

Mark Wieczorek // Curriculum Vitae

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I have been at the Laboratoire Lagrange (Observatoire de la Côte d'Azur) since 2017. Prior to this, I was the leader of the Planetary and Space Sciences group at the Institut de Physique du Globe de Paris. Much of my scientific research focuses on using geophysical and remotely sensed geochemical data to decipher the interior structure and geologic evolution of the Moon, with an emphasis on planetary topography, gravity, and magnetic fields. I was a co-investigator of the orbiting SMART-1 and Chandrayaan-1 X-ray fluorescence spectrometers, and NASA's lunar gravity mapping mission GRAIL. I am also a co-investigator associated with NASA's geophysical mission to Mars, Insight, and the laser altimeters on ESA's BepiColombo mission to Mercury and JUICE mission to Ganymede. I am a former editor-in-chief of the Journal of Geophysical Research Planets and am the lead developer of the software package SHTOOLS that is in common use among geophysicists in the planetary science community.

1. Academic background

- *Centre National de la Recherche Scientifique*, Directeur de recherche deuxième classe, 2010–.
- *Centre National de la Recherche Scientifique*, Chargé de recherche première classe, 2002–2010.
- *Massachusetts Institute of Technology*, Department of Earth, Atmospheric, and Planetary Sciences, Postdoctoral Fellow, 1999–2002.
- *Habilitation à Diriger des Recherches*, Université Paris VII, France, 2008.
- *Ph.D., planetary geophysics*, Washington University, St. Louis, Missouri, USA, 1999.
- *B.S., physics*, State University of New York at Buffalo, USA, 1994.

2. Professional activities

- IGP Planétologie et Sciences Spatiales, *Responsable d'équipe*, 2013–2016.
- Journal of Geophysical Research Planets, *Editor in chief*, 2011–2015.
- ROBEX, Robotic Exploration of Extreme Environments (Helmholtz Alliance), *Advisory board*, 2013–2016.
- Comité de sélection *Univeristé Pierre et Marie Curie* (section 34), groupe externe A, 2012–2016.
- Member of *Group de Travail Système Solaire* (CNES), 2009–2015.

3. Participation in funded planetary missions

- *Jupiter icy moons explorer (JUICE)*. ESA mission to explore the icy satellites of Jupiter. Member of the Ganymede Laser Altimeter (GALA) instrument team that will map globally the topography of Ganymede. Co-investigator, 2013–.
- *Gravity Recovery and Interior Laboratory (GRAIL)*. NASA discovery class mission to map the gravity field of the Moon. Co-investigator, 2008–2016.
- *BepiColumbo Laser Altimeter*. This instrument will map globally the topography of Mercury as part of ESA's BepiColumbo mission (launch 2016). Co-investigator, 2005–.
- *InSight*. NASA discovery class mission to deploy the first-ever geophysical station on Mars. Co-investigator, 2010–.
- *Chandrayaan-1 X-ray spectrometer*. Co-investigator. This instrument mapped the chemical composition of the lunar surface as part of the Indian mission Chandrayaan-1. Co-investigator, 2006–2010.
- *SMART-1 Demonstration Compact X-Ray Spectrometer*. This x-ray spectrometer was flown on ESA's SMART-1 technological demonstration mission. Co-investigator, 2004–2007.

4. Academic advising

- Supervision of four post-docs: Joana Oliveira, Katarina Miljkovic, Wenzhe Fa, Hajime Hikida.
- Direction and Co-direction of 6 Ph.D. theses: Shengxia Gong, Clément Thorey, Corinna Roy, Qian Huang, Matthieu Laneuville, Mathieu Lefevre.

5. Publications

- 72 peer-reviewed publications between 1997 and 2016.
- *H-index*: 31
- Number of citations: 3376
- 8 articles published in *Science* and *Nature* (2 first authored)
- 1 chapter in *Treatise on Geophysics* (1st and 2nd editions, 2007, 2015)

Peer Reviewed Publications

- K. Miljković, G. S. Collins, M. A. Wieczorek, B. C. Johnson, J. M. Soderblom, G. A. Neumann and M. T. Zuber (2016). Subsurface morphology and scaling of lunar impact basins, *J. Geophys. Res. Planets*, 121, 1695–1712, doi:10.1002/2016JE005038, 2016.
- S. Gong, M. A. Wieczorek, F. Nimmo, W. S. Kiefer, J. W. Head, C. Huang, D. E. Smith, and M. T. Zuber (2016). Thicknesses of mare basalts on the Moon from gravity and topography, *J. Geophys. Res. Planets*, 121, 854–870, doi:10.1002/2016JE005008, 2016.
- M. Dumberry and M. A. Wieczorek (2016). The forced precession of the Moon's inner core, *J. Geophys. Res. Planets*, 121, 1264–1292, doi:10.1002/2015JE004986, 2016.
- Tosi, N., O. Čadež, O. M. Běhouňková, M., M. Káňová, A.-C. Plesa, M. Grott, D. Breuer, S. Padovan, and M. A. Wieczorek (2015). Mercury's low-degree geoid and topography controlled by insolation-driven elastic deformation, *Geophys. Res. Lett.*, 42, 7327–7335, doi:10.1002/2015GL065314, 2015.
- Neumann, G. A., M. T. Zuber, M. A. Wieczorek, J. W. Head, D. M. H. Baker, S. C. Solomon, D. E. Smith, F. G. Lemoine, E. Mazarico, T. J. Sabaka, S. Goossens, H. J. Melosh, R. J. Phillips, S. W. Asmar, A. S. Konopliv, J. G. Williams, M. M. Sori, J. M. Soderblom, K. Miljković, J. C. Andrews-Hanna, F. Nimmo, W. S. Kiefer (2015). Lunar Impact Basins Revealed by Gravity Recovery and Interior Laboratory, *Science Advances*, 1(9), doi:10.1126/sciadv.1500852.

- Soderblom, J. M., A. J. Evans, B. C. Johnson, H. J. Melosh, K. Miljković, R. J. Phillips, J. C. Andrews-Hanna, C. J. Bierson, J. W. Head III, C. Milbury, G. A. Neumann, F. Nimmo, D. E. Smith, S. C. Solomon, M. M. Sori, M. A. Wieczorek, M. T. Zuber (2015). The fractured Moon: Production and saturation of porosity in the lunar highlands from impact cratering, *Geophys. Res. Lett.*, doi:10.1002/2015GL065022.
- Wieczorek, M. A. (2015). Gravity and Topography of the Terrestrial Planets, *Treatise on Geophysics*, 2nd edition, Oxford, 153-193, doi:10.1016/B978-0-444-53802-4.00169-X.
- Thorey, C., C. Michaut, and M. A. Wieczorek (2015). Gravitational signatures of lunar floor-fractured craters, *Earth Planet. Sci. Lett.*, **424**, 269-279, doi:10.1016/j.epsl.2015.04.021.
- Miljković, K., M. A. Wieczorek, G. S. Collins, S. C. Solomon, D. E. Smith, M. T. Zuber (2015). Excavation of the lunar mantle by basin-forming impact events on the Moon, *Earth Planet. Sci. Lett.*, **409**, 243-251, doi:10.1016/j.epsl.2014.10.041.
- Padovan, S., M. A. Wieczorek, J.-L. Margot, N. Tosi, S. C. Solomon (2015). Thickness of the crust of Mercury from geoid-to-topography ratios, *Geophys. Res. Lett.*, **42**, 1029-1038, doi:10.1002/2014GL062487, 2015.
- Wieczorek, M. A., M. Meschede, I. Oshchepkov (2015). SHTOOLS - Tools for working with spherical harmonics (v3.1), *ZENODO*, doi:10.5281/zenodo.20920, 2015.
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- Laneuville, M., M. A. Wieczorek, D. Breuer, J. Aubert, G. Morard, T. Rückriemen (2014). A long-lived lunar dynamo powered by core crystallization, *Earth Planet. Sci. Lett.*, **401**, 251-260, doi:10.1016/j.epsl.2014.05.057.
- Taylor, G.J., and M. A. Wieczorek (2014). Lunar bulk chemical composition: a post-Gravity Recovery and Interior Laboratory reassessment, *Phil. Trans. R. Soc. A*, **372**, 20130242, doi:10.1098/rsta.2013.0242.
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