

## Comparative and planetological approach on debris flow deposits on Earth and Mars

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Runoff features including possible recent flows on walls of impact craters have been considered as geomorphic evidence for martian groundwater. These features may be results of debris flows mixed with a significant amount of water, however, other volatile activity such as CO<sub>2</sub> permafrost is also suggested. Decompressed CO<sub>2</sub> permafrost may generate a vapor-lubricated grain flow or gas supported fluidized flows of rocks. We review recent developments on debris flow studies on Earth to discuss the possibility to constrain a source of a flow from the morphologic evidence. Also we will discuss advantages of studies of martian debris flows against those on Earth to draw a statistical image of a debris flow deposition and to understand its flow mechanism.