

Ground Penetrating Radar Imaging of Moisture and Water movement in volcanic soil

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Ground Penetrating Radar is a non-invasive subsurface method that provides results on the dielectric properties of the ground between 0 and 30 m on average in sediments. Working from sediments from Mt Unzen in Japan, tests over the moisture content and the air content change were conducted on the material in order to infer further data during field measurement. The GPR used in the survey is a Ramac Mala mounted with an antenna of 800 Mhz and a stack signal over time. The data were processed using Matlab using data filtering and time-depth conversion, and calculation of the dielectric properties variations. The signal analysis shows that the velocity does change over time depending on the moisture content and the change in air/void ratio. For a given homogeneous material, like at volcanoes, multiplying such analysis is a step forward the development of relatable tables for various environments.

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