

CONTACT INFORMATION

New Mexico Institute of Mining and Technology
Department of Earth and Environmental Science
801 Leroy Place
Socorro NM 87801, USA

phone: +1 575 835 5924
mail: rg@nmt.edu
web: www.grapenthin.org

POSITION

Assistant Professor of Geophysics, 2014–present

INTERESTS

Volcanic, hydrologic and tectonic crustal deformation processes, high-rate and real-time GNSS applications, non-traditional GNSS signals, signal processing & time series analysis, inverse methods, software engineering

EDUCATION

- 09/2007 – 07/2012 Ph.D. Geophysics, University of Alaska Fairbanks (UAF), USA
Dissertation: “Volcano Deformation and Subdaily GPS Products”
- 10/1999 – 08/2007 M.Sc. Computer Science, Humboldt-Universität zu Berlin, Germany
Thesis: “CRUSDE: A plug-in based simulation framework for composable CRUSTal Deformation simulations using Green’s functions”

PROFESSIONAL EXPERIENCE

- 08/2012 – 08/2014 *Postdoctoral Employee, Berkeley Seismological Laboratory, UC Berkeley, USA*
Implementation of GPS integrated earthquake early warning (Python, Shell)
Volcano deformation studies in Alaska, Iceland
- 09/2007 – 07/2012 *Research Assistant, Geophysical Institute and Alaska Volcano Observatory, University of Alaska Fairbanks, USA*
Volcano deformation studies in Alaska, Kamchatka and Iceland; volcano monitoring; development of computer programs for data analysis (Matlab, Shell, Perl)
- 03/2006 – 09/2006 *Visiting Student, Nordic Volcanological Center, Iceland*
Forecast elastic crustal response to the Hálslón water reservoir, investigation of seasonal cycles in continuous GPS time series in Iceland (Matlab, C).
- 06/2003 – 07/2007 *Developer/Programmer, Zuse Institute Berlin, Germany*
Redesign of a platform independent museum database system (C/C++, Qt)
- 09/2001 – 12/2002 *Programmer, DaimlerChrysler Research/Technology, Germany*
Multi-Agent-System to analyze supply net relations in the automotive industry (Java)
- 05/2001 – 05/2002 *Developer/Programmer, Skilldeal AG, Germany*
Web application design and development to manage company and employee profiles and administer outsourcing tasks (PHP, MySQL).
- until 2007 *Freelance Programmer, Germany*
Development of several commercial and private websites or webbased projects.

ACADEMIC HONORS AND AWARDS

Student Publication Award 2013, Geophysical Institute, UAF (for [Redoubt paper](#))
Outstanding Student Performance Award 2011, Geophysical Institute, UAF
Geophysical Society of Alaska, Scholarship Award 2010
Alaska Geological Society, Scholarship Award 2010
Best Diploma Thesis in Applied Computer Science: CS Dept. Humboldt Univ. Berlin, 2008
AGU Outstanding Student Paper Award: Geodesy Section, Fall Meeting, 2006.
Erasmus Exchange Programme grant: Háskóli Íslands, Reykjavík, Iceland, 2005.

TEACHING EXPERIENCE (NMT)

Time Series Analysis (GEOP 505) (Spring 2018)

An introductory overview of methods for analyzing temporal and spatial series with an emphasis on scientific applications.

Geophysical Inverse Methods (GEOP 529) (Spring 2015, 2017)

Theory and practice of various techniques of inverting geophysical data to obtain model parameters. Emphasis is on the understanding and use of linear inverse techniques.

Geodetic Methods (ERTH 455 & GEOP 555) (Fall 2015, 2017)

Theory and application of modern geodetic tools to measure Earth's surface deformation with emphasis on GPS and InSAR. Data processing from raw data to kinematic products. Evaluation of signals and modeling of their sources.

Volcanology (ERTH 456 & GEOL 556) (Fall 2016)

Volcanic systems from storage to plume and deposits combined with monitoring and analysis techniques.

Geophysics Journal Club (GEOP 572) (every semester Spring 2015-2017)

Discussion of recent papers of significant relevance to the field or current geologic events.

Complex Systems Seminar (GEOP 572) (Spring 2018)

Exploration of current trends and applications in complexity theory through discussions of general theory and a review of current literature. Offered by Earth Science, Biology, Social Science, Computer Science faculty.

The Earth's Crust (ERTH 203) (Spring 2016)

Basic structural geology and dynamic processes for earth science majors and petroleum engineers.

Earth Science Practicum (ERTH 205) (Spring 2015)

Instruction and practice in computational methods used to solve Earth science problems. Simple ways to describe physical processes mathematically, then approximate them numerically. Introduction to spreadsheets, Matlab, graphics programs. Review of math and statistics.

TEACHING EXPERIENCE (UAF)

Beyond the Mouse – Programming Skills for Geoscientists (GEOS 692) (Fall 2009, 2010, 2011)

I created a new 2 credit course (2009: 1 credit) together with faculty supervisor Jeff Freymueller aimed at geoscience students with little or no programming experience. General introduction to programming and fundamental concepts, Matlab, Shell Scripting, Unix Tools, Generic Mapping Tools, HTML/CSS.

International Volcanological Fieldschool – Lectures on Volcano Deformation (Summer 2009)

Lectures on volcano deformation focusing on data acquisition and source modeling. Aimed at un-

dergraduate and graduate students of volcanology and related fields.

FIELDWORK

2014-now	New Mexico	campaign GPS (SMB, Valles), cont. GPS maintenance
2018	Florida	seismometer installation, tiltmeter installation pending
2016	Antarctica, Erebus	campaign GPS
2014	Antarctica, Erebus	campaign GPS
2014	Iceland	continuous GPS installations
2011	Katmai, Alaska	GPS campaign, International Volcanological Field School
2009-2012	Alaska	Differential GPS campaigns in coastal towns
2009	Kamchatka, Russia	Field school at Mutnovsky and Gorely volcanoes
2008-2010	Kamchatka, Russia	GPS work for volcano deformation (Bezymianny, Karymsky 2008)
2008	Iceland	field assistant, examination of the Skerin ridge, Eyafjallajökull
2007-2012	Alaska	GPS campaigns
2006	Iceland	field assistant, GPS campaigns: Highlands and Skeiðarárjökull

CONTINUOUS GPS/GNSS NETWORKS

2014-now	Iceland	installation, open data, maintenance of 8 stations around Holuhraun eruption (with Icelandic Meteorological Office)
2014-now	New Mexico	open data, maintenance of 4 stations on Socorro Magma Body (2 NMT, 2 Georgia Tech)
2018-now	New Mexico	installation, & maintenance of 7 temporary continuous GPS stations in Mesilla and Rincorn Basins, NM (open data likely Fall 2018)

POPULAR RECOGNITION

March 11, 2011 Tohoku-oki Earthquake Response

- > 80,000 YouTube views of animations of Japan's continuous GPS data showing the evolution of permanent and dynamic displacements generated by the earthquake
- > 37,000 unique visitors of my response website: http://www.grapenthin.org/notes/2011_03_11-tohoku-oki/
- > 5,000 views of invited presentation on slideshare.net:
<http://www.slideshare.net/rgrapenthin/visualization-of-the-seismic-waves-and-permanent-displacements>
- Animations featured in National Geographic video: "Rare Video: Japan Tsunami"
<http://video.nationalgeographic.com/video/news/japan-tsunami-2011-vin>
- Figure showing dynamic features of the event reproduced in Global – The International Briefing, Issue 6, second quarter 2011
- Paper (see Publication 4) covered by OurAmazingPlanet and syndicated outlets: <http://www.ouramazingplanet.com/1960-3d-japan-quake-animation.html>

Kamchatka PIRE Project

- Project was featured in one episode of the 4 part documentary "The Pacific Ring of Fire" for French/German TV station ARTE

Other Research News Coverage

- Paper 11 *The 2014 Mw 6.0 Napa earthquake, California: Observations from real-time GPS-enhanced earthquake early warning* was Science Editor's Choice (Science, Vol. 346, Issue 6214, page 1197) and covered by KQED Science.
- Paper 9 *Volcanic plume height correlated with magma pressure change at Grímsvötn volcano, Iceland* gained significant traction and was covered by Nature News, phys.org, Ars Technica, Live Science and others

In Press

1. *Zhang, Y., M. Person, V. Voller, D. Cohen, J. McIntosh, and **R. Grapenthin**, Hydromechanical Impacts of Pleistocene Glaciations on Pore Fluid Pressure Evolution, Rock Failure, and Brine Migration within Sedimentary Basins and the Crystalline Basement. *in press at Water Resources Research*.

Under Review

1. *Folsom, M., S. Kelley, **R. Grapenthin**, and M. Person, Surface Rebound and Groundwater Temperature Fluctuations at a Municipal wellfield during an Episode of Aquifer Recovery. *in revision for Water Resources Research*
2. Murray, J.R., B.W. Crowell, **R. Grapenthin**, K. Hodgekinson, J.O. Langbein, T. Melbourne, D. Melgar, S.E. Minson, and D.A. Schmidt, Development of a Geodetic Component for the U. S. West Coast Earthquake Early Warning System, *under review at SRL*.
3. **Grapenthin, R.**, S. Hreinsdóttir, and A. van Eaton, Tephra, Water, Hail: The Volcanic Plumes of the 2011 Grímsvötn eruption, Iceland, as seen by GNSS, *under review at GRL*.

In Preparation

1. +Ruhl, C., A. Chung, **R. Grapenthin**, R.M. Allen, and D. Melgar, Ground Motion Estimates in Earthquake Early Warning: Performance with Global Seismic and Geodetic Data Set, *in prep. for JGR*.
2. **Grapenthin, R.**, A. Komjathy, R. Bürgmann, Precursor or No? Review of Earthquake Precursors seen with GNSS in the Ionosphere, *in prep. for SRL*
3. **Grapenthin, R.**, E. D’Anastasio, and S. Hreinsdóttir, GNSS Clips: Cycle slip during the 2016 M_w 7.8 Kaikōura Earthquake, New Zealand. *in prep. for GRL*
4. **Grapenthin, R.** et al., Post-rifting deformation following the 2014 Holuhraun eruption, Iceland, *in prep. for JGR*.

Peer-reviewed

15. Sigmundsson, F., M. Parks, R. Pedersen, K. Jónsdóttir, B.G. Ófeigsson, **R. Grapenthin**, S. Dumont, P. Einarsson, V. Drouin, A.R. Hjartardóttir, M.T. Guðmundsson, H. Geirsson, S. Hreinsdóttir, E. Sturkell, E.R. Heimisson, Áð. Högnadóttir, A. Hooper, K. Vogfjörð, T. Barnie, M. Roberts, *Magma movements in volcano plumbing systems and their associated ground deformation*, In “Volcanic and Igneous Plumbing Systems”, edited by Steffi Burchardt. doi:10.1016/B978-0-12-809749-6.00011-X.
14. **Grapenthin, R.**, M. West, C. Tape, M. Gardine, J. T. Freymueller, Single-frequency instantaneous GNSS velocities resolve dynamic ground motion and basin resonance of the 2016 M_w 7.1 Iniskin Earthquake, Alaska. *SRL*. doi:10.1785/0220170235.
13. +Ruhl, C., D. Melgar, **R. Grapenthin**, and R.M. Allen, 2017. The Value of Real-Time GNSS to Earthquake Early Warning, *Geophys. Res. Lett.*, 44(16), 8311-8319, doi:10.1002/2017GL074502.
12. **Grapenthin, R.**, M. West, and J. T. Freymueller, 2017. The Utility of GNSS for Earthquake Early Warning in Regions with Sparse Seismic Networks, *BSSA*, doi:10.1785/0120160317 (UNAVCO science snapshot on this: unavco.org/science/snapshots/technology/2017/grapenthin.html).
11. **Grapenthin, R.**, I.A. Johanson, R.M. Allen, 2014. The 2014 M_w 6.0 Napa earthquake, California: Observations from real-time GPS-enhanced earthquake early warning, *Geophys. Res. Lett.*, published online, doi:10.1002/2014GL061923, Science Editor’s Choice: Science, Vol. 346, Issue 6214, page 1197.
10. **Grapenthin, R.**, I.A. Johanson, R.M. Allen, 2014. Operational real-time GPS-enhanced earthquake early warning. *J. Geophys. Res.*, 119(10), 7944-7965, doi:10.1002/2014JB011400

9. Hreinsdóttir, S., F. Sigmundsson, M. Roberts, H. Björnsson, **R. Grapenthin**, P. Arason, Th. Árnadóttir, J. Hólmjárn, H. Geirsson, R.A. Bennett, M.T. Gudmundsson, B. Oddsson, B.G. Ófeigsson, T. Villemin, T. Jónsson, E. Sturkell, Á. Höskuldsson, G. Larsen, T. Thordarson, B.A. Óladóttir, 2014. Volcanic plume height correlated with magma pressure change at Grímsvötn volcano, Iceland, *Nature Geoscience*, doi:10.1038/ngeo2044 (News & Views on this: doi:10.1038/ngeo2064, Nature News coverage: doi:10.1038/nature.2014.14498)
8. **Grapenthin, R.**, 2014. CRUSDE: A plug-in based simulation framework for composable CRUSTAL Deformation simulations, *Computers & Geosciences*, 62, 168-177, doi:10.1016/j.cageo.2013.07.005
7. **Grapenthin, R.**, J. T. Freymueller, S. S. Serovetnikov, 2013. Surface Deformation of Bezymianny Volcano, Kamchatka, Recorded by GPS: The Eruptions from 2005-2010 and Long-term, Long-wavelength Subsidence, *JVGR*, 263, 58-74, doi:10.1016/j.jvolgeores.2012.11.012
6. **Grapenthin, R.**, J. T. Freymueller, A. M. Kaufman, 2013. Geodetic Observations during the 2009 eruption of Redoubt Volcano, Alaska, *JVGR*, 259, 115-132, doi:10.1016/j.jvolgeores.2012.04.021
5. **Grapenthin, R.**, 2011. Computer Programming for Geosciences: Teach Your Students How to Make Tools, *EOS*, Vol. 92, Issue 50, pp. 469–470, doi:10.1029/2011E0500010
4. **Grapenthin, R.** and J. T. Freymueller, 2011. The dynamics of a seismic wave field: Animation and analysis of kinematic GPS data recorded during the 2011 Tohoku-oki earthquake, Japan, *Geophys. Res. Lett.*, 38, L18308, doi:10.1029/2011GL048405 – **GRL Editors' Highlight**
3. Ófeigsson, B.G., A. Hooper, F. Sigmundsson, E. Sturkell, and **R. Grapenthin**, 2011. Deep magma storage at Hekla volcano, Iceland, revealed by InSAR time series analysis, *J. Geophys. Res.*, 116, B05401, doi:10.1029/2010JB007576
2. **Grapenthin, R.**, B. G. Ófeigsson, F. Sigmundsson, E. Sturkell, and A. Hooper, 2010. Pressure sources versus surface loads: Analyzing volcano deformation signal composition with an application to Hekla volcano, Iceland, *Geophys. Res. Lett.*, 37, L20310, doi:10.1029/2010GL044590
1. **Grapenthin, R.**, F. Sigmundsson, H. Geirsson, Th. Árnadóttir, V. Pinel, 2006. Icelandic rhythms: Annual modulation of land elevation and plate spreading by snow load, *Geophys. Res. Lett.*, 33, L24305, doi:10.1029/2006GL028081

Significant Reports & White Papers

4. Holt, B., **R. Grapenthin**, A. Borsa, J. Haase, George Hajj, B. Hammond, T. Herring, and H. Martens, 2018. UNAVCO GNSS Data Products Subcommittee Report, prepared for UNAVCO Geodetic Data Services Advisory Committee and UNAVCO Management, 16 pp.
3. **Grapenthin, R.**, T. Fischer, Rick Aster, Jessica Larsen, Craig Cary, and Nelia Dunbar, 2016. A Vision for a Facility Supporting Antarctic Volcano Studies, submitted to NSF & Mount Erebus Research Community.
2. 3 contributions to *The Benefits of Enhanced Earthquake Monitoring and Potential Earthquake Early Warning in Alaska – A Stakeholder Survey*, 2016. Developed by the Alaska Seismic Hazards Safety Commission for the Office of Alaska Governor Bill Walker; http://seismic.alaska.gov/presentations_reports.php
1. **Grapenthin, R.**, and F. Sigmundsson, 2006. Green's Functions and Crustal Deformation - Manual and Examples - Institute of Earth Sciences, University of Iceland, Nordic Volcanological Center, Report 0602, 30 pp.

INVITED PRESENTATIONS

- 08/2018 University of Alaska Fairbanks, Alaska Earthquake Center Seminar
- 02/2018 University of Oregon, Geology Seminar
- 03/2016 Department of Earth and Planetary Science, University of New Mexico, Department Seminar
- 03/2016 ShakeAlert Research Meeting, Caltech, California, USA.
- 11/2015 Earthquake Early Warning in Subduction Zones, UC Berkeley, California, USA.
- 06/2015 EarthScope National Meeting, Stowe, Vermont, USA.
- 04/2015 School of Earth Sci. and Env. Sustainability, Northern Arizona University, Department Seminar

- 03/2014 Department of Terrestrial Magnetism, Carnegie Institution Washington, Department Seminar
- 02/2014 South Dakota School of Mines and Technology, Department Seminar
- 01/2014 New Mexico Tech, Department Seminar
- 10/2013 Cornell University, Department Seminar and Active Tectonics lecture
- 04/2013 University of Oregon, Geology Seminar
- 03/2013 University of Alaska, Seismology Brown Bag Seminar
- 01/2013 Central Washington University, Geology Seminar
- 12/2012 Northern California GPS User Group Meeting
- 07/2012 USGS, Earthquake Science Center Seminar, Menlo Park, CA ([video](#))
- 05/2012 University of Iceland, Nordvulk Seminar, Reykjavik, Iceland
- 05/2012 Humboldt-University, METRIK Seminar, Berlin, Germany
- 03/2012 UC Berkeley, Seismological Laboratory Seminar, Berkeley, CA
- 05/2011 Real-time GPS for Seismology and other Applications Workshop, Austin, TX.

CONFERENCE PRESENTATIONS

* – presented for first author ◦ – invited # – student first author + – post-doc first author

2017–now

- 86. S. Kelley, M. Folsom, **R. Grapenthin**, M. Person, *Groundwater Temperature Rise During Aquifer Recovery at the Buckman Municipal Well Field, Santa Fe, New Mexico*, NM Geological Society Annual Spring Meeting, 13 April 2018, Socorro, USA.
- 85. Sigmundsson, F., M.T. Gudmundsson, S.A. Halldorsson, A. Hooper, V. Pinel, P. Einarsson, M. Parks, B.G. Ófeigsson, K. Jónsdóttir, K. Vogfjörð, **R. Grapenthin**, S. Li, V. Drouin, E.R. Heimisson, H. Geirsson, S. Dumont, *Physical modeling constraints on thickness and geometry of the melt body feeding the 2014-2015 dike and eruption, and the triggering of caldera collapse, in the BÃqqrÃrarbunga volcanic system*, Geoscience Society of Iceland Meeting, March 9, 2018, Reykjavik, Iceland.
- 84. C. Ruhl⁺, D. Melgar, **R. Grapenthin**, R.M. Allen, *Evaluating Geodetic Alarm System Alert Accuracy and Timeliness using Synthetic Earthquakes in Cascadia and California*, UNAVCO Science Workshop, March 27-29, 2018, Broomfield, CO, USA.
- 83. Sigmundsson, F., M.T. Gudmundsson, S.A. Halldorsson, A. Hooper, V. Pinel, P. Einarsson, M. Parks, B.G. Ófeigsson, K. Jónsdóttir, K. Vogfjörð, **R. Grapenthin**, S. Li, V. Drouin, E.R. Heimisson, H. Geirsson, S. Dumont, *Physical modeling constraints on thickness and geometry of the melt body feeding the 2014-2015 dike and eruption, and the triggering of caldera collapse, in the BÃqqrÃrarbunga volcanic system*, UNAVCO Science Workshop, March 27-29, 2018, Broomfield, CO, USA.
- 82. **R. Grapenthin**, S. Li, B. Ófeigsson, F. Sigmundsson, V. Drouin, S. Hreinsdóttir, M. Parks, H. M. Fridriksdóttir, *Post-eruptive Deformation following the 2014 Holuhraun Rift, Iceland*, UNAVCO Science Workshop, March 27-29, 2018, Broomfield, CO, USA.
- 81. **R. Grapenthin**, S. Li, B. Ófeigsson, F. Sigmundsson, V. Drouin, S. Hreinsdóttir, M. Parks, H. M. Fridriksdóttir, *Post-eruptive Deformation following the 2014 Holuhraun Rift, Iceland*, AGU, 11-15 Dec 2017, New Orleans, USA.
- 80. C. Ruhl⁺, D. Melgar, **R. Grapenthin**, R.M. Allen, *Geodetic Finite-Fault-based Earthquake Early Warning Performance for Great Earthquakes Worldwide*, AGU, 11-15 Dec 2017, New Orleans, USA.
- 79.* S. Bilek, A. Luhmann, **R. Grapenthin**, *Karst aquifer characterization using geophysical remote sensing and modeling of dynamic recharge events*, AGU, 11-15 Dec 2017, New Orleans, USA.
- 78. A. Luhmann, S. Bilek, **R. Grapenthin**, J. B. Martin, *Geophysical characterization of karst aquifers using dynamic recharge events*, GSA, 22-25 Oct 2017, Seattle, USA.
- 77.* M. Folsom[#], S. Kelley, **R. Grapenthin**, M. Person, *Surface Rebound and Groundwater Temperature Rise during Aquifer Recovery at the Buckman Municipal Well Field, Santa Fe, New Mexico*, EarthScope Synthesis Workshop: Hydrological Applications of Geodetic Techniques, 25-27 Oct 2017, San Diego, USA.

- 76.* A. Luhmann, S. Bilek, **R. Grapenthin**, J. B. Martin, *Geophysical characterization of karst aquifers using dynamic recharge events*, EarthScope Synthesis Workshop: Hydrological Applications of Geodetic Techniques, 25-27 Oct 2017, San Diego, USA.
75. S. Bilek, A. Luhmann, **R. Grapenthin**, R. Diniakos, E. Morton, E. Alexander, S. Alexander, M. Larsen, J. Green, *Seismic monitoring of karst recharge events – Results from a pilot experiment*, GSA, 22-25 Oct 2017, Seattle, USA.
74. M. Folsom[#], S. Kelley, **R. Grapenthin**, M. Person, *Surface Rebound and Groundwater Temperature Rise during Aquifer Recovery at the Buckman Municipal Well Field, Santa Fe, New Mexico*, Espanola Basin Technical Advisory Group Workshop, 12-13 October 2017, Santa Fe, USA.
73. D. Melgar, C. Ruhl, **R. Grapenthin**, R.M. Allen, *The value and role of GNSS in earthquake and tsunami early warning*, JpGU-AGU, 20-25 May 2017, Makuhari, Japan.
72. C. Ruhl⁺, D. Melgar, **R. Grapenthin**, M. Aranha, R.M. Allen, *Testing a real-time GNSS-based earthquake and tsunami early warning system*, JpGU-AGU, 20-25 May 2017, Makuhari, Japan.
71. C. Ruhl⁺, D. Melgar, **R. Grapenthin**, M. Aranha, R.M. Allen, *Evaluating the Geodetic Alarm System (G-larmS) Performance using Synthetic Earthquakes*, SSA, 18-20 April 2017, Denver, USA.
70. C. J. Ruhl⁺, D. Melgar, R. Grapenthin, M. Aranha, and R. M. Allen, *Evaluating the Geodetic Alarm System (G-larmS) Performance using Synthetic Earthquakes*, Offshore Geophysical Monitoring of Cascadia for Early Warning and Hazards Research, April 3-5, 2017, Seattle, USA.
69. C. Ruhl⁺, **R. Grapenthin**, D. Melgar, M. Aranha, R.M. Allen, *West-Coast Wide Expansion and Testing of the Geodetic Alarm System (G-larmS)*, AGU Fall Meeting, 12-16. Dec 2016, San Francisco, CA, USA.
68. J. Freymueller, J. Elliott, **R. Grapenthin**, *GPS/GNSS for Earthquake, Tsunami and Volcano Hazards: Examples of Assessments, Response, and Real-time Monitoring in Alaska*, AGU Fall Meeting, 12-16. Dec 2016, San Francisco, CA, USA.
- 67.^o Murray, J.R., B. Crowell, **R. Grapenthin**, K. Hodgkinson, T. Melbourne, D. Melgar, S. Minson, D. Schmidt, *Toward incorporation of real-time GNSS data in the West Coast Earthquake Early Warning system*, 11th Joint Meeting U.S.-Japan Natural Resources Panel on Earthquake Research, 16-18. November 2016, Napa, CA, USA.
66. A.J. Luhmann, S.L. Bilek, R.S. Diniakos, E.A. Morton, A. Rinehart, E.C. Alexander, Jr., S.C. Alexander, M. Larsen, J.A. Green, **R. Grapenthin**, G.A. Spinelli, *Delineating karst conduit location using geophysical signals generated during recharge events*, GSA Annual Meeting, 25-28. September 2016, Denver, CO, USA.
65. C. Ruhl⁺, D. Melgar, **R. Grapenthin**, M. Aranha, R.M. Allen, *Fakequakes: Earthquake Rupture Scenarios for California and Cascadia*, SCEC Annual Meeting, 11-14 September 2016, Palm Springs, USA.
- 64.^o Melgar, D., R. M. Allen, S. Barrientos, **R. Grapenthin**, M. Aranha, *Local Tsunami Warnings and the role of high-rate GNSS in Earthquake Early Warning*, Japan Geoscience Union Annual Meeting 2016, 22-26th May 2016.
63. **Grapenthin, R.**, M. Aranha, D. Melgar, R.M. Allen, *Rapid Finite Faults with Real-Time GPS: The Geodetic Alarm System*, SSA Annual Meeting, 20-22. April 2016, Reno, NV, USA.
62. **Grapenthin, R.**, J.T. Freymueller, *The 2016 M_w 7.1 Iniskin, Alaska, Earthquake as seen by High-rate GPS and Early Warning Potential*, SSA Annual Meeting, 20-22. April 2016, Reno, NV, USA.
61. **Grapenthin, R.**, S. Hreinsdóttir, *GPS phase-residual and SNR analysis of the 2010 Eyjafjallajökull and 2011 Grímsvötn ash plumes*, UNAVCO Science Workshop, 29-31. March 2016, Broomfield, CO, USA.
- 60.^o **Grapenthin, R.**, M. Aranha, D. Melgar, R. M. Allen, *G-larmS: Overview and Updates*, ShakeAlert Research Meeting, 14-15th March 2016.

2011–2015

59. **Grapenthin, R.**, S. Hreinsdóttir, M. T. Gudmundsson, *The 2010 Eyjafjallajökull and 2011 Grímsvötn ash plumes as seen by GPS*, AGU Fall Meeting, 14-18. December 2015, San Francisco, USA, #G32A-03 (talk).
- 58.* Aranha, M., **R. Grapenthin**, D. Melgar, R.M. Allen, *Investigations on Real-time GPS for Earthquake Early Warning*, AGU Fall Meeting, 14-18. December 2015, San Francisco, USA, #S33B-2763 (poster).

57. Ófeigsson, B. and 19 others, *Deformation derived from GPS geodesy associated with Bárðabunga 2014 rifting event in Iceland*, AGU Fall Meeting, 14-18. December 2015, San Francisco, USA, #T51G-2998 (poster).
56. Fríðriksdóttir[#], H. and 20 others, *Real-time GPS Monitoring of the 2014-2015 Bárðarbunga Rifting Event in Iceland*, AGU Fall Meeting, 14-18. December 2015, San Francisco, USA, #G41A-1005 (poster).
55. ^o **R. Grapenthin**, I. A. Johanson, and R. M. Allen *Operational Real-time GPS in Earthquake Early Warning*, EarthScope National Meeting, 14-17 June 2015, Stowe, Vermont, USA (talk).
54. Hellweg, M., R.M. Allen, I. Henson, I. Johanson, D. Neuhauser, **R. Grapenthin**, *ElarmS & GlarmS, UC Berkeley's Earthquake Early Warning Algorithms in CISN ShakeAlert*, SSA Annual Meeting, 21-23. April 2015, Pasadena, USA.
53. Hellweg, M., R.M. Allen, I. Henson, I. Johanson, D. Neuhauser, **R. Grapenthin**, *Earthquake Early Performance in the M 6.0 South Napa earthquake: UCB's algorithms ElarmS and GlarmS*, SSA Annual Meeting, 21-23. April 2015, Pasadena, USA.
52. **Grapenthin, R.**, I.A. Johanson, R.M. Allen, *G-larmS: An Infrastructure for Geodetic Earthquake Early Warning, applied to Northern California*, AGU Fall Meeting, San Francisco, Abstract: S32C-06 (talk).
51. **Grapenthin, R.**, I.A. Johanson, R.M. Allen, *The 2014 Mw 6.0 Napa Earthquake, California: Observations from Real-time GPS-enhanced Earthquake Early Warning*, AGU Fall Meeting, San Francisco, Abstract: S33F-4938 (poster).
50. Sigmundsson, F., S. Hreinsdottir, A. Hooper, **Ronni Grapenthin**, E. Heimisson, B. Ofeigsson, E. Sturkell, M. Roberts, M. T. Gudmundsson, A. Hoskuldsson, H. Bjornsson, P. Arason, M. Parks, S. Dumont, and V. Drouin, *Magma flow, eruption column and magma pressure change during 2010 Eyjafjallajökull and 2011 Grimsvötn eruptions, Iceland: Constraints from volcano geodesy on physical models of eruptive processes*, AGU Fall Meeting, San Francisco, Abstract: V34B-02 (talk).
49. Hudnut, K. W., S. Minson, M. Boese, C. Felizardo, I. Johanson, **R. Grapenthin**, B. Crowell, D. Schmidt, J. Murray, M. Lisowski, J. Langbein, D. Smith, D. Determan, V. Thomas, T. Melbourne, *The West Coast Earthquake Early Warning Global Navigation Satellite System Working Group*, AGU Fall Meeting, San Francisco, Abstract: S32C-03 (talk).
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