

How do Archean impacts fit into biblical earth history?

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The Archean Eon is that period in conventional earth science between about 4.0 to 2.5 Ga ago. Within the past several decades, conventional scientists have discovered evidence of enormous impacts in the Archean in South Africa and Western Australia.¹ This is based on finding widespread spherules, platinum group elements, and other impact indicators. The discovery was very controversial at first, but even skeptics have become convinced that the spherules and other evidence are indeed from large impacts.² The volcanic and sedimentary rocks that contain the spherule layers are many kilometres thick. The spherule layers have been dated by secular scientists to between 3.47 and 2.49 Ga; thus, the Archean date.³ The number of impacts and their size has not yet been determined.

The S2 Archean impact in South Africa

A recent report has claimed that the spherule layers represent 16 major Archean impacts of bolides over 10 km in diameter.⁴ The report focused on one of the spherule layers, the S2 layer, in South Africa, which was found in six structural belts; i.e., the layer was widespread. Researchers estimated that the bolide was 37 to 58 km in diameter and would have destroyed much of the microbial life believed to be on earth at that time: “Numerous studies

have shown that large impacts have severe consequences for the surface environment and, thus, can potentially severely affect life.”⁵ But they also have concluded that life was only temporarily affected, since they find microbes above the impact debris.

Other Precambrian impacts

About 30 impacts also struck in the Proterozoic Eon (2.5 Ga to 542 Ma conventional years ago).⁶ Two were very large: the Sudbury impact in southern Ontario, Canada (figure 1), conventionally dated 1.85 Ga ago⁷ and the Vredefort impact of South Africa (figure 2), dated about 2.0 Ga ago.⁸ So, there were impacts all throughout the Precambrian from the Paleoproterozoic to the Neoproterozoic.

The possible devastation of the Vredefort and Sudbury impacts

The Sudbury bolide is believed to have been 20 km in diameter and the Vredefort bolide, 28 km in diameter. Conventional researchers believe these two bolides would likely have destroyed the surface of the continents. The air blast and fireball would have directly destroyed around 15% of the continental surface.⁹

Moreover, the blast would have sent debris and vapour on ballistic

trajectories over much of the earth.^{10,11} The vapour would have condensed into spherules. The debris and spherules that did not overcome the earth’s gravity would have accelerated toward the earth and hit the top of the atmosphere at velocities a little less than the escape velocity. Strong heating to around 1,600 K would have resulted and radiated upward and downward. It appears that the infrared radiation would have been enough to cause global wildfires by first igniting lichen, grass, pine needles, etc.^{10,12} The optical depth from the impact and wildfire soot would have shrouded the earth in total darkness, stopping photosynthesis. The submicron particles would have caused an impact winter that would last for years. Acid rain and air pollution would have been intense. The ozone shield would have mostly disappeared. It is probable that that these two impacts, alone, not to mention Archean impacts, would have destroyed the surface of the earth. Such possible devastation helps us pinpoint when such impacts occurred in biblical earth history.

How do creation scientists explain Precambrian impacts?

There are three possible times in biblical Earth history to place the Proterozoic and Archean impacts: 1) during Creation Week,^{13,14} 2) between Creation Week and the Flood,¹⁵ and



Figure 1. The almond-shaped Sudbury impact melt structure, Ontario, Canada

Image: Vesta, Wikimedia / Public Domain



Image: NASA Earth Observatory, Wikimedia / Public Domain

Figure 2. The upturned central portion of the Vredefort impact structure, South Africa

3) during the Flood.¹⁶ Number 2 can be eliminated right away, since Precambrian impacts would likely have destroyed all life after creation and before the Flood, and we know this did not happen.

Those who place the large impacts during Creation Week place them in Day 1 or 2, thinking then they would then not destroy life. However, impacts on Day 1 or 2 would have had effects lasting beyond Day 2, unless God miraculously stopped the devastation. Furthermore, other Mesoproterozoic and Neoproterozoic impacts⁶ would likely have to be placed on Day 3 or afterwards in this Creation Week scenario. These would not have caused global destruction, but would have regionally devastated life.

Moreover, Precambrian impacts during Creation Week also bring up several question. First, a major theological question: why would God

have bombarded Earth with dozens of huge impacts on Days 1 and 2, and small- to moderate-sized impacts after Day 2, during His supernatural, *very good* creation? Second, would there even have been a planet Earth to strike? Whatever earth means on Days 1 and 2, it was covered by the waters below.

In light of all these challenges, it seems much more straightforward that the impacts struck very early in the Flood. Early Flood impacts would have profound implications for a model of the Flood and can potentially explain many geologically perplexing features.¹⁶

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