

OLIVER LUKE WHITE

Research Scientist at the SETI Institute, Mountain View, CA.

Work address: NASA Ames Research Center, MS 245-3, Moffett Field, CA, 94035-1000

Nationality: British/American dual nationality

PREVIOUS POSITIONS AND EDUCATION

2014-17: NASA Postdoctoral Program Fellow (NASA Ames Research Center, Mountain View, CA)

2010-13: Postdoctoral Researcher (Lunar and Planetary Institute, Houston, TX)

2006-10: PhD in Planetary Science (University College London, London, UK). Thesis title: The Influence of Environmental Conditions on Volcanic Processes on the Terrestrial Planets.

2002-06: 4-year MSci degree in Planetary Science (University College London, London, UK). Graduated with first-class honours. Awarded four prizes for work of good honours standard during the degree. Placed on the Dean's List at graduation.

RESEARCH INTERESTS

New Horizons data analysis and mission planning (2015-19)

I am an affiliate on the Geology, Geophysics and Imaging team of NASA's New Horizons mission and participated in mission planning and flyby operations for the spacecraft's flyby of the Pluto system in July 2015. I have produced a geological map of Sputnik Planitia on Pluto and am leading a project to produce a global US Geological Survey Science Investigations Map of Pluto. I have investigated the origins of the enigmatic "washboard" and "fluted" terrain types on Pluto, and am also mapping global tectonism on Pluto and Charon, which will be used in tandem with numerical modeling to determine the structural evolution of these bodies. I participated in mission planning for the January 2019 New Horizons flyby of the Kuiper belt object 2014 MU₆₉, as well as flyby operations and post-flyby data analysis. I am the lead author on the "Geology of Pluto" chapter in "The Pluto System" volume in the University of Arizona Space Science Series, to appear in 2020.

Landform evolution modeling (2014-19)

I have used the MARSSIM landform evolution model (operated in Fortran) to investigate the formation and evolution of Callisto's ice pinnacle terrain. This has involved advancing the model's treatment of relevant physical processes, e.g. determination of surface temperature from various energy sources, varying the crustal ice species undergoing sublimation, modeling passage of sublimated volatiles through a porous medium, etc. I am also involved in an effort to develop a GUI interface and documentation for MARSSIM in the widely used Python cross-platform environment.

Investigation of the topography of the Galilean and Saturnian satellites (2010-19)

I have employed stereo and shape-from-shading techniques to produce topographic maps of Io and the Saturnian mid-sized icy satellites. For Io, I have refined the relevant techniques to extract the best-quality data from the available imaging, allowing characterization of volcano and mountain morphologies as well as regional and global scale shape deviations. I have used topographic maps of the Saturnian satellites to measure crater morphologies on them and assess the extent of crater relaxation, allowing determination of past heat flow conditions across their surfaces. I am currently involved in an effort to study the evolution of large impact features on Ganymede and Callisto using a combination of geological mapping and hydrocode modeling.

FUNDED GRANTS AS PRINCIPAL INVESTIGATOR

- "A Global Geologic Map of Pluto at 1:7M Scale", submitted to 2018 Planetary Data Archiving, Restoration and Tools Solicitation. Period of Performance: March 2019 to March 2022.

SERVICE AND COMMITTEES

- Served on two NASA review panels, one in 2012, and one in 2016.
- Served on the 43rd and 44th Lunar and Planetary Science Conference committee panels in 2012 and 2013.
- Judged abstracts for the LPI Career Development Award for LPSC 2013.
- Served as co-chair of the Lunar and Planetary Institute seminar series from 2011-2012.

TEACHING AND ADVISING

- Primary supervisor for LPI summer intern Rebecca Johnston, Brigham Young University, for 10 weeks between June and August 2012.

INVITED TALKS

- Invited speaker at the Geological Society of America 2014 Meeting on “Modeling of sublimation-driven erosion and ice pinnacle formation on Callisto”.
- General Session speaker on New Horizons results at the 128th Annual Meeting of the Iowa Academy of Science in April 2016.

EDUCATION AND PUBLIC OUTREACH

- In 2016, I was the Geology, Geophysics and Imaging Team press release coordinator for the New Horizons mission.
- Volunteered at LPI Family Space Day and Sky Fest public outreach events between June 2011 and September 2013.

EDITORIAL ROLES

- Contributed to the entries for ‘radially-patterned intermediate volcano’ and ‘layered plains (Io)’ in the Encyclopedia of Planetary Landforms (edited by Henrik Hargitai), published by Springer in 2014.

SPECIALIZED IT SKILLS

- Use of Fortran (editing performed in Xcode) to run the MARSSIM model, and MATLAB for post-processing of model results.
- Use of Unix and customized ISIS software at LPI to create topographic maps of Io and the Saturnian satellites.
- Use of ArcGIS for geological mapping.
- Use of Adobe Illustrator and Adobe Photoshop for creation of schematics to be used as figures in reports/papers.

PERSONAL AFFILIATIONS

- Member of the American Geophysical Union, and a Division Affiliate member of the American Astronomical Society.