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BRECCIA-FILLED PIPES: DISTINGUISHING BETWEEN VOLCANIC AND NON-VOLCANIC ORIGINS

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Some vertical cylindrical bodies of breccia are breccia-filled volcanic pipes, some may form when caves collapse, some result from solution of evaporite pipes, and some are produced by various other mechanisms.
Convergent landforms are those formed by different processes but with the same surface expression: an example is the surface expression of breccia pipes. We can also think of convergent structures, for breccia pipes have section and plans that may be very similar, yet formed by completely different mechanisms.

There is a spectrum from obvious volcanic phenomena to obvious collapse phenomena, but some breccia-pipes are difficult to interpret. Besides volcanism and collapse, many different origins have been proposed. Hydrothermal alteration, closely related to volcanic gas eruption, is associated with many breccia pipes that are thought to form in the first place by collapse into limestone caves, which seems a remarkable coincidence. The rock mechanics and mechanisms of collapse seem incapable of producing the largest breccia pipes, which are over a kilometre deep.

KEY WORDS: Breccia, Pipe, Diatreme, Sinkhole, Collapse, Eruption, Hydrothermal.

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