Arctic Report Card 2023

Why in news?

Recently the National Oceanic and Atmospheric Administration (NOAA) released the annual Arctic report card 2023.

What is Arctic report card?

- **Launch year**-2006
- **Released by-** National Oceanic and Atmospheric Administration**.**
- **Published-** Annually since 2006
- **About-** It is a comprehensive assessment of the current state and trends of the Arctic environment relative to the historical records.
- **Data source**- It is a peer reviewed analysis done by 82 scientists from 13 countries.
- **Significance**-It is intended for a wide audience, including scientists, teachers, students, decision-makers and the general public interested in the Arctic environment and science.

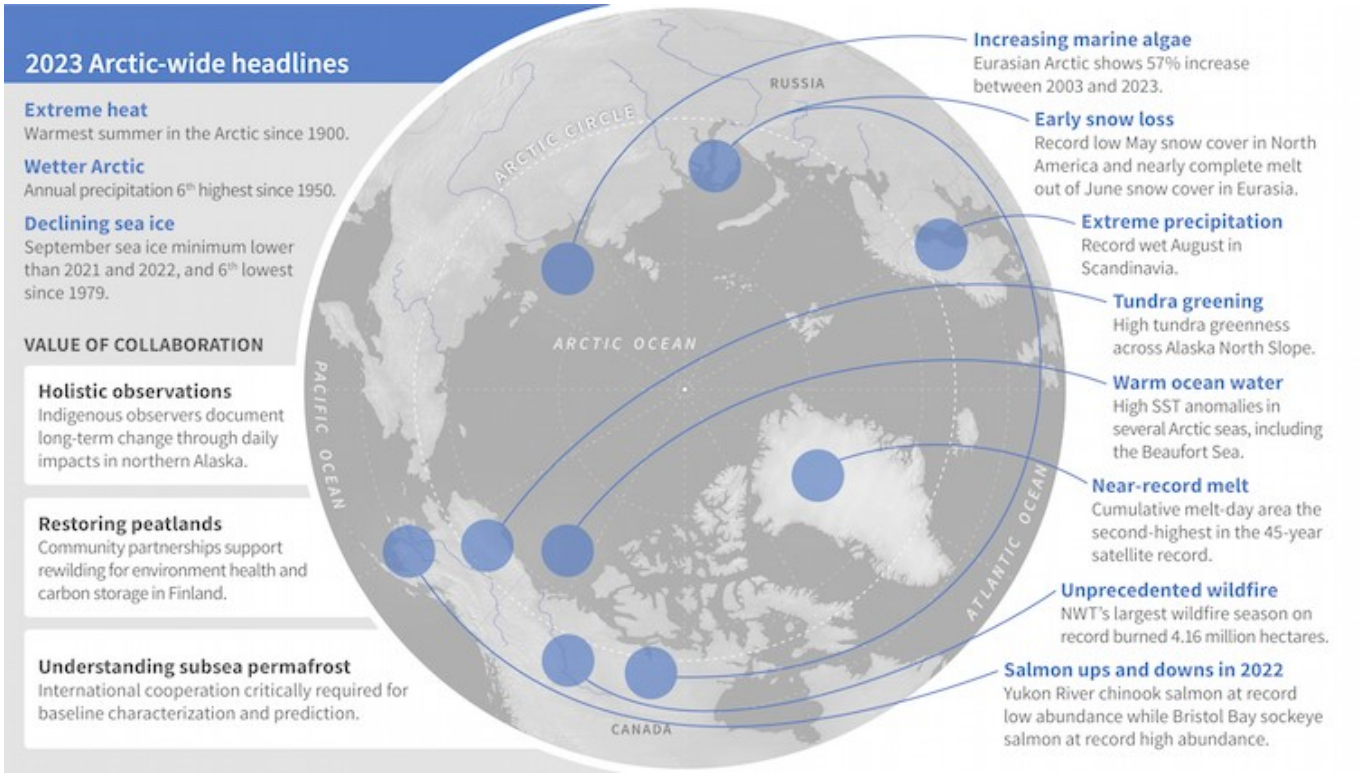
What are the key highlights of the report?

About	Description
Warmest summer	• The Arctic experienced its warmest summer and *sixth warmest* year on record in 2023. • It has widespread impacts on ecosystems and communities.
Feedback loops	• The rising air temperature, sea ice decline and warming water temperature feed off one another in a warming climate. • The summer warming reduces sea ice, which causes more warming.
Arctic sea ice extent	• It was the *sixth lowest* in the satellite record, which began in 1979. • The 17 lowest Arctic sea ice extents on record occurred during the last 17 years.
Greenland ice sheet	• It continued to *lose mass* despite above-average winter snow accumulation. • The ice sheet lost an estimated 223 gigatons of ice in 2023, equivalent to about 0.62 millimeters of global sea level rise.
Arctic tundra	• It showed the *third-highest peak greenness* since 2000, indicating increased plant growth and productivity. • However, the greening was not uniform across the region, and some areas showed browning or reduced vegetation.
Arctic ocean	• The primary productivity, or the amount of organic matter produced by phytoplankton, was above average in many regions. • This reflects the *earlier onset of the phytoplankton bloom* due to earlier sea ice melt.

Arctic precipitation	• It was the *sixth highest on record*, continuing the trend toward a wetter Arctic. • Increased precipitation can affect soil moisture, river runoff, permafrost thaw, and ecosystem dynamics
Arctic wildfires	• During 2023 it was the most extreme on record, burning an estimated 34.6 million hectares of land, or about 4.5% of the Arctic land area. • The fires emitted large amounts of carbon dioxide, black carbon, and other pollutants, affecting air quality and climate1
Arctic climate change	• It is disrupting the lives and livelihoods of people living in the region, especially *Indigenous communities*. • Some are adapting to new opportunities and challenges while other are working to restore damaged habitats and preserve their cultures.

What are the most severe consequences of the soaring temperatures in Arctic?

- **Subsea permafrost thawing**- Frozen soil under the sea bed is melting faster due to warmer oceans.
- This releases greenhouse gases that worsen climate change and ocean acidification.
- **Food insecurity**- Warming of freshwater and marine habitats makes the chinook and chum salmon smaller and less abundant than usual in Western Alaska due to warming freshwater and marine habitats.
- **Impact on livelihood**- The reduced salmon availability causes problems for fishing activities, livelihoods, and traditions of the Indigenous people who rely on salmon.
- **Raging wildfires**- The Arctic and Northern regions of Canada faced record-breaking wildfires that burned over 10 million acres of land in 2023.
- **Climate change**- The wildfires were fuelled by high temperatures, dry vegetation and soil, and low rainfall, all linked to climate change.
- **Mendenhall glacier melting**- The glacier in *Alaska* has thinned significantly due to rising temperatures in the past 20 years.
- **Severe flooding**- The meltwater formed a lake that broke its ice dam and flooded Juneau, causing damage and disaster.



What lies ahead?

- **Sustainable solution-** In Finland peatland restoration is done as a *nature-based climate solution* led by traditional knowledge, it will help to capture and store carbon away from the atmosphere.
- **Habitat preservation-** In Finland, an effort to restore damaged reindeer habitat is done in collaboration with Sámi reindeer herders (Indigenous population). It is helping to preserve their way of life.
- **Rewilding-** It requires partnership, recognition of Indigenous and community rights, and the use of Indigenous knowledge alongside science to succeed and avoid replication of past inequities.
- **Data collection-**The Alaska Arctic Observatory and Knowledge Hub (AAOKH) works with a network of coastal Indigenous observers to document long-term and holistic observations of environmental change and impacts in northern Alaska.

To know about Arctic research click here

References

1. Down To Earth-Arctic Report Card 2023
2. Indian Express- Effect of hottest summer in Arctic