

# A modeling of splash height time series in hot pond

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Physical parameters which control time series pattern of splash height are discussed.

Summary of observations at active vent in Oyunuma pond, Goshogake geothermal area on the east of Akita-Yakeyama volcano, northeastern Japan, revealed these facts;

1. Greater splash height of boiling appears at lower water level in the crater. Abrupt burst are occurred among steady boiling.

2. Smaller splash height appears at higher water level. Only steady boiling is observed.

3. Water level varies significantly and precipitation response is rapid.

In order to model the time series pattern of the splash height of boiling, a simple model is introduced. A lidded pot with boiling water constitutes the model. Steam pressure of boiling drives the lid against atmosphere pressure and gravity. Simultaneous nonlinear differential equations are derived for lid height and inner pressure of the pot. Relation of flux and pressure is referred Ida (1996). Numerical solutions are obtained for the equations under assumption of constant steam supply. The solution presents that the mass of the lid controls amplitude and period of both lid height and inner pressure variations. The time series patterns successfully reproduce the features of actual boiling of hot pond.