

JULIE C. CASTILLO-ROGEZ
Research Scientist, Planetary Ices Group

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<http://scienceandtechnology.jpl.nasa.gov/research/facilities/ices/>

EDUCATION:

2001 Ph. D., Geophysics, University of Rennes, France
1998 M.Sc., Geophysics, University of Rennes, France
1997 B.Sc., Geology, University of Nantes, France

PROFESSIONAL POSITIONS:

2017 – Present Research Scientist (Scientist V) – Planetary Ices Group, JPL/Caltech
2010 – 2017 Research Scientist (Scientist IV) – Planetary Ices Group, JPL/Caltech
2007 – 2010 Scientist, Strategic Hire – Planetary Ices Group, JPL/Caltech
Affiliate – Geological and Planetary Science Division, Caltech
2005 – 2007 Postdoctoral Researcher – Caltech
2002 – 2005 NASA Research Associate

PROFESSIONAL EXPERIENCE

2017 – Present Co-Chair for the Pre-Decadal Study on Future Ceres Missions
2016 – Present Project Scientist for the *Dawn* Extended Mission
2016 – Present *Dawn* Science co-investigator
2016 – Present Co-investigator of the Very Large Telescope Large Program about determining the physical properties of ~100 main belt asteroids
2013 – 2016 *Dawn* Science Team affiliate
2013 – Present Science PI for the *Near Earth Asteroid Scout* Mission under NASA's Advanced Exploration Systems (HEOMD) – Now in Phase C/D
2013 – Present Participating Scientist in *MAVEN* mission
2013 – Present Investigation Scientist for the *InSight* mission
2012 – 2014 Infusion Scientist for *INSPIRE* Deep CubeSat Precursor Mission
2008 *Titan and Saturn System Mission* Science Definition team member
2002 – 2004 Science Planning and Operations – *Cassini* Radio Science Team

AWARDS

2017 Asteroid *Castillorogez* (11274, 1998SX2) awarded by IAU
2016 Collier Award awarded to the *Dawn* Science Team
2016 Exceptional Achievement – *MAVEN* Science Team
2015 NASA Honors – *Near Earth Asteroid Scout* Project, awarded from the Marshall Space Flight Center

2012	Prix de la Recherche – Best work published by French Nationals (led by Prof. Sebastien Charnoz)
2011	JPL's Lew Allen Award for early career scientists

PUBLICATIONS

1. Scully, J., et al., Occator Special Issue Synthesis, Submitted to the Occator Special Issue of *Icarus*.
2. Scully, J., et al., Occator Special Issue Introduction, Submitted to the Occator Special Issue of *Icarus*.
3. King, S., et al., Ceres Internal Structure from Geophysical Constraints, submitted to *Meteoritics and Planetary Science*.
4. Prettyman et al., Elemental composition and mineralogy of Vesta and Ceres: Distribution and origins of hydrogen-bearing species, Submitted to the Ceres Composition Special Issue of *Icarus*.
5. Bowling, T. J., Ciesla, F. J., Davison, T. M., Scully, J. E. C., Castillo-Rogez, J. C., Marchi, S., Post-Impact Thermal Structure and Cooling Timescales of Occator Crater on Asteroid 1 Ceres, Submitted to the Occator Special Issue of *Icarus*.
6. Lawrence, D., et al., Compositional Variability on the Surface of 1 Ceres Revealed through GRaND Measurements of High-Energy Gamma Rays, submitted to *Meteoritics and Planetary Science*.
7. Scully, J., et al., Geology of Occator Crater, Submitted to the Occator Special Issue of *Icarus*.
8. Schenk, P., et al., Interpretation of pit/floor on Ceres and comparison to icy moons, Submitted to the Occator Special Issue of *Icarus*.
9. Ruesch, O., et al., Bright carbonate surfaces on Ceres as remnants of salt-rich water fountains, Submitted to the Occator Special Issue of *Icarus*.
10. Raponi, A., et al., Mineralogy of Occator Crater on Ceres, Submitted to the Occator Special Issue of *Icarus*.
11. Belov et al., A Space-based Decametric Wavelength Radio Telescope Concept, Submitted to *J. Experimental Astronomy*.
12. Carrozzo, G., De Sanctis, M. C., Raponi, A., Ammannito, E., Castillo-Rogez, J. C., et al., Distribution of carbonates on Ceres, submitted to *Science Advances*.
13. McCord, T. B., Castillo-Rogez, J. C., Ceres evolution: Before and after the Dawn Mission, submitted to *Meteoritics and Planetary Science*.
14. Frigeri, A., et al., Castillo-Rogez, The geology of the Nawish quadrant on Ceres, submitted to *Geology*.
15. Mitri, G., Park, R., Castillo-Rogez, J. C., Raymond, C. A., Russell, C. T., Crustal Structure and Internal Differentiation of the Dwarf Planet Ceres, submitted to *Icarus*.
16. Castillo-Rogez, J. C., Hemingway, D., McKinnon, W. B., Schubert, G., Tobie, G., Original and geophysical evolution of Saturn's midsize icy satellites, Submitted to *Enceladus and Saturn's Satellites Book*.
17. Castillo-Rogez, J. C., Neveu, M., McSween, H. Y., De Sanctis M. C., Raymond, C. A., Russell, C. T., Insights into Ceres' evolution from surface composition, submitted to *Meteoritics and Planetary Science*.
18. Bland, M., et al. (2018) Morphological indicators of a mascon beneath Ceres' largest crater, Kerwan, *Geophys. Res. Lett.* In press.
19. Schorghofer, N., et al. (2017) The putative Cerean exosphere, *Astroph. J.* 850, id. 85.
20. Scully, J., et al. (2017) Evidence for the Interior Evolution of Ceres from Geologic Analysis Fractures, *Geophys. Res. Lett.* 44, 9564-9572.
21. Pieters, C., et al., Geologic constraints on the origin of red organic-rich material on Ceres, *MAPS Ceres Special Issue*, in press.
22. Rambaux, N., Baguet, D., Chambat, F., Castillo-Rogez, J. C. (2017) Equilibrium shapes of large transneptunian objects, *Astrophysical Journal Letters*.
23. Fu, R. R., Ermakov, A., Marchi, S., Castillo-Rogez, J. C., and 8 co-authors, Interior structure of the dwarf planet Ceres as revealed by surface topography, *EPSL* 476, 153-164.
24. Neveu, M., Desch, S., Castillo-Rogez, J., Aqueous chemistry in icy world interiors: Fate of antifreeze and radionuclides, *Geochimica and Cosmochimica Acta* 212, 324-371.
25. Ermakov, A., Fu, R. R., Castillo-Rogez, J. C., et al., Constraints on Ceres' internal structure and evolution from its shape and gravity measured the Dawn spacecraft, submitted to *J. Geophys. Res.*, in revisions.
26. Konopliv, A., et al., including Castillo-Rogez, The Ceres gravity field, spin pole, rotation period, and orbit from the Dawn radiometric tracking and optical data, *Icarus*, in press.
27. Landis, M., Byrne, S., Schorghofer, N., Schmidt, B., Hayne, P., Castillo-Rogez, J. C., et al., Sublimating water ice can be a source of Ceres' transient atmosphere, *J. Geophys. Res.*
28. Vance et al., including Castillo-Rogez, Vital Signs: Seismology of icy ocean worlds, *Astrobiology*, in press.
29. McSween, H. Y., et al., including Castillo-Rogez, Carbonaceous chondrite analogs for the composition and alteration of Ceres, *Meteoritics and Planetary Science*, Accepted.

30. Grasset, Castillo-Rogez, et al., Outer solar system water and volatiles, Special Issue of *Space Science Reviews* on Volatiles in the Solar System, accepted.
31. Vernazza, P., Castillo-Rogez, J. C., et al. (2017) Different origins or different evolutions? Decoding the spectral diversity among C-type asteroids, *Astron. J.* 153, 72.
32. Schmidt, B., et al., including Castillo-Rogez, Evidence for and distribution of ground ice at the surface of dwarf planet Ceres, *Nature Geoscience*.
33. Prettyman et al., including Castillo-Rogez, Extensive water ice within Ceres' aqueously altered regolith: Evidence from nuclear spectroscopy, *Science* aah6765.
34. Hiesinger et al., including Castillo-Rogez, Cratering on Ceres: Implications for its crust and evolution, *Science*.
35. Russell, C. T., et al., including Castillo-Rogez, Dawn Arrives at Ceres: Exploration of a Small Volatile-Rich World, *Science*.
36. Ruesch O., Platz, T., Schenk, P., McFadden, L. A., Castillo-Rogez, J. C., et al., Cryovolcanic activity on Ceres, *Science*.
37. Ammanito, E., et al., including Castillo-Rogez, Distribution of Phyllosilicates on the surface of Ceres, *Science*.
38. Park, R., Konopliv, A. S., Bills, B. G., Rambaux, N., Castillo-Rogez, J. C., Raymond, C. A., Vaughan, A. T., Ermakov, A. I., Zuber, M. T., Fu, R. R., Toplis, M. J., Russell, C. T., Nathues, A. (2016) Interior structure of dwarf planet Ceres from measured gravity and shape, *Nature*, accepted.
39. De Sanctis, M.C., Raponi, A., E. Ammannito, M. Ciarniello, M.J. Toplis, H.Y. McSween, J.C. Castillo-Rogez, B.L. Ehlmann, F.G. Carrozzo, S. Marchi, F. Tosi, F. Zambon, F. Capaccioni, M.T. Capria, S. Fonte¹, M. Formisano, A. Frigeri, M. Giardino, A. Longobardo, G. Magni, E. Palomba, L.A. McFadden, C.M. Pieters, R. Jaumann, P. Schenk, R. Mugnuolo, C.A. Raymond, C.T. Russell, Bright carbonate deposits as evidence of aqueous alteration on Ceres, *Nature*, 2016.
40. Bland, M. T., Raymond, C. A., Fu, R. R., Schenk, P., Kneissl, T., Pasckert, J.H., Hiesinger, H., Preusker, F., Park, R., Marchi, S., King, S., Castillo-Rogez, J. C., Russell, C.T. (2016) Composition and Structure of the Shallow Subsurface of Ceres as Revealed by Crater Morphology, *Nature Geoscience*, in press.
41. Li, J.-Y., and 24 co-authors, incl. Castillo-Rogez (2015) Surface Albedo and Spectral Variability of Ceres, *The Astrophysical Journal Letters*, Volume 817, Issue 2, article id. L22, 7 pp.
42. Castillo, J. C., Young, E. D. (2016) Origin and Evolution of Volatile-Rich Planetesimals, In: *Planetesimal Differentiation*, Eds.: Elkins-Tanton, L., Weiss, B., Cambridge University Press.
43. Thomas, C., Abell, P. A., Castillo-Rogez, J. C., Moskovitz, N., Mueller, M., Reddy, V., Rivkin, A. Ryan, E., Stansberry, J. (2016) Observing Near-Earth Objects with the James Webb Space Telescope, *Publications of the Astronomical Society of Pacific*, Volume 128, Issue 959, pp. 018002.
44. Rambaux, N., J. C., Chambat, F., Castillo-Rogez, (2015) Relationship between global shape and interior structure in the case of rapid rotators – Application to Ceres, *Astronomy & Astrophysics*, Volume 584, id.A127, 8 pp.
45. Castillo, J. C., Yoseph Bar-Cohen, Steve Vance, Mathieu Choukroun, Hyeong Jae Lee, Xiaoqi Bao, Mircea Badescu, and Stewart Sherrit, Melissa Grady Trainer, Stephanie Getty, Chapter 9: Sample handling and instruments for the in-situ exploration of ice-rich planets, In: *Planetary Exploration of Cold Planets*, edited by Y. Bar-Cohen, Springer.
46. Huffman, W., Thompson, D. R., Bue, B., Castillo-Rogez, J., Boland, J. (2015) Autonomous Onboard Point Source Detection by Small Exploration Spacecraft, *Publications of the Astronomical Society of the Pacific*, *Publications of the Astronomical Society of Pacific*, Volume 127, Issue 958, pp. 1279-1291
47. Scully et al. Geomorphological evidence for transient water flow on Vesta, *Earth and Planetary Science Letters*. [doi:10.1016/j.epsl.2014.12.004](https://doi.org/10.1016/j.epsl.2014.12.004)
48. Neveu M., Desch, S., Castillo-Rogez, J. C. (2015) Core cracking and hydrothermal circulation can profoundly affect Ceres' geophysical evolution, *J. Geophys. Res.*, doi: 10.1002/2014JE004714.
49. Fuchs, T., Thompson, D. R., Bue, B., Castillo-Rogez, J. C., Chien, S., Garibian, D., Wagstaff, K., Enhanced Flyby Science with Onboard Computer Vision: Tracking and Surface Feature Detection at Small Bodies, *Earth and Space Science*, in press.
50. Rosenblatt P., Marty J.C., Konopliv A.S., Beuthe M., and Castillo-Rogez J., MAGE: Maven Atmospheric drag and Gravity Experiment, *Space Science Reviews*, in press.
51. Arridge, C. S. et al. The science case for an orbital mission to Uranus: Exploring the origins and evolution of ice giant planets, *Planetary and Space Science*, [doi:10.1016/j.pss.2014.08.009](https://doi.org/10.1016/j.pss.2014.08.009).
52. Grazier, Kevin R.; Castillo-Rogez, Julie C.; Sharp, Philip W. (2014) Dynamical delivery of volatiles to the outer main belt, *Icarus* 232, 13-21.

53. Marchis, F.; Durech, J.; Castillo-Rogez, J.; Vachier, F.; Cuk, M.; Berthier, J.; Wong, M. H.; Kalas, P.; Duchene, G.; van Dam, M. A.; Hamanowa, H.; Viikinkoski, M. (2014) The Puzzling Mutual Orbit of the Binary Trojan Asteroid (624) Hektor, *The Astrophysical Journal Letters*, Volume 783, Issue 2, article id. L37, 6 pp. + press release
54. Le Maistre, Sebastien; Rosenblatt, Pascal; Rambaux, Nicolas; Castillo-Rogez, Julie C.; Dehant, Veronique; Marty, Jean-Charles (2013) Phobos interior from librations determination using Doppler and star tracker measurements, *Planetary and Space Science*, Volume 85, p. 106-122.
55. Tiscareno, M. S., Hedman, M. M., Burns, J. A., Castillo-Rogez, J. C., Compositions and origins of outer planet systems: Insights from the Roche critical density, Submitted to *Astroph. J.*
56. Rambaux, N., Castillo-Rogez, J. C., Tides on satellites of giant planets, In: *Lecture Notes in Physics, Tidal Effects in Astronomy and Astrophysics*, Springer, in press.
57. Rambaux, N., Castillo-Rogez, J. C., Le Maistre, S., Rosenblatt, P., Phobos Rotational Motion, *Astronomy and Astrophysics*, in press.
58. Castillo-Rogez, J., Johnson, T., Thomas, P., Choukroun, M., Matson, D., Lunine, J., Evolution of Phoebe, a large planetesimal in the outer Solar system, *Icarus* 219, 86-109. – Featured in http://www.nasa.gov/home/hqnews/2012/apr/HQ_12-136_Cassini_Phoebe.html
59. Turner, N. J., Choukroun, M., Castillo-Rogez, J. C., Bryden, G., A hot gap around Jupiter's orbit in the Solar nebula, *Astroph. J.*
60. Matson, D. L., Johnson, T. V., Lunine, J. I., Castillo-Rogez, J. C., Enceladus' heat pump, *Icarus*.
61. Charnoz, S., Crida, A., Castillo-Rogez, J., Lainey, V., Dones, L., Accretion of Saturn's mid-sized moons during the viscous spreading of young massive rings: solving the paradox of silicate-poor rings versus silicate-rich moons, *Icarus* 210, 635-643, doi: 10.1016/j.icarus.2010.08.005.
62. McCarthy, C. M., Castillo-Rogez, J. C., Planetary ices attenuation properties, *Science of Solar System Ices*, Eds. M. S. Gudipati, J. Castillo-Rogez, (peer-reviewed), Springer, in press.
63. Schmidt B., Castillo-Rogez, J. C., Water, heat, bombardment: The evolution and current state of (2) Pallas, *Icarus* 218, 478-488.
64. Castillo-Rogez, J. C., Lunine, J. I., Small Worlds Habitability, "Astrobiology: The Next Frontier," Eds: C. Impey, J. Lunine, J. Funes, Cambridge University Press, in press (publication in Sept. 2012)
65. Sharp, P. W., Castillo-Rogez, J. C., Grazier, K. R., The performance of phase-lag enhanced ERKN pairs on N-body simulations, *Journal of Computational and Applied Mathematics* 236, 2378-2386.
66. Castillo-Rogez, J. C., Ceres – Neither a porous nor salty ball, *Icarus* 215, 599-602.
67. Castillo-Rogez, J. C., Efroimsky, M., Lainey, V., The tidal history of Iapetus. Dissipative spin dynamics in the light of a refined geophysical model, *J. Geophys. Res.* 116, E09008, doi:10.1029/2010JE003664.
68. Rambaux, N., Castillo-Rogez, J. C., Dehant, V., Dynamical Rotation of Ceres, *Astronomy and Astrophysics* 535, doi: 10.1051/0004-6361/201116563 – Work highlighted as NASA http://solarsystem.nasa.gov/scitech/display.cfm?ST_ID=2474
69. McCord, T. B., Castillo-Rogez, J. C., Rivkin, A. S., Ceres: Its Origin, Evolution and Structure and Dawn's Potential Contribution, *Space Science Reviews*, special issue on the Dawn Mission, doi: 10.1007/s11214-010-9729-9
70. Choukroun, M., Barmatz, M., Castillo-Rogez, J. C., Understanding the Evolution of Icy Satellites through Cryogenic LM and Raman Studies, *Microscopy and Analysis*, March 2011.
71. Robutel, P., Rambaux, N., Castillo-Rogez, J., Analytical description of physical librations of Saturnian coorbital satellites Janus and Epimetheus, *Icarus* 211, 758-769, doi: 10.1016/j.icarus.2010.09.014.
72. Castillo-Rogez, J. C., Lunine, J. I. (2010) Evolution of Titan's rocky core constrained by Cassini observations, submitted to *Geophysical Research Letters* 37, L20205, doi: doi:10.1029/2010GL044398.
73. Matson D. L., Castillo-Rogez J. C., McKinnon W. B., Sotin C., Schubert G., The thermal evolution and internal structure of Saturn's midsize icy satellites, In: *Saturn after Cassini-Huygens*, Eds: R. Brown, M. Dougherty, L. Esposito, T. Krimigis, H. Waite, Chapter 19, doi: 10.1007/978-1-4020-9217-6_18.
74. Davies, A. G., Sotin, C., Matson, D. L., Castillo-Rogez, J. C., Johnson, T. V., Choukroun, M., Baines, K. H., Atmospheric Control of the Cooling Rate of Impact Melts and Cryolavas on Titan's Surface, *Icarus* 208, 887-895, doi:10.1016/j.icarus.2010.02.025.
75. Castillo-Rogez, J. C., Schmidt, B. E. (2010), Geophysical evolution of the Themis family parent body, *Geophys. Res. Lett.*, 37, L10202, doi:10.1029/2009GL042353.
76. Rambaux, N., Castillo-Rogez, J. C., Williams, J. G., Karatekin, O. (2010) The librational response of Enceladus, *Geophysical Research Letters*, 37, L04202, doi:10.1029/2009GL041465.

77. Castillo-Rogez, J. C., McCord, T. B. (2010) Ceres' evolution and present state constrained by shape data, *Icarus* 205, 443-459, doi:10.1016/j.icarus.2009.04.008.
78. Castillo-Rogez, J. C., Johnson, T. V., Lee, M. H., Turner, N., Lunine, J. I., Matson, D. L. (2009) ^{26}Al decay: Heat production and a revised age for Iapetus, *Icarus* 204, 658-662, doi:10.1016/j.icarus.2009.07.025.
79. Castillo-Rogez J., D. L. Matson, C. Sotin, T. V. Johnson, J. I. Lunine, P. C. Thomas (2007) Iapetus' Geophysics: Rotation Rate, Shape, and Equatorial Ridge, *Icarus*, doi:10.1016/j.icarus.2007.02.018.
80. Work Highlighted in Science News.
81. Matson, D. L., Castillo-Rogez, J. C., Lunine, J. and T. V. Johnson 2007: Enceladus' Plume: Compositional Evidence For a Hot Interior, *Icarus* 187, 569-573 doi:10.1016/j.icarus.2006.10.016., 2007.
82. Castillo-Rogez J. 2006: The internal structure of Rhea, *J. Geophys. Res.*, 111, E11005, doi:10.1029/2004JE002379.
83. Matson, D. L., Davies, A. G., Veeder, G. J., Rathbun, J. A., Johnson, T. V., Castillo, J. C., Io: Loki Patera as a magma sea, *Journal of Geophysical Research* 111, CiteID E09002, doi:10.1029/2006JE002703.
84. Castillo, J., Mocquet, A., Saracco, G. (2001) Wavelet transform: A tool for the interpretation of upper mantle converted phases at high frequency, *Geophys. Res. Lett.* 28 4327-4330, doi: 10.1029/2001GL013214.
85. Castillo, J., A. Mocquet, and C. Sotin, 2000: Detecting a deep ocean within Europa by means of geodetic measurements, *C. R. Acad. Sci.* 330, 659-666, doi:10.1016/S1251-8050(00)00195-6.

ADVISORY ACTIVITIES

COSPAR – 4S Roadmap Committee Member – 2017 – 2018

Member of the Small Body Assessment Group Committee – 2017 - Present

Member of the Roadmap for Ocean Worlds – 2016 – Present

NRC Committee on *Achieving Science with CubeSats* – 2015 – 2016

Committee member of the Division for Planetary Science – 2013 – 2016

NASA Advisory Committee, Planetary Science Subcommittee – 2010 – 2014

Vice-chair – November 2013 – April 2014

Science, Research and Technology Working Group – 2010 – 2011

Small Bodies Assessment Group – Roadmap Action Team – 2010 – 2013