Iceberg A68a

Why in News

Iceberg **A68a,** which **calved from Antarctica in 2017,** has been **floating off the coast of South Georgia island.**

> This has prompted **fears about the impact the iceberg could have on the island's abundant wildlife.**

Key Points

- **Iceberg:**
  - An iceberg is **ice that broke off from glaciers or shelf ice** and is floating in open water.
  - Icebergs **travel with ocean currents** and either get caught up in shallow waters or ground themselves.
  - The **US National Ice Center (USNIC)** is the **only organisation** that **names and tracks Antarctic Icebergs.**
    - Icebergs are **named according to the Antarctic quadrant** in which they are spotted.

- **A68a:**
    - Shaped like a closed hand with a pointing finger, the iceberg known as A68a **split off in 2017 from Larsen Ice Shelf on the West Antarctic Peninsula,** which has warmed faster than any other part of Earth's southernmost continent.
    - On its journey, **smaller icebergs have calved from the iceberg** and the **biggest section of the iceberg is called A68a** and spans an area of roughly 2,600 sq. km.

        Recently, the **two icebergs that calved from A68a -** have been named by the USNIC. They are called **A68e and A68f.**
    - All the berg fragments are entrained in a fast-moving stream of water known as the **Southern Antarctic Circumpolar Current Front.**
        - The **Antarctic Circumpolar Current (ACC)** is the most important current in the Southern Ocean, and the **only current that flows completely around the globe.**
        - The ACC, as it encircles the Antarctic continent, flows eastward through the southern portions of the Atlantic, Indian, and Pacific Oceans.
    - It has been **drifting towards the remote island of South Georgia,** which is a **British Overseas Territory (BOT).**
        - The fear is that if the iceberg grounds itself near the island, it could **cause disruption to the local wildlife** that forages in the ocean. Penguins and seals will have to travel farther in search of food.
        - On the other hand, there are some positives of an iceberg being stuck in the open ocean, since **icebergs carry dust which fertilises ocean plankton,** which draws up carbon dioxide from the atmosphere.
    - The **British Antarctic Survey (BAS)** will launch **a research mission** to study **A68a's impact on the ecosystem.**
        - BAS is a component of the Natural Environment Research Council (NERC). NERC is part of UK Research and Innovation.
        - It delivers and enables world-leading interdisciplinary research in the Polar Regions.

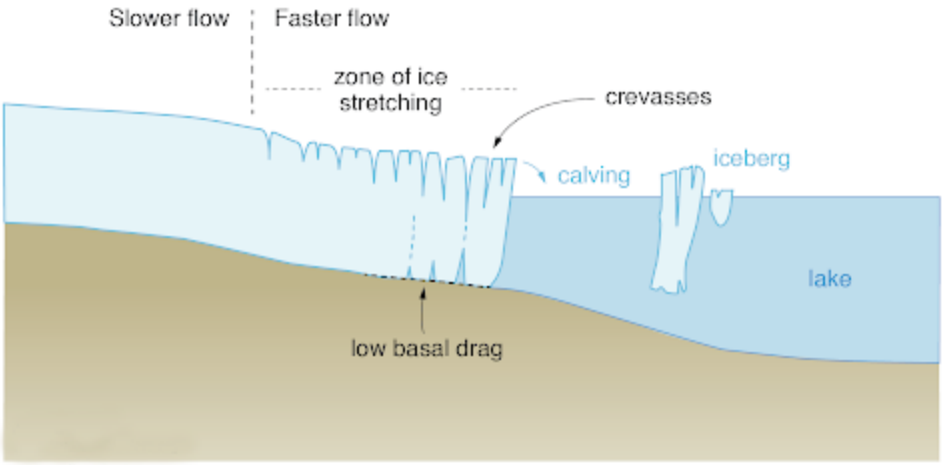
Calving of Glaciers

- **Meaning:**
    - Calving is the **glaciological term for the mechanical loss** (or simply, breaking off) **of ice from a glacier margin.**
    - Calving is most common when a glacier flows into water (i.e. lakes or the ocean) but can also occur on dry land, where it is known as **dry calving.**

- **Process:**
    - Before calving occurs, **smaller cracks** and fractures in glacier ice **grow into larger crevasses.**
    - The growth of crevasses effectively **divides the ice into blocks** that subsequently **fall from the snout into an adjacent lake** (where they are known as icebergs).

        Glacier Snout: It is the **lowest end of a glacier,** also called **glacier terminus or toe.**
- **Impact on Glacier Mass Balance:**

    In lake-terminating (or freshwater) glaciers, calving is often a very **efficient process of ablation** and is therefore an important control on **glacier mass balance.**
        - **Ablation:** It implies combined processes (such as sublimation, fusion or melting, evaporation) which remove snow or ice from the surface of a glacier or from a snow-field.
        - **Glacier mass balance:** It is simply the gain and loss of ice from the glacier system.
- **Global warming** has **increased the frequency of this process.**
- **Recent Cases of Calving:**
    - Up to the end of the **20th century,** the **Larsen Ice Shelf had been stable** for more than 10,000 years.
    - In **1995,** however, **a huge chunk** broke off, **followed by another in 2002.** This was **followed by** the breakup of the nearby **Wilkins Ice Shelf in 2008 and 2009,** and **A68a in 2017.**
    - **Hydrofracturing -** when water seeps into cracks at the surface, splitting the ice farther down - was **almost certainly the main culprit in each case.**
        - Hydrofracturing is a **water well development process** that involves injecting high pressure water via the well into the bedrock formation immediately surrounding it.
        - It was **originally developed for the oil and gas industry** to increase oil and gas well production.
        - On a global scale, **drilling or hydrofracturing** result in **significant greenhouse gas emissions,** leading to global warming.


Slower flow
Faster flow
zone of ice stretching
crevasses
calving
iceberg
lake
low basal drag

Source: IE