



## **The impact of deforestation and forest fire on the subsurface temperatures**

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Concern about global warming and temperature changes during the last century brought to the attention of the borehole climatology community the need to examine the International Heat Flow Commission database for evidence of recent climate change. Changes in the Earth's surface energy balance arising from non-climatic effects, are also recorded in the subsurface. These non-climatic perturbations appear superimposed on the subsurface signature of climatic changes. In this study we examine the effects of two types of land-cover changes on borehole temperature data: deforestation and forest fire. We implement a correction method for borehole temperature data to account for the effects of deforestation previously described by Nitoiu and Beltrami (JGR, in press) and we modify it to account for the effects of forest fire on the subsurface temperatures. The ground surface temperature variation following deforestation and forest fire is simulated using a combined power and exponential function, based on data obtained from a chronosequence study of the evolution of the forest floor organic matter mass. The application of this correction to the borehole temperature data from areas affected by land-cover changes may allow their incorporation into climatological studies