Scott Thomas Henderson

Earth & Space Sciences Research Associate
eScience Postdoctoral Fellow
Website: http://scottyhq.github.io

University of Washington
Johnson Hall, ATG - 219a
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Profile

Ph.D. in Geological Sciences with several years of industry and government work experience. Expertise in satellite remote sensing, geospatial data analysis, and international collaborations. Research interests in monitoring and mitigation of terrestrial natural hazards, including volcanoes, earthquakes and landslides.

Education

Ph.D. Geological Sciences	**Cornell University** (May 2015)	Ithaca, NY
B.A. Physics, *Cum Laude*	**Lewis & Clark College** (May 2008)	Portland, OR

Work Experience

eScience Data Science Postdoctoral Fellow (2017 - present)

Location: University of Washington, Seattle, WA

Designing near-real-time scalable processing and database storage of radar imagery for earthquake, volcano, and landslide monitoring in the Pacific Northwest. Implementing unsupervised classification and transient detection of earth surface movements in geodetic imagery.

Postdoctoral Researcher (2016 - 2017)

Location: Universidad de los Andes, Bogotá, Colombia

Investigated surface deformation with Sentinel-1 Interferometric Synthetic Aperture Radar (InSAR) and finite element modeling. Developed tools for natural hazard and aquifer monitoring in Colombia.

Geophysicist (2015 - 2016)

Location: Chevron Energy Technology Company, Houston, TX

Processed 2D and 3D active-source seismic data for onshore and offshore exploration. Investigated limits of imaging fracture systems using finite difference wave-propagation code.

Ph.D. Researcher (2008 - 2015)

Location: Cornell University, Ithaca, NY
Thesis: Quantifying the properties of magmatic intrusions in the Central Andes with geodesy

Generated maps of two decades worth of surface deformation measurements in the Andes of Chile, Peru, Bolivia, and Argentina; modeled magmatic reservoirs with inverse and finite element models based on deformation data; published results in several peer-reviewed journals.

Physical Science Technician (2008 - 2009)

Location: US Geological Survey (USGS) Cascade Volcano Observatory, Vancouver, WA

Developed a graphical user interface for 2D and 3D numerical models of debris-flows, incorporated into a USGS official software release.

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Awards and Grants

-- NASA Earth & Space Science Graduate Research Fellowship (2010 - 2013)

-- Cornell University Long Fellowship & Meyer-Bender Memorial Award (2009, 2014)

-- Phi Beta Kappa (2008)

Technical Skills

-InSAR processing (ISCE, GMTSAR)

-Numerical programming (Python, Matlab)

-Finite element modeling (Pylith, Comsol)

-Version control software (Git/Github)

-GUI development (Python)

-Open-source GIS (GDAL, GMT, QGIS)

-Cloud computing platforms (AWS)

-Technical Blog

Selected Publications

Henderson, S. T., M.E. Pritchard, Time dependent deformation of Uturuncu Volcano, Bolivia constrained by GPS and InSAR measurements and implications for source models, *Geosphere* (In Press)

Henderson, S. T., F. Delgado, J.E. Elliott, M.E. Pritchard, T. Lopez, Decelerating uplift at Lazufre Volcanic Center, Central Andes, from 2010-2016, and implications for geodetic models, *Geosphere* (In Press)

Gottsmann, J., Blundy, J., ***Henderson, S.T.***, Pritchard, M.E., and Sparks, R.S.J., (2017), Thermo-mechanical modeling of the Altiplano-Puna deformation anomaly: Multiparameter insights into magma mush reorganization: Geosphere, v. 13, no. 3, p. 1–24, doi:10.1130/GES01420.1.

Perkins, J. P., Finnegan, N.J., ***Henderson, S.T.,*** Rittenour, T.M. (2016) Topographic constraints on magma accumulation below the actively uplifting Uturuncu and Lazufre volcanic centers in the Central Andes, *Geosphere, 12(4):1078,* doi:10.1130/GES01278.1

Henderson, S. T. (2015). Quantifying the properties of magmatic intrusions in the Central Andes with geodesy. Cornell University, Ph.D. Thesis.

Reid, M.E., Christian, S.B., Brien, D.L., and ***Henderson, S.T.,*** (2015), Scoops3D: Software to analyze 3D slope stability throughout a digital landscape: *U.S. Geological Survey Techniques and Methods*, book 14, chap. A1, 218 p., doi:10.3133/tm14A1.

Pritchard, M. E., ***Henderson, S.T.,*** Jay, J.A., Soler, V., Krezesni, D., Button, N.E., Welch, M., Semple, A., Glass, B., Sunagua, M., Minaya, E., Amigo, A., and Clavero, J., (2014), Reconnaissance earthquake studies at nine volcanic areas of the Central Andes with coincident satellite thermal and InSAR observations: *Bulletin of Volcanology*, 90–103, doi:10.1016/j.jvolgeores.2014.05.004.

Henderson, S. T., and Pritchard, M. E. (2013), Decadal volcanic deformation in the Central Andes Volcanic Zone revealed by InSAR time series, *Geochemistry Geophysics Geosystems*, 14(5), 1358–1374, doi:10.1002/ggge.20074.

Pritchard, M. E., Jay J. A., Aron F., ***Henderson S. T.,*** and Lara L. E. (2013), Subsidence at Southern Andes volcanoes induced by the 2010 Maule, Chile earthquake, *Nature Geoscience*, 6(7), 1–5, doi:10.1038/ngeo1855.

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Service & Outreach

InSAR Short Course Organizer (2016)

Coordinated and taught 3-day Interferometric Synthetic Radar (InSAR) short course at the Cities on Volcanoes 9 IAVCEI conference in Puerto Varas, Chile.

“Supervolcanoes” Museum Exhibit (2010 - 2011)

Designed bilingual (Spanish & English) posters, slideshow, and rock sample displays for the general public in a year-long exhibit at the Museum of the Earth in Ithaca, NY.

Conference Participation

IAVCEI Cities on Volcanoes 9	workshop organizer	2016
STREVA InSAR Workshop	co-organizer	2016
American Geophysical Union (AGU)	3 oral, 4 poster	2009 - 2014

Professional References

*Available upon request

Personal Statement

I am from the Pacific Northwest and draw inspiration from the natural world. I am ceaselessly amazed by the powerful insights provided by earth observation satellites. If I’m considering the view from satellites then I am exploring on ground, whether in my own backyard or abroad!