US have made attempts to weaponize it.

Affected Areas

- According to US media reports, in the past few years, its officials have reported more than 130 such experiences across the world including at Moscow in Russia, Poland, Georgia, Taiwan, Colombia, Kyrgyzstan, Uzbekistan, and Austria, among others.
 - ♦ In early 2018, similar accusations began to be made by US diplomats in China.
- **Status in India :** The first such case was reported in the year 2021, when a US intelligence officer travelling to New Delhi with CIA director William Burns reported symptoms of Havana Syndrome.

Findings of the recent investigation

- The year-long investigation "uncovered evidence suggesting that unexplained anomalous health incidents, also known as Havana Syndrome, may have their origin in the use of directed energy weapons wielded by members of (the **Russian GRU) Unit 29155**
 - ♦ **Russia's 29155** unit is responsible for foreign operations and has been blamed for several international incidents, including the attempted poisoning of defector Sergei Skripal in Britain in 2018.

Response of Russia

- Moscow dismissed the allegations as "groundless" and nobody has ever published any convincing evidence, so all this is nothing more than a groundless and unfounded accusation.

Source: TH

STUDY FINDS OZONE ON JUPITER'S MOON CALLISTO

In News

- Researchers have discovered strong evidence indicating the **presence of ozone on Jupiter's moon Callisto**, shedding light on the complex chemical processes taking place on **icy celestial bodies in the Solar System**.

About the Study

- The Study outlines the chemical evolution of "SO₂ astrochemical ice", which is ice primarily composed of sulphur dioxide (SO₂) in the presence of ultraviolet irradiation.
- They analyzed the data of the UV absorption spectra of the irradiated ice samples, and were able to identify a distinct signature indicating the formation of ozone.
- The Callisto's surface is kind of stable. This stability could be vital to preserve any subsurface ocean or potential habitats beneath the icy crust.

Callisto and its unique environment

- After Saturn, Jupiter has the most moons in the Solar System. Callisto is one of Jupiter's largest moons and the third-largest moon in the Solar System after Ganymede and Titan.
- Callisto is primarily composed of water ice, rocky materials, sulphur dioxide, and some organic compounds. These substances make the moon a potential candidate for supporting life in the Solar System beyond the earth.
- Callisto's surface is heavily cratered, indicating a long history of being struck by asteroids and comets.

Significance of the Study

- The discovery of ozone on Callisto suggests the presence of oxygen, which in turn is a fundamental ingredient required for the formation of complex molecules required for life, such as amino acids, raising questions about the moon's habitability.
- This extends to other icy moons in our Solar System, potentially informing our understanding of habitable conditions beyond Earth.

Ozone & its importance

- The ozone molecule is composed of **three oxygen atoms** bonded together.
- The ozone layer, found in the lower part of the **earth's stratosphere**, around 15-35 km above ground, serves as a shield.
- Without the ozone layer, ultraviolet radiation levels would be much higher on the planet's surface, rendering it uninhabitable for many species and disrupting entire ecosystems.
- Two of the UV's components, called **ultraviolet-B and ultraviolet-C**, of wavelengths 290-320 nanometres and 100-280 nanometres

respectively, can damage DNA, trigger mutations, and increase the risk of skin cancer and cataracts in humans.

- Ultraviolet light has also been known to **inhibit plant growth and have detrimental effects** on various organisms.

Conclusion

- Scientists are currently studying various celestial bodies in the Solar System that show signs of ozone, suggesting the existence of stable atmospheric conditions and, by extension, the possibility of their being able to host life.

Source: TH

NEWS IN SHORT

SWELL WAVES

In News

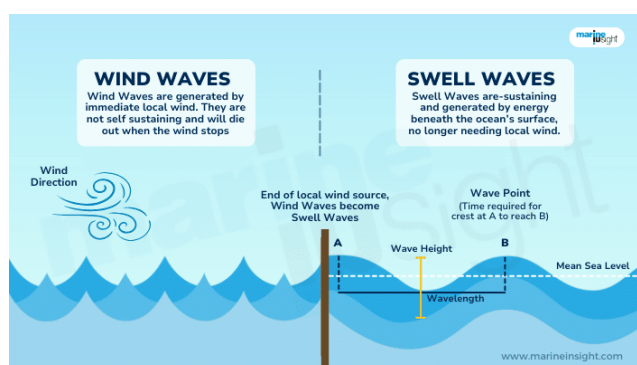
- Swell waves inundated coastal areas in central and southern districts of Kerala .

About

- The phenomenon of Swell waves, referred to as '**Kallakkadal**' locally.
 - ♦ '**Kallakkadal**' is a colloquial term used by Kerala fishermen to refer to the freaky flooding episodes. In 2012 UNESCO formally accepted this term for scientific use.
 - ♦ During 'Kallakkadal events,' the sea surges into the land causing inundation.

About Swell Wave

- The waves in a fully developed sea outrun the storm that creates them, traveling great distances from the wind source and lengthening and reducing in height in the process.
 - ♦ These **lower frequency waves are called swell waves.**
- Swells organise into groups smooth and regular in appearance.
- They are able to travel thousands of miles unchanged in height and period.
- The longer the wave, the faster it travels.
 - ♦ As waves leave a storm area, they tend to sort themselves out with the long ones ahead of the short ones, and the energy is simultaneously spread out over an increasingly larger area.



Source:TH

ANTIRETROVIRAL THERAPY (ART) INITIATIVE

In News

- Twenty years of Free Antiretroviral Therapy (ART) initiative have been completed recently.

About Antiretroviral Therapy (ART) initiative

- It was on April 1, 2004 for **Persons living with HIV (PLHIV)**.
- It is the treatment of people infected with human immunodeficiency virus (HIV) using anti-HIV drugs.
- The standard treatment consists of a **combination of drugs** (often called “highly active antiretroviral therapy” or HAART) that suppress HIV replication.
- Rationale behind the initiative:** At the emergence of HIV/AIDS in the early 1980s, the disease was considered a death sentence and was met with a lot of fear, stigma and discrimination.
 - Access to many medicines including the first antiretroviral drug, **AZT (zidovudine)**, remained limited for most of the world’s population except in some high-income countries.
- Impact:** In 2023, the prevalence of HIV in 15-49 years has come down to 0.20 (confidence interval 0.17%-0.25%) and the burden of disease in terms of estimated PLHIV has been coming down to 2.4 million.
 - India’s share in PLHIV globally had come down to 6.3% (from around 10% two decades ago).
 - The annual new HIV infections in India have declined by 48% against the global average of 31% (the baseline year of 2010).

Other Related Initiatives

- There were many complementary initiatives which have contributed to halting the HIV epidemic.

- These include the provision of **free diagnostic facilities**; attention on prevention of parent to child transmission of HIV (PPTCT) services.
- Dolutegravir (DTG)**, a new drug with superior virological efficacy and minimal adverse effects was introduced in 2020.
- In 2021, **India adopted a policy of rapid ART initiation** in which a person was started on ART within seven days of HIV diagnosis, and in some cases, even the same day.
- The ongoing and **fifth phase of India’s National AIDS Control programme(NACP) aims to (by 2025)** reduce the annual new HIV infections by 80%, reduce AIDS-related mortalities by 80% and eliminate vertical transmission of HIV and syphilis.

Source:TH

SCORES 2.0

In News

- Securities and Exchange Board of India (Sebi) unveiled an upgraded **2.0 version of SCORES**.

About

- SEBI Complaint Redressal System (SCORES) is an **online system where investors in the securities market** can lodge their complaints through web URL and an app. It was launched in June 2011.
- The **SCORE 2.0** makes the platform more efficient through auto-routing, auto-escalation, monitoring by the designated bodies and reduction of timelines.
- The new version provides **two levels of review**—first review by the **‘Designated Body’**, if the investor is dissatisfied with the resolution provided by the concerned regulated entity, and second review by Sebi if the investor is still dissatisfied after the first review.

Know about Securities and Exchange Board of India

- It is a **statutory body** established on April 12, 1992 in accordance with the provisions of the **Securities and Exchange Board of India Act, 1992**.
- Before SEBI came into existence, Controller of Capital Issues was the regulatory authority; it derived authority from the Capital Issues (Control) Act, 1947.

- It is a **quasi-legislative and quasi-judicial body** which can draft regulations, conduct inquiries, pass rulings and impose penalties.
- SEBI protects the interests of Indian investors in the securities market.
- By **Securities Laws (Amendment) Act, 2014**, SEBI is now able to regulate any money pooling scheme worth Rs. 100 cr. or more and attach assets in cases of non-compliance.

Source: PIB

CYBER SLAVERY

In News

- MEA rescued many Indians from Cambodia who were trapped to do cyber slavery.

About Cyber Slavery

- It is the exploitation and abuse of individuals through digital means, often involving forced labor or human trafficking facilitated by technology.
- In this individuals are coerced, manipulated, or deceived into performing tasks or services against their will or under duress, typically for the benefit of others.
- It is an organized crime of unprecedented severity and scale.

Source: TH

VOTER VERIFIABLE PAPER AUDIT TRAIL (VVPAT)

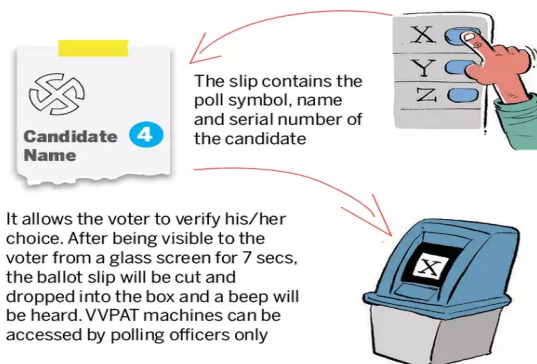
In News

- Opposition parties have been demanding complete (100 percent) counting of VVPATs to increase public confidence in Electronic Voting Machines.

About

How do VVPAT machines work?

When a voter presses a button in the EVM, a paper slip is printed through the VVPAT



TOI FOR MORE INFOGRAPHICS DOWNLOAD THE APP

- Introduced for the first time in India in the **2014 Lok Sabha elections**, VVPAT or the Voter Verifiable Paper Audit Trail is basically a ballot-less vote verification system connected with the EVM.
- The VVPAT generates a paper slip to be viewed by the voter and allows him/her to verify whether the vote was cast correctly on the EVM.
- The slip contains the name and symbol of the party they have voted for.
- The machine also has a transparent window for the voter to see the printed slip. Eventually, the slip goes inside a sealed box of the machine.

Source: TH

SUPREME COURT BAN UNREGULATED SOIL EXTRACTION

Context

- Recently, the Supreme Court of India has barred the unregulated extraction of soil for linear projects such as roads and pipelines.

About the Controversial Exemption:

- The Union Environment Ministry issued a notification exempting the extraction of ordinary earth for linear projects from obtaining Environmental Clearance (EC) in March 2020.
- It was challenged before the **National Green Tribunal (NGT)**, which asked the Ministry to review it within three months.
 - ◆ However, the **Ministry did not take any action**, leading the matter to reach the Supreme Court.

The Supreme Court's Ruling:

- The Supreme Court **struck down the 'blanket' and 'arbitrary' exemption**, and noted that the notification was introduced in a 'tearing hurry' during the Covid-19 lockdown without inviting objections or opinions through the publication of prior notice.
- The Centre had argued that the exemption was necessary **'for the aid of the general public'**, and would help **'the kumhars (potters), farmers, gram panchayats, vanjara, oads of Gujarat'**, and all non-mining activities identified by the states.
 - ◆ However, the Apex court stated that the Centre had failed to provide reasons for coming to the conclusion that the notification was issued in public interest.

Implications of the Judgment:

- It is a significant step towards environmental protection.
- By striking down the exemption, the court has ensured that any extraction of earth for linear projects will require an Environmental Clearance, thereby ensuring that such activities are carried out in a manner that minimises environmental harm.

The National Green Tribunal (NGT):

- It is a **statutory body** that was set up under the **National Green Tribunal Act in 2010**.
 - ◆ It was set up as per recommendations of the Supreme Court, Law Commission and India's international law obligations to develop national laws on the environment and implement them effectively.
- It is a specialised judicial body equipped with expertise solely for the purpose of adjudicating environmental cases in the country.
 - ◆ It has been endowed with suo-motu powers to take up environmental issues across the country.

Power:

- The NGT is not simply adjudicatory in nature. It performs vital roles that are **preventative, ameliorative, or remedial**.
- The NGT is **not bound by the procedure laid down under the Code of Civil Procedure (1908)**, but shall be **guided by principles of natural justice**.
- Its orders are **binding** and it has power to grant relief in the form of compensation and damages to affected persons.
- It has powers to review its own decisions. If this fails, the **decision can be challenged before the Supreme Court** within ninety days.

Source: IE

KODAIKANAL SOLAR OBSERVATORY**Context**

- Kodaikanal Solar Observatory completed its **125 years of establishment**.

About the Kodaikanal Solar Observatory

- It is located in the **Palani range of hills** in the Indian state of **Tamil Nadu**, is a significant scientific establishment that has been observing the Sun for over a century.

- It was established **in 1899 as a Solar Physics Observatory**, and has been recording images of the Sun every day for more than a hundred years, providing one of the longest series of solar data.

Key Scientific Discoveries:

- **Spectroscopic observations** taken during the August 18, 1868, total solar eclipse from Guntur in Andhra Pradesh led to the **discovery of helium**, the Universe's second-most abundant element after hydrogen.
- **Data Collection and Analysis:** The data consist of **full disc spectral images of the Sun** using the Ca II K and H-alpha lines.
 - ◆ Both these lines image the atmospheric layer of the Sun known as the chromosphere.
- The Kodaikanal Solar Observatory boasts a mammoth **digital repository** containing 1.48 lakh digitised solar images of 10 terabytes.
- **Contribution to Solar Physics:** Understanding the **magnetic field evolution** in the past improves our understanding of the physics itself.
 - ◆ In the work, the timing of the **polarity reversal**, which is also very important, has been discussed.
 - ◆ **Solar variations**, both of long scale and short, depend on the magnetic field, and these can affect both the **climate and space weather**.

Links to the Great Drought

- Scanty rainfall over south India during the winter monsoon of 1875 triggered one of the worst droughts the country had experienced till then.
- Multiple failed crops over the famine-stricken peninsular India killed 12.2 to 29.3 million people across the Madras and Mysore Provinces during 1875-1877.
- **India, along with China, Egypt, Morocco, Ethiopia, southern Africa, Brazil, Columbia and Venezuela**, suffered concurrent multi-year droughts during 1876-1878, later named the **Great Drought**, and an associated **global famine** that killed nearly 50 million.
- The drought was thought to be **due to multiple reasons** – solar activity; cool Pacific Ocean conditions followed by a record-breaking El Nino (1877-1878); strong Indian Ocean Dipole and warm North Atlantic Ocean conditions.

Source: IE

