

John W. "Jack" Holt

University of Texas Institute for Geophysics
John A. and Katherine G. Jackson School of Geosciences
University of Texas at Austin
Austin, Texas 78759
512-471-0487, jack@ig.utexas.edu

Education

- 1997 Ph.D., Geology, California Institute of Technology
Thesis advisors: Joseph Kirschvink, Joann Stock
- 1993 M.S., Geology, California Institute of Technology
- 1988 B.S., Electrical Engineering, Rice University
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Professional Positions

- 2000 - pres **Research Associate**, Institute for Geophysics, University of Texas at Austin
- July, 2004 **Visiting Scholar**, University of Paris, Orsay
- 2003 **Herbert J. Reich Professor of Natural Sciences**, Deep Springs College, CA
- 1998 - 2000 **Research Scientist/Associate V**, Institute for Geophysics, Univ. of Texas
- 1997 - 1998 **Postdoctoral Scholar**, Jet Propulsion Laboratory, Pasadena, CA
- 1988 - 1990 **Member Technical Staff**, Jet Propulsion Laboratory, Pasadena, CA
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Field Experience

- 2004 - 05 Antarctica: Amundsen Sea Embayment, Expedition Leader, airborne geophysics.
- 2001 - 02 Antarctica: Dry Valleys, Ice Stream D, South Pole; airborne radar development.
- 2000 - 01 Antarctica: Vostok; Expedition Leader, airborne geophysics.
- 1999 - 00 Antarctica: Dome C, Ross Embayment; Expedition Leader, airborne geophysics.
- 1998 - 99 Antarctica: Marie Byrd Land, S. Pole; Expedition Leader, airborne geophysics.
- 1998 Amazon Basin, Brazil, airborne optical measurements for satellite calibration.
- 1995 - 98 Baja California, Mexico, thesis research, class field trips.
- 1990 - 97 Death Valley and Mojave Desert, thesis research, class field trips.
- 1993 South Africa and Namibia, thesis research.
- 1990 Belize, airborne SAR calibration deployment.
- 1989 Scotland, airborne SAR calibration deployment.
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Awards and Grants

2003 - 06	NSF Office of Polar Programs, \$1.6M
2002 - 06	NASA research grant, Mars Fundamental Research Program, \$200k
2002 - 06	NASA Education and Public Outreach grant, \$45k
1997 - 98	Caltech Post-Doctoral Scholar at JPL
1992	Koons Field Research Fellowship, California Institute of Technology
1992	NASA Technical Achievement Award
1990	NASA Technical Achievement Award
1984 - 88	President's Honor Roll, Rice University
1984 - 88	Scott AFB Credit Union Scholarship
1984 - 88	National Merit Scholar

Service

2003	Taught science courses to undergraduate students at Deep Springs College, an underserved educational institution, engaging them in field-based research projects and exposing them to major research facilities (Owens Valley Radio Observatory, Jet Propulsion Laboratory, Caltech Paleomagnetism Laboratory.)
1998 - 2002	Project Manager of Support Office for Aerogeophysical Research (SOAR), an NSF facility. Managed the acquisition, reduction, and distribution of 97,000 line-km of airborne radar, laser altimetry, gravity, and magnetism data from Antarctica for 15 investigators at 10 institutions. Spent 10 months in Antarctica in support of these activities.

Outreach

2005	BBC news article, <i>Antarctica's ice bottom exposed</i> , Dec. 6, 2005.
2005	Guardian news article, <i>I'm a scientist, get me out of here</i> , Feb. 24, 2005
2005	AAAS press conference, Feb. 18, 2005, Washington D.C.
2003 - 05	NASA-funded Education and Public Outreach Project
2004	Interview for Antarctic Sun article, published Dec. 26, 2004.
2002	Classroom visit and talk, Martin Jr. High, Austin, Texas (8th grade).
2001 - 02	Email dialogue from Antarctica with 8th grade class, Martin Jr. High.
2001	Interview with Australian National Public Radio (Lake Vostok survey).

Student Supervision

Irina Filina	Doctoral student, Geophysics, member of thesis committee.
Erick Leuro	Doctoral student, Geophysics, member of thesis committee.
Jeremy Krimmel	Undergraduate, Geology, Web outreach project, 2005-06.
Tomoko Iwata	Undergraduate, Computer Science, Web outreach project, 2005-06.
Holden Hanna	Undergraduate, Geology, Web outreach project, 2004.
Brandon Johnson	Undergraduate, Geology, research project, 2003.

Professional Societies

American Geophysical Union
Geological Society of America
Institute of Electrical and Electronics Engineers
International Airborne Geophysics Safety Association

Publications

Refereed Papers

Holt, J.W., M.E. Peters, D.L. Morse, D.D. Blankenship, L.E. Lindzey, J.L. Kavanaugh, and K.M. Cuffey, Identifying and Characterizing Subsurface Echoes in Airborne Radar Sounding Data From a High-Clutter Environment in Taylor Valley, Antarctica, *Eleventh International Conference on Ground Penetrating Radar, 19-22 June, 2006, Columbus, Ohio*, 5 pp., submitted Feb. 3, 2006, in review.

Holt, J.W., D.D. Blankenship, D.L. Morse, D.A. Young, M.E. Peters, S.D. Kempf, T.G. Richter, D.G. Vaughan, and H.F.J. Corr, New Boundary Conditions for the West Antarctic Ice Sheet: Subglacial Topography of the Thwaites and Smith Glacier Catchments. *Geophysical Research Letters*, submitted Dec 21, 2005, in review.

Holt, J.W., T.G. Richter, S.D. Kempf, D.L. Morse, and D.D. Blankenship, Airborne gravity over Lake Vostok and adjacent highlands, East Antarctica, *Geochemistry, Geophysics, Geosystems*, submitted Nov. 10, 2005, in review.

Holt, J.W., M.E. Peters, S.D. Kempf, D.L. Morse, and D.D. Blankenship, Echo Source Discrimination in Single-Pass Airborne Radar Sounding Data from the Dry Valleys, Antarctica: Implications for Orbital Sounding of Mars. *Journal of Geophysical Research*, in press.

Vaughan, D.G., H.F.J. Corr, F. Ferraccioli, N. Frearson, A. O'Hare, D. Mach, J.W. Holt, D.D. Blankenship, D.L. Morse, and D.A. Young, New boundary conditions for the West Antarctic ice sheet: Subglacial topography beneath Pine Island Glacier, *Geophysical Research Letters*, submitted Dec 22, 2005, in review.

Filina, I.Y., D.D. Blankenship, L. Roy, M.K. Sen, T.G. Richter and J.W. Holt, Acquisition and analysis of airborne gravity data over subglacial lakes in East Antarctica, in: Futterer, D.K., D. Damaske, G. Kleinschmidt, H. Miller, F. Tessensohn, eds., *Antarctica: Contributions to Global Earth Sciences*, Springer Publishing House, Berlin Heidelberg New York, pp. 129-134, 2006.

Studinger, M., R.E. Bell, G.D. Karner, A.A. Tikku, J.W. Holt, D.L. Morse, T.G. Richter, S.D. Kempf, M.E. Peters, D.D. Blankenship, Ice cover, landscape setting, and geological framework of Lake Vostok, East Antarctica. *Earth and Planetary Science Letters*, 205(3-4): pp. 195-210, 2003.

Richter, T.G., J.W. Holt, and D.D. Blankenship, Airborne Gravimetry Over The Antarctic Ice Sheet, in *Proceedings of the International Symposium on Kinematic Systems in Geodesy, Geomatics and Navigation*, Banff, Canada, 2001.

Holt, J.W., E.W. Holt, and J.M. Stock, An age constraint on Gulf of California rifting from the Boleo Copper District, Baja California Sur, Mexico, *GSA Bulletin*, v. 112(4), pp. 540-549, 2000.

Holt, J.W., J.L. Kirschvink and F. Garnier, Geomagnetic field inclinations for the past 400 kyr from the 1 km core of the Hawaii Scientific Drilling Project, *Journal of Geophysical Research*, 101 (B5), pp. 11,655-11,663, 1996.

Holt, J.W. and J.L. Kirschvink, The upper Olduvai reversal from Death Valley, California: A fold test of transitional directions, *Earth and Planetary Science Letters*, 133, pp. 475-491, 1995.

Quidelleur, X., J. Holt, and J.P. Valet, Confounding influence of magnetic fabric on sedimentary records of a field reversal, *Nature*, 374, pp. 246-249, 1995.

Kwok, R., E.J.M. Rignot, J. Way, A. Freeman and J. Holt, Polarization signatures of frozen and thawed forests of varying environmental state, *IEEE Transactions on Geoscience and Remote Sensing*, 32 (2), pp. 371-381, 1994.

Conference Presentations, Abstracts and Non-Refereed Publications

Note: Only first-author abstracts are included for the past two years.

Holt, J.W., D.D. Blankenship, D.L. Morse, D.A. Young, and D.G. Vaughan, New Boundary Conditions for Ice Sheet Modeling of the Thwaites Glacier Catchment from a Multi-Instrumented Airborne Geophysical Survey of the Amundsen Sea Embayment, West Antarctica, *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract C21B-1096, 2005.

Holt, J.W., M.E. Peters, S.D. Kempf, D.L. Morse, and D.D. Blankenship, Challenges to Airborne and Orbital Radar Sounding in the Presence of Surface Clutter: Lessons Learned (so far) from the Dry Valleys of Antarctica, *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract P31C-0213 (Invited), 2005.

Holt, J.W., D.L. Morse, D.D. Blankenship, D.A. Young, and D.G. Vaughan, Summary of the 2004-05 Airborne Geophysical Survey of the Amundsen Sea Embayment, Antarctica

(AGASEA) with preliminary results for the Thwaites Glacier catchment, West Antarctic Ice Sheet Workshop, Sterling, Virginia, Sept. 28 – Oct. 1, 2005.

Holt J.W., D.D. Blankenship, D.L. Morse, M.E. Peters, and S.D. Kempf, Surface Clutter Removal in Airborne Radar Sounding Data from the Dry Valleys, Antarctica. *Workshop on Radar Investigations of Planetary and Terrestrial Environments*, p.45, LPI Contribution No. 1231, Lunar and Planetary Institute, Houston., 2005.

Holt, J.W., D.L. Morse, D.D. Blankenship, and D.G. Vaughan, Plans for the 2004-05 Airborne Geophysical Survey of the Amundsen Sea Embayment, Antarctica (AGASEA), West Antarctic Ice Sheet Workshop, Sterling, Virginia, Sept. 29 – Oct. 2, 2004.

Holt J.W., D.D. Blankenship, M.E. Peters, S.D. Kempf and B. Johnson, Determination of Sub-Ice Topography in a Valley Glacier Environment Using Airborne Radar Sounding with Echo Discrimination Techniques, *Eos Trans. AGU*,85(17), Jt. Assem. Suppl., Abstract P52A-05, 2004.

Holt J.W., D.D. Blankenship, M.E. Peters, S.D. Kempf and B. Johnson, Determination of Sub-Ice Topography in a Valley Glacier Environment Using Airborne Radar Sounding with Echo Discrimination Techniques, *Eos Trans. AGU*,85(17), Jt. Assem. Suppl., Abstract P52A-05, 2004.

Holt J.W., D.L., Morse, D.D. Blankenship, and D.G. Vaughan, An Airborne Geophysical Survey of the Amundsen Sea Embayment, Antarctica for Interdisciplinary Studies of Ice Sheet Variability and Coupling to Geologic and Climatic Boundary Conditions, XXVIII SCAR Open Science Conference, Bremen, Germany, Abstract S12-O22, July 26-28, 2004.

Holt J.W., D.D. Blankenship, M.E. Peters, S.D. Kempf and B.J. Williams, Echo Source Discrimination in Airborne Radar Sounding Data from the Dry Valleys, Antarctica for Mars Analog Studies, *Eos Trans. AGU* 84(46), Fall Meet. Suppl., Abstract P31B-1058, 2003.

Holt J.W., D.D. Blankenship, M.E. Peters, S.D. Kempf, D.L. Morse and B.J. Williams, Echo Source Discrimination in Airborne Radar Sounding Data for Mars Analog Studies, Dry Valleys, Antarctica, Third International Conference on Mars Polar Science and Exploration, Alberta, Oct. 13-17, 2003.

Morse, D.L., J.W. Holt, D.D. Blankenship, D. Vaughan. An airborne geophysical survey of the Amundsen Sea Embayment, Antarctica (AGASEA). Tenth Annual West Antarctic Ice Sheet (WAIS) Workshop, Sterling, Virginia, September 17-20, 2003.

Blankenship, D.D., J.W. Holt, D.L. Morse and I.W.D. Dalziel. The scientific and technical evolution of Antarctic over-ice aerogeophysics using an instrumented Twin Otter. Remote views and exploration of Antarctic lithosphere workshop (REVEAL), Denver, August 5-8, 2002, USGS Open File Report 03-0065, 2003.

Morse, D.L., J.W. Holt and D.D. Blankenship. An airborne geophysical survey of the Amundsen Sea Embayment, Antarctica. Remote views and exploration of Antarctic lithosphere workshop (REVEAL), Denver, August 5-8, 2002, USGS Open File Report 03-0065, 2003.

Holt, J.W., D.D. Blankenship, M.E. Peters, S.D. Kempf and D.L. Morse. Terrestrial analogs of Martian radar targets from the Dry Valleys, Antarctica. *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract P61D-02, 2002.

Farr, T. and 46 other authors, Terrestrial Analogs to Mars, in Sykes, M.V., ed., *The Future of Solar System Exploration 2003-2013: Community Contributions to the NRC Solar System Exploration Decadal Survey*, Vol. CS-272, pp. 35-76, The Astronomical Society of the Pacific, 2002.

Morse, D.L., J.W. Holt, D.D. Blankenship, and D. Vaughan. Airborne geophysical survey of the Amundsen Sea Embayment, Antarctica (AGASEA). 2002 WAIS Workshop, NSF, Sterling, Va., September 18-21, 2002.

Blankenship, D.D., D.L. Morse, J.W. Holt, M.E. Peters and S.D. Kempf. An airborne radioglaciological survey of iceberg B15a on November 23, 2001. Fall Meeting of AGU, December 6-10, 2002. *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract C52B-01, 2002.

Blankenship, D.D., D.L. Morse, J.W. Holt. An airborne radioglaciological survey of iceberg B15a on November 23, 2001. 2002 WAIS Workshop, NSF, Sterling, Va., September 18-21, 2002.

Peters, M.E., D.D. Blankenship, D.L. Morse, J.W. Holt, S.D. Kempf, T.G. Richter, B. Falola and S. Oliason. Airborne radar sounding and ice thickness measurements over Lake Vostok, East Antarctica. Spring Meeting of AGU, 28-31 May 2002. *Eos Trans. AGU*, 83(19), Spring Meet. Suppl., Abstract B22A-05, 2002.

Richter, T G, S.D. Kempf, J.W. Holt, D.L. Morse, D.D. Blankenship and M.E. Peters. Airborne gravimetry and laser altimetry over Lake Vostok, East Antarctica. Spring Meeting of AGU, May 28-31, 2002. *Eos Trans. AGU*, 83(19), Spring Meet. Suppl., Abstract B22A-04, 2002.

Holt, J.W., Airborne Surveys Conducted by SOAR for Geologic Studies in Antarctica, 1998-2001, *Eos Trans. AGU*, v. 82, 20, 2001.

Richter, T.G., J.W. Holt, and D.D. Blankenship, *Airborne Gravimetry Over The Antarctic Ice Sheet*, in Proceedings of the International Symposium on Kinematic Systems in Geodesy, Geomatics and Navigation, Banff, Canada, 2001.

M.B. Davis, D.D. Blankenship, and J.W. Holt, Subglacial Morphology and Structural Geology in the Southern Transantarctic Mountains from Airborne Geophysics, *Antarctic Neotectonics Workshop*, Siena, Italy, July 11-15, 2001.

Holt, J.W., Airborne Surveys Conducted by SOAR for Geologic Studies in Antarctica, 1998-2001, *Antarctic Neotectonics Workshop*, Siena, Italy, July 11-15, 2001.

Holt, J.W., A. Freeman, C. Kramer, and M. Alves, Classification of Multitemporal JERS-1 SAR Data from the Amazon Basin, *Global Rainforest Mapping Workshop*, Pasadena, California, Nov. 1997.

Holt, J.W. and J.L. Kirschvink, Multiple polarity reversals within the Réunion subchron(s) from the Confidence Hills, southern Death Valley, California, *Eos Trans. AGU*, v.77, 166, 1996.

Holt, J.W. and J.L. Kirschvink, Contrasting behavior of the lower and upper Olduvai reversals from Death Valley, California, *European Geophysical Society Annual Meeting*, The Hague, 1996.

Holt, J.W., J.L. Kirschvink, and F. Garnier, A 400 kyr record of geomagnetic field inclination at Hilo, Hawaii from the 1 km core of the Hawaii Scientific Drilling Project, *Eos Trans. AGU*, v.76, 164, 1995.

Sharp, W., J.W. Holt, J.L. Kirschvink, B. Turrin, Correlation of a 226 ± 7 ka paleomagnetic excursion in lava from Mauna Kea, Hawaii with the Pringle Falls Excursion, *Eos Trans. AGU*, v.76, 176, 1995.

Holt, J.W., R.L. Ripperdan, and J.L. Kirschvink, Paleomagnetic data from Kilauea: A comparison of preliminary results from the Hawaii Scientific Drilling Project 1km core with surficial flows at Pu'u Kapu Kapu, *Eos Trans. AGU*, v.75, 709, 1994.

Holt, J.W., J.L. Kirschvink, Multiple high-resolution records of geomagnetic field reversals from continental sediments: an alternative approach to transition studies, *Second Santa Fe Conference on Rock Magnetism*, 1994.

Holt, J.W., L.W. Holt, and J.M. Stock, Paleomagnetism of marine sedimentary rocks in the Boleo Copper District, Santa Rosalia, Baja California, Mexico, *GSA Abst. Prog.* v.26, 60, 1994.

Evans, D.A., J.L. Kirschvink, and J.W. Holt, Paleomagnetism of the Chuos Formation, Otavi Mountains, Namibia, *Conference on Metallogenic Evolution*, Windhoek, Namibia, 1994.

Quidelleur, X., J-P Valet, and J. Holt, Are sediments reliable recorders of geomagnetic changes in presence of weak field intensity? *Eos Trans. AGU*, v.75, 192, 1994.

Holt, J.W. and J. L. Kirschvink, A detailed paleomagnetic study of the upper Olduvai geomagnetic field reversal recorded by sediments in Death Valley, California, *Eos. Trans. AGU* v.74, 219, 1993.

Holt, J.W., C. J. Pluhar, and J. L. Kirschvink, A detailed study of the Upper Olduvai geomagnetic field reversal and its implications for transition field geometry. *GSA Abst. Prog.* v.23, 92, California, 1991.

Holt, J.W. and A. Freeman, Along-track calibration of NASA-JPL aircraft SAR imagery. *International Geoscience and Remote Sensing Symposium*, Baltimore, Maryland, 1990.