

Jeff Dozier

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Jeff Dozier has taught at the University of California, Santa Barbara since 1974 after earning his PhD from the University of Michigan. He founded the Bren School and served as its first dean for 6 years. His research interests are in the fields of snow hydrology, Earth system science, remote sensing, and information systems. He has led interdisciplinary studies in two areas: one addresses hydrologic science, environmental engineering, and social science in the water environment; the other is in the integration of environmental science and remote sensing with computer science and technology. From 1990-92, he was the senior project scientist for NASA's Earth Observing System when the configuration for the system was established. He is a Fellow of the American Geophysical Union and the American Association for the Advancement of Science, an Honorary Professor of the Academia Sinica, a recipient of both the NASA/Department of Interior William T. Pecora Award and the NASA Public Service Medal, the winner of the 2009 Jim Gray Award from Microsoft for his achievements in data-intensive science, and the 2010 John Nye Lecturer for the American Geophysical Union. A long-time backcountry skier, mountaineer, and rock climber, he helped lead six expeditions to the Hindu Kush range in Afghanistan and has a dozen first ascents there. Dozier Dome in Tuolumne Meadows in the Sierra Nevada of California is named after him.

EDUCATION

All degrees in Geography

B.A.	1968	California State University, East Bay
M.Sc.	1969	University of Michigan
Ph.D.	1973	University of Michigan

EMPLOYMENT

University of California, Santa Barbara

1994–present: Professor, Donald Bren School of Environmental Science and Management.
 1994–2000: Founding Dean, Bren School of Environmental Science & Management, an interdisciplinary graduate program integrating natural and social sciences, law, policy, and business practices.
 1974–1994: Department of Geography (Assistant Professor 1974–1980, Associate Professor 1980–1985, Professor 1985–1994).

Other Assignments

1990–1992: Senior Project Scientist, Earth Observing System, NASA Goddard Space Flight Center.
 1987–1990: Project Scientist, High-Resolution Imaging Spectrometer (HIRIS), Jet Propulsion Laboratory, California Institute of Technology.
 1980: Senior Postdoctoral Research Associate, National Oceanic and Atmospheric Administration.

1971–1974: Lecturer, Department of Geography, California State University, East Bay.

AWARDS AND HONORS

2010: John Nye Lecturer, American Geophysical Union.
 2009: Jim Gray eScience Award, Microsoft Research.
 2005: William T. Pecora Award, Department of Interior and NASA, for “scientific excellence and leadership in snow hydrology, remote sensing, and information systems.”
 1999: Fellow, American Association for the Advancement of Science.
 1997: Moe I. Schneebaum Lecturer, NASA Goddard Space Flight Center.
 1993: NASA Public Service Medal.
 1991: Fellow, American Geophysical Union.
 1989: IEEE Geoscience and Remote Sensing Society, *Transactions* Prize Paper Award.
 1988: Honorary Professor, Institute of Remote Sensing Applications, Academia Sinica (China).
 1969–1971: Rackham Fellowship, University of Michigan.
 1968–1969: NSF Traineeship, University of Michigan.
 1968: NCGE Medal, Outstanding Senior Geography Major, California State University, East Bay.

PERSONAL INFORMATION

Born August 14, 1944, Stockton, California. Married to Linda Dozier, 5 children, 4 grandchildren.

SYNERGISTIC ACTIVITIES

2010-present: Microsoft External Research Advisory Board.

2008-2010: Chief Scientists, NSF WATERS Network.

2005-2011: NRC Board on Earth Sciences and Resources.

2002–2007: Science and Technology Panel, oversight committee for the University of California's Department of Energy laboratories (Berkeley, Livermore, Los Alamos).

2002–2007: Chair, Environmental eScience Steering Committee, National Environment Research Council, United Kingdom.

1998–2003: NASA Earth System Science and Applications Advisory Committee.

1994–1999: Scientific and Technical Advisory Panel, Director of Central Intelligence.

1992–present: Co-founder and member of MEDEA, which investigates the use of classified data for environmental research, monitoring, and assessment.

1991–1993: Editor of *Geophysical Research Letters*.

REPRESENTATIVE PUBLICATIONS

(270 TOTAL, h-INDEX=33)

Most recent publications are available electronically at <http://www.bren.ucsb.edu/~dozier/publications.htm>.

Full publication list is at

<http://www.researcherid.com/rid/B-7364-2009>.

General Guidance for Science

Asrar, G., and J. Dozier (1994), *EOS: Science Strategy for the Earth Observing System*, 119 pp., American Institute of Physics, Woodbury, NY.

Bales, R. C., N. P. Molotch, T. H. Painter, M. D. Dettinger, R. Rice, and J. Dozier (2006), Mountain hydrology of the western United States, *Water Resour. Res.*, 42, W08432, doi: 08410.01029/02005WR004387.

Braden, J. B., D. G. Brown, J. Dozier, P. Gober, S. M. Hughes, D. R. Maidment, S. L. Schneider, P. W. Schultz, James S. Shortle, S. K. Swallow, and C. M. Werner (2009), Social science in a water observing system, *Water Resour. Res.*, in press, doi: 10.1029/2009WR008216.

Dozier, J., and W. B. Gail (2009), The emerging science of environmental applications, in *The Fourth Paradigm: Data-Intensive Scientific Discovery*, edited by K. Tolle, S. Tansley and T. Hey, pp. 13-19, Microsoft Research, Redmond, WA.

Marsh, W. M., and J. Dozier (1981), *Landscape: an Introduction to Physical Geography*, 637 pp., Addison-Wesley, Reading, MA.

Melack, J. M., J. Dozier, C. R. Goldman, D. Greenland, A. M. Milner, and R. J. Naiman (1997), Effects of climate change on inland waters of the Pacific Coastal Mountains and Western Great Basin of North America, *Hydrol. Proc.*, 11, 971-992, doi: 10.1002/(SICI)1099-1085(19970630)11:8<971::AID-HYP514>3.0.CO;2-Y.

National Research Council (1991), *Opportunities in the Hydrologic Sciences*, 368 pp., National Academies Press, Washington, DC.

National Research Council (1992), *Computing the Future: A Broader Agenda for Computer Science and Engineering*, 288 pp., National Academies Press, Washington, D.C.

National Research Council (2007), *Earth Observations from Space: The First 50 Years of Scientific Achievement*, 144 pp., National Academies Press, Washington D.C.

National Research Council (2010), *Monitoring Climate Change Impacts: Metrics at the Intersection of the Human and Earth Systems*, 110 pp., National Academies Press, Washington, D.C.

Remote Sensing of Snow

Dozier, J. (1989), Spectral signature of alpine snow cover from the Landsat Thematic Mapper, *Remote Sens. Environ.*, 28, 9-22, doi: 10.1016/0034-4257(1089)90101-90106.

Dozier, J., and T. H. Painter (2004), Multispectral and hyperspectral remote sensing of alpine snow properties, *Ann. Rev. Earth Planet. Sci.*, 32, 465-494, doi: 410.1146/annurev.earth.1132.101802.120404.

Dozier, J., S. R. Schneider, and D. F. McGinnis Jr. (1981), Effect of grain size and snowpack water equivalence on visible and near-infrared satellite observations of snow, *Water Resour. Res.*, 17, 1213-1221.

Dozier, J., T. H. Painter, K. Rittger, and J. E. Frew (2008), Time-space continuity of daily maps of fractional snow cover and albedo from MODIS, *Adv. Water Resour.*, 31, 1515-1526, doi: 10.1016/j.advwatres.2008.08.011.

Green, R. O., T. H. Painter, D. A. Roberts, and J. Dozier (2006), Measuring the expressed abundance of the three phases of water with an imaging spectrometer over melting snow, *Water Resour. Res.*, 42, W10402, doi: 10.1029/2005WR004509.

Nolin, A. W., and J. Dozier (2000), A hyperspectral method for remotely sensing the grain size of snow, *Remote Sens. Environ.*, 74, 207-216, doi: 10.1016/S0034-4257(1000)00111-00115.

- Nolin, A. W., J. Dozier, and L. A. K. Mertes (1993), Mapping alpine snow using a spectral mixture modeling technique, *Ann. Glaciol.*, *17*, 121-124.
- Painter, T. H., and J. Dozier (2004), Measurements of the hemispherical-directional reflectance of snow at fine spectral and angular resolution, *J. Geophys. Res.*, *109*, D18115, doi: 18110.11029/ 12003JD004458.]
- Painter, T. H., J. Dozier, D. A. Roberts, R. E. Davis, and R. O. Green (2003), Retrieval of subpixel snow-covered area and grain size from imaging spectrometer data, *Remote Sens. Environ.*, *85*, 64-77, doi: 10.1016/S0034-4257(1002)00187-00186.
- Painter, T. H., K. Rittger, C. McKenzie, R. E. Davis, and J. Dozier (2009), Retrieval of subpixel snow-covered area, grain size, and albedo from MODIS, *Remote Sens. Environ.*, *113*, 868-879, doi: 10.1016/j.rse.2009.01.001.
- Rosenthal, W., and J. Dozier (1996), Automated mapping of montane snow cover at subpixel resolution from the Landsat Thematic Mapper, *Water Resour. Res.*, *32*, 115-130, doi: 110.1029/ 1095WR02718.
- Shi, J., and J. Dozier (1995), Inferring snow wetness using C-band data from SIR-C's polarimetric synthetic aperture radar, *IEEE Trans. Geosci. Remote Sens.*, *33*, 905-914, doi: 910.1109/1136. 406676.
- Shi, J., and J. Dozier (2000), Estimation of snow water equivalence using SIR-C/X-SAR, Part I: Inferring snow density and subsurface properties, *IEEE Trans. Geosci. Remote Sens.*, *38*, 2465-2474, doi: 2410.1109/2436.885195.
- Part II: Inferring snow depth and grain size, *IEEE Trans. Geosci. Remote Sens.*, *38*, 2475-2488, doi: 2410. 1109/2436.885196.
- Thermal Infrared Remote Sensing**
- Dozier, J. (1981), A method for satellite identification of surface temperature fields of subpixel resolution, *Remote Sens. Environ.*, *11*, 221-229, doi: 210.1016/0034-4257(1081)90021-90023.
- Dozier, J., and S. G. Warren (1982), Effect of viewing angle on the infrared brightness temperature of snow, *Water Resour. Res.*, *18*, 1424-1434.
- Matson, M., and J. Dozier (1981), Identification of subresolution high temperature sources using a thermal IR sensor, *Photogramm. Engrg. Remote Sens.*, *47*, 1311-1318.
- Wan, Z. M., and J. Dozier (1989), Land-surface temperature measurement from space: physical principles and inverse modeling, *IEEE Trans. Geosci. Remote Sens.*, *27*, 268-278, doi: 210. 1109/1136.17668.
- Wan, Z. M., and J. Dozier (1996), A generalized split-window algorithm for retrieving land-surface temperature from space, *IEEE Trans. Geosci. Remote Sens.*, *34*, 892-905, doi: 810.1109/ 1136.508406.
- Hydrology/Climate Over Terrain**
- Cline, D. W., R. C. Bales, and J. Dozier (1998), Estimating the spatial distribution of snow in mountain basins using remote sensing and energy balance modeling, *Water Resour. Res.*, *34*, 1275-1285, doi: 1210.1029/1297WR03755.
- Dozier, J. (1980), A clear-sky spectral solar radiation model for snow-covered mountainous terrain, *Water Resour. Res.*, *16*, 709-718.
- Dozier, J., and J. Frew (1990), Rapid calculation of terrain parameters for radiation modeling from digital elevation data, *IEEE Trans. Geosci. Remote Sens.*, *28*, 963-969, doi: 910.1109/1136. 58986.
- Dozier, J., and S. I. Outcalt (1979), An approach toward energy balance simulation over rugged terrain, *Geog. Anal.*, *11*, 65-85.
- Dubayah, R. O., J. Dozier, and F. W. Davis (1990), Topographic distribution of clear-sky radiation over the Konza Prairie, Kansas, *Water Resour. Res.*, *26*, 679-690, doi: 610.1029/1089WR 03107.
- Elder, K., J. Dozier, and J. Michaelsen (1991), Snow accumulation and distribution in an alpine watershed, *Water Resour. Res.*, *27*, 1541-1552, doi: 1510.1029/1591WR00506.
- Marks, D., and J. Dozier (1979), A clear-sky longwave radiation model for remote alpine areas, *Theoret. Appl. Climatol.*, *27*, 159-187, doi: 10.1007/ BF02243741.
- Marks, D., J. Dozier, and J. Frew (1984), Automated basin delineation from digital elevation data, *Geo-Processing*, *2*, 299-311.
- Molotch, N. P., T. H. Painter, R. C. Bales, and J. Dozier (2004), Incorporating remotely sensed snow albedo into spatially distributed snowmelt modeling, *Geophys. Res. Lett.*, *31*, L03501, doi: 03510.01029/ 02003GL019063.
- Molotch, N. P., R. C. Bales, M. T. Colee, and J. Dozier (2005), Estimating the spatial distribution of snow water equivalent in an alpine basin using binary regression tree models: the impact of digital elevation data and independent variable selection, *Hydrol. Proc.*, *19*, 1459-1479, doi: 1410. 1002/hyp.5586.
- Snow Processes and Observations**
- Bair, E. H., J. Dozier, and K. W. Birkeland (2008), Avalanche crown-depth distributions, *Geophys. Res. Lett.*, *35*, L23502, doi: 10.1029/ 2008GL035788.
- Bair, E. H., K. W. Birkeland, and J. Dozier (2010), In situ and photographic measurements of avalanche crown transects, *Cold Regions. Sci. Technol.*, *64*, 174-181, doi: 10.1016/j.coldregions.2010. 08.004.

Davis, R. E., J. Dozier, E. R. LaChapelle, and R. Perla (1985), Field and laboratory measurements of snow liquid water by dilution, *Water Resour. Res.*, *21*, 1415-1420.

Davis, R. E., J. Dozier, and A. T. C. Chang (1987), Snow property measurements correlative to microwave emission at 35 GHz, *IEEE Trans. Geosci. Remote Sens.*, *25*, 751-757.

Kattelman, R., and J. Dozier (1999), Observations of snowpack ripening in the Sierra Nevada, California, USA, *J. Glaciol.*, *45*, 409-416.

Marks, D., and J. Dozier (1992), Climate and energy exchange at the snow surface in the alpine region of the Sierra Nevada, 2, Snow cover energy balance, *Water Resour. Res.*, *28*, 3043-3054, doi: 3010.1029/3092WR01483.

Marks, D., J. Dozier, and R. E. Davis (1992), Climate and energy exchange at the snow surface in the alpine region of the Sierra Nevada, 1, Meteorological measurements and monitoring, *Water Resour. Res.*, *28*, 3029-3042, doi: 3010.1029/3092WR01482.

Rice, R., R. C. Bales, T. H. Painter, and J. Dozier (2011), Snow water equivalent along elevation gradients in the Merced and Tuolumne River basins of the Sierra Nevada, *Water Resour. Res.*, *47*, W08515, doi: 10.1029/2010wr009278.

Rosenthal, W., J. Saleta, and J. Dozier (2007), Scanning electron microscopy of impurity structures in snow, *Cold Regions Sci. Technol.*, *47*, 80-89, doi: 10.1016/j.cold.regions.2006.1008.1006.

Tyler, S. W., S. A. Burak, J. P. McNamara, J. S. Selker, and J. Dozier (2008), Spatially distributed temperatures at the base of two mountain snowpacks measured with fiber optic sensors, *J. Glaciol.*, *54*, 673-679.

Environmental Information Management

Dozier, J. (1990), Looking ahead to EOS: the Earth Observing System, *Comput. Phys.*, *4*, 248-259.

Dozier, J. (1992), Opportunities to improve hydrologic data, *Rev. Geophys.*, *30*, 315-331, doi: 310.1029/1092RG01440.

Dozier, J. (1994), Planned EOS observation of the land, ocean, and atmosphere, *Atmos. Res.*, *31*, 329-357, doi: 310.1016/0169-8095(1094)90007-90008.

Dozier, J., and J. Frew (2009), Computational provenance in hydrologic science: A snow mapping example, *Phil. Trans. Royal Soc. A*, *367*, 1021-1033, doi: 10.1098/rsta.2008.0187.

Frew, J., and J. Dozier (1997), Data management for Earth system science, *SIGMOD Rec.*, *26*, 27-31.

Li, S., Z. Wan, and J. Dozier (1987), A component decomposition model for evaluating atmospheric effects in remote sensing, *J. Electromag. Waves Appl.*, *1*, 323-347.

National Research Council (2003), *IT Roadmap to a Geospatial Future*, 136 pp., National Academies Press, Washington, D.C.

FORMER PHD STUDENTS

Edward H. Bair, 2011, Assistant Research Professor, Earth Research Institute, University of California, Santa Barbara.

Robert E. Davis, 1986, Director, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, NH.

Ralph O. Dubayah, 1990, Professor, Department of Geography, University of Maryland, College Park.

Kelly Elder, 1995, Research Scientist, U.S. Forest Service, Fort Collins, CO.

James E. Frew, 1990, Associate Professor, Donald Bren School of Environmental Science and Management, University of California, Santa Barbara.

Robert O. Green, 2003, Senior Member of Technical Staff, Jet Propulsion Laboratory, Pasadena, CA.

Richard C. Kattelman, 1995, independent consultant, Mammoth Lakes, CA.

Shusun Li, 1985, Research Professor Emeritus, Geophysical Institute, University of Alaska, and Professor, East China Normal University, Shanghai, China.

Danny Marks, 1988, Research Hydrologist, U.S. Department of Agriculture, Agricultural Research Service, Boise, ID.

Ralph F. Milliff, 1989, Research Scientist, Colorado Research Associates, Boulder, CO.

Anne W. Nolin, 1993, Associate Professor, Department of Geosciences, Oregon State University.

Thomas H. Painter, 2002, Staff Scientist, Jet Propulsion Laboratory.

Jiancheng Shi, 1991, Research Professor, Earth Research Institute, University of California, Santa Barbara,

Damon Turney, 2009, Research Associate, Brookhaven National Laboratory.

Zhengming Wan, 1985, Research Professor, Earth Research Institute, University of California, Santa Barbara.

Mark W. Williams, 1991, Professor, Department of Geography, University of Colorado, Boulder.