



Magnetic dating of storm floods, jökulhlaups and tsunamis

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A new method using the remanent magnetization of flood boulders is presented that can be used to date paleo-floods and can help distinguish between storm floods and tsunamis, as well as constrain recurrence frequencies of jökulhlaups.

The method is based on the fact that boulders that are transported and rotated by a flood slowly become re-magnetized as the time passes post-flood. The blocking temperature of this remanent magnetization can be determined in the lab and be used to calculate the age of the flood. Compared to other dating methods such as cosmogenic radionuclide dating it has the advantage that no exposed surface is required, and contrary to previous magnetic dating methods the accuracy has been improved by using a continuous thermal demagnetization technique and novel rock magnetic experiments, giving a clearly understanding of the rate at which a flood boulder acquires a re-magnetization after emplacement.

In order to assess the performance of the new dating method, it has been applied to (1) jökulhlaups in Iceland, (2) storm floods in Scotland, and (3) a tsunami in Cape Verde, spanning a range of timescales from tens of years to tens of thousands of years. Preliminary results of these events are presented, along with a proposed protocol to follow for the application of magnetic dating of flood boulders.