

The Great Dying: the extinction of life at the end of the Permian (P-Tr) 250 million years ago.

250 million years ago the world underwent the “great dying”. Over 90% of life on this planet vanished. Many major geological species, like trilobites, disappeared. Just what caused this extinction is still open to public debate.

The Cause of the end-Permian Extinction: Three Theories

There are three leading theories that attempt to explain what happened at the end of the Permian. The main theories are: the impactor (bolide) theory, the volcanism theory and the anoxia theory. (1)

1. Impactor

The impactor theory is inspired by the success of the Alvarez's explanation for the end-Cretaceous catastrophe. Clearly the impact from this asteroid or comet caused an extraordinary catastrophe for many organisms. Obviously, according to impactor advocates, an even larger impactor would have the energy to do even greater damage to the biosphere. Consequently, the impactor theory has had a strong appeal and needs to be examined.

The problem with the impactor proposal, however, is that there has been no evidence to support it. There is no iridium layer, as found at the Cretaceous-Tertiary boundary. There is no accepted evidence for shocked quartz. There are no microtektites -- or the clay spherules which the microtektites by now would have weathered into. There are no tsunami deposits that record a great impact in the ocean. No impact crater has been located.

2. Volcanism

The second theory regarding the cause of the end-Permian catastrophe is the volcanism theory. Unlike the impactor theory, the volcanism theory starts with extraordinarily good evidence. The Siberian Traps eruptive event was a large event. There has been little doubt that Traps volcanism was somehow involved with the end-Permian catastrophe.

There have been continuing suggestions that Traps volcanism could have been triggered by an impact. Again, this is not an unreasonable proposal. Impactors do have extraordinary destructive power.

3. Ocean Anoxia – lack of oxygen/increase in hydrogen sulfide.

Several studies have indicated that the Late Permian to Early Triassic Ocean was partially or even significantly anoxic (lacking in oxygen). The anoxia constituted the cause of the end-Permian extinction. Oceanic anoxia is an excellent mechanism for killing off aerobic marine organisms. A lack of oxygen caused sulfur-reducing bacteria to dominate the seas causing the release of hydrogen sulfide that killed off many marine species.

Validity of the information communicated to the public.

Information that is presented comes mainly from reputable geological sources. The US geological society produces sources that explain the geology in layman's terms. Wikipedia has good resources as well. The resources on the internet are written by geologists and are therefore correct and valid. (2)

Conclusion:

There is no doubt that the Earth suffered a major extinction event at the end of the Permian. (250ma). What caused it is still up to negotiation. I think it was caused by the Siberian Traps because we can still see evidence of them today. (3)