

Greenland Ice | Going, Gone

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GREENLAND ICE SHEET

The 2nd largest body of ice in the world is losing 20% more ice than previously thought ...

30,000,000

tonnes of ice lost
per hour
(1985-2022)

Ice lost per hour will fill up
31 Empire State Buildings!!



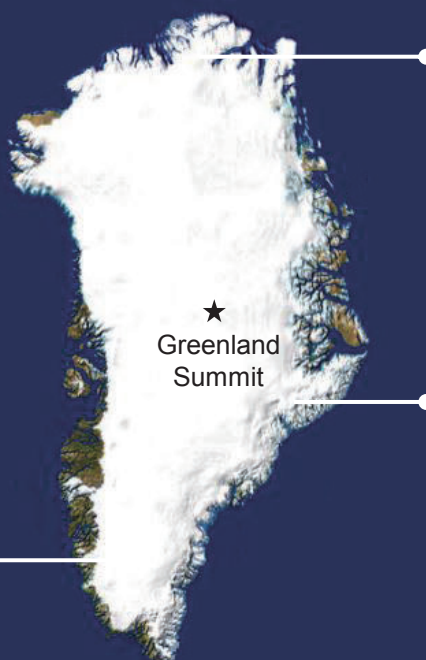
Vanishing Fast! Greenland Ice Sheet losses today already tracks IPCC worst-case projections



Contribution of the Greenland Ice Sheet to observed SLR has increased in recent decade (2006-2018) to **22% of SLR**

... making it the 2nd largest single contributor to SLR after thermal expansion...

... but now, accelerated melt from the Greenland Ice Sheet (30mn tonnes of ice per hour) makes it the single largest contributor to SLR!



3 ice shelves

Have collapsed completely and ice shelves in northern Greenland have lost 35% of their volume since 1978

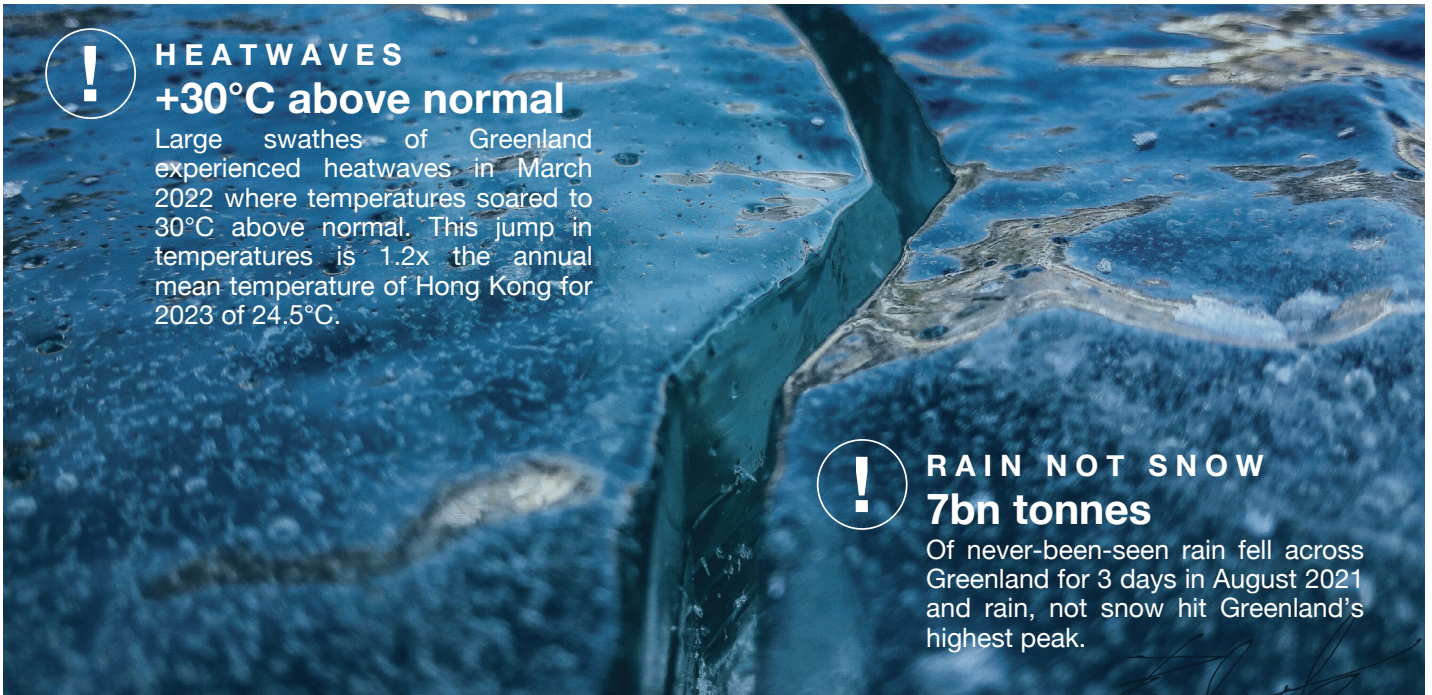


~7m SLR

Will be unleashed upon the melting of the GREENLAND ICE SHEET

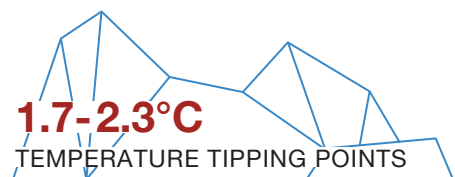
Heatwaves + rain + cracks = extreme melt! Ice is vanishing for the 27th year in a row

The Greenland Ice Sheet is the 2nd largest body of ice in the world and covers around 80% of the surface area of Greenland. Alarmingly, it's losing 20% more ice than previously thought – for the 27th year in a row, it lost more mass during the 2022-2023 melting season than it gained during winter. According to the UN, Greenland Ice Sheet losses average ~270bn tonnes/year. Recent record heatwaves & extreme deluges of rainfall have only sped up ice melt as rainwater drains into the vast network of micro-cracks (that may run hundreds of metres deep) melting the ice sheet from within. Rain also removes snow revealing darker ice beneath, leading to higher heat absorption & faster ice melt. Rainfall has already increased by a third since 1991.



Ice sheets are more sensitive to warming than we expected!

Advancements in modelling and scientific understanding of ice sheet behaviour show that ice sheets are more sensitive to warming than previously understood. This means that much greater levels of SLR can be released at lower global mean temperatures than previously projected.



GREENLAND ICE SHEET

Breaching these temperature thresholds will trigger abrupt Greenland Ice Sheet loss, locking in at least 2-3m to 7m of SLR. We are dangerously "close" – **global heating as of August 2024 hit 1.64°C. We even breached 2°C for a few days in 2023 & 2024.**

Tipping Points

Current Path

It's happened before! Greenland is now in the risk zone ...

A 2023 study found evidence recovered from ancient soil beneath the ice sheet that it had retreated >200km inland some 400,000 years ago. This means that this section of Greenland alone caused at least 1.4m of SLR. Worryingly, CO₂ levels at the time were only 280ppm compared to [today's of 420ppm+](#). A 2024 study further showed that Greenland's Summit was ice free at least once within the last million years despite CO₂ never exceeding 320ppm.

ICE SHEET RETREAT 400,000 years ago (Northwest Greenland)



The 7 worst years of ice losses = all happened this decade

Ice is vanishing today, not tomorrow. The seven worst years of ice losses recorded have all happened in the last 10 years. In fact between 1992-2022, the **Earth's ice sheets in Greenland & Antarctica have lost a shocking 7,560bn tonnes of ice – this is enough to cover the entire USA with an 1m thick ice layer!** Such massive losses may be out of sight and out of mind for now but there's no escaping the ensuing SLR impacts, especially in Asia, the region most vulnerable to rising seas. There is no negotiating with ice – we either decarbonise much faster today or face the consequences of rising seas later – and "later" is a lot sooner than you think. Choose wisely...

Antarctica

SLR Levels

Source: CWR; ICCI, Greenland Factsheet; Greene et al. (2022); Polar Portal Season Report 2023; ICCI State of the Cryosphere 2023; Phys.org "Hot poles: Antarctica, Arctic 40 and 30 degrees Celsius above normal (March 2022); Hong Kong Observatory; NSIDC, Rain at the summit of Greenland (2021); Bochow et al. (2023), Nature (622); Copernicus; ICCI State of the Cryosphere 2024; Christ et al. (2023), Science (381); Bierman et al. (2024), PNAS (121); NOAA; Otsuka et al.(2023), Earth System Science Data (15).