Geophysical Research Abstracts
Vol. 13, EGU2011-8886, 2011
EGU General Assembly 2011

An unmanned aerial system for thermal observation

Stefania Amici (1), Maria Fabrizia Buongiorno (1), Emanuele Luigi De Angelis (2), Fabrizio Giulietti (2), and Matteo Turci (2)

(1) Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy (stefania.amici@ingv.it), (2) Università di Bologna, II Facoltà di Ingegneria, 47100 Forlì

Responders to natural disasters - such as volcanic eruptions - typically employ aircraft or helicopter reconnaissance flights with human crewmembers. Due to the unpredictable environmental conditions during the eruptive event, risk levels for human crew may reach a critical point which prevent flights in the area near the vent; under such conditions, Unmanned Aerial Vehicles (UAVs) may permit monitoring and surveillance tasks without any risk for human operators. To first explore the operational aspects of UAV deployment over volcanoes, an experimental R/C UAV flew over Stromboli volcano (Sicily, Italy) in 2004.
The present work describes the state of the art and the first results of flight test activities of the RAVEN-INGV project, developed by the National Institute of Geophysics and Volcanology (INGV) in a close cooperation with the University of Bologna.
The project is divided in three phases: 1) design and development of the airborne platform, 2) design and development of the flight control system (autopilots, data link and ground station), 3) definition and development of on-board sensors for volcano monitoring.
The RAVEN-INGV aircraft is equipped with visible and IR cameras. The IR camera will allow the detection of thermal anomalies during an eruption, while both the devices will help to monitor lava flow dynamics and surface temperatures: features that are, of course, useful in the post-crisis phase for damage assessments.