Table 1 | The ‘Big Five’ mass extinction events

<table>
<thead>
<tr>
<th>Event</th>
<th>Proposed causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ordovician event</td>
<td>Onset of alternating glacial and interglacial episodes; repeated marine transgressions and regressions. Uplift and weathering of the Appalachians affecting atmospheric and ocean chemistry. Sequestration of CO₂.</td>
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<tr>
<td>The Devonian event</td>
<td>Global cooling (followed by global warming), possibly tied to the diversification of land plants, with associated weathering, pedogenesis, and the drawdown of global CO₂. Evidence for widespread deep-water anoxia and the spread of anoxic waters by transgressions. Timing and importance of bolide impacts still debated.</td>
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<tr>
<td>The Triassic event</td>
<td>Activity in the Central Atlantic Magmatic Province (CAMP) thought to have elevated atmospheric CO₂ levels, which increased global temperatures and led to a calcification crisis in the world oceans.</td>
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<tr>
<td>The Cretaceous event</td>
<td>A bolide impact in the Yucatán is thought to have led to a global cataclysm and caused rapid cooling. Preceding the impact, biota may have been declining owing to a variety of causes: Deccan volcanism contemporaneous with global warming; tectonic uplift altering biogeography and accelerating erosion, potentially contributing to ocean eutrophication and anoxic episodes. CO₂ spike just before extinction, drop during extinction.</td>
</tr>
</tbody>
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Mry, million years; Kyr, thousand years.


   This paper discusses the definition of mass extinctions and mass depletions, and the relative role of origination versus extinction rates in causing the diversity reductions that characterize the Big Five.


