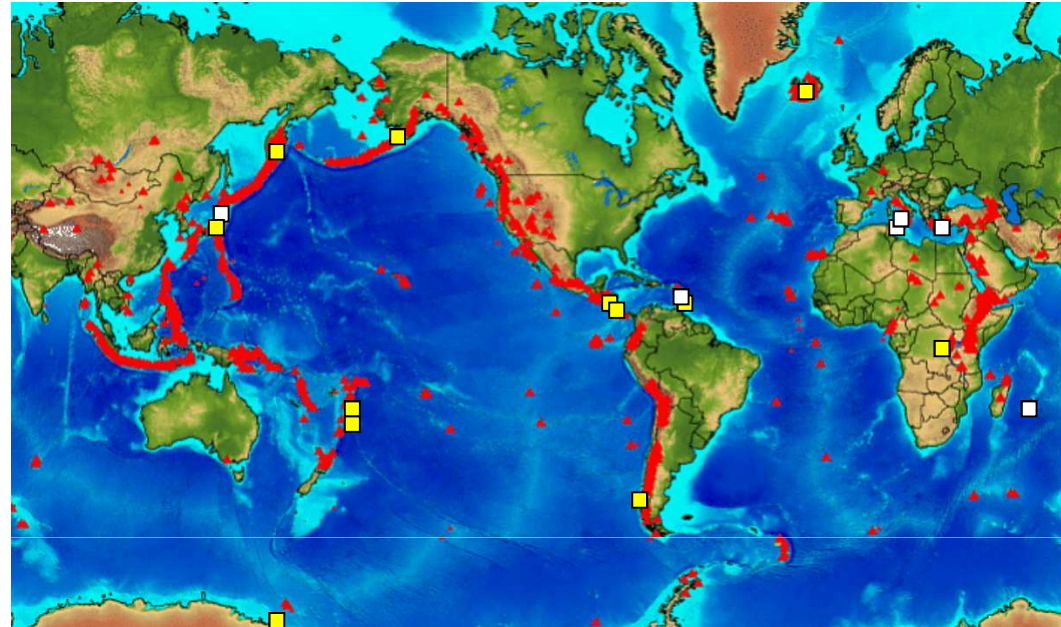


# RU 18 (Università di Palermo - UniPa)

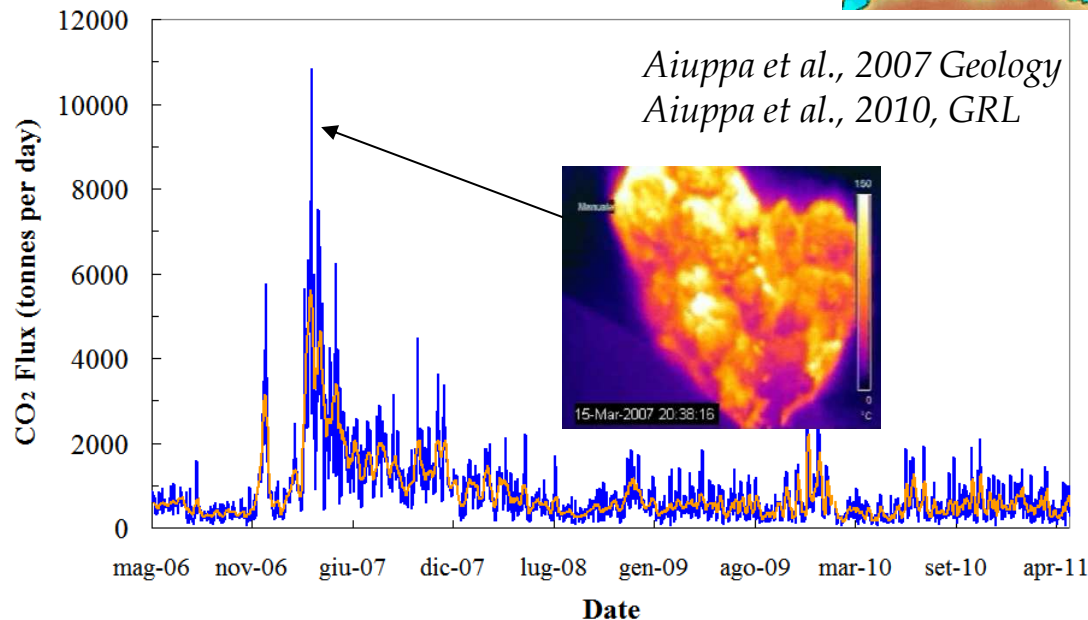


- UniPa+INGV team with > 10 year experience on *new techniques/models for real-time gas observations* at active volcanoes (ERC-Starting grant on this topic, PI A. Aiuppa)

- *Main development: The Multi-GAS, a custom-made instrument for detection of H<sub>2</sub>O, CO<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub> and H<sub>2</sub>S concentrations in volcanic plumes; increasingly used worldwide in surveys and permanent installations at volcano observatories*



■ surveys  
□ Volcano installations



- *Science output: Experimental evidence for the CO<sub>2</sub> flux as a mid-term (days) precursor to basaltic explosions (e.g., Stromboli)*

**Key personnel:** Alessandro Aiuppa (scientist-in-charge), Mariano Valenza, Giancarlo Tamburello, Franco Parello: (UniPa) Sergio Gurrieri, Marco Liuzzo, Gaetano Giudice (INGV- Sezione di Palermo)

• **Task 5.10: Monitoring gas emissions of volcano volatiles**

- Field deployment of a permanent gas monitoring system (MultiGAS; to measure in-plume water, carbon and sulfur species) at Hekla volcano.
- Prior to the field deployment (**May 2013**), instruments need to be adapted to work in the high latitude environment.
- prototype installed on June 2012, but iced in late September (NEED OF COMMON FUTUREVOLC EFFORTS)

**GOALS**

- (i) to first characterize volcanic degassing at one of Iceland's most active volcanoes (expanding the **limited dataset** that now exists);
- (ii) to verify the existence of any **gas precursor** tracking deep magma ascent prior to an eruption, e.g., precursory CO<sub>2</sub> flux increases;
- (iii) first systematic **inter-comparison** of volcanic gas data with seismic and geodetic datasets.

(Chalmers leads, UNIPA develops and installs the MultiGAS, IMO works with field deployment and maintenance)



Courtesy R.Yeo/E. Ilyinskaya

**WT2:  
List of Deliverables**

Deliverable Number <sup>61</sup>	Deliverable Title	WP number <sup>63</sup>	Lead beneficiary number	Estimated indicative person-months	Nature <sup>62</sup>	Dissemination level <sup>63</sup>	Delivery date <sup>64</sup>
D5.3	Volcanic gas and river water chemistry	5	8	27.00	R	PU	36

• *Task 7.1: Development and implementation of new near-real time to real time source monitoring systems*

- Development and preparation of quick-deployment, portable version of the Multi-GAS;
- to be rapidly deployed (within 1 day) at volcanic systems which have started showing independent signals of unrest, or where an eruption has commenced;
- Site preparation at each volcano (identifying suitable locations related to plume transport direction, telemetry and accessibility)



**GOALS**

*(i) During an ongoing eruption, these measurements will allow **quantification of the total volatile flux**; and, by scaling to known pre-eruptive volatile contents in melts (from melt inclusions), will allow to obtain independent estimates of **magma degassing budgets** (e.g., volumes of degassing - shallow circulation - magma per unit time)*

**WT2:**  
**List of Deliverables**

Deliverable Number <sup>61</sup>	Deliverable Title	WP number <sup>63</sup>	Lead beneficiary number	Estimated indicative person-months	Nature <sup>62</sup>	Dissemination level <sup>65</sup>	Delivery date <sup>64</sup>
D7.6	Gas release and volatile budgets	7	18	19.00	R	PU	36