Geophysical Research Abstracts, Vol. 7, 01522, 2005
SRef-ID: 1607-7962/gra/EGU05-A-01522

Numerical modelling of magma chamber fracture

J. Gray

Department of Physics and Astronomy, University of Leicester, United Kingdom.
(James.Gray@astro.le.ac.uk)

The formation of cracks around magma chambers and their relation to caldera collapse will be discussed. Starting from the basic physics and causes of caldera collapse events, the suitability of the Smoothed Particle Hydrodynamics (SPH) numerical method for studying such systems will be examined by application to simple two-dimensional systems. A fracture model is introduced which allows for the study of the effects of brittle fracture. The classical view of caldera formation by ring faults due to tensional stresses is considered. We find that fracture development depends in a complex way on the geometry of the chamber together with the history of country rock tension and sudden jumps in the chamber pressure.