

10– 02 – 2022

News: Marine Heatwaves

- According to a study, marine heatwaves — or the ones that form on oceans — have been on the rise in the waters around India.

Marine Heatwaves

- Marine heatwaves are periods of extremely high temperatures in the ocean.
- These events are linked to coral bleaching, seagrass destruction, and loss of kelp forests, affecting the fisheries sector adversely.
- Study showed that 85% of the corals in the Gulf of Mannar near the Tamil Nadu coast got bleached after the marine heatwave in May 2020.
- The most common drivers of marine heatwaves include ocean currents which can build up areas of warm water and air-sea heat flux, or warming through the ocean surface from the atmosphere.
- Winds can enhance or suppress the warming in a marine heatwave, and climate models like El Niño can change the likelihood of events occurring in certain regions.

Impact of Marine Heatwaves

Affect Ecosystem Structure

- Marine heat waves **affect ecosystem structure, by supporting certain species and suppressing others.**
- It has been **associated with the mass mortality of marine invertebrates**, and may force species to change behaviour in a way that puts wildlife at increased risk of harm.

Change Habitat Ranges of Certain Species

- Marine heatwaves can **change the habitat ranges of certain species**, such as the spiny sea urchin off southeastern Australia which has been expanding southward into Tasmania at the expense of kelp forests which it feeds upon.

Economic Losses

- Marine heatwaves can **cause economic losses through impacts on fisheries and aquaculture.**

Affect Biodiversity

- Biodiversity can be drastically affected by marine heatwaves.

- In 2016, marine heatwaves across northern Australia led to severe bleaching of the Great Barrier Reef.

Increase the Risk of Deoxygenation and Acidification

- Often they occur alongside other stressors such as ocean acidification, deoxygenation, and overfishing.
- In such cases, MHWs not only further damage habitats, but also increase the risk of deoxygenation and acidification.

Heat Waves

- A Heat Wave is a period of abnormally high temperatures, more than the normal maximum temperature that occurs during the summer season in the North-Western parts of India.
- Heat Waves typically occur between March and June, and in some rare cases even extend till July.
- The extreme temperatures and resultant atmospheric conditions adversely affect people living in these regions as they cause physiological stress, sometimes resulting in death.

The Indian Meteorological Department (IMD) has given the following criteria for Heat Waves:

- Heat Wave need not be considered till **the maximum temperature of a station reaches at least 40°C for Plains and at least 30°C for Hilly regions.**
- When the normal maximum temperature of a station is less than or equal to **40°C** Heat Wave Departure from normal is 5°C to 6°C Severe Heat Wave Departure from normal is **7°C or more.**
- When the **normal maximum temperature of a station is more than 40°C** Heat Wave Departure from normal is 4°C to 5°C Severe Heat Wave Departure from normal is 6°C or more
- When the **actual maximum temperature remains 45°C or more irrespective of normal maximum temperature, heat waves should be declared.**
- Higher daily peak temperatures and longer, more intense heat waves are becoming increasingly frequent globally due to climate change.

Health Impacts of Heat Waves

- The health impacts of Heat Waves typically involve dehydration, heat cramps, heat exhaustion and/or heat stroke.

The signs and symptoms are as follows:

- **Heat Cramps: Edema (swelling) and Syncope (Fainting) generally accompanied by fever** below 39°C or 102°F.
- **Heat Exhaustion:** Fatigue, weakness, dizziness, headache, nausea, vomiting, muscle cramps and sweating.
- **Heat Stroke: Body temperatures of 40°C / 104°F** or more along with delirium, seizures or coma.
- This is a potential fatal condition.

Heat Domes

- High-pressure circulation **traps hot ocean air like a lid** or a cap **trapping heat at the surface and favouring the formation of a heat wave.**
- **Higher daily peak temperatures and longer, more intense heat waves** are becoming increasingly frequent globally due to climate change.

Effects of Extreme Heat

- According to the World Health Organization (WHO), extreme heat can exacerbate **pre-existing health conditions, including respiratory diseases, heart conditions and kidney disorders.**

- The immediate effects on the human body are **heat cramps, dehydration and even potentially fatal heat strokes.**
- It can also have **a severe impact on agriculture and forests.**
- It either causes vegetables to wilt and die or **encourage the spread of plant diseases.**
- It **causes wildfires** which lead to forest cover reduction and death of fauna.
- It affects infrastructure too by **straining power grids and causing blackouts.** It can ground planes, melt roads and cause the inside of **vehicles to overheat** to dangerous levels.
- Recently, **Death Valley (USA) registered a temperature** of 54.4°C which, once verified, could be the highest temperature in more than a century.
- The temperature has been termed as preliminary and not final as it awaits verification.

News: Nai Roshni Scheme

- Recently, the Ministry of Minority Affairs has informed the Rajya Sabha that the Government has sanctioned Rs 26 crore under the Nai Roshni scheme in the last three years (2018-19 to 2020-21) through which around one Lakh women have been trained.

Nai Roshni

- Nai Roshni-a Leadership Development Programme for Minority Women is a **Central Sector Scheme for women belonging to minority communities in the age group of 18 to 65 years.**
- It was **started in 2012-13** and is under the aegis of **Ministry of Minority Affairs.**
- The objective of the scheme is to **empower and instill confidence among minority women, including their neighbours from other communities living in the same village/locality, by providing knowledge, tools and techniques for interacting with Government systems, banks and other institutions at all levels.**
- It is **run with the help of NGOs, Civil societies and Government Institutions all over the country.**
- It includes various training modules like **Leadership of women, Educational Programmes, Health and Hygiene, Swachh Bharat, Financial Literacy, Life**

Skills, Legal Rights of Women, Digital Literacy and Advocacy for Social and behavioral change.

Significance of the Scheme

- Empowerment of women per se is not only essential for **equity**, but also constitutes a critical element in our fight for **poverty reduction, economic growth and strengthening of civil society**.
- Women and children are always the worst sufferers in a poverty stricken family and need support. Empowering women, especially mothers, is even more important as it is in homes that **she nourishes nurtures and molds the character of her offspring**.
- It helps embolden minority women to **move out of the confines of their home and community and assume leadership roles and assert their rights, collectively or individually, in accessing services, facilities, skills, and opportunities** besides claiming their due share of development benefits of the Government for improving their lives and living conditions.

News: ISRO to launch new satellite on Feb. 14

- ISRO plans to place, into orbit, an Earth Observation Satellite (EOS04) on board the PSLV C52 on February 14.

Earth Observation Satellite (EOS) – 04 / PSLV C 52

Mission

- PSLV-C52 is designed to orbit an earth observation satellite (EOS-04), weighing 1710 kg into a **sun synchronous polar orbit**.
- PSLV-C52 mission will also carry **two small satellites as co-passengers which includes one student satellite (INSPIREsat-1) from Indian Institute of Space Science & Technology (IIST) in association with Laboratory of Atmospheric & Space Physics at University of Colorado, Boulder and a technology demonstrator satellite (INS-2TD) from ISRO, which is a precursor to India-Bhutan Joint Satellite (INS-2B)**.
- EOS-04 is a Radar Imaging Satellite designed to **provide high quality images under all weather conditions for applications such as Agriculture, Forestry & Plantations, Soil Moisture & Hydrology and Flood mapping**.

PSLV

- Polar Satellite Launch Vehicle (PSLV) is the **third generation launch vehicle** of India.
- It is a **four-staged launch** vehicle with **first and third stages using solid rocket** motors and **second and fourth stages using liquid rocket engines**.
- It is the first Indian launch vehicle to be equipped with liquid stages.
- Initially, PSLV had a carrying capacity of 850 kg but has been enhanced to **1.9 tonnes**.
- The PSLV has helped take payloads into almost all the orbits in space including **Geo-Stationary Transfer Orbit (GTO), the Moon, Mars and would soon be launching a mission to the Sun**.
- Between 1994 and 2019, the **PSLV launched 50 Indian satellites** and 222 foreign satellites for over 70 international customers from 20 countries.
- It has a history of successful launches of payloads that include **Chandrayaan-1, Mars Orbiter Mission (MOM) and the space recovery mission**, etc.
- The **PSLV has failed only twice in its history** — the maiden flight of the PSLV D1 in 1993 and the PSLV C-39 in 2017.

- PRADAN Portal is the portal launched by ISRO, hosted by Indian Space Science Data Centre (ISSDC). It gives the information about space missions to the general public.