



Abstract Details

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Title: High Resolution Monitoring and Thermal Modelling of the 2001-2003 lava flow episode at Puʻu Ōʻo, Hawaii, observed by ASTER spaceborne radiometer

Abstract:

- Session NH4 - The Japanese payload ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) is one of the five sensors onboard the TERRA polar platform launched in December 1999 from the Vandenberg base, USA. It provides high resolution data (15 to 90m) in three wavelength intervals spreading from Visible/Near Infrared (3 channels), Short Wavelength Infrared (6 channels) and Thermal Infrared (5 channels). Data are processed at ERSDAC (Earth Remote Sensing Data Analysis Center), Japan. Availability of as much as 12 high-resolution Infrared channels suggested that ASTER would be effective in the detection, monitoring and inverse modelling of thermal volcanic features ranging from fumarole fields to active lava flows. Here we exploit the full payload potential in a multi-temporal, partly automated experiment encompassing the whole 2001-2003 part of the Episode 55 lava flow from Puʻu Ōʻo in the South Zone of Hawaii. Fourteen scenes are used for the thermal modelling of the flow, including mapping of overflows, high-resolution location of the active parts of the flows, instantaneous temperature mapping and radiant-heat flux eruption rate determination. These results indicate that automated post-processing of high-resolution Infrared satellite observation is mature for the strategic management of lava flow emergencies.

Presentation Mode: Oral

Keywords: remote sensing, inverse modelling, lava flow, emergency management, eruption rate, simulation

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