Catherine Neish – Curriculum Vitae

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Education

August 2004 – Dec. 2008	University of Arizona Ph.D., Planetary Sciences
August 1999 – May 2004	University of British Columbia B.Sc., Combined Honours Physics and Astronomy

Work Experience

July 2015 – present	Assistant Professor Department of Earth Sciences, University of Western Ontario Cross-appointment in Physics and Astronomy (2018 – present)
August 2013 – June 2015	Assistant Professor Department of Physics and Space Sciences, Florida Tech
July 2012 – July 2013	NASA Postdoctoral Fellow NASA Goddard Space Flight Center
May 2009 – June 2012	Postdoctoral Fellow Johns Hopkins University Applied Physics Laboratory
January 2009 – Apr. 2009	Postdoctoral Research Associate Department of Planetary Sciences, University of Arizona
August 2004 – Dec. 2008	Graduate Research Assistant Department of Planetary Sciences, University of Arizona

Honours and Awards

- AGU Ronald Greeley Early Career Award in Planetary Science, 2014
- NASA Fellowship for Early Career Researchers, 2012
- NASA Group Achievement Award to the LRO Team, 2010
- NSERC Postgraduate Scholarship (Doctoral), 2005 - 2008
- Julie Payette-NSERC Research Scholarship, 2004 – 2005
- Minor Planet 16972 Neish

Currently Funded Research Grants

- **PI**: *NSERC Discovery Grants Program - Individual* 2015-2020
  Landscape evolution of planetary surfaces: Comparative analysis of craters in the solar system
  Total Budget: $135,000 CAD

- **PI**: *NSERC Discovery Accelerator Supplement* 2015-2018
  Landscape evolution of planetary surfaces: Comparative analysis of craters in the solar system
  Total Budget: $120,000 CAD

- **PI**: *CSA Flights & Fieldwork for the Advancement of Science and Technology* 2016-2019
  Volcanic analogue mission for planetary exploration (VAMPE)
  Total Budget: $200,000 CAD

- **PI**: *CSA Flights & Fieldwork for the Advancement of Science and Technology* 2018-2020
  Volcanic analogues for the exploration of Mars
  Total Budget: $100,000 CAD

- **PI**: *Early Researchers Award, Ontario Ministry of Research & Innovation* 2017-2022
  Radar remote sensing of the Earth and Planets
  Total Budget: $100,000 CAD

- **Co-I**: *CSA FAST – Lunar Exploration Analogue Deployment* 2019-2021
  CanLunar – A Canadian Lunar Sample Return Analogue Mission
  Total Budget: $225,000 (PI: Gordon Osinski, UWO)

- **Co-I**: *NASA New Frontiers Phase A* 2017-2018
  Dragonfly: Titan Rotorcraft Lander
  Total Budget: Unknown (PI: Elizabeth Turtle, JHU/APL)

- **Co-I**: *NSERC CREATE* 2016-2022
  Technologies for Exo-Planetary Science (TEPS)
  Total Budget: $1,650,000 CAD (PI: Ray Jayawardhana, York University)

- **Co-I:** *NASA Lunar Data Analysis Program* 2016-2019
  Analysis of *Chang'E* Orbital and Surface Data
  Total Budget: $219,000 USD (PI: David Blewett, JHU/APL)

- **Co-I:** *NASA Solar System Workings Program* 2015-2018
  Lunar impact melt flows: Geological mapping, experimental simulation, numerical modeling
  Total Budget: $479,495 USD (PI: Christopher Hamilton, University of Arizona)

Previously Funded Research Grants

- **PI**: *NSERC Engage Grants for Universities* 2017
  Geologic applications of mobile and tripod LiDAR systems
  Total Budget: $24,260 CAD

- **PI**: *CSA Science and Operational Applications Research for RADARSAT-2* 2016-2017
  Monitoring salt diapir evolution on Axel Heiberg Island with InSAR
  Total Budget: $50,000 CAD

- **PI**: *NASA Outer Planets Research Program* 2014-2017
  Erosion on Titan as revealed by its crater population
  Total Budget: $232,697 USD

- **Co-I**: *CSA NeMO SAR Contract*
  Concept Study for a Sub-Surface Ice Sounder on the Next Mars Orbiter 2017
  Total Budget: $300,000 CAD (PI: Gordon Osinski, UWO)

- **Co-I**: *CSA Topical Team Contract* 2016-2017
  Planetary Geology, Geophysics and Prospecting Topical Team
  Total Budget: $15,000 CAD (PI: Gordon Osinski, UWO)

- **Co-I:** *CSA Science and Operational Applications Research for RADARSAT-2* 2015-2017
  Application of RADARSAT-2 polarimetric SAR for geological mapping and resource exploration in the Canadian Arctic
  Total Budget: $200,000 CAD (PI: Gordon Osinski, University of Western Ontario)

Professional Activities

Spacecraft Involvement:

- Member of the Chandrayaan-1 and LRO Mini-RF Science Team (2009 – present)
- Associate Team Member of the Cassini Radar Science Team (2010 – present)
- Co-Investigator on the Dragonfly New Frontiers mission concept (2016 – present)

Scientific Collaborations and Committees:

- Member, Outer Solar System Task Group, IAU Working Group for Planetary System Nomenclature (2018 – present)
- Committee Member, Division for Planetary Sciences of the American Astronomical Society (2016 – present)
- Executive Council, Centre for Planetary Science and Exploration, Western University (2015 – present)
- Collaborator, FINESSE Node, NASA Solar System Exploration Research Virtual Institute (2014 – present)
- Member, "Roadmaps for Ocean Worlds", NASA Outer Planets Assessment Group (2016 – 2018)
- Member, CSA Planetary Geology, Geophysics and Prospecting Topical Team (2016-17)

Peer Review:

- Review panel member for NASA (2008, 2009, 2012, 2013, 2015, 2017)
- Review panel member for NSERC RTI
- External reviewer, Arecibo Scheduling Advisory Committee (2012 - 2017)

- Manuscript reviewer for *Icarus*, *Journal of Geophysical Research*, *Geophysical Research Letters*, *Planetary and Space Sciences*, *ApJ Letters, Advances in Space Research, Nature Geosciences, Earth and Planetary Science Letters, Geology, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Transactions on Geoscience and Remote Sensing*, *Planetary Science,* and *Eos*

Meeting Organization:

- Lead organizer, TEPS Summer Skills Series Workshop (05/2018)
- Lead organizer, TEPS Summer Skills Series Workshop (06/2017)
- Lead organizer, Titan Surfaces Workshop, FIT (01/2014)
- Lead organizer, NLSI Workshop Without Walls (09/2011)
- Member, SOC, 5th Annual NASA Exploration Science Forum (06/2018)
- Member, SOC, Cryovolcanism in the Solar System (06/2018)
- Member, SOC, Titan Through Time IV (04/2017)
- Member, SOC, 2nd Annual NASA Exploration Science Forum (07/2015)
- Member, SOC, Habitable Worlds Across Time and Space, STScI 2014 Spring Symposium (04/2014)
- Member, SOC, 45th Annual Meeting of the AAS Division for Planetary Sciences (10/2013)
- Member, SOC, 6th Annual NLSI Lunar Science Forum (07/2013)

Recent Invited Seminars

Extreme Makeover: Titan Edition

- Department of Astronomy and Astrophysics, The University of Toronto (11/2018)
- Department of Earth and Planetary Sciences, The Johns Hopkins University (05/2018)
- Department of Physics and Astronomy, University of Delaware (12/2017)
- Department of Astronomy, Cornell University (06/2016)
- Planetary Science Institute (05/2016)
- Department of Earth Sciences, University of Western Ontario (01/2016)
- Southwest Research Institute Seminar Series (11/2015)

Titan: Ingredients for Life

- Department of Physics and Astronomy, The University of Western Ontario (11/2018)
- Origins Institute, McMaster University (03/2018)
- Gordon Research Conference on the Origins of Life (01/2018)

Professional Societies

American Geophysical Union
Division for Planetary Science, American Astronomical Society
Geological Society of America

Teaching and Mentorship

Courses taught:

- ES1023A – Planet Earth: Shaken and Stirred – UWO – Fall 2016
- ES2123A – The Dynamic Earth – UWO – Fall 2016
- ES3001B – Astrobiology – UWO – Spring 2016, Spring 2017, Spring 2018
- PS9606L – Remote Sensing and Image Analysis for Earth and Planetary Science – UWO – Summer 2016, Summer 2018 (*co-taught*)

- SPS 4035 – Comparative Planetology – FIT – Spring 2015
- SPS 4030 – Physics of the Atmosphere – FIT – Spring 2014, Spring 2015
- SPS 1010 – Introduction to Astronomy – FIT – Spring 2014
- SPS 5031 – Planetary Science: Atmospheres – FIT – Spring 2014

Mentorship:

- **Postdoctoral Fellows:**
  - Supervisor – Western postdoctoral fellow Byung-Hun Choe, 2018
  - Co-supervisor – Western postdoctoral fellow Nora Weitz, 2017 – 2018
  - Co-supervisor – Western postdoctoral fellow Michael Zanetti, 2015 – 2018

- **Graduate Students:**
  - Supervisor – Western MSc student William Yingling, 2018 - present
  - Supervisor – Western MSc student Jahnavi Shah, 2018 – present
  - Supervisor – Western MSc student Carolina Rodriguez, 2018 – present
  - Co-supervisor – Western PhD student Gavin Tolometti, 2016 – present
  - Supervisor – Western PhD student Josh Hedgepeth, 2016 – present
  - Supervisor – Western MSc student Alyssa Werynski, 2016 – 2018
  - Supervisor – Western MSc student Jeff Daniels, 2016 – 2018
  - Supervisor – Western MSc student Elise Harrington, 2016 – 2018
  - Co-supervisor – Western PhD student Byung-Hun Choe, 2016 – 2017
  - Supervisor – FIT MSc student Rebeca Kinser, 2014 – 2016

- **Undergraduate Students:**
  - Supervisor – UBC BSc student Kevin Fan, 2017 – 2018
  - Supervisor – Western BSc student Nilushi Mahathantila, 2016 – 2017
  - Supervisor – Western BA student Maria Shaposhnikova, 2016
  - Supervisor – UBC BSc student Rachel Maj, 2016
  - Supervisor – Western BSc student Derek Smith, 2015 – 2016
  - Supervisor – FIT undergraduate students Deirdra Fey, Ryan Ripper, Thomas Barranger, Sakhee Bhure, and Jacob Lashley, 2013 - 2015
  - Mentor for NASA Goddard undergraduate intern Jack Madden, 2013

Book Chapters

1. **C.D. Neish**, L.M. Carter (2014) Planetary radar. In: Spohn, T., Breuer, D., Johnson, T. (Eds.) *Encyclopedia of the Solar System, 3rd Edition*. Elsevier, Waltham, MA.

Non-Refereed Publications

1. A. Hendrix *et al*. (2019) The NASA Roadmap to Ocean Worlds. *Astrobiology*, 19, 1-27.
2. M. Zanetti, A. Kukko, **C. Neish**, and G. Osinski (2018) Comparative Planetology: Lidar Unveils Similarities of Earth and Mars. *LiDAR Magazine* 8(2), 22-33.
3. **C. Neish** (2014) Research Focus: MESSENGER Into Darkness. *Geology* 42, 1111-1112.
4. **C. Neish** (2011) News and Views: Titan's Nitrogenesis. *Nature Geosciences* 4, 356-357.

Peer-Reviewed Publications *(underline indicates student or postdoc advisee*)

1. A. Werynski, **C. Neish**, A. Le Gall, M. Janssen (2019) Compositional variations of Titan's impact craters indicates active surface erosion. *Icarus*, 321, 508-521.
2. Y.-C. Zheng, K.L. Chan, K. T. Tsang, Y.-C. Zhu, G. P. Hu, D. T. Blewett, **C. Neish** (2019) Analysis of *Chang'E-2* brightness temperature data and production of high spatial resolution microwave maps of the Moon. *Icarus*, 319, 627-644.
3. A. Morrison, M. Zanetti, C. Hamilton, E. Lev, **C. Neish**, A. Whittington (2019) Rheological investigation of lunar highland and mare impact melt simulants. *Icarus*, 317, 307-323.
4. **C. D. Neish**, R.D. Lorenz, E.P. Turtle, J.W. Barnes, M.G. Trainer, B. Stiles, R. Kirk, C.A. Hibbitts, and M.J. Malaska (2018) Strategies for detecting biological molecules on Titan. *Astrobiology*, 18, 571-585.
5. G. Osinski, R. Grieve, J.E. Bleacher, **C. Neish**, E. Pilles, L. Tornabene (2018) Igneous rocks formed by hypervelocity impact. *Journal of Volcanology and Geothermal Research*, 353, 25-54.
6. V. J. Bray, C. Atwood-Stone, **C. D. Neish**, A. McEwen, N. Artemieva, J. N. McElwaine (2018) Lobate impact melt flows within the extended ejecta blanket of Pierazzo crater. *Icarus,* 301, 26-36.
7. **C. D. Neish**, R. R. Herrick, M. Zanetti, D. Smith (2017) The role of pre-impact topography in impact melt emplacement on terrestrial planets. *Icarus*, 297, 240-251.
8. **C. D. Neish**, C. W. Hamilton, S. S. Hughes, S. Kobs Nawotniak, W. B. Garry, J. R. Skok, R. C. Elphic, E. Schaefer, L. M. Carter, J. L. Bandfield, G. R. Osinski, D. Lim, J. L. Heldmann (2017) Terrestrial analogues for lunar impact melt flows. *Icarus*, 281, 73-89.
9. L.M. Carter, B.A. Campbell, **C.D. Neish**, M.C. Nolan, G.W. Patterson, J.R. Jensen, D.B.J. Bussey (2017) A Comparison of Radar Polarimetry Data of the Moon from the LRO Mini-RF Instrument and Earth-based Systems. *IEEE Transactions on Geoscience and Remote Sensing*, 55, 1915-1927.
10. G.W. Patterson, A.M. Stickle, F.S. Turner, J.R. Jensen, D.B.J. Bussey, P. Spudis, R.C. Espiritu, R.C. Schulze, D.A. Yocky, D.E. Wahl, M. Zimmerman, J.T.S. Cahill, M. Nolan, L. Carter, **C.D. Neish**, R.K. Raney, B. Thomson, R. Kirk, T.W. Thompson, B.L. Tise, I.A. Erteza, C.V. Jakowatz (2017) Bistatic Radar Observations of the Moon using Mini-RF on LRO and the Arecibo Observatory. *Icarus*, 283, 2-19.
11. J. Bandfield, J.T. Cahill, L.M. Carter, **C. D. Neish**, G.W. Patterson, J.-P. Williams, and D.A. Paige (2017) Distal ejecta from lunar impacts: Extensive regions of rocky deposits. *Icarus*, 283, 282-299.
12. S.P.D. Birch, A.G. Hayes, W. Dietrich, A.D. Howard, C. Bristow, M.J. Malaska, J. Moore, M. Mastrogiuseppe, J.D. Hofgartner, D.A. Williams, O. White, J. Soderblom, J.W. Barnes, E. Turtle, J.I. Lunine, C. Wood, **C. Neish**, R. Kirk, E. Stofan, R. Lorenz,

and R.M.C. Lopes (2016) Geomorphologic mapping of Titan's polar terrains: Constraining Surface Processes and Landscape Evolution. *Icarus*, 282, 214-236.

13. S. Domagal-Goldman *et al.* (2016) The Astrobiology Primer v2.0. *Astrobiology*, 16, 561-653.
14. B. Greenhagen, **C. D. Neish**, J.-P. Williams, J. T. Cahill, R. R. Ghent, P. O. Hayne, S. J. Lawrence, N. E. Petro, J. L. Bandfield (2016) Origin of anomalously rocky appearance of Tsiolkovskiy crater. *Icarus,* 273, 237-247. [*Selected to be on the cover of Icarus*]
15. **C.D. Neish**, J.L. Molaro, J. Lora, A.D. Howard, R.L. Kirk, P. Schenk, V.J. Bray, R.D. Lorenz (2016) Fluvial erosion as a mechanism for crater modification on Titan. *Icarus* 270, 114-129.
16. M.A. Janssen, A. Le Gall, R.M. Lopes, R.D. Lorenz, M.J. Malaska, A.G. Hayes, **C.D. Neish**, A. Solomonidou, K.L. Mitchell, J. Radebaugh, S. J. Keihm, M. Choukroun, C. Leyrat, P.J. Encrenaz, M. Mastrogiuseppe (2016) Titan's surface at 2.18 cm wavelength imaged by the Cassini RADAR radiometer: Results and interpretations through the first ten years of observation. *Icarus* 270, 443-459.
17. M.J. Malaska, R.M. Lopes, D.A. Williams, **C.D. Neish**, A. Solomonidou, J.M. Soderblom, A.M. Schoenfeld, S.P. Birch, A.G. Hayes, A. Le Gall, M.A. Janssen, T.G. Farr, R.D. Lorenz, J. Radebaugh, and E.P. Turtle (2016) Geomorphological map of the Afekan Crater region, Titan: Terrain relationships in the equatorial and mid-latitude regions. *Icarus* 270, 130-161.
18. R.M.C. Lopes, M.J. Malaska, A. Solomonidou, A. Le Gall, M.A. Janssen, **C.D. Neish**, E.P. Turtle, S.P.D. Birch, A.G. Hayes, J. Radebaugh, A. Coustenis, A. Schoenfeld, B.W. Stiles, R.L. Kirk, K.L. Mitchell, E.R. Stofan, K.J. Lawrence (2016) Nature, distribution, and origin of Titan's undifferentiated plains. *Icarus* 270, 162-182.
19. Z.Y.C. Liu, J. Radebaugh, E. H. Christiansen, R.A. Harris, **C.D. Neish**, R.L. Kirk, and R.D. Lorenz (2016) The tectonics of Titan: Global structural mapping from Cassini RADAR. *Icarus* 270, 14-29.
20. **C.D. Neish**, J.W. Barnes, C. Sotin, S. MacKenzie, J.M. Soderblom, S. Le Mouélic, R.L. Kirk, B.W. Stiles, M.J. Malaska, A. Le Gall, R.H. Brown, K.H. Baines, B. Buratti, R.N. Clark, P.D. Nicholson (2015) Spectral properties of Titan's impact craters imply chemical weathering of its surface. *Geophysical Research Letters* 42*,* doi:10.1002/2015GL063824.
21. J.T.S Cahill, B.J. Thomson, G.W. Patterson, D.B.J. Bussey, **C.D. Neish**, N.R. Lopez, F.S. Turner, T. Aldridge, M. McAdam, H.M. Meyer, R.K. Raney, L.M. Carter, P.D. Spudis, H. Hiesinger, J.H. Pasckert (2014) The miniature radio frequency instrument's (Mini-RF) global observations of Earth's Moon. *Icarus* 243, 173-190.
22. **C.D. Neish**, J. Madden, L.M. Carter, B.R. Hawke, T. Giguere, V.J. Bray, G.R. Osinski, J.T.S. Cahill (2014) Global distribution of lunar impact melt flows. *Icarus* 239, 105-117.
23. H.J. Cleaves, **C. Neish**, M.P. Callahan, E. Parker, F.M. Fernandez, J.P. Dworkin (2014) Amino acids generated from hydrated Titan tholins: Comparison with Miller-Urey electric discharge products. *Icarus* 237, 182-189.
24. **C.D. Neish**, R.D. Lorenz (2014) Elevation distribution of Titan's craters suggests extensive wetlands. *Icarus* 228, 27-34. [*Selected to be on the cover of Icarus*]
25. **C.D. Neish**, D.T. Blewett, J.K. Harmon, E.I. Coman, J.T.S. Cahill, C.M. Ernst (2013) A comparison of rayed craters on the Moon and Mercury. *Journal of Geophysical Research* 118, 1-15, doi:10.1002/jgre.20166.

26. R.D. Lorenz, B.W. Stiles, O. Aharonson, A. Lucas, A.G. Hayes, R.L. Kirk, H.A. Zebker, E.P. Turtle, F. Nimmo, **C.D. Neish**, J.W. Barnes, E.R. Stofan (2013) A global topographic map of Titan. *Icarus* 225, 367-377.
27. R.M.C. Lopes, R.L. Kirk, K.L. Mitchell, A. LeGall, J.W. Barnes, A. Hayes, J. Kargel, L. Wye, J. Radebaugh, E.R. Stofan, M. Janssen, **C. Neish**, S. Wall, C.A. Wood, J.I. Lunine (2013) Cryovolcanism on Titan: New results from Cassini RADAR and VIMS. *Journal of Geophysical Research* 118, 1-20, doi:10.1002/jgre.20062.
28. B. Shankar, G.R. Osinski, I. Antonenko, **C.D. Neish** (2013) A multispectral geological study of the Schrödinger impact crater. *Canadian Journal of Earth Sciences* 50, 44-63.
29. **C.D. Neish**, R.L. Kirk, R.D. Lorenz, V.J. Bray, P. Schenk, B. Stiles, E. Turtle, K. Mitchell, A. Hayes, the Cassini RADAR Team (2013) Crater topography on Titan: Implications for landscape evolution. *Icarus* 223, 82-90.
30. S.W. Bell, B.J. Thomson, M.D. Dyar, **C.D. Neish**, J.T. Cahill, D.B.J. Bussey (2012) Dating small fresh lunar craters with Mini-RF observations of ejecta blankets. *Journal of Geophysical Research* 117, E00H30.
31. **C.D. Neish**, L. Prockter, G.W. Patterson (2012) Observational constraints on the identification and distribution of chaotic terrain on icy satellites. *Icarus* 221, 72-79.
32. J.E. Moores and 44 colleagues (2012) A Mission Control Architecture for Lunar Sample Return as Field Tested in an Analogue Deployment to the Sudbury Impact Structure. *Advances in Space Research* 50, 1666-1686.
33. B.J. Thomson, D.B.J. Bussey, **C.D. Neish**, J.T.S. Cahill, E. Heggy, R.L. Kirk, G.W. Patterson, R.K. Raney, P.D. Spudis, T.W. Thompson, E. Ustinov (2012) An upper limit for ice in Shackleton crater as revealed by LRO Mini-RF orbital radar. *Geophysical Research Letters* 39, L14201.
34. **C.D. Neish**, R.D. Lorenz (2012) Titan's global crater population: A new assessment. *Planetary and Space Science* 60, 26-33.
35. L.M. Carter, **C.D. Neish**, D.B.J. Bussey, P.D. Spudis, M.S Robinson, G.W. Patterson, J.T. Cahill, R.K. Raney (2012) Initial observations of lunar impact melts and ejecta flows with the Mini-RF radar. *Journal of Geophysical Research* 117, E00H09.
36. **C.D. Neish**, D.T. Blewett, D.B.J. Bussey, S.J. Lawrence, M. Mechtley, B.J. Thomson (2011) The surficial nature of lunar swirls as revealed by the Mini-RF instrument. *Icarus* 215, 186-196.
37. R.K. Raney, P. Spudis, B. Bussey, J. Crusan, J.R. Jensen, W. Marinelli, P. McKerracher, **C. Neish**, M. Palsetia, R. Schulze, H. Sequeira, H. Winters (2011) The Lunar Mini-RF Radars: Hybrid Polarimetric Architecture and Initial Results. *Proceedings of the IEEE* 99, 808-823.
38. **C.D. Neish**, D.B.J. Bussey, P. Spudis, W. Marshall, B.J. Thomson, G.W. Patterson, L.M. Carter (2011) The nature of lunar volatiles as revealed by Mini-RF observations of the LCROSS impact site. *Journal of Geophysical Research* 116, E01005.
39. **C.D. Neish**, R.D. Lorenz, R.L. Kirk, L.C. Wye (2010) Radarclinometry of the sand seas of Africa's Namibia and Saturn's moon Titan. *Icarus* 208, 385-394.
40. D.B.J. Bussey, J.A. McGovern, P.D. Spudis, **C.D. Neish**, H. Noda, Y. Ishihara, S-A. Sorensen (2010) Illumination conditions of the south pole of the Moon derived using Kaguya topography. *Icarus* 208, 558-564.
41. **C.D. Neish**, A. Somogyi, M.A. Smith. (2010) Titan's primoridal soup: Formation of amino acids via low temperature hydrolysis of tholins. *Astrobiology* 10, 337-347.
42. P.D. Spudis and 29 colleagues (2010) Initial results for the north pole of the Moon from Mini-SAR, Chandrayaan-1 mission. *Geophysical Research Letters* 37, L06204.

43. **C.D. Neish**, A. Somogyi, J.I. Lunine, M.A. Smith (2009) Low temperature hydrolysis of laboratory tholins in ammonia-water solutions: Implications for prebiotic chemistry on Titan. *Icarus* 201, 412-421.
44. A. Coustenis and 154 colleagues (2009) TandEM: Titan and Enceladus mission. *Experimental Astronomy* 23, 893-946.
45. **C.D. Neish**, R.D. Lorenz, R.L. Kirk (2008) Radar topography of domes on planetary surfaces. *Icarus* 196, 552-564.
46. **C.D. Neish**, A. Somogyi, H. Imanaka, J.I. Lunine, M.A. Smith (2008) Rate measurements of the hydrolysis of organic polymers in cold aqueous solutions: Implications for prebiotic chemistry on the early Earth and Titan. *Astrobiology* 8, 273-287.
47. R.M.C. Lopes, K.L. Mitchell, E.R. Stofan, J. I. Lunine, R. Lorenz, F. Paganelli, R. L. Kirk, C.A. Wood, S.D. Wall, L. Robshaw, A.D. Fortes, **C.D. Neish**, and 32 colleagues (2007) Cryovolcanic features on Titan's surface as revealed by the Cassini Radar Mapper. *Icarus* 186, 395-412.
48. **C.D. Neish**, R.D. Lorenz, D.P. O'Brien, the Cassini RADAR Team (2006) The potential for prebiotic chemistry in the possible cryovolcanic dome Ganesa Macula on Titan. *The International Journal of Astrobiology* 5, 57-65.
49. M.C. Nolan, E.S. Howell, A.S. Rivkin, **C.D. Neish** (2003) (5381) Sekhmet. *IAU Circular*. 8163: 1.
50. P.C. Gregory, **C.D. Neish** (2002) Density and velocity structure of the Be star equatorial disk in the binary LS I +61 303, a probable microquasar. *The Astrophysical Journal* 580, 1133-1148.

Publications in Progress

- J. Hedgepeth, **C. Neish**, E. Turtle, B. Stiles, R. Kirk, R. Lorenz (2019) Titan's impact crater population after Cassini. *Icarus*, submitted.
- E. M. Harrington, M. Shaposhnikova, **C. D. Neish**, L. L. Tornabene, G. R. Osinski, B-H. Choe, M. Zanetti (2018) A polarimetric SAR and multispectral remote sensing approach for mapping salt diapirs: Axel Heiberg Island, NU, Canada. *Canadian Journal of Remote Sensing*, submitted.
- B-H. Choe, G.R. Osinski, **C.D. Neish**, L.L. Tornabene (2018) A modified semi-empirical radar scattering model for weathered rock surfaces. *Remote Sensing*, submitted.
- B-H. Choe, G.R. Osinski, **C.D. Neish**, L.L. Tornabene (2018) Polarimetric SAR signatures for characterizing geological units in the Canadian Arctic. *Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, submitted.
- G. Wei, X. Li, H. Gan, D. Blewett, **C. Neish**, B. Greenhagen (2018) A new method for simulation of microwave brightness temperatures and recalibration of Chang'e-2 MRM data using thermal constraints from Diviner. *Journal of Geophysical Research Planets*, submitted.

Conference Presentations

- C. D. Neish, K. Cannon, L. Tornabene, M. Zanetti, E. Pilles (2018) Evidence for glass-rich surfaces on lunar impact melt deposits. The Geological Society of America, 130th Annual Meeting, #18-2. Oral presentation (invited).

- C. D. Neish, K. Cannon, L. Tornabene, M. Zanetti, E. Pilles (2018) Evidence for glass-rich surfaces on lunar impact melt deposits. The American Astronomical Society, DPS meeting #50, #103.03. Oral presentation.
- C.D. Neish, R.D. Lorenz, E.P. Turtle, J.W. Barnes, M.G. Trainer, R. Kirk, B. Stiles, C.A. Hibbitts (2017) Strategies for detecting the products of aqueous chemistry on Titan. Astrobiology Science Conference 2017, #3081. Poster presentation.
- C.D. Neish, R.D. Lorenz, E.P. Turtle, J.W. Barnes, M.G. Trainer, R. Kirk, B. Stiles, C.A. Hibbitts (2017) Strategies for detecting the products of aqueous chemistry on Titan. The 48th Annual Lunar and Planetary Science Conference, Abstract 1457. Oral presentation.
- C.D. Neish, R.R. Herrick, D. Smith, R. Ripper, J. Lashley (2016) The role of pre-impact topography in impact melt emplacement on terrestrial planets. The 47th Annual Lunar and Planetary Science Conference, Abstract 1520. Oral presentation.
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