

Arctic climate perturbations during recovery from world's worst mass extinction

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Following the latest Permian extinction (LPE), the most severe in Earth history, normal marine ecosystems did not recover for another 5-9 million years. Here, we show that widespread nutrient stress in the photic zone off NW Pangea reduced marine productivity during the early Triassic hothouse climate, prolonging the recovery of the marine ecosystem after the LPE event. Parallel, hothouse climate during this early Triassic biotic crisis caused intense weathering onshore, a fact that is evident on the Norwegian mainland. Fractured and kaolinitized weathered basement rocks have been discovered in various wells off the Norwegian coast and inferences on timing, source to sink relationships, and environmental implications are here discussed. K-Ar geochronology based on in-situ formed illite in well-developed and preserved supergene weathering profiles corroborate a Triassic hothouse climate and suggest a causal relationship between intense chemical weathering, high atmospheric CO₂ concentration, extreme ocean warming, delayed biotic recovery, increased riverine flux of nutrients and widespread anoxia/euxinia at high northern latitudes during a time of rapid global climate perturbations.