

Andrea Gabrieli

Mobile: +1 (808) 304 2499

Email: gabrieli@higp.hawaii.edu

*Hawai'i Institute of Geophysics and Planetology
University of Hawai'i at Mānoa
1680 East-West Road, POST 512
Honolulu, HI 96822, USA*

Remote sensing geophysics PhD student. Experienced in **hyperspectral infrared imaging, radiative transfer algorithms, image processing, and spectral analysis with Matlab.**

EDUCATION

**Sep 2014-now University of Hawai'i at Mānoa
PhD in Geophysics**

Special Achievements:

- My research results were featured twice on Thinktech Hawai'i Television on May the 30th, 2016 (<https://www.youtube.com/watch?v=bjvKpCt-rJY>) and September the 26th, 2016 (<https://www.youtube.com/watch?v=b7FhqD07YtY>).
- I was invited to talk about magma chambers on Thinktech Hawai'i Television on May the 30th, 2016 (<https://www.youtube.com/watch?v=BHE5QCg3vJQ>).
- I was selected to report live from the American Geophysical Union meeting in San Francisco for ThinkTech Hawai'i TV on December the 14th, 2016 (<https://www.youtube.com/watch?v=aqcQVJUFPHw>)

NASA-funded focused research program, which aims to develop new remote sensing instruments for small satellite applications. These include:

- Development of thermal hyperspectral imaging technology for small satellite applications: retrieving atmospheric path-concentrations of trace gases, monitoring crops characteristics, as well as soil properties, remote identification of minerals, and detection of camouflaged targets in military applications.
- Testing how hyperspectral thermal imaging can be used to detect and quantify volcanic emissions.
- Examining the atmospheric, environmental and health impacts of volcanic gas emissions.
- Developing Radiative Transfer Inversion Algorithms to derive trace gas path-concentrations from Thermal InfraRed hyperspectral data.

**2013-Aug 2014 Lancaster University
MSc in Volcanology and Geological Hazards (with Distinction)**

Special Achievements:

My dissertation: "volcano-tectonic interactions as triggers of volcanic eruptions" was awarded:

- **The Geologists' Association of the United Kingdom 2015 MSc Curry Award**
- **The Lancaster University 2014 Best MSc Dissertation Award**

Broad topic course, which covered physical processes of volcanic eruptions and their management, which has enabled me to develop:

- Excellent knowledge of remote sensing, geophysics, disaster management and environmental hazards
- Competence to professional standards in using MatLab for programming and analyzing geophysical data.
- Ability to collect geophysical data in the field and use remote-sensing techniques.
- Expertise in FEM modelling physical volcanic phenomena by studying volcano-tectonic interactions at magma chambers and rheology of lava flows
- Good understanding of the physical dynamics and composition of the atmosphere and volcanic plumes dynamics

2010-2013 University of Milano

Bachelor Degree in Physics (A level)

During my dissertation project (seasonal variation of the measure of soil fundamental resonant frequency), I have gained:

- Deep knowledge of seismic noise signals spectral analysis with MatLab working on absolute spectral content of seismic noise.
- Experience in using seismic stations and managing yearlong data sets of seismic recordings
- Knowledge of local sedimentary geology of a fluvial plain studying the Po plain

Special Achievement:

Final thesis was accepted for publication by the European Geosciences Union (EGU) General Assembly 2013

RELEVANT WORK EXPERIENCE

Sep 2014-now HIGP (Hawai'i Institute of Geophysics and Planetology)

US research, technology development and teaching-based organization that investigates geological and geophysical processes on the Earth and throughout the Solar System

2013 IDPA-CNR

(Nov-Apr) (Institute for the Dynamics of Environmental Processes - National Research Council)

Italian research-based organization that carries out quantitative research in seismology, geodynamics and environmental geophysics.

I analysed 2 years long seismic noise recordings to investigate a peculiar seasonal variation of the fundamental frequency of the soil evaluated by H/V ratio method. I correlated such variation to the general climatic conditions and to the global pattern of the wave field in the range 0.1-1 Hz in accordance with the analysed literature

VOLUNTARY EXPERIENCE

2016 Invited to serve as a Senior Research Judge at the 59th State of Hawai'i Science and Engineering Fair

2013-2014 Meteorological data collector for the UK's MET Office at the Lancaster University's Hazelrigg Weather Station. Gained ability working with data-sets and sending them to the UK's Met Office on a weekly basis

2013 Selected to be an interpreter volunteer at the Hawai'i Volcanoes National Park

2007-2013 Astronomy lecturer at the Planetarium of Milano. I developed my public-speaking abilities by teaching classes on a bi-weekly basis either to senior expert members of the Planetarium and to general public tailoring my lectures according to the audience

OTHER COMPETENCIES

Languages Italian: mother tongue
English: excellent conversational and written English

Photography My Stromboli volcano picture was chosen by Prof. Steve McNutt as the front cover of the International Association of Volcanology and Chemistry of Earth's Interior (IAVCEI) 2013 volcano calendar. (January, 2013)
And my "Halema'uma'u with MilkyWay" picture was selected and published by the American newspaper Sky&Telescope. (June, 2011)

Referee details:

- Prof. Rob Wright: wright@higp.hawaii.edu
- Prof. Lionel Wilson: l.wilson@lancaster.ac.uk
- Prof. Alberto Marcellini: a.marcellini@idpa.cnr.it

Published and In Press Papers:**Scientific Papers**

- Gabrieli, A.**, J.N. Porter, R. Wright, P.G. Lucey (2017). *Validation Studies of the Accuracy of Various SO₂ Gas Retrievals in the Thermal InfraRed (8-14 μm)*. (IN PRESS in Bulletin of Volcanology).
- Gabrieli, A.**, R. Wright, J.N. Porter, P.G. Lucey (2017). *Applications of quantitative thermal InfraRed hyperspectral imaging (8-14 μm): investigating volcanic plume characteristics and SO₂ fluxes*. (IN PREPARATION)
- Gabrieli, A.**, R. Wright, P.G. Lucey, H. Garbeil, E. Pilger, J.N. Porter, M. Wood. (2016). *Characterization and initial field test of a long wave thermal infrared hyperspectral imager for measuring SO₂ in volcanic plumes*. Bulletin of Volcanology, DOI: 10.1007/s00445-016-1068-6.
- Wright, R., P.G. Lucey, S. Crites, H. Garbeil, M. Wood, E. Pilger, **A. Gabrieli**, and C. Honnibal. (2016) *TIRCIS: thermal infrared compact imaging spectrometer for small satellite applications*. Proc. SPIE 9880, Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques and Applications VI, 98801K (August 19, 2016); doi:10.1117/12.2224311
- Gabrieli, A.**, L. Wilson, S. Lane. (2015). *Volcano-Tectonic Interactions as Triggers of Volcanic Eruptions*. Journal of the Geologists' Association, UK. DOI: 10.1016/j.pgeola.2015.10.002
- Crites, S.T., R. Wright, P.G. Lucey, J. Chan, **A. Gabrieli**, H. Garbeil, K.A. Horton, A.K.R. Imai-Hong, E.J. Pilger, M. Wood, L. Yoneshige. (2015) *The Thermal Infrared Compact Imaging Spectrometer (TIRCIS): A follow-on to the Space Ultra Compact Hyperspectral Imager (SUCHI)*. Sensors and Systems for Space Application IX – SPIE [9469-26]. DOI:10.1117/12.2185649
- Wright, R., P. Lucey, S.T., Crites, **A. Gabrieli**, H. Garbeil, M. Wood. (2015). *Thermal InfraRed Compact Imaging Spectrometer (TIRCIS): Instrument Update and Preliminary Volcanic Gas Composition Measurements*. [Online]. Available at: <https://esto.nasa.gov/forum/estf2015/presentations/Wright_S4P6_ESTF2015.pdf>.

Abstracts and Posters:

- Gabrieli, A.**, R. Wright, J.N. Porter, P.G. Lucey (2017). *Imaging volcanic SO₂ and CO₂*. (Abstract and Poster for AGU Session: xxxx Volcanology, Geochemistry, and Petrology General Contributions).
- Gabrieli, A.**, R. Wright, J.N. Porter, P.G. Lucey (2017). *Validation Studies of the Accuracy of Various SO₂ Gas Retrievals in the Thermal InfraRed (8-14 μm)*. (Abstract and Poster for IAVCEI2017-Portland Conference).
- Gabrieli, A.**, R. Wright, P.G. Lucey, J.N. Porter, C. Honnibal, H. Garbeil, M. Wood. *Validation Studies of the Accuracy of Various SO₂ Gas Retrievals in the Thermal InfraRed (8-14 μm)* (Abstract and Poster for AGU Session: V11C Volcanology, Geochemistry, and Petrology General Contributions: Monitoring and Volcanic Processes)
- Wright, R., P.G. Lucey, S.T. Crites, H. Garbeil, M. Wood, E. Pilger, C. Honnibal, **A. Gabrieli**. (2016) *Enabling High Spectral Resolution Thermal Imaging from CubeSat and MicroSatellite Platforms Using Uncooled Microbolometers and a Fabry-Perot interferometer*. (Abstract and Poster for AGU Session: A41H The Rise of Small Satellite Constellations for Earth Observation)

- Gabrieli, A.**, R. Wright, P.G. Lucey, H. Garbeil, E. Pilger, J.N. Porter, M. Wood. (2015) *Characterization and initial field test of a long wave thermal infrared hyperspectral imager for measuring SO₂ in volcanic plumes* (Abstract and Poster for AGU Session: V043 Volcanology, Geochemistry and Petrology General Contributions, Dec. 2015).
- Porter, J.N., **A. Gabrieli**, R. Wright. (2015). *Trace Gas Inversion For InfraRed Spectra (TGIF-IRS)*. (Abstract and Poster for AGU Session: V043 Volcanology, Geochemistry and Petrology General Contributions, Dec. 2015)
- Tento, A., **A. Gabrieli**, A. Marcellini. (2013) Seasonal variation of the measure of soil fundamental resonant frequency. (Abstract for EGU General Assembly 2013, held 7-12 April, 2013 in Vienna, Austria, id. EGU2013-10005)