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Title	Deglacial Mass-Movement Floods as a Potential Source of Catastrophic Flood Traditions: A Testable Geomythological Hypothesis
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Scope note: This is a hypothesis and scoping-review manuscript. It does not claim a single global flood, does not claim that all flood traditions share one origin, and does not identify the biblical Noah narrative with a specific geological event.

Deglacial Mass-Movement Floods as a Potential Source of Catastrophic Flood Traditions: A Testable Geomythological Hypothesis

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Abstract

Catastrophic flood traditions occur in many geographically separated cultures, but their possible geological substrates need not be uniform. Existing explanations include river floods, earthquake and volcanic tsunamis, glacial-lake outburst floods, postglacial sea-level rise, and cultural transmission. This paper proposes a complementary, explicitly testable hypothesis: during the terminal Pleistocene and early Holocene, deglaciation and associated paraglacial adjustment increased opportunities for catastrophic glacier, ice-rock, and rock-slope failures in many formerly glaciated mountain regions; where such failures entered lakes, fjords, or confined river valleys, they could generate extreme displacement waves, debris-rich floods, secondary damming and outburst floods, and long-lived burial or destruction of valley-floor habitat. Modern analogues demonstrate the required magnitudes. The 2015 Taan Fiord landslide generated 193 m run-up, while the 2020 Elliot Creek rock avalanche produced greater than 100 m run-up before evolving into a destructive outburst flood. A 2026 glacier-associated slope failure in Nepal generated a debris-laden flood that travelled about 100 km, illustrating the continuing relevance of this hazard class, although its detailed mechanism remains under study. Geomythological and ethnographic evidence shows that mass-movement-generated floods can enter cultural memory: a Tlingit account recorded in 1909 explicitly describes an avalanche entering a lake, forcing water out, and overwhelming a settlement. The proposed Deglacial Mass-Movement Flood Tradition (DMFT) hypothesis therefore predicts a non-random association between formerly glaciated mountain settings and narrative features such as sudden onset, extreme local run-up, debris transport, anomalous flow direction, high-ground survival, and permanent loss of inhabited land. The hypothesis is not a claim of a simultaneous worldwide flood. It is a framework for testing whether regionally asynchronous but climatically clustered catastrophic events contributed to a subset of extraordinary flood traditions.

Keywords: deglaciation; paraglacial; rock avalanche; ice-rock avalanche; landslide tsunami; debris flood; geomythology; oral tradition; flood tradition; Holocene

1. Introduction

Flood traditions are widespread in human cultural records, but similarity of theme does not imply a single event or a single mechanism. Riverine floods, coastal inundation, earthquake tsunamis, volcanic processes, glacial-lake outburst floods (GLOFs), and cultural transmission can all generate or reshape flood narratives. Geomythology provides a useful framework because it treats traditional narratives neither as literal stratigraphic logs nor as mere fiction; instead, it asks whether culturally transformed narratives sometimes preserve observations of geological processes (Vitaliano, 2007; Ludwin et al., 2007).

The end of the last glacial period created a distinctive global environmental context. From approximately 19 ka to the early Holocene, global warming, ice-sheet decay, glacier retreat, changing hydrology, and large sea-level rise transformed landscapes across both hemispheres (Clark et al., 2012; Shakun et al., 2012). In mountains, deglaciation can alter slope stresses, remove ice support, modify groundwater routing, degrade permafrost, and initiate long-term paraglacial adjustment. A substantial literature now documents enhanced rock-slope instability following deglaciation, often with delays of centuries to millennia rather than immediate failure (McColl, 2012; Ballantyne and Wilson, 2014; Curry, 2020).

If a large slope or glacier failure enters a water body or confined valley, the resulting hazard can be much larger than an ordinary river flood. The initial mass movement may generate a displacement wave, entrain water and sediment, form or breach temporary dams, and transform into a long-runout debris flood. Such cascades can produce local run-up exceeding 100 m and leave valley floors deeply eroded, buried, or hydrologically reorganized (Higman et al., 2018; Geertsema et al., 2022). To an affected community, the physically relevant experience is not necessarily “a landslide” or “a tsunami” in modern terminology, but a rapidly advancing wall of water, mud, rock, trees, and debris followed by the loss of the former inhabited landscape.

A scientific connection between glacial processes and flood legends is not wholly new. Wright and Stein (1976) published a short Science contribution entitled “Glacial Surges and Flood Legends.” Because the full text was not available in the present scoping review, the precise mechanism argued in that note is not characterized here. The present paper instead builds from the much larger post-1976 literature on paraglacial slope failure, landslide-generated waves, hazard cascades, and geomythology.

The hypothesis advanced here is that deglacial mass-movement floods were one recurring class of catastrophic human experience during the terminal Pleistocene and early Holocene, and that some of these experiences contributed to the formation or later shaping of extraordinary flood traditions. The proposal is deliberately narrower than claims of a single “global flood.” It predicts multiple independent events, regionally asynchronous but concentrated within a broad interval of deglaciation and landscape adjustment.

2. Scope and Review Method

This paper is a hypothesis-generating scoping review rather than a systematic review or meta-analysis. A targeted literature search was conducted through 5 September 2026 using combinations of the terms deglaciation, paraglacial rock-slope failure, rock avalanche, landslide tsunami, glacier collapse, ice-rock avalanche, outburst flood, oral tradition, flood legend, geomythology, and geological memory. Priority was given to peer-reviewed journal articles, academic monographs, government science agencies, and primary ethnographic publications. Recent 2026 Nepal material is explicitly identified as preliminary or non-peer-reviewed where applicable.

The review has three purposes: (1) establish whether deglaciation can plausibly increase large-slope-failure hazard; (2) establish whether mass movements can generate flood phenomena of the magnitude and geomorphic persistence described in extraordinary traditions; and (3) establish whether geological catastrophes, including mass-movement-generated floods, can be retained in oral or literary cultural memory. The paper then derives falsifiable predictions and a coding framework for future comparative work.

No attempt is made here to date individual ancient flood traditions solely from narrative content. Nor are genealogically related narratives counted as independent events. In particular, the Atrahasis, Gilgamesh, and Genesis flood narratives are treated as a historically related Near Eastern narrative complex rather than three independent observations (Lambert and Millard, 1969; George, 2003; Carr, 2020).

3. Geological Basis of the Hypothesis

3.1 Deglaciation and rock-slope instability

Glaciation modifies mountain geometry and stress fields through erosion, loading, confinement, and water storage. Deglaciation reverses some of these conditions while exposing over-steepened slopes and changing groundwater pathways. McColl (2012) reviewed global evidence and concluded that glaciation and associated climatic change influence spatial and temporal patterns of rock-slope stability, with empirical evidence for a temporary increase in instability following deglaciation. Importantly, failure need not occur at the moment ice disappears; progressive fracture development and stress redistribution can delay catastrophic collapse.

The strongest chronological evidence comes from dated postglacial rock-slope failures. Ballantyne and Wilson (2014) found that catastrophic rock-slope failure in deglaciated, tectonically stable Scottish terrain was about 4.6 times more frequent before 11.7 ka than during the Holocene, and that 95% of dated failures at sites deglaciated after the last ice sheet occurred within roughly 5,400 years of deglaciation, with a peak about 1,600-1,700 years after ice withdrawal. Curry (2020), synthesizing 49 prehistoric rock-slope failures in western Norway, found that the great majority of activity occurred during the Late Weichselian to Early Holocene transition (approximately 13-9 ka), generally within 2 ka of local deglaciation.

These studies do not demonstrate a globally synchronized pulse of catastrophic collapse. Local deglaciation histories, lithology, relief, hydrology, permafrost, seismicity, and slope geometry vary. The relevant prediction is therefore broad temporal clustering on centennial-to-millennial scales across suitable mountain environments, not simultaneity within a year or generation.

Early-Holocene mass movements are also documented in the eastern Mediterranean. The Akdag rock avalanche in southwestern Turkey displaced an estimated 3 × 10^8 m3 of material and has a cosmogenic exposure age of 8.3 ± 1.4 ka. Bayrakdar et al. (2020) interpreted increased water discharge along a carbonate-flysch contact as important to failure and discussed early-Holocene warming, snow and glacier melt, and hydrological change as plausible contributing conditions. This event is not proposed as the source of any specific flood tradition; it demonstrates that very large slope failures occurred in a formerly glaciated Near Eastern mountain setting during the interval relevant to the hypothesis.

3.2 Extreme displacement waves and hazard cascades

The 17 October 2015 Taan Fiord event in Alaska is a key modern analogue. A slope failure at the terminus of Tyndall Glacier sent about 180 million tons of rock into the fjord. The resulting tsunami reached a maximum measured run-up of 193 m, with run-up exceeding 100 m over approximately 1.5 km (Higman et al., 2018). The failure had been conditioned by rapid glacier retreat and ice thinning, although tectonic setting and long-term slope deformation were also important. The event demonstrates that local water elevation hundreds of meters above normal level does not require regional or global sea level to rise by the same amount.

The 28 November 2020 Elliot Creek event in British Columbia provides an even closer analogue for the full proposed cascade. Approximately 18 million m3 of rock descended about 1,000 m, crossed the toe of a glacier, entered a 0.6 km2 glacier lake, and generated greater than 100 m run-up. Water overtopped the outlet, scoured a roughly 10 km channel, deposited debris on a 2 km2 fan, and produced a sediment plume extending more than 60 km into a fjord (Geertsema et al., 2022). The sequence was therefore not simply landslide -> wave; it was landslide -> displacement wave -> overtopping -> outburst flood -> erosion and deposition -> downstream environmental change.

These observations matter for interpretation of traditional flood descriptions. A brief hydrodynamic event can have long-lived consequences. Floodwater may pass in minutes or hours while thick debris, channel relocation, destroyed forest, dammed tributaries, or newly formed lakes make a former settlement or agricultural surface unusable for generations. Narrative statements that a “world” was destroyed therefore cannot be evaluated solely by the duration of standing water.

3.3 The 26 August 2026 Nepal event as a recent analogue

On 26 August 2026, a catastrophic debris flow and flood in Nepal was likely triggered by rapid slope failure involving a glacier in Langtang National Park near the China border. As of its final response update, the U.S. Geological Survey reported that the debris flow and flood travelled approximately 100 km and that the initiating slope failure generated seismic energy equivalent to a magnitude 5.2 earthquake. USGS explicitly cautioned that it was still unclear whether the initial failure was a landslide incorporating glacier ice or a glacier collapse (USGS, 2026). Copernicus emergency mapping described a partial high-altitude glacier collapse or glacier-associated failure descending about 1,200 m and producing a powerful flow of water, mud, and debris downstream (EU Space / Copernicus, 2026).

Two rapidly released EarthArXiv preprints have attempted multi-source reconstruction of the event. Xu (2026) interpreted it as an ice-rock avalanche and transboundary hazard cascade, while Asadollahi (2026) reported remotely sensed precursor changes several days before the event but did not demonstrate an operationally reliable warning threshold. These studies are useful as contemporary context but are not peer reviewed and should not carry the evidentiary weight of the Taan Fiord and Elliot Creek studies.

The Nepal event is nevertheless conceptually important because it illustrates how glacierized-slope failure can evolve into a fast, sediment-rich flood that travels far beyond the source. It also cautions against reducing such disasters to a single trigger such as rainfall. The preliminary multi-sensor assessment of Asadollahi (2026) found that cumulative pre-event precipitation was not anomalously high relative to the selected recent baseline; future analysis may refine the event sequence.

Table 1. Proposed physical-to-narrative diagnostic framework

Physical process	Observable consequence	Potential narrative expression	Diagnostic value
Sudden mass failure	Abrupt onset; roar/seismic shaking	Flood arrives suddenly after mountain disturbance	Moderate
Impact into lake/fjord/valley	Displacement wave; extreme local run-up	Water reaches unusually high slopes or "mountains"	High if local rather than regional
Confined-basin wave propagation	Water may approach from non-normal directions	Water appears to come from below/downstream or from multiple directions	Potentially high, but requires local topographic modeling
Sediment entrainment	Mud, boulders, trees, ice, organic debris	Dark/dirty water; debris-laden destruction	High
Temporary damming and breach	Multiple pulses; delayed secondary flood	More than one destructive surge	Moderate
Aggradation/erosion	Buried or removed valley floor; channel relocation	Old land is lost; survivors relocate	High
Localized catastrophe	Extreme local devastation without global inundation	"Whole world" destroyed from community perspective	Interpretive, not diagnostic

4. Cultural Memory, Oral Tradition, and Geomythology

4.1 Geological events can be culturally retained

Geomythology examines cases in which myths, legends, place names, and oral traditions preserve information about noteworthy landforms or geological events (Vitaliano, 2007). The approach requires caution because narratives can change, merge, acquire moral or cosmological meaning, and travel between communities. Nevertheless, well-documented cases show that geological content can survive substantial cultural transformation.

Nunn and Reid (2016) analyzed Aboriginal Australian stories from 21 coastal locations that describe landscapes inundated by rising seas. By comparing narrative geography with postglacial sea-level reconstructions, they argued that some traditions plausibly preserve observations from approximately 7,250-13,070 calibrated years BP. Their interpretation is debated in the broader problem of dating oral tradition, but the study demonstrates a serious empirical method for comparing cultural memory with independent geological reconstruction.

Other work shows that short-lived catastrophes can also be remembered. Ludwin et al. (2007) compared Native American oral traditions from Cascadia with geological evidence and historical Japanese records of earthquakes, landslides, and tsunamis, concluding that folklore can supplement conventional geological evidence in some cases. Terry et al. (2021) combined oral history on Makin Island, Kiribati, with transported megaclasts and geochronology to argue for a high-magnitude palaeotsunami near the end of the sixteenth century, probably generated locally by submarine slope failure.

4.2 A positive-control ethnographic case: the Alsek River account

A particularly relevant positive-control case appears in John R. Swanton's 1909 Smithsonian Bureau of American Ethnology volume Tlingit Myths and Texts. In the account titled "The Alsek River People," two hunters on a neighboring mountain look back and see a great flood overwhelm a town beside a lake. The narrative explicitly states that the flood was caused by an avalanche entering the lake and forcing the water out; bodies are described as caught in tree branches. Elsewhere in the same account, a glacier descending with a rush is said to raise a wave that throws salmon ashore (Swanton, 1909).

The cultural framing includes shamans, spirits, and moral causation, but the physical sequence avalanche -> lake displacement -> flood -> settlement destruction remains recognizable. This is important because it demonstrates the possibility at issue rather than merely assuming it: a mass-movement-generated displacement flood can enter oral tradition while retaining core process information.

This case is not evidence that the Alsek tradition dates to terminal-Pleistocene deglaciation, nor that other flood traditions have the same origin. It functions as a process positive control: the proposed class of event is known to be narratable, memorable, and culturally transformable.

4.3 Oral histories of GLOFs as methodological analogues

Byers et al. (2020) used oral histories, remote sensing, field evidence, and numerical modeling to reconstruct historical GLOFs in the Kanchenjunga Conservation Area of eastern Nepal. Local informants described at least six major events since 1921, and remote sensing confirmed those six while identifying two additional smaller events. For the Nangama event, modeling suggested an approximately 800,000 m3 ice-and-debris avalanche generated a surge that breached a terminal moraine and released about 11.2 ± 1.4 million m3 of water. This interdisciplinary work illustrates how human memory can help identify high-mountain flood events while independent geomorphic methods test the account.

The methodological lesson is central to the present hypothesis: narrative evidence should not be treated as self-validating. It becomes scientifically useful when linked to independently testable topography, deposits, chronologies, and process models.

5. The Deglacial Mass-Movement Flood Tradition (DMFT) Hypothesis

The proposed causal chain is:

- Global and regional deglaciation produces retreating glaciers, changing permafrost, hydrology, stress fields, and exposed over-steepened terrain.
- In susceptible settings, glacier, ice-rock, or rock-slope failures occur immediately or after a delay of centuries to millennia.
- Failures enter a lake, fjord, river, or confined valley, generating a displacement wave and/or directly entraining water and sediment.
- The moving mass amplifies through erosion, damming, breach, tributary blockage, or downstream water entrainment, producing a debris-rich flood cascade.
- Communities occupying valley floors, lake margins, or downstream alluvial surfaces experience sudden extreme inundation and long-term loss of habitable land.
- Event memory is transmitted culturally and may later merge with religious, moral, genealogical, or literary traditions.

The DMFT hypothesis makes three negative claims equally important to its positive claim. First, it does not require a single worldwide flood. Second, it does not predict that all flood traditions should have a glacial or mass-movement origin. Third, it does not imply that narrative details can be read literally as quantitative hydrological measurements.

Its distinctive prediction is statistical and geographical: after controlling for cultural genealogy and alternative hazards, flood traditions associated with formerly glaciated mountain catchments should contain a higher frequency of mass-movement-compatible features than appropriate comparison traditions from non-glaciated, non-mountain settings.

6. Pilot Comparative Framework

A full global test requires a pre-registered or otherwise predefined coding protocol and a much larger corpus than assembled here. Table 2 therefore presents a pilot set of cases chosen to demonstrate how positive controls, alternative-mechanism controls, disputed cases, and candidate traditions should be separated. It is descriptive and should not be interpreted as a statistical result.

Case	Independent geological constraint	Cultural record	Role in testing	Key caution
Alsek / Tlingit (Swanton, 1909)	Narrative itself specifies avalanche into lake; region is strongly glaciated	Ethnographic oral tradition	Positive control for narratability of mass-movement flood	Event age and exact geological correlate not established
Kanchenjunga, Nepal (Byers et al., 2020)	Remote sensing, field evidence, modeling of GLOFs	Oral histories of 20th-century events	Methodological positive control	Recent historical memory, not deep-time tradition

Case	Independent geological constraint	Cultural record	Role in testing	Key caution
Makin, Kiribati (Terry et al., 2021)	Megaclast transport and dating; local submarine slope failure favored	Giant-wave oral tradition	Positive control for geology + oral history	Marine, not deglacial
Australian coastal traditions (Nunn & Reid, 2016)	Postglacial sea-level curves	21 coastal story groups	Alternative-mechanism control	Slow/episodic coastal inundation differs from mass-movement flood
Jishi Gorge / Yu tradition (Wu et al., 2016)	Proposed landslide-dam outburst flood ca. 1920 BCE	Chinese Great Flood tradition	Cautionary disputed candidate	Geological magnitude, dating, and historical linkage disputed (Han, 2017; Wu et al., 2017)
Near Eastern flood complex	Known Pleistocene glaciation in Taurus-Zagros; no specific causal event yet identified	Atrahasis, Gilgamesh XI, Genesis 6-9	Primary candidate group	Strong literary genealogy; geological source unproven

7. Near Eastern Flood Traditions as a Case Study, Not a Proof

7.1 Geological setting

The northern and northeastern margins of Mesopotamia are bordered by the Taurus-Zagros mountain system. Wright (1962) documented Pleistocene glaciation in Kurdistan, including high mountain sectors of southeastern Turkey and northern Iraq that separate the Anatolian-Iranian plateaus from the Mesopotamian lowland. More recent syntheses confirm widespread Late Quaternary glaciation in the Turkish mountains and retreat into the Holocene, with paraglacial processes becoming active as glaciers receded (Altinay et al., 2020).

This geography is sufficient to make a deglacial mountain-hazard source physically conceivable for communities in or downstream of the northern Fertile Crescent. It is not sufficient to identify a specific event. A credible causal argument would require mapped late-Pleistocene or early-Holocene mass-movement deposits, evidence that the failure interacted with a water body or river network, robust dating, hydrodynamic reconstruction, and archaeological evidence of human exposure.

7.2 Literary dependence must be respected

The biblical Noah narrative is not an independent member of a global statistical sample. Mesopotamian flood narratives precede and parallel Genesis in important structural elements. Critical editions of Atrahasis and the Babylonian Gilgamesh Epic document the older Near Eastern flood-story tradition, and modern biblical scholarship treats Genesis 6-9 as literarily connected to earlier Mesopotamian flood traditions (Lambert and Millard, 1969; George, 2003; Carr, 2020).

Accordingly, Atrahasis, Utnapishtim/Gilgamesh, and Noah should be analyzed as a related narrative complex. Similarities among them cannot be counted as multiple independent confirmations of a geological mechanism.

7.3 Features that are compatible, neutral, or problematic

Several features of the Near Eastern flood complex are compatible with a catastrophic mass-movement flood but are not uniquely diagnostic:

- Sudden catastrophic inundation is compatible with a displacement or debris flood but also with river avulsion, dam failure, storm surge, or tsunami.
- Association with a vessel and survival can arise in many flood environments and is therefore weak geological evidence.
- Association with high ground or mountains is compatible with extreme local run-up or post-disaster relocation, but is also a common narrative motif.
- Long-term loss of the former inhabited landscape is compatible with deep aggradation, erosion, and channel reorganization; it does not require water to remain at peak level for the full duration of social disruption.
- Water described as coming from both above and below can be compared with complex flood sources, but in Genesis such language also has cosmological and theological functions and must not be reduced to hydraulics.

The strongest current weakness is the absence of a securely dated, process-matched geological event in the Taurus-Zagros / northern Mesopotamian region that can be connected to the transmission history of the Near Eastern flood narrative. Until such evidence exists, the Noah case remains a candidate application of the broader DMFT hypothesis, not confirmation of it.

8. Falsifiable Predictions and Research Program

The DMFT hypothesis can be tested with the following predictions:

- Geographical enrichment: independently transmitted flood traditions from formerly glaciated mountain catchments should show more mass-movement-compatible features than matched controls from low-relief non-glaciated regions.
- Process-specific motifs: extreme local run-up, debris transport, channel-blocking, multi-pulse flooding, anomalous approach direction, and permanent burial or abandonment should be more discriminating than generic motifs such as “much water,” “rain,” or “a boat.”
- Geological co-location: strong candidate traditions should coincide with mapped large mass-movement deposits, palaeolake/fjord margins, outburst pathways, or high-energy flood deposits.
- Chronological plausibility: geological event ages should precede the earliest recoverable form of the tradition and be compatible with known human occupation. A match obtained only by broad millennial overlap is weak evidence.
- Cultural independence: apparent global similarity should weaken after genealogically related traditions and historically transmitted motifs are clustered rather than counted separately.
- Negative controls: regions with long-lived flood traditions but no plausible glacial or mass-movement setting should be explainable by alternative mechanisms; if they show the same supposed diagnostic pattern at equal frequency, DMFT is weakened.
- Deposit signature: candidate mass-movement floods should leave sedimentological or geomorphic signatures distinct from ordinary overbank floods, such as outsized clasts, erosional trimlines, chaotic diamicton, buried surfaces, backwater deposits, or abrupt channel reorganization.

9. Alternative Explanations and Major Limitations

The hypothesis competes with several well-supported alternatives. Postglacial sea-level rise can permanently inundate occupied coastal landscapes and has been linked to long-lived Australian oral traditions (Nunn and Reid, 2016). Earthquake tsunamis and submarine landslides can generate extreme waves without any glacial connection (Ludwin et al., 2007; Terry et al., 2021). GLOFs can occur without large rock-slope collapse. Major alluvial-river floods and avulsions can devastate lowland settlements. Different mechanisms may also be blended into a single tradition over time.

Cultural transmission is a major confounder. Similar narrative motifs can spread by migration, trade, conquest, literary borrowing, missionary activity, or translation. A geographically wide motif is therefore not automatically independent evidence for geographically wide geological events. Statistical analyses must use cultural-genealogical clustering or other methods to reduce pseudo-replication.

Chronological uncertainty is even more serious. Geological deposits may be dateable to decades or centuries, whereas the origin of an oral tradition is usually not. Nunn and Reid (2016) provide an important argument for very long persistence of some traditions, but such longevity cannot be assumed in every culture. The hypothesis is strongest when independent geological, archaeological, linguistic, and ethnographic constraints converge.

Confirmation bias is a particular risk because dramatic flood narratives contain many flexible motifs. The coding scheme must therefore be fixed before evaluating a large corpus, ambiguous features must be recorded as unknown rather than forced into agreement, and investigators should include traditions expected not to match. The disputed attempt to connect the Jishi Gorge outburst flood with China’s Great Flood illustrates the need for this caution: the original geological-historical claim (Wu et al., 2016) was challenged on flood magnitude, chronology, and textual interpretation (Han, 2017; Wu, W. et al., 2017), followed by a published response (Wu, Q. et al., 2017).

Finally, deglaciation should not be described as a single instantaneous global trigger. Climate and glacier retreat were globally connected but regionally asynchronous, and large-slope failure can lag ice retreat substantially. A successful DMFT model therefore predicts a broad hazard interval, not a calendar date shared by all traditions.

10. Discussion

The main value of the DMFT hypothesis is that it combines several independently established observations without requiring any one of them to carry the entire argument. Deglaciation can destabilize mountain slopes; large slope failures can create displacement waves and debris floods of apparently “mythic” vertical scale; such floods can permanently transform inhabited terrain; and geological disasters can enter cultural memory. The novel step is to ask whether these processes were sufficiently recurrent during deglacial landscape adjustment to leave a detectable signature in the distribution and content of flood traditions.

The model also resolves an important scale problem. A local 100-200 m run-up does not imply that a continent or planet was covered by 100-200 m of additional water. An observer may truthfully report water reaching far up a mountainside while the event remains confined to a fjord, lake, or valley. Likewise, a short-lived wave can produce centuries of social consequence if the valley floor is deeply buried or the river network is reorganized.

The distinction between event duration and landscape persistence is particularly important. Modern hazard terminology separates landslide, tsunami, debris flow, outburst flood, and sediment plume, but affected communities experience a cascade as one catastrophe. The culturally retained object may therefore be “the flood” even when the initiating cause was a slope failure and the long-term damage was predominantly sedimentary.

The hypothesis also accommodates heterogeneity among flood traditions. Australian coastal-inundation traditions may preserve postglacial sea-level rise; Cascadian traditions can preserve earthquake-tsunami experience; Kiribati tradition may record a local submarine-slope-failure tsunami; other traditions may be literary or cosmological. DMFT does not compete by insisting on one universal cause. It predicts one identifiable subclass within a plural causal landscape.

For the Near Eastern flood complex, the appropriate next step is not additional textual matching but targeted geomorphology. Candidate corridors in the Taurus-Zagros and adjoining highlands should be screened using mapped Pleistocene glacier extent, high-resolution topography, landslide inventories, palaeolake evidence, and downstream archaeological settlement data. Cosmogenic exposure dating and sedimentology could then determine whether any large deglacial collapse-flood cascades coincide with occupied catchments. A null result would be informative and would weaken application of DMFT to the Noah/Gilgamesh complex without invalidating the broader global hypothesis.

11. Conclusions

Modern observations establish that glacier-associated and rock-slope failures can generate displacement waves with run-up exceeding 100 m, evolve into debris-rich flood cascades, and permanently modify valley landscapes. Independent Quaternary research shows enhanced rock-slope-failure activity after deglaciation in several mountain regions, often with delayed peak activity. Geomythological research and ethnographic examples demonstrate that geological catastrophes, including mass-movement-generated floods, can be retained in cultural memory.

On this basis, the Deglacial Mass-Movement Flood Tradition hypothesis is physically plausible and scientifically testable: some extraordinary flood traditions may derive in part from repeated, regionally asynchronous glacier and mountain-collapse floods during the terminal Pleistocene and early Holocene. The hypothesis does not require a single global flood and should not be used to identify any specific tradition with a specific geological event without independent chronological and geomorphic evidence.

The most decisive future test is a preregistered comparative analysis that codes flood traditions independently of geological setting, clusters genealogically related narratives, and compares them with reconstructions of former glacier extent and dated mass-movement/flood deposits. The hypothesis should be rejected or substantially narrowed if the predicted geographical and process-specific associations are absent.

Data and Materials Availability

No new field, laboratory, or human-subject data were collected for this Version 1.0 manuscript. All evidence is drawn from cited published literature, institutional reports, and public-domain ethnographic sources. A future version should archive the comparative coding dataset and search protocol in a versioned repository (e.g., Zenodo or Figshare) before inferential statistical analysis.

Ethical and Interpretive Note

Indigenous and traditional narratives are culturally situated knowledge, not merely geological data points. This paper uses only previously published accounts and does not claim authority over community interpretations. Future research should prioritize collaboration with knowledge-holding communities, respect restrictions on sacred or sensitive narratives, and avoid replacing cultural meanings with geological reductionism.

Competing Interests

The author declares no competing interests.

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The author used OpenAI ChatGPT for English-language drafting, literature organization, manuscript formatting, and editorial assistance. The AI system is not an author and cannot take responsibility for the work. Scientific claims, citations, interpretations, and the decision to submit remain the responsibility of the human author. This disclosure may be revised to match the policy of any later peer-reviewed journal.

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Appendix A. Proposed Coding Form for a Future Global Test

Each tradition should be coded from a source selected before geological classification is revealed to the coder where feasible. Use 1 = present, 0 = explicitly absent, ? = not stated/uncertain. “Not stated” must not be treated as absent.

- Narrative identifier and cultural/community attribution
- Earliest known recording date and source quality
- Cultural-genealogical cluster / known transmission links
- Approximate geographic origin and catchment
- Sudden onset (1/0/?)
- Extreme local water elevation / high run-up (1/0/?)
- Water from anomalous direction or apparent upstream movement (1/0/?)
- Mud, boulders, trees, ice, or heavy debris explicitly described (1/0/?)
- Multiple flood pulses or dam/breach sequence (1/0/?)
- Survival on mountains or high ground (1/0/?)
- Permanent burial, destruction, relocation, or abandonment of former land (1/0/?)
- Vessel/raft survival (1/0/?) - low diagnostic weight
- Rain as primary cause (1/0/?) - low diagnostic weight
- Independent geological setting: former glacier extent, mass-movement inventory, lake/fjord/valley geometry
- Candidate event age(s) and dating method
- Alternative mechanism(s): river flood, sea-level rise, earthquake tsunami, volcanic tsunami, GLOF, storm surge
- Overall evidentiary status: positive control / candidate / alternative-mechanism control / disputed / unusable

Appendix B. Search Terms Used in the Version 1.0 Scoping Review

- “deglaciation” AND “rock-slope failure”
- “paraglacial rock-slope stability”
- “landslide tsunami” AND glacier
- “ice-rock avalanche” AND flood
- “glacial lake outburst flood” AND oral history
- “flood legends” AND glacial
- “geomythology” AND flood
- “oral tradition” AND tsunami AND geology
- “Pleistocene glaciation” AND Taurus OR Zagros OR Kurdistan
- “Great Flood” AND landslide dam AND China

This search was targeted rather than exhaustive. A future statistical version should use a preregistered systematic search across bibliographic databases and an archived screening log.