

Estimation of emplacement temperatures of pyroclastic flow deposits based on H/C ratios of carbonaceous woods

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Laboratory experiments for estimation of emplacement temperatures of pyroclastic flow deposits were carried out using carbonaceous wood chips formed in volcanic ash heated to high temperatures in an electric furnace. The range of temperature investigated was 280 to 830 deg. C, in steps of c. 25 deg. In one group of experiments, wood chips and ash were heated to maximum temperature, and were then slowly cooled. The following equation was obtained: $\log T(\text{deg.C})=2.45-0.56 \times \log(\text{H/C})(\text{atomic ratio})$. In a second group of experiments, wood chips were held at constant temperature for 3 days, yielding the equation $\log T=2.46-0.62 \times \log(\text{H/C})$. Estimation of emplacement temperatures from natural carbonaceous wood in pyroclastic flow deposits are consistent with results gained from paleomagnetic study.