

GROUP 2: PLANETARY THREATS (78 Causes)

(Events originating from Earth's systems, spanning regional to global scales)

2A: Geophysical & Volcanic (18 Causes)

- 1. Crustal Shifts and Deformations**
- 2. Continental Drift**
- 3. Massive Valley/Fjord Landslides**
- 4. Explosive Eruptions (VEI 6–7, Non-Caldera)**
- 5. Limnic Eruptions ('Killer Lakes')**
- 6. Regional Explosive Volcanic Eruptions (VEI 5–6)**
- 7. Kimberlite Pipe Explosions**
- 8. Cessation of Earth's Rotation**
- 9. Methane Release from Shale Fracking**
- 10. Tectonic Plate Gas Bursts**
- 11. GLOFs: Sudden Glacial Lake Outburst Floods**
- 12. Submarine Volcanic Instability & Tsunamis**
- 13. Megatsunamis (Subduction or Massive Landslides)**
- 14. Rupture Risk of Artificial Glacial Dams**
- 15. Human-Induced Seismicity**
- 16. Supervolcano Eruption (Toba/Yellowstone Analogs)**
- 17. Supercontinent Formation & Mountain Chains**
- 18. Massive Submarine Volcanism**

2B: Climatic & Environmental (60 Causes)

- 1. Accelerated Sea-Level Rise**
- 2. Severe Ocean Acidification**
- 3. Carbonic Acid Buildup**
- 4. Widespread Oceanic Anoxia/Euxinia**

5. Surge in Fires in Non-Adapted Ecosystems
6. Forest Pest Outbreaks (Bark Beetles, Defoliators)
7. Elevated UV Radiation from Ozone Depletion
8. Flash Droughts
9. Global Increase in Lightning-Induced Fires
10. Lethal Wet-Bulb Heat (Critical WBGT)
11. Rapid Anthropogenic Climate Change
12. Abrupt Polar Jet Stream Shifts
13. Drastic Atmospheric Changes
14. Drastic Atmospheric Chemistry Shifts
15. Drastic Ocean Chemistry Shifts
16. Sudden Sea-Level Jumps
17. More Intense Tropical Cyclones
18. Accelerated Greenland Ice Sheet Collapse
19. AMOC Collapse
20. Antarctic Ice Shelf Collapse
21. Antarctic Sea Ice Collapse
22. Severe AMOC Weakening
23. Global Freeze
24. Accelerated Desertification
25. Permafrost Thaw Damaging Critical Infrastructure
26. Permafrost Carbon Emissions
27. Rain-on-Snow Sudden Melt Events (ROS)
28. Global Ocean Deoxygenation
29. Universal Flood (Reframed as Mega-Flood)
30. Accelerated Coastal Erosion

- 31. Severe Soil Erosion & Degradation**
- 32. Ice Ages**
- 33. More Frequent Extreme ENSO Events**
- 34. Ocean Carbon Sink Failure**
- 35. Harmful Algal Blooms**
- 36. Extreme Coastal Marine Hypoxia (Acute Events)**
- 37. Large-Scale Peatland Fires**
- 38. Mega-Regional Wildfires**
- 39. Antarctic Glacier Instability (Thwaites/Amundsen)**
- 40. West Antarctic Ice Sheet Instability**
- 41. Saline Intrusion into Coastal Aquifers**
- 42. Regional Salinization from Sea-Level Rise**
- 43. Widespread Extreme Flooding**
- 44. Regional Methane Clathrate Release**
- 45. Mega-Floods from Storm Surge + Extreme Rain**
- 46. Prolonged Megadroughts**
- 47. Lethal Heatwaves in Megacities**
- 48. Widespread Marine Heatwaves**
- 49. Global Dimming Events**
- 50. Arctic Albedo Loss from Sea Ice Melt**
- 51. Loss of Cryoconite & Polar Microbiomes**
- 52. Tropical Andes Glacier Loss**
- 53. Antarctic Sea Ice Loss & Circulation Shifts**
- 54. Loss of Seasonal Snow Cover**
- 55. Ocean Circulation Disruptions (Non-AMOC)**
- 56. Monsoon Disruption by Aerosols/GHGs**

57. Tropical Forest Carbon Feedbacks

58. Accelerated Multi-Year Sea Ice Retreat

59. Mountain Glacier Retreat

60. Ocean Salinization & Salt Consumption Risks

61. Salinization & Loss of Irrigated Soils