

Diana Valencia

Sagan NASA Postdoctoral Fellow
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RESEARCH INTERESTS

Structure and evolution of low mass exoplanets: super-Earths and mini-Neptunes, rocky and icy/ocean planets and satellites; habitability; early evolution; tectonics; equations of state.

EDUCATION

Ph.D., Harvard University, Department of Earth & Planetary Sciences, 2008
M.A., University of Toronto, Physics Department, 2002
B. A. Sc., University of Toronto, Physics Specialist Program, 2001

POSITIONS

12.2010 – Sagan NASA Postdoctoral Fellow, Massachusetts Institute of Technology
10.2008 – 11.2010 Henri Poincare Postdoctoral Fellow, Observatoire de la Cote d'Azur, Nice, France
06.2008 – 10.2008 Origins of Life Postdoctoral Fellow,
Department of Earth & Planetary Sciences, Harvard University
2002 – 2008 Origins of Life Graduate Fellow, Researcher/Teaching Fellow
Department of Earth & Planetary Sciences, Harvard University

HONORS & AWARDS

Sagan NASA Postdoctoral Fellowship, 2010–2012
Henri Poincare Postdoctoral Fellowship, Observatoire de la Cote d'Azur, 2008–2010
Origins of Life Graduate Fellowship, Harvard University, 2006–2008
Nature Research Highlights, Feb 2007
GSAS Merit Fellowship Award, Harvard University, 2006
Stickney Fellowship, Harvard University, 2005
Dean's List at the University of Toronto 2001
Don Salt Award given by the Canadian Exploration Geophysics Society, 2001
Canadian Society of Exploration Geophysics Award, 2000
NSERC Undergraduate Research Student award, 1999

ACADEMIC SERVICE & OUTREACH

Chair and convenor of 'super-Earth' session, AGU fall meeting 2008 (first exoplanet session at AGU)
Reviewer for Icarus, Astrophysical Journal, Astrobiology, Earth and Planetary Science Letters
Lead organizer of the Planetary Journal Club at Harvard University, 2007–2008
Science and technology adviser to Colombian presidential candidate Dr. Sergio Fajardo
Director of first conference 'Science, Technology and Innovation in Colombia, 2005', Harvard University

TEACHING EXPERIENCE

- Harvard University
Co-adviser for two undergraduates senior's thesis
Teaching assistant for advanced undergraduates courses 'Differential Equations', 'Fluid Mechanics' and

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'Terrestrial Planets'

Guest lecturer for advanced undergraduates course 'Terrestrial Planets'

Head Teaching Fellow for non-science undergraduates course 'Dynamic Earth'

Teaching assistant for undergraduate field trip to Big Island in Hawai'i

- University of Toronto
Graduate teaching assistant for introductory physics courses

INVITED TALKS

Kongsberg Conference 25th: Celebrating a Dynamic Planet. May 2012. University of Oslo, Norway

Astrobiology Conference. May 2012. Bogota, Colombia

Kepler First Science Conference. Dec 2011. NASA Ames, CA

CIERA Future of Astronomy Conference. Sep 2011. Northwestern University, Chicago, IL

Gordon Conference on Origins of Solar Systems. July 2011. South Hadley, MA

Extrasolar Planets: Towards Comparative Planetology, June 2011. Physikzentrum Bad Honnef, Germany

Exoplanet Exploration Program, May 2011, Exploring Strange New Worlds: From Giant Planets to super-Earths. Flagstaff, AZ

Cornell University, Astronomy Department, Colloquium, Mar 2011. Ithaca, NY

Penn State University, Astronomy Department, Colloquium, Mar 2011. State College, PA – Job Talk

University of Chicago, Astronomy & Geology and Geophysics Departments, Colloquium, Feb 2011. Chicago, IL – Job Talk

TEDlocal Costa Rica, Feb 2011. San Jose de Costa Rica (outreach talk)

AGU, Session Interiors of Terrestrial Planets and Super-Earth Exoplanets, Dec 2010. San Francisco, CA

University of Toronto, Geophysics Seminar, Nov 2010. Toronto, Canada

IAU Symposium 276, Oct 2010. Torino, Italy

Detection and Dynamics of Transiting Exoplanets, Aug 2010. Observatoire Haute Provence, France

Evolving Theory for Planet Formation Conference, June 2010. Ishigaki, Japan

European Science Foundation Conference, Apr 2010. Obergurgl, Austria

High Energy Density Laboratory Astrophysics Conference, Mar 2010. Pasadena, CA

The Theory and Observations of Exoplanets Conference, Kavli Institute of Theoretical Physics, Mar 2010. Plenary talk, Santa Barbara, CA

Institute of Planetary Research, DLR Berlin, Planetary Seminar, Dec 2009. Berlin, Germany

Golschmidth Conference, June 2009. Keynote talk. Davos, Switzerland

Yale University, Department of Geology and Geophysics, Colloquium, Nov 2008. New Haven, CT

Extra-solar Super-Earths International Workshop, June 2008. Nantes, France

University of California at Los Angeles, Earth and Space Sciences Department, Colloquium, Apr 2008. Los Angeles, CA – Job Talk

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Astrobiology Science Conference, Apr 2008. Santa Clara, CA

High Energy Density Laboratory Astrophysics Conference, Apr 2008. St. Louis, MO

Northwestern University, Astrophysics Seminar, Feb 2008. Chicago, IL

Chicago University, Geophysical Laboratory Seminar, Feb 2008. Chicago, IL

Extreme Solar Systems Conference, June 2007. Santorini, Greece

Carnegie Institution of Washington, Department of Terrestrial Magnetism, Colloquium, Oct 2006, Washington, DC

AAS special session, Jan 2006, T97.04. Washington, DC

University of California at Berkeley, "Super-Earths" graduate seminar, Oct 2005, Berkeley, CA

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REFEREED PUBLICATIONS

- Valencia, D.** & R. T. Pierrehumbert. Detecting magma-ocean rocky super-Earths. In preparation
- Valencia, D.** Composition and Internal Dynamics of super-Earths. In *Physics and Chemistry of the Deep Earth*, ed. J. Karato. Submitted
- Valencia, D.** & T. Guillot. GJ1214b's composition and its peers. In preparation
- Demory, B. O., M. Gillon, D. Deming, **D. Valencia**, S. Seager & 10 more authors (2011). Detection of a transit of the super-Earth 55 Cnc-e with warm Spitzer. *A&A*, 533, A114
- Hatzes, A. P., M. Fridlund, G. Nachmani, T. Mazeh, **D. Valencia**, & the CoRoT team (2011). On the Mass of CoRoT-7b. *ApJ*, in print
- M. Havel, T. Guillot, **Valencia, D.**, & A. Crida. (2010) The multiple planets transiting Kepler-9 : Inferring stellar properties the planetary compositions. *A&A*, 531, A3
- Morard, G., J. Bouchet, **D. Valencia**, S. Mazevet & F. Guyot (2010). High Pressure melting curve of Iron by molecular dynamics calculations: Implications for exoplanet habitability. *EPSL*. submitted
- Valencia, D.**, M. Ikoma, T. Guillot & N. Nettelmann (2010). Composition and Fate of short-period Super-Earths: The case of CoRoT-7b. *A&A*, 516, A20.
- Valencia, D.** & R. J. O'Connell (2009). Convection scaling and subduction on Earth and super-Earths. *EPSL*, 286: 492-502
- Valencia, D.** , R. J. O'Connell & D. D. Sasselov (2009). The role of high-pressure experiments on determining super-Earth properties. *Astrophys. & Space Sci.*, 322: 135-139.
- Fortney, J. J., S. Glenzer, M. Koenig, B. Militzer, D. Saumon & **D. Valencia** (2008). Frontiers of the Physics of Dense Plasmas and Planetary Interiors: Experiment, Theory, Applications. *Physics of Plasmas Review*. 16: 041003-041003-7
- Valencia, D.**, R. J. O'Connell & D. D. Sasselov (2007). Inevitability of Plate Tectonics on Super-Earths. *ApJ*, 670: L45-L48
- Valencia, D.**, D. D. Sasselov & R. J. O'Connell (2007). Detailed models of super-Earths: How well can we infer bulk properties? *ApJ*, 665: 1413-1420
- Valencia, D.**, D. D. Sasselov & R. J. O'Connell (2007). Radius and Structure Models for the First Super-Earth Planet, *ApJ*, 656: 545-551
- Valencia, D.**, R. J. O'Connell & D. D. Sasselov (2006). Internal Structure of Massive Terrestrial Planets, *Icarus*, 181: 545-554

PROCEEDINGS, WHITE PAPERS, OUTREACH ARTICLES AND THESIS

- Valencia, D.** Composition of Transiting and Transiting only Super-Earths (2011). *IAU 276 Proceedings : The Astrophysics of Planetary Systems: Formation, Structure and Dynamical Evolution*.
- Valencia, D.** Characterising Super-Earths (2011). *Detection and Dynamics of Transiting Exoplanets*, St. Michel l'Observatoire, France, Edited by F. Bouchy, R. Diaz, C. Moutou. *EPJ Web of Conferences*, vol 11
- Sasselov, D. & **D. Valencia** (2011). Planets we could call home. *Scientific American*, Aug
- Valencia, D.** Alternate Earths: evolution of planetary interiors and their surfaces (2010). In *Geodynamics White Paper for NSF*

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Valencia, D. Internal Structure and Thermal State of Super-Earths (2008). PhD Thesis. Harvard University.

Valencia, D., R. J. O'Connell & D. D. Sasselov (2007). Super-Earths' Evolution: Towards Habitability, in Proceedings ASP Conference, Extreme Solar Systems Symposium, Santorini, Greece.

Valencia, D., D. D. Sasselov & R. J. O'Connell (2006). Structure of First Super-Earth Planet, in Proceedings, Rencontres de Blois - Planetary Science: Challenges and Discoveries Conference, 18th, Blois, France.

Valencia, D. Estimating Love Numbers with the use of Long Period Seismic Data (2002). Masters Thesis. University of Toronto.