

UPPER EOCENE IMPACT/SPHERULE LAYERS: A STATUS REPORT

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The late Eocene was a time of major climatic and biological change on Earth. At least two major impacts took place during this period of time as evidenced by the 100 km diameter Popigai structure in Northern Siberia and the 90 km diameter Chesapeake Bay structure. The best way to determine whether or not these impact events played some role in the late Eocene biological and climatic changes is to find the ejecta layers from these impacts in marine deposits that also record the biological and climatic changes. There are at least two (some researchers say at least eight) impact/spherule layers in upper Eocene marine sediments: 1) the North American (N.A.) microtektite layer and 2) the clinopyroxene-bearing (cpx) spherule layer. Earlier studies indicated the N.A. microtektite layer was confined to the Gulf of Mexico, Caribbean Sea, and NW Atlantic area, but recent studies indicate that it might extend down to the Atlantic section of the Southern Ocean and into the eastern equatorial Indian Ocean. This layer appears to be associated with the Chesapeake Bay structure. The cpx spherule layer has been found in every ocean basin and may be global in extent; however, some researchers believe that they belong to at least two layers. Some, or all, of the cpx spherules may be associated with the Popigai structure. Present data indicate that the upper Eocene microtektite/spherule layers are not directly associated with any major biological or climatic changes, but research on this subject is continuing.