Biographical Sketch for Daniel Buscombe

Professional Preparation

University of Plymouth	Nearshore Oceanography	Ph.D.	2004 - 2008
Lancaster University	Physical Geography	B.Sc.	2000 - 2003

Appointments and Teaching Experience

U.S Geological Survey	Research Geologist	2012 - Present
University of Plymouth	NERC Postdoctoral Research Fellow	2009 - 2012
UC Santa Cruz	Postdoctoral Research Fellow	2008 - 2009
University of Plymouth	Research Assistant	2007 - 2008
University of Plymouth	Teaching Assistant	2004 - 2008
Field Studies Council	Assistant Tutor	2003 - 2004

Selected Related Publications

Jake Vanderplas, Andrew Connolly, Željko Ivezić, & Alex Gray. *AstroML: Machine Learning for Astronomy in Astrophysics.* CIDU proceedings, 2012

Jake Vanderplas, Andrew Connolly, Bhuvnesh Jain, & Mike Jarvis. *Interpolating Masked Weak Lensing Signals with Karhunen-Loeve Analysis.* ApJ 744:180, 2012.

Jake Vanderplas, Andrew Connolly, Bhuvnesh Jain, & Mike Jarvis. *3D Reconstruction of the Density Field: An SVD Approach to Weak Lensing Tomography.* ApJ 727:118, 2011.

LSST Science Collaboration LSST Science Book, Version 2.0, 2009 arXiv:0912.0201

Jake Vanderplas & Andrew Connolly. *Reducing the Dimensionality of Data: Locally Linear Embedding of Sloan Galaxy Spectra.* AJ 138:1365, 2009.

Other Significant Publications

V. Vikram, A. Cabre, B. Jain & **J. VanderPlas**. *Astrophysical Tests of Modified Gravity: the Morphology and Kinematics of Dwarf Galaxies.* JCAP 08:20, 2013

Bhuvnesh Jain & **Jake Vanderplas**. *Tests of Modied Gravity with Dwarf Galaxies.* JCAP 10:32, 2011.

Scott Daniel, Andrew Connolly, Jeff Schneider, **Jake Vanderplas** & Liang Xiong. Classication of Stellar Spectra with LLE. AJ 142:203, 2011.

Pedregosa, F.; Varoquaux, G.; Gramfort, A.; Michel, V.; Thirion, B.; Grisel, O.; Blondel, M.; Prettenhofer, P.; Weiss, R.; Dubourg, V.; **Vanderplas, J.**; Passos, A.; Cournapeau, D.; Brucher, M.; Perrot, M.; Duchesnay, E. *Scikit-learn: Machine learning in Python.* Journal of Machine Learning Research, 12:2825, 2011

R. Kessler, A. Becker, D. Cinabro, **J. Vanderplas**, & 42 co-authors. *First-Year Sloan Digital Sky Survey-II Supernova Results: Hubble Diagram and Cosmological Parameters.* ApJ 703:1374, 2009.

Synergistic Activities

Open Source Contributions: I have developed fast sparse matrix eigen-decomposition code and graphical analysis for the numerical package `scipy`, and a number of optimized supervised and unsupervised learning and data visualization methods for the machine learning packages `scikit-learn` and `MDP-toolkit`. I created `SciDB-py`, a Python interface to SciDB. I have also written and contributed to astronomy-specic packages such as `astroML` (Astronomy Machine Learning), and `SNANA` (Fermilab's supernova analysis software).

Digital Planetarium: From 2010-2011, I managed and coordinated the upgrade of the UW planetarium to a digital system based on the World Wide Telescope software. This was a joint project between the University of Washington and Microsoft Research. I have developed related educational tools for K-12 class visits as well as undergraduate astronomy courses. I have occasionally partnered with Microsoft as an astronomy expert at a variety of education and technology conferences around the country.

Science Communication Fellow: I have participated in the Portal to the Public training program at the Pacic Science Center, and have volunteered regularly since 2009 as a Science Communication Fellow, exploring astronomical research with visitors to the museum.

Undergraduate Mentoring: I have participated as a mentor for the U. Washington PreMajor in Astronomy Program (PreMAP), providing research experiences for undergraduates from demographics which are traditionally under-represented in the sciences.

K-12 Curriculum Development: I taught for two years at the Mount Hermon Outdoor Science School, where among other activities I developed an outdoor astronomy curriculum for K-12 students, and conducted an astronomy training workshop for my peers at a regional conference for outdoor educators.

Selected Collaborators

Paul Grams, *U.S. Geological Survey*
David Rubin, *University of California Santa Cruz*
Daniel Conley, *University of Plymouth*
Alex Nimmo-Smith, *University of Plymouth*
Jessie Lacy, *U.S. Geological Survey*
Emlyn Davies, *SINTEF, Norway*
Jon Warrick, *U.S. Geological Survey*
David Topping, *U.S. Geological Survey*
Joe Wheaton, *Utah State University*
Jack Puleo, *University of Delaware*
Sean Smith, *University of Maine*
Gerd Masselink, *University of Plymouth*

Graduate Advisors

Gerd Masselink	*University of Plymouth*	(2004-2008)
Mark Davidson	*University of Plymouth*	(2004-2008)