TODAY'S IMPORTANT CURRENT AFFAIRS

UPSC

. **Date: 14.10.2024**

Green patch spread in Antarctica

Source: The post is based on the article published in **"The Hindu"** on **14th Oct 2024**.

In News: Satellite data analysis reveals that plant cover on the Antarctic Peninsula has grown 14 times over the past 35 years, driven by rising temperatures. Vegetation mainly mosses and lichen expanded from under 1 sq km in 1986 to nearly 12 sq km by 2021.

Syllabus: ***Mains – GS III (Environment- Climate Change)***

About the Antarctic Peninsula:

- The Antarctic Peninsula is the **northernmost and most accessible part** of the Antarctica continent.
- The peninsula's Antarctic tundra features mountainous landscapes, glaciers and ice shelfs.
- The west coast of the peninsula, the area most commonly explored, has the mildest weather in all of Antarctica, where the warmest month is January with an average temperature of 1 to 2 °C.

Warming Trends in Antarctica:

Warming Rate:

- **Antarctica** is **warming twice** as fast as the **global average (0.22-0.32°C per decade).**
- The Antarctic Peninsula is warming **five times faster** than the global average.
- Since 1950, the Antarctic Peninsula has warmed by almost 3°C.

Record Heat:

- The continent has experienced record-breaking heatwaves, particularly during its winter (northern hemisphere summer).
- In July 2024, ground temperatures were 10°C higher than normal and up to 28°C higher on certain days.
- In March 2022, East Antarctica experienced an extreme heatwave with temperatures 39°C above normal.

Key Findings of the Study:

- Research published in Nature Geoscience reveals that vegetation, **mainly consisting of mosses and lichen,** has expanded significantly.
- In 1986, plant life covered less than 1 square kilometer, but by 2021, it had **grown to nearly 12 square kilometers**.
- This is a remarkable **fourteen-fold increase over just 35 years**, with **more than 30% of this growth occurring between 2016 and 2021.**
- The extent of sea ice is rapidly decreasing. In 2024, it was the second smallest on record, only slightly higher than the record low in 2023.
- Warmer open seas are likely creating wetter conditions that support plant growth.
- Researchers attribute this rapid transformation to **anthropogenic climate change**.

Environmental Implications of Increased Plant Growth:

Threat of Invasive Species: New soil formation from organic matter could make the peninsula more habitable for non-native species, potentially introduced by eco-tourists or researchers. This could disrupt local ecosystems and threaten native flora and fauna.

Decreased Albedo Effect: The darker plant-covered surface absorbs more solar radiation, reducing the region's ability to reflect sunlight. This phenomenon may further raise ground temperatures, potentially accelerating ice melt and impacting global sea levels.

Ice Mass Decline: Antarctica has lost 280% more ice in the 2000s and 2010s than in previous decades, exacerbated by rising temperatures. Reduced sea ice extent, recorded as the second smallest in 2024, may create wetter conditions conducive to further plant growth.

Future Warming Concerns: With continued greenhouse gas emissions, temperatures are expected to rise, likely facilitating more vegetation expansion and contributing to Antarctica's transformation.

Way forward:

- Accelerate global efforts to reduce greenhouse gas emissions, focusing on renewable energy and sustainable practices to mitigate further warming in Antarctica.
- Establish stricter bio security measures and enhanced monitoring to prevent invasive species from spreading and disrupting Antarctica's fragile ecosystem.
- Increase international collaboration on Antarctic research, focusing on climate change impacts, ecosystem protection, and adaptation strategies to minimize global sea-level rise and biodiversity loss.