Weitere Beweise: Viele der heute existierenden Gletscher waren während fast der gesamten letzten 10.000 Jahre viel kleiner!!

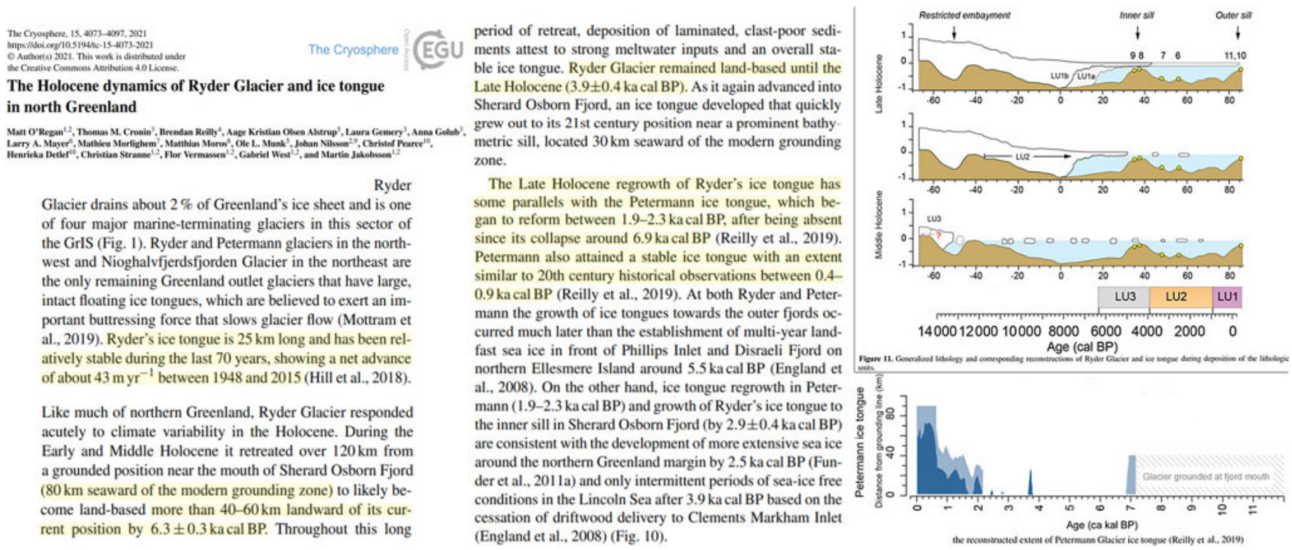
geschrieben von Chris Frey | 30. Dezember 2021

[Kenneth Richard](#)

Die Kryosphäre widersetzt sich dem Narrativ der anthropogenen globalen Erwärmung, wonach die steigenden Treibhausgas-Emissionen das arktische Eis katastrophal schmelzen lassen sollten.

Wissenschaftler (O’Regan et al., 2021) berichten, dass der Ryder-Gletscher in Nordgrönland zwischen 1948 und 2015 um 2881 m vorgedrungen ist bei einer Vorschubgeschwindigkeit von 43 m pro Jahr. Seine heutige Eisausdehnung ist etwa 50 km größer als vor 6300 Jahren.

Der nahe gelegene Petermann-Gletscher mit einer Ausdehnung von etwa 60 km existierte während der Römischen Warmzeit noch nicht. Wie die Grafik unten rechts in der Abbildung zeigt, gab es in dieser Region bis auf wenige Jahrhunderte des Holozäns vor 2 000 Jahren kein Eis. In der Periode der Kleinen Eiszeit war er etwa genauso groß wie heute.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The Holocene dynamics of Ryder Glacier and ice tongue in north Greenland

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Ryder Glacier drains about 2 % of Greenland's ice sheet and is one of four major marine-terminating glaciers in this sector of the GrIS (Fig. 1). Ryder and Petermann glaciers in the northwest and Nioghalvfjerdsfjorden Glacier in the northeast are the only remaining Greenland outlet glaciers that have large, intact floating ice tongues, which are believed to exert an important buttressing force that slows glacier flow (Mottram et al., 2019). Ryder's ice tongue is 25 km long and has been relatively stable during the last 70 years, showing a net advance of about 43 m yr^{-1} between 1948 and 2015 (Hill et al., 2018).

Like much of northern Greenland, Ryder Glacier responded acutely to climate variability in the Holocene. During the Early and Middle Holocene it retreated over 120 km from a grounded position near the mouth of Sherard Osborn Fjord (80 km seaward of the modern grounding zone) to likely become land-based more than 40–60 km landward of its current position by 6.3 ± 0.3 ka cal BP. Throughout this long period of retreat, deposition of laminated, clast-poor sediments attest to strong meltwater inputs and an overall stable ice tongue. Ryder Glacier remained land-based until the Late Holocene (3.9 ± 0.4 ka cal BP). As it again advanced into Sherard Osborn Fjord, an ice tongue developed that quickly grew out to its 21st century position near a prominent bathymetric sill, located 30 km seaward of the modern grounding zone.

The Late Holocene regrowth of Ryder's ice tongue has some parallels with the Petermann ice tongue, which began to reform between 1.9–2.3 ka cal BP, after being absent since its collapse around 6.9 ka cal BP (Reilly et al., 2019). Petermann also attained a stable ice tongue with an extent similar to 20th century historical observations between 0.4–0.9 ka cal BP (Reilly et al., 2019). At both Ryder and Petermann the growth of ice tongues towards the outer fjords occurred much later than the establishment of multi-year landfast sea ice in front of Phillips Inlet and Disraeli Fjord on northern Ellesmere Island around 5.5 ka cal BP (England et al., 2008). On the other hand, ice tongue regrowth in Petermann (1.9–2.3 ka cal BP) and growth of Ryder's ice tongue to the inner sill in Sherard Osborn Fjord (by 2.9 ± 0.4 ka cal BP) are consistent with the development of more extensive sea ice around the northern Greenland margin by 2.5 ka cal BP (Funder et al., 2011a) and only intermittent periods of sea-ice free conditions in the Lincoln Sea after 3.9 ka cal BP based on the cessation of driftwood delivery to Clements Markham Inlet (England et al., 2008) (Fig. 10).

[Quelle](#)

Ein anderer Glaziologe (Winker, 2021) behauptet, dass es „keine Beweise“ dafür gibt, dass der Jostedalsbreen, ein Gletscher in Südnorwegen, während der ersten paar tausend Jahre des Holozäns überhaupt existierte, oder als der CO2-Gehalt bei 260 ppm lag. Der Gletscher erreichte seine größte Ausdehnung während der Kleinen Eiszeit, als die CO2-Konzentration im Bereich von 275 bis 280 ppm lag.

„Das ‚Holozäne Thermische Maximum‘ oder ‚Hypsithermal‘ am Jostedalsbreen liefert keine Beweise für eine wesentliche Gletscheraktivität und kann als eine verlängerte Periode des nahezu (möglicherweise sogar vollständigen) Verschwindens des Gletschers charakterisiert werden… Im Gegensatz dazu wird der höchste Gletschereintrag auf vor 600 bis 200 Jahren datiert, was auf das lokale ‚Kleine Eiszeit‘-Maximum hinweist.“

Interessanterweise stabilisierte sich der Gletscher, nachdem er in den 1930er und 1940er Jahren rapide geschrumpft war. Von den 1950er bis 1980er Jahren kam es zu einem „leichten Gesamtanstieg“ der Eisausdehnung. Dies entspricht einem ähnlichen Schmelzmuster für den Nigardsbreen-Gletscher.

Springer Link

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Terminal Moraine Formation Processes and Geomorphology of Glacier Forelands at the Selected Outlet Glaciers of Jostedalsbreen, South Norway

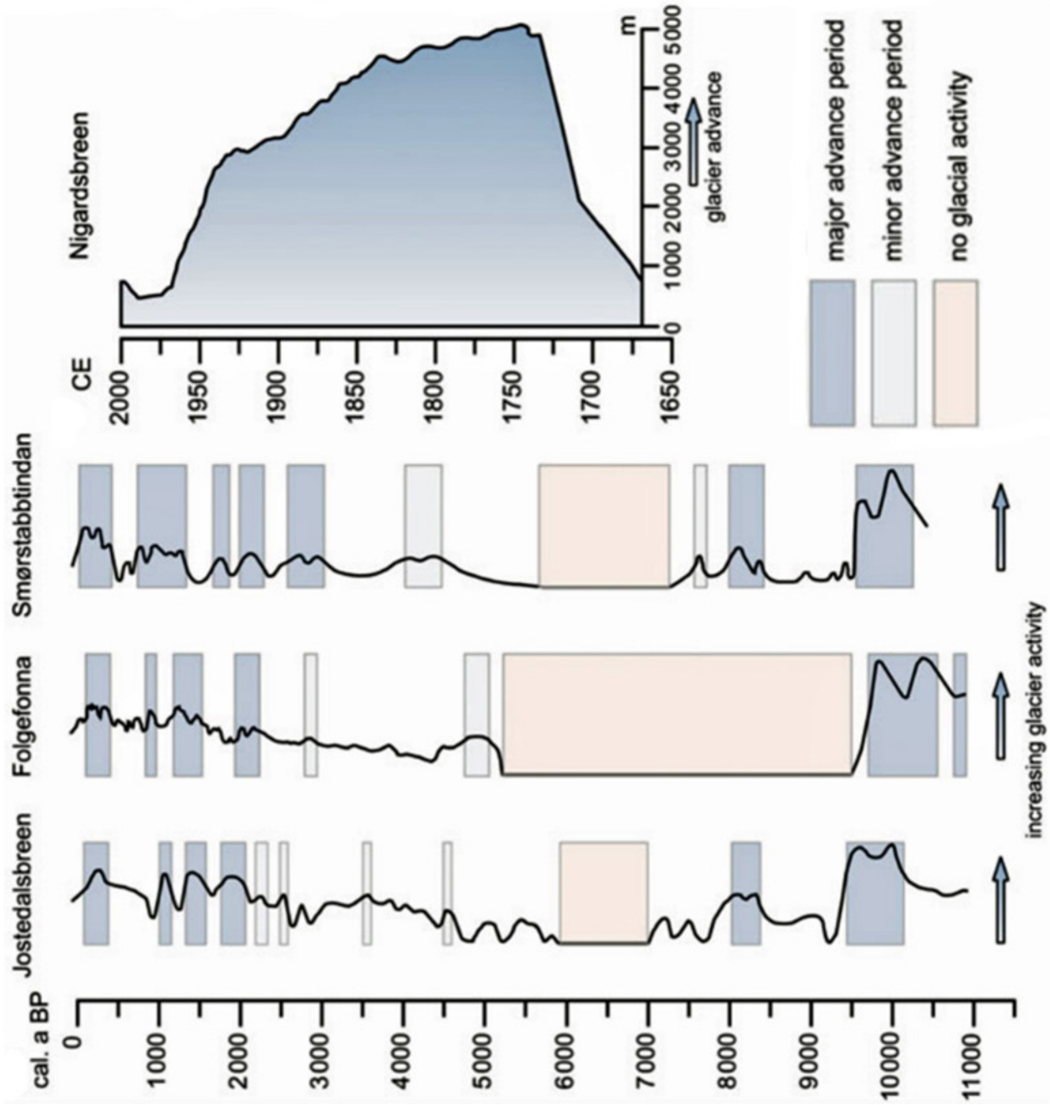
The 'Holocene Thermal Maximum' or 'Hypsithermal' at Jostedalsbreen provides no evidence for any substantial glacial activity and can be characterised as a prolongated period of near (possibly even complete) glacier disappearance (Fig. 3.4a; Nesje and Kvamme 1991; Nesje et al. 2000, 2008a). This period of climatic conditions that were unfavourable for glaciers seems to have commenced immediately after the Finse Event. Many small glaciers are, however, expected to have melted completely earlier, following the Erdalen Event, and possibly only re-formed briefly around 8200 cal a BP prior to their final disappearance until the late Holocene (Nesje et al. 2001). On the contrary, Nesje et al. (2000) report periods of minor glacier activity from the northern sector of Jostedalsbreen about 7750, 7600 and 7400 cal. a BP, thus locally delaying the assumed disappearance of the entire ice cap to c. 7350 cal a BP. Furthermore, they indicate minor interruptions of the Holocene Thermal Maximum during short intervals at 6900 and 6700 cal a BP. It remains unclear whether their findings can be interpreted as sufficient evidence to assume substantial re-formation of Jostedalsbreen at that stage. Summarising, following the Finse Event until at least around 6000 cal a BP, there is no clear and uncontested indication of any resuming glacier activity in the region.

As indicated by glaciofluvial sediments in lake and bog archives, the Holocene Thermal Maximum terminated with a stepwise re-formation of glaciers (Fig. 3.4a). This would correspond with the 'classic' concept of a 'neoglaciation' *sensu stricto*. For the large catchment of Oppstrynsvatnet in the northern sector of Jostedalsbreen, Vasskog et al. (2012) record a minimum of glacier-derived sediment input between 6700 and 5700 cal. a BP when the catchment was almost or completely free of glaciers. By contrast, the highest glacial input is dated to 600 and 200 cal. a BP indicating the local 'Little Ice Age'-maximum.

Despite its far minor magnitude, the recent advance during the 1990s can be considered as a modern analogue regarding its underlying mass balance perturbation and its climatic causes (Nesje and Matthews 2011).

Following the short-term advances during the early twentieth century CE, a widespread and substantial glacier retreat commenced at Jostedalsbreen (Fægri 1950; Hoel and Werenskiold 1962; Bogen et al. 1989; Andreassen et al. 2005). It is unanimously linked to warm summers and overall above-average air temperatures during the 1930s and 1940s (Nesje et al. 1995, 2008a).

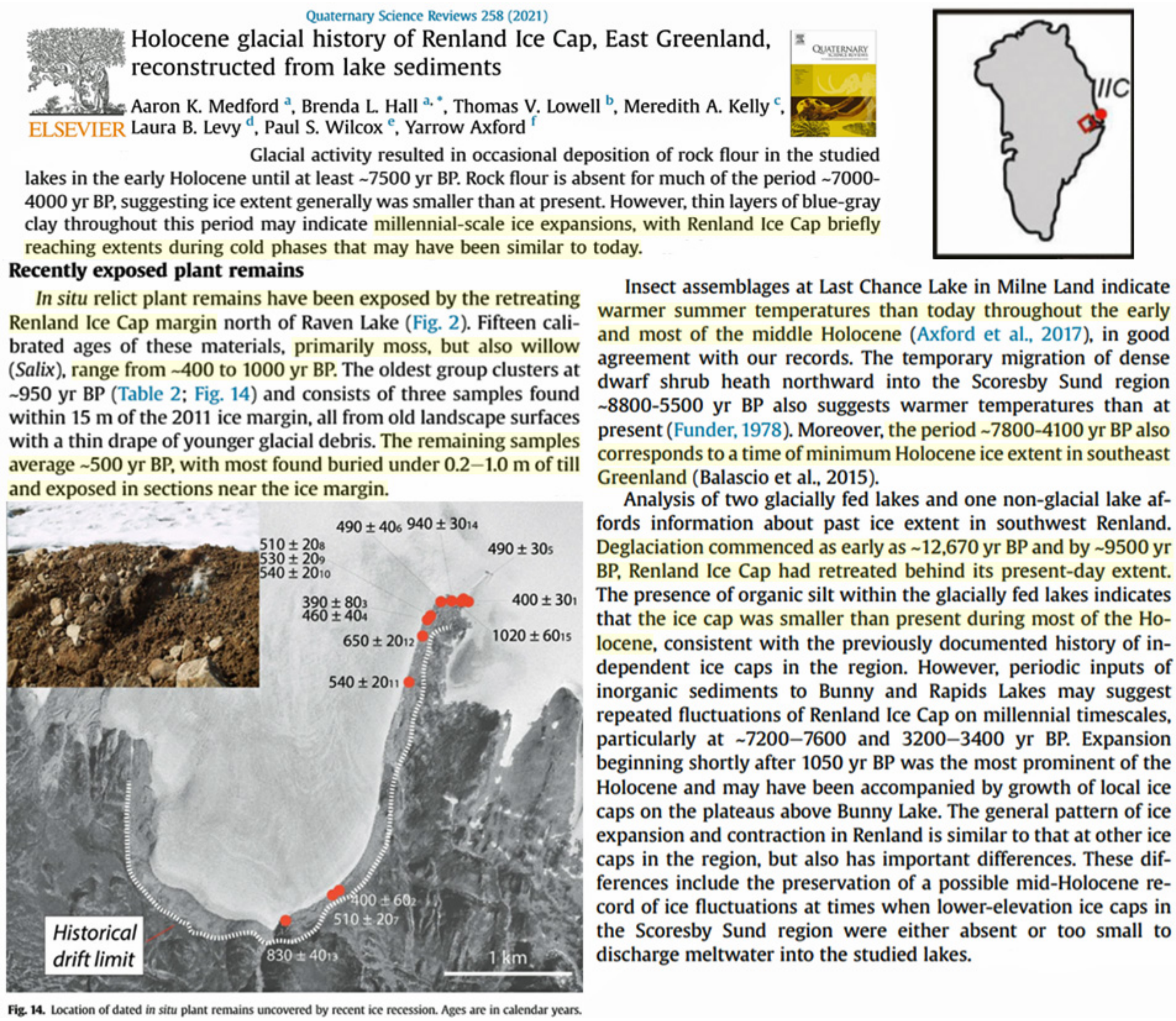
At several small outlets, glacier termini stabilisation was followed from the 1950s until the late 1980s by a slight overall advance, although this did not attract much attention and mass balance records demonstrate only a slight increase of the overall glacier mass in western South Norway during that time (Andreassen et al. 2005, 2016).



[Quelle](#)

Vor einigen Monaten haben wir auf eine weitere neue [Studie](#) hingewiesen, die belegt, dass es im frühen und mittleren Holozän in Ostgrönland wesentlich wärmer war als heute. Während dieses Zeitraums gab es keine Eiskappen oder sie waren weit weniger ausgedehnt als heute.

Es mag überraschen, dass mit Kohlenstoff datierte Pflanzenreste, die unter zurückweichenden Gletschern in Ostgrönland vergraben wurden, bestätigen, dass diese Orte noch vor 400 bis 500 Jahren oder während der kleinen Eiszeit nicht von Gletschern bedeckt waren.



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Holocene glacial history of Renland Ice Cap, East Greenland, reconstructed from lake sediments

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Glacial activity resulted in occasional deposition of rock flour in the studied lakes in the early Holocene until at least ~7500 yr BP. Rock flour is absent for much of the period ~7000-4000 yr BP, suggesting ice extent generally was smaller than at present. However, thin layers of blue-gray clay throughout this period may indicate millennial-scale ice expansions, with Renland Ice Cap briefly reaching extents during cold phases that may have been similar to today.

Recently exposed plant remains

In situ relict plant remains have been exposed by the retreating Renland Ice Cap margin north of Raven Lake (Fig. 2). Fifteen calibrated ages of these materials, primarily moss, but also willow (*Salix*), range from ~400 to 1000 yr BP. The oldest group clusters at ~950 yr BP (Table 2; Fig. 14) and consists of three samples found within 15 m of the 2011 ice margin, all from old landscape surfaces with a thin drape of younger glacial debris. The remaining samples average ~500 yr BP, with most found buried under 0.2–1.0 m of till and exposed in sections near the ice margin.

Fig. 14. Location of dated *in situ* plant remains uncovered by recent ice recession. Ages are in calendar years.

Insect assemblages at Last Chance Lake in Milne Land indicate warmer summer temperatures than today throughout the early and most of the middle Holocene (Axford et al., 2017), in good agreement with our records. The temporary migration of dense dwarf shrub heath northward into the Scoresby Sund region ~8800-5500 yr BP also suggests warmer temperatures than at present (Funder, 1978). Moreover, the period ~7800-4100 yr BP also corresponds to a time of minimum Holocene ice extent in southeast Greenland (Balascio et al., 2015).

Analysis of two glacially fed lakes and one non-glacial lake affords information about past ice extent in southwest Renland. Deglaciation commenced as early as ~12,670 yr BP and by ~9500 yr BP, Renland Ice Cap had retreated behind its present-day extent. The presence of organic silt within the glacially fed lakes indicates that the ice cap was smaller than present during most of the Holocene, consistent with the previously documented history of independent ice caps in the region. However, periodic inputs of inorganic sediments to Bunny and Rapids Lakes may suggest repeated fluctuations of Renland Ice Cap on millennial timescales, particularly at ~7200–7600 and 3200–3400 yr BP. Expansion beginning shortly after 1050 yr BP was the most prominent of the Holocene and may have been accompanied by growth of local ice caps on the plateaus above Bunny Lake. The general pattern of ice expansion and contraction in Renland is similar to that at other ice caps in the region, but also has important differences. These differences include the preservation of a possible mid-Holocene record of ice fluctuations at times when lower-elevation ice caps in the Scoresby Sund region were either absent or too small to discharge meltwater into the studied lakes.

[Quelle](#)

Die Autoren räumen sogar ein, dass es während des Holozäns gelegentlich kurze „Kältephasen“ gab, in denen die Ausdehnung der grönländischen Gletscher auf das heutige Niveau anstieg.

„…die Renland-Eiskappe erreichte während der Kältephasen kurzzeitig Ausmaße, die denen von heute ähnlich gewesen sein könnten.“

Dies bestätigt natürlich, dass auch die heutigen Temperaturen und Eismengen in den Bereich einer „Kaltphase“ fallen.

Es gibt also wieder einmal keine Beweise für die Behauptungen der Alarmisten, dass die heutigen Gletscherausdehnungen im Vergleich zu den letzten 10.000 Jahren – einschließlich der letzten Jahrhunderte – beispiellos oder sogar ungewöhnlich sind.

Link: http://notrickszone.com/2021/12/27/more-evidence-glaciers-existing-today-were-absent-for-nearly-all-of-the-last-10000-years/

Übersetzt von Christian Freuer für das EIKE