



Mains Practice Question

Q. How do the melting of the Arctic ice and glaciers of the Antarctic differently affect the weather patterns and human activities on the Earth? Explain. (250 Words)

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Approach

- Start the answer with writing the causes of melting of the Arctic sea and Glaciers of the Antarctic.
- Discuss how the melting of glaciers affects the weather pattern and human activities on the Earth.
- Conclude suitably

Introduction

Many glaciers around the world have been rapidly melting. Human activities are at the root of this phenomenon. Specifically, since the industrial revolution, carbon dioxide and other greenhouse gas emissions have raised temperatures, even higher in the poles, and as a result, glaciers are rapidly melting, calving off into the sea and retreating on land.

When it comes to sea ice, 95% of the oldest and thickest ice in the Arctic is already gone.

- Scientists project that if emissions continue to rise unchecked, the Arctic could be ice-free in the summer as soon as the year 2040 as ocean and air temperatures continue to rise rapidly.

Body

Consequences of Melting of Arctic ice

- **Affects Sea Level and Salinity:**
 - The loss of ice and the warming waters will affect sea levels, salinity levels, and current and precipitation patterns.
- **Danger to Coastal Communities:**
 - The global average sea level has risen by about 7-8 inches since 1900, and it's getting worse.
 - Rising seas endanger coastal cities and small island nations by exacerbating Coastal Flooding and storm surge.
- **Food Security:**
 - Polar vortexes increase heat waves, and the unpredictability of weather caused by ice loss is already causing significant damage to crops on which global food systems depend.
- **Loss of Methane Store:**
 - Permafrost in the Arctic region (ground that is permanently frozen) stores large amounts of methane, which is a greenhouse gas that contributes to climate change.
 - As more quickly the arctic ice is lost, more rapidly permafrost will melt. This will result in a

vicious cycle that may result in a climate catastrophe.

- **Biodiversity Threat:**

- The melting of the Arctic ice puts the Arctic region's vibrant biodiversity under serious threat especially in the mid-latitude.

Consequences of Melting of Antarctic Glaciers

- **Rising Sea Level:**

- Antarctic ice sheets are the largest contributors to global sea-level rise.
- As a result of these rising sea levels, coastal erosion has also increased.

- **Climate change:**

- The warming of Antarctica Circumpolar Current can aggravate the effects of global warming.
- As a result of sea-level rise, storm surges become more prevalent, with warm air and ocean temperatures combining to increase the frequency of coastal storms.

- **Loss of Species**

- Species are also at risk. Many land and sea animals rely on glaciers as their natural habitats and as they disappear so does the rich ecological life they shelter.

- **Disrupting Ocean Currents:** Melting of Antarctic glaciers will lead to slowing of Atlantic Meridional Overturning Circulation, disrupting gulf stream.

- It would also impact west wind drift.

Conclusion

The solution to all of this is obvious. It is in humanity's interest to treat the Arctic melting and glaciers as a severe global issue and act accordingly. Climate change mitigation policies need to be implemented stringently. If CO2 emissions can be reduced over the next ten years then glaciers can still be saved. More targeted measures may also be required.