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# A terrestrial analogue for Mars Fluidized Ejecta Blankets (FEB)

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Fluidized ejecta blankets (FEBs) first described from Mars images acquired by the 1976 Viking missio et al., 1977. Carr et al. (1977) noted that FEBs are not found on Mercury or the moon, which lead propose two possible fluidization mechanisms: entrainment of atmospheric gasses or incorporation o volatiles such as water. Subsequent discoveries of FEBs on Venus, Mars, Ganymede, and Earth provid tant new insights into their formation processes. The question remains on the mechanisms of formation volatile rich deposit (i.e. atmospheric versus volatile rich target rock). Chicxulub impact crater was for shallow ocean on a volatile rich target rock, which makes it a prime candidate for FEBs. The Chicxulu crater is located in the Yucatan Peninsula Mexico and it has a diameter of 200 km (Ocampo et al., 19 and Ocampo, 1999; Pope et al., 1999). The FEB flows closely resemble pyroclastic flow and surge (Sheridan, 1979). The overall close similarities between the Chicxulub FEB deposits and pyroclastic suggest similar emplacement mechanisms. Nevertheless, such similarities do not help confirm what the ing agent was, since trapped atmospheric gases, volatiles de-gassed from the ejecta, or both could be i While it is clear that the atmosphere played an important role in formation of the Chicxulub FEB, the fluidized flow may well have been augmented significantly by volatiles de-gassed from the ejecta.

Chicxulub ejecta composed of altered glass, accretionary lapilli, and pebble-sized carbonate clasts a in the Cayo District of central Belize, about 475 km southeast of the Chicxulub impact crater cen ejecta layer, particular well preserve FEB is found near the town of Armenia , is about 5 m thick a on a deeply weathered Cretaceous land surface. Overlying the bed with glass and lapilli is a 5-m-thi of limestone pebbles and cobbles, which contain altered glass and shocked quartz in the matrix. Th interpreted as a FEB with accretionary lapilli as ejecta deposited by the rapidly expanding vapor plu may contain carbonate condensates. The overlying pebble and cobble bed may be a later deposit conta worked ejecta, or a lateral extension of the coarse ejecta beds found in northern Belize. This outcrop i Belize of thick vapor plume deposits $\sim$500 km from Chicxulub emphasizes the importance of volatile These volatiles may have included significant amounts of $CO_2$ and perhaps $SO_2$ from the carbonate an rocks, but probably also included a large amount of water vapor. Thus the Chicxulub data suggest t atmospheres and crustal water play a role in FEB formation. The best model for FEBs may be one from pyroclastic flows, not mud or debris flows.

This work looks into characterizing the geological signatures of this Chicxulub FEBs that could ser recognition of impacts deposits in water-rich terrain.

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