

## CURRICULUM VITAE - LUJENDRA OJHA

311 FERST DRIVE, SCHOOL OF EARTH AND ATMOSPHERIC SCIENCE, GEORGIA INSTITUTE  
OF TECHNOLOGY 30308 ATLANTA, GA, USA

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### Education

- **Ph.D., Georgia Institute of Technology, expected 2016.**
  - **Planetary Science with Volcanology Minor.**
    - Dissertation: (1) Spectroscopic study of active mass wasting features on Mars. (2) Gravity/Topography investigation of InSight landing site. (3) Erosion rates of far-western Himalayas from Cosmogenic Nuclide.
- **B.Sc., University of Arizona, 2012.**
  - **Geo-physics with Planetary Science Minor.**
    - Senior Thesis (w/ Alfred McEwen): “Characterization of temporal change due to geological processes on Mars”.

### Awards/Honors

- **Special Recognition**
  - *Office of the Governor. Douglas A. Ducey (Governor, AZ)*
- **Graduate Research Opportunities Worldwide (GROW) fellowship.**
  - *National Science Foundation (2015).*
- **Research Excellence Award.**
  - *Georgia Institute of Technology (2015).*
- **Planetary Geology Travel Grant.**
  - *Geological Society of America (2014).*
- **Summer Internship**
  - *Jet Propulsion Laboratory (2013).*
- **Mars Terrestrial Analog Conference Travel Grant.**
  - *NASA & Carnegie Institution for Science (2013).*
- **Graduate Research Fellowship.**
  - *National Science Foundation (2013)*
- **Lunar and Planetary Institute Career Award.**
  - *Lunar and Planetary Institute. (2013).*
- **Team-X Merit Award.**
  - *Jet Propulsion Laboratory (2013).*
- **Vorhees Scholarship for Summer Field Camp**
  - *University of Arizona (2012).*
- **Herbert & Diane Welhener Best Geomorphology Talk.**
  - *University of Arizona (2012)*
- **First Place in Physical Science Research. Annual Student Showcase.**
  - *University of Arizona (2011).*

- **Honorary Presidents Award.**
  - *University of Arizona (2011).*
- **Invited for research Presentation in Capitol Hill.**
  - *Council on Undergraduate Research Symposium (2011).*
- **Group Achievement Award. HiRISE Science Team.**
  - *NASA (2011).*

### **Employment and Involvement (Chronological)**

1. **University de Nantes. (NSF-GROW/CNRS Fellowship). [September, 2015-October,2015].**  
Project: Cryostat experiments to study perchlorates stability under Martian surface conditions.
2. **Jet Propulsion Laboratory [June 2013 – August 2013].**  
Project: Geophysical characterization of the landing site for InSight mission to Mars.  
*(w/Dr. Suzanne Smrekar).*
3. **Planetary Science Institute, (PSI) [2011-2012].**  
Project: Characterization of coma morphology of comet Halley.  
*(w/Dr. Nalin Samarasinha).*
4. **Lunar Reconnaissance Orbiter & Lunar Mapping and Modeling Project [2010-2012].**  
Digital Terrain Model (DTM) Analyst.
5. **Lunar and Planetary Laboratory, University of Arizona [2010-2011].**  
Project: Metal distribution analysis on H-chondrites.  
*(w/Dr. Dante Lauretta).*
6. **High Resolution Imaging Science Experiment, (HiRISE) [2008-2012].**  
Image Validator, DTM Analyst, Research Assistant (w/Dr. Alfred McEwen).
7. **Southern California Earthquake Center [2009].**  
Project: Non-volcanic Triggered Tremors in California and Nepal.  
*(w/Dr. Zhigang Peng).*
8. **Department of Geoscience, University of Arizona [2008].**  
Project: (1) Scanning Electron Microprobe (SEM) imaging of detrital zircons. (2) Operation Tech in Paleomagnetism Lab.  
*Research Assistant (w/Dr. George Gehrels & Dr. Tank Ojha).*
9. **Department of Physics and Atmospheric Science, University of Arizona [2008].**  
Project: Extraction of graphene. Engineering design, implementation and construction of a feedback box.  
*Research Assistant (w/Dr. Brian LeRoy).*

### **Papers in Preparation (Drafts):**

1. **L. Ojha, K. Ferrier, T. Ojha.** “Erosion rates of Far-western Himalayas from Cosmogenic Nuclide.” *In preparation.*
2. **L. Ojha.** “The Salty Regolith of Mars.” *In preparation.*
3. **L. Ojha, S. Smrekar, D. Nunes.** “Geophysical Investigation of the InSight landing site.” *In preparation.*
4. **J. A. Watkins, L. Ojha, M. Chojnacki and A. Yin.** “Structurally Controlled Subsurface Fluid Flow as a Mechanism for the Formation of Recurring Slope Lineae.” *In preparation.*
5. **M. Chojnacki, A. McEwen, C. Dundas and L. Ojha.** “Geologic Context of Valles Marineris Recurring Slope Lineae”. *In preparation.*
6. **C. Huber, L. Ojha, J. J. Wray,** “A Gravity Current Model for Recurring Slope Lineae on Mars”. *In preparation.*

## **First-Authored Refereed Publications**

1. **L. Ojha**. "Spectral Evidence for Hydrated Salts in Seasonal Brine Flows on Mars." *In press. Nature Geoscience*. (2015).
2. **L. Ojha**, A. McEwen, C. Dundas, J. Wray, S. Mattson, S. Byrne. "HiRISE Observations of Recurring Slope Lineae during Southern Summer on Mars". *Icarus*, doi:10.1016/j.icarus.2013.12.021.
3. **L. Ojha**, J. J. Wray, S. L. Murchie, A. S. McEwen, M. J. Wolff, and S. Karunatillake (2013). "Spectral Constraints on the Formation Mechanism of Recurring Slope Lineae." *Geophys. Res. Lett.* 40, 5621-5626.

## **Co-Authored Refereed Publications**

1. K. Runyon & **L. Ojha**. "Recurring Slope Lineae". *Encyclopedia of Planetary Landforms*. (2014).
2. G. Komatsu, C. H. Okubo, J. J. Wray, **L. Ojha**, R. Gallagher, M. Cardinale, R. Orosei, M. A. Chan, A. Murana, and J. Ormö. "Small mounds in Chryse Planitia, Mars: Assessment of a mud volcano hypothesis." *In Review* (2/2014).
3. A. S. McEwen, C. M. Dundas, S. S. Mattson, A. D. Toigo, **L. Ojha**, J. J. Wray, M. Chojnacki, S. Byrne, S. L. Murchie, and N. Thomas. (2014). "Recurring Slope Lineae in Equatorial Regions of Mars." *Nature Geoscience*, 7(1), 53-58.
4. S. Karunatillake, J. J. Wray, O. Gasnault, S. M. McLennan, A. D. Rogers, S. W. Squyres, W. V. Boynton, J. R. Skok, and **L. Ojha** (2014). "Fe-sulfates as a key hydration phase of bulk soil in the Martian mid-latitudes." *Geophys. Res. Lett.* 41(22), 7987-7996.
5. S. Karunatillake, J. J. Wray, O. Gasnault, S. M. McLennan, A. D. Rogers, S. W. Squyres, W. V. Boynton, J. R. Skok, N. E. Button, and **L. Ojha**. "Latitudinal variability of hydrous sulfates on Mars." In revision (10/2015)
6. Chao, K, Z Peng, A Fabian, and **L Ojha**. (2012). "Comparisons of Triggered Tremor in California." *Bulletin of the Seismological Society of America* 102.2, 900-908.
7. Quade, J, P Reiners, C Placzek, A Matmon, M Pepper, **L Ojha**, and K Murray. (2012). "Seismicity and the Strange Rubbing Boulders of the Atacama Desert, Northern Chile." *Geology* 40(9), 851-854.
8. Banks, M. E., T R. Watters, M S. Robinson, L L. Tornabene, T Tran, **L Ojha**, and N R. Williams. (2012). "Morphometric Analysis of Small-Scale Lobate Scarps on the Moon Using Data from the Lunar Reconnaissance Orbiter." *JGR: Planets* (1991-2012), 117(E12).
9. C.M. Caudill, L.L. Tornabene, A.S. McEwen, S. Byrne, **L. Ojha**, S. Mattson (2012). "Layered Megablocks in the Central Uplifts of Impact Craters." *Icarus*, 221(2), 710-720.
10. A. S. McEwen, **L. Ojha**, C. M. Dundas, S. S. Mattson, S. Byrne, J. J. Wray, S. C. Cull, S. L. Murchie, N. Thomas, and V. C. Gulick (2011). "Seasonal Flows on Warm Martian Slopes." *Science*, 333(6043), 740-743.
11. P. Avanesians, G. A. Daroch, J. Fleming, S. A. Hundt, S. C. Leake, **L. Ojha**, B. K. Sternberg, D. F. Wampler. "Geophysical Investigation of the Tucson Mountains." GEOPHYSICAL FIELD CAMP 2011. LASI-11-1. May14, 2011.

## **First-Authored Conference Abstracts**

1. **L. Ojha**, M. B. Wilhelm, S. L. Murchie, A. S. McEwen, J. J. Wray, J. Hanley, M. Massé, and M. Chojnacki. "Spectral evidence for hydrated salts in recurring slope lineae on Mars." European Planetary Science Congress (2015): #838.

2. **L. Ojha**, M. B. Wilhelm, S. L. Murchie, A. S. McEwen, J. J. Wray, J. Hanley, M. Massé, and M. Chojnacki. "Spectral evidence for hydrated salts in recurring slope lineae on Mars." American Geophysical Union (2015).
3. **L. Ojha**, M. J. Wolff, M. B. Wilhelm, and J. J. Wray. "Temporal observations observed in spectra of active features on Mars." Geological Society of America Annual Meeting (2014): #329-6.
4. **L. Ojha**, S. Smrekar, D. Nunes. "Geophysical Investigation of InSight Landing Site." Geological Society of America Annual Meeting. (2014).
5. **L. Ojha**, S. Smrekar, D. Nunes. "Geophysical Investigation of InSight Landing Site." Lunar and Planetary Science Conference 45. (2014)
6. **L. Ojha**, S. Smrekar, D. Nunes. "Geophysical Investigation of InSight Landing Site." GATech Graduate Student Symposium. Atlanta, GA. (2013)
7. **L. Ojha** & M. B. Wilhelm, and J. J. Wray. "Spectral study of water tracks as an analog for recurring slope lineae." Analog Sites for Mars Missions II: Past, Present and Future Missions to Mars (August 5-7, 2013), Washington, DC: #4013
8. **L. Ojha**, J. J. Wray, A. S. McEwen, S.L. Murchie. "Spectral Constraints on the Nature and Formation Mechanism of Recurring Slope Lineae". Lunar and Planetary Science Conference 44 (2013).
9. **L. Ojha**, J. J. Wray, A. S. McEwen, S.L. Murchie. "Spectral Constraints on the Nature and Formation Mechanism of Recurring Slope Lineae. Present-Day Habitability of Mars Conference". UCLA, 2013.
10. **L. Ojha**, A. McEwen, C. Dundas, S. Mattson, S. Byrne, E. Schaefer, M. Masse. "Recurring Slope Lineae on Mars: Updated Global Survey Results". AbSCICON 2012. #2252.
11. **L. Ojha**, A. McEwen. "Recurring Slope Lineae on Mars: Updated Global Survey Results". Geodaze 2012.
12. **L. Ojha**, A. McEwen, C. Dundas, S. Mattson, Byrne S, E. Schaefer, M. Masse. "Recurring Slope Lineae on Mars: Updated Global Survey Results" Lunar and Planetary Science Conference 43 (2012): #2591.
13. **L. Ojha**, A. McEwen, J. Wray, C. Dundas, S. Mattson, and S. Byrne. "Transient Slope Lineae: possible briny flow on Mars." 2011. Geodaze
14. **L. Ojha** and Z. Peng. "Systematic search of remotely triggered earthquakes and non-volcanic tremor along the Himalaya/southern Tibet and northern California." 2010. Geodaze.
15. **L. Ojha**, A. McEwen, C. Dundas, S. Mattson, S. Byrne, and J. Wray. "Transient Slope Lineae on Mars: Observations by HiRISE." Lunar and Planetary Science Conference 42 (2011): #2101.
16. **L. Ojha**, A. McEwen, C. Dundas, and S. Mattson. "Characterization of temporal change due to geological processes on Mars." 2010. Geodaze.
17. **L. Ojha** and Z. Peng, "Systematic search of remotely triggered earthquakes and non-volcanic tremor along the Himalaya/Southern Tibet and Northern California" (2009 SCEC Annual Meeting poster 1-092)

### **Co-Authored Conference Abstracts**

1. A. McEwen, and 21 coauthors including **L. Ojha**. "Recurring Slope Lineae on Mars." 8th International Mars Conference (2014): #1149.
2. S. Diniega, A. S. McEwen, C. M. Dundas, **L. Ojha**. "Signs of Water? A Review of Recent Martian Slope Features." 8th International Mars Conference (2014): #1423.
3. M. Masse, S. Conway, J. Gargani, M. Patel, A. McEwen, M. Vincendon, F. Poulet, G. Jouannic, **L. Ojha**. "Geomorphological Impact of Transient Liquid Water Formation on Mars." 8th International Mars Conference (2014): 1305.

4. D. A. Susko, S. Karunatillake, J. J. Wray, J. R. Skok, J. Hurowitz, **L. Ojha**, T. Judice, and R. O. J. Bentley. "Chemical provinces reveal Elysium volcano's compositional evolution." AGU Fall Meeting (2014).
5. S. Karunatillake, J. J. Wray, O. Gasnault, S. M. McLennan, D. Rogers, W. V. Boynton, J. R. Skok, **L. Ojha**, and N. E. Button. "Variations in the association of H<sub>2</sub>O with sulfur on Mars." AGU Fall Meeting (2014).
6. A. McEwen, S. Byrne, V. F. Chevrier, M. Chojnacki, C. M. Dundas, M. Masse, S. Mattson, **L. Ojha**, A. Pommerol, A. D. Toigo, and J. J. Wray. "Recurring Slope Lineae and Future Exploration of Mars." EGU General Assembly (2014): #8851.
7. M. Chojnacki, A. McEwen, C. Dundas, S. Mattson, **L. Ojha**, S. Byrne, J. Wray, and the HiRISE Team. "Geologic context of recurring slope lineae in Coprates Chasma." Lunar and Planetary Science Conference 45 (2014): #2701.
8. M. Masse, P. Beck, S. J. Conway, J. Gargani, A. McEwen, B. Schmitt, M. Patel, G. Jouannic, **L. Ojha**, A. Pommerol. "Laboratory Simulation of Martian Recurring Slope Lineae (RSL): Origin and Detectability of Liquid Brines." Lunar and Planetary Science Conference 45 (2014): #2137.
9. M. Masse, P. Beck, S. J. Conway, J. Gargani, A. McEwen, B. Schmitt, M. Patel, G. Jouannic, **L. Ojha**, A. Pommerol. "Laboratory Simulation of Martian Recurring Slope Lineae (RSL): Origin and Detectability of Liquid Brines." EGU (2014).
10. A. McEwen, S. Byrne, V. F. Chevrier, M. Chojnacki, C. M. Dundas, M. Masse, S. Mattson, **L. Ojha**, A. Pommerol, A. D. Toigo, J. J. Wray. "Recurring Slope Lineae and Future Exploration of Mars." EGU (2014).
11. E. I. Schaefer, A. S. McEwen, S. Mattson, **L. Ojha**. "Quantifying Recurring Slope Lineae in Space and Time." Lunar and Planetary Science Conference 45 (2014): #2800.
12. J. Watkins, **L. Ojha**, M. Chojnacki, R. Reith, A. Yin. "Structurally Controlled SubSurface Fluid Flow As A Mechanism For The Formation of Recurring Slope Lineae." Lunar and Planetary Science Conference 45 (2014): #2911.
13. A. S. McEwen, C. M. Dundas, S. Mattson, A. D. Toigo, **L. Ojha**, J. J. Wray, M. Chojnacki, S. Byrne, S. L. Murchie, and N. Thomas. "Recurring Slope Lineae in Mid-Latitude and Equatorial Mars." AGU Fall Meeting (2013): #P31C-10.
14. J. Watkins, **L. Ojha**, R. Reith, A. Yin. "Characterization of The Geologic Setting of Recurring Slope Lineae: Constraints on Their Formation Mechanism." AGU Fall Meeting (2013).
15. A. McEwen, S. Byrne, C. Dundas, **L. Ojha**, S. Murchie, N. Thomas, J. Wray. "Recurring Slope Lineae: Evidence for Present-Day Flowing Water on Mars?" Present-Day Habitability of Mars Conference". UCLA, 2013.
16. M. E. Banks, T. R. Watters, M. S. Robinson, N. R. Williams, L. S. Walsh, K. Daud, C. Klimczak, K. Burns, **L. Ojha**, S. Mattson, and N. Gizzi. "DISPLACEMENT-LENGTH RELATIONSHIP OF THRUST FAULTS ASSOCIATED WITH LOBATE SCARPS ON THE MOON". Lunar and Planetary Science Conference 44 (2013)
17. M. B. Wilhelm, J. L. Bishop, J. J. Wray, **L. Ojha**. "STRUCTURAL VARIATION IN THE ANCIENT PHYLLOSILICATES AT MAWRTH VALLIS". Lunar and Planetary Science Conference 44 (2013)
18. C. Lejoly, N. H. Samarasinha, **L. Ojha**, D. G. Schleicher. "Repeatability of the Dust and Gas Morphological Structures in the Come of Comet 1P/Halley". DPS 45. (2013).
19. M. B. Wilhelm & **L. Ojha**, A. E. Brunner, J. Dufek, and J. J. Wray. "Organic entrainment and preservation in volcanic glasses." Analog Sites for Mars Missions II: Past, Present and Future Missions to Mars (August 5-7, 2013), Washington, DC: #4021.
20. A. S. McEwen, **L. Ojha**, C. M. Dundas, S. S. Mattson, S. Byrne, J. J. Wray, S. C. Cull, S. L. Murchie, N. Thomas, and M. Masse. "Recurring Slope Lineae: Warm-season incremental flows

- in the middle southern midlatitudes of Mars.” *Fifth International Conference on Mars Polar Science and Exploration* (September 12-16, 2011), Fairbanks, AK.
21. A. S. McEwen, **L. Ojha**, C. M. Dundas, S. S. Mattson, S. Byrne, J. J. Wray, S. C. Cull, S. L. Murchie, N. Thomas, V. C. Gulick, and M. Masse. “Recurring Slope Lineae on Mars.” DPS Meeting 43/European Planetary Science Congress (2011): #1368.
  22. McEwen, **L. Ojha**, C. Dundas, S. Byrne, S. Mattson, J. Wray, S. Cull, S. Murchie, and N. Thomas. “Transient Slope Lineae: Possible Summertime Briny Flows on Mars.” *Conference on Exploring Mars Habitability* (June 13-15, 2011), Lisbon, Portugal.
  23. McEwen, **L. Ojha**, C. Dundas, S. Mattson, S. Byrne, J. Wray, S. Cull, and S. Murchie. “Transient slope lineae: evidence for summertime briny flows on Mars?” Lunar and Planetary Science Conference 42 (2011): #2314.
  24. Fabian, A., **L. Ojha**, Z. Peng, and K. Chao (2009). Systematic search of remotely triggered tremor in Northern and Southern California, *Eos Trans. AGU* **90(54)**, Fall Meet. Suppl., Abstract T13D-1916.
  25. K. Chao Z. Peng, Fabian, A., and **L. Ojha**. “Comparisons of Triggered Tremor in California”, SSA Annual Meeting (April 13-15), Memphis, Tennessee.
  26. D. S. Lauretta, A. V. Andronikov, K. M. Jackson, and **L. Ojha**. “A Comparative Study of Trace-Element Distributions in R and H Chondritic Sulfides: Quantitative Assessment of Enhanced Sulfur Fugacity in the Early Solar System” 74th Annual Meteoritical Society Meeting. (August 8-12), London, UK. Abstract # 5282.
  27. M. E. Banks, T. R. Watters, M. S. Robinson, L. L. Tornabene, T. Tran, and **L. Ojha**. “Morphological Analysis of Lunar Lobate Scarps Using LROC NAC and LOLA Data.” DPS Meeting 43/European Planetary Science Congress (2011): #1661.
  28. S. Mattson, A.S. McEwen, **L. Ojha**, R. Heyd, E. Howington-Kraus, and R.L. Kirk. “High resolution digital terrain models and orthorectified images of Mars from HiRISE and HiSCI.” DPS Meeting 43/European Planetary Science Congress (2011): #1380.
  29. Mattson, S., Archinal, B., Beyer, R., Edmundson, K., Gaskell, B., Haase, I., Howington-Kraus, E., Li, R., Mastrodemos, N., McEwen, A., Moratto, Z., Oberst, J., **Ojha, L.**, Ortiz, A., Robinson, M., Rosiek, M., Scholten, F., Tran, T., and Lroc Team. 2010. High Resolution Topography from LROC-NAC Geometric Stereo Images. Annual Meeting of the Lunar Exploration Analysis Group, held September 14-16, 2010 in Washington, DC. LPI Contribution No. 1595, p.38.
  30. Z. Peng, L.T. Long, A. Fabian, and **L. Ojha**, "Elevated high-frequency signals during the large-amplitude surface waves in southern California: widespread triggering, instrumental cause, or filtering effect?" (2009 SCEC Annual Meeting poster 2-119).
  31. Banks M. E., Watters T. R., Robinson M. S., Tornabene L. L., Tran T. **Ojha L.** “Williams N. R. LROC Team Morphometric Analysis of Small-Scale Lobate Scarps on the Moon Using Data from the Lunar Reconnaissance Orbiter.” LPSC 2012. [#2817]
  32. Schaefer E. I., McEwen A. S., **Ojha L.**, Mattson S. S. “Comprehensive Survey of Recurring Slope Lineae in Tivat Crater, Mars.” LPSC 2012. [#2558]
  33. Mattson S., **Ojha L.**, Ortiz A., McEwen A. S., Burns K. “Regional Digital Terrain Model Production with LROC-NAC.” LPSC 2012. [#2630]
  34. A. McEwen, S. Byrne, C. Dundas, S. Mattson, S. Murchie, **L. Ojha**, E. Schaefer, N. Thomas, J. Wray. “Recurring Slope Lineae: Evidence for Present-Day Flowing Water on Mars?” EPSC 2012.

## Teaching Experience

1. Teaching Assistant for EAS1601 “How to Build a Habitable Planet”-**Dr. Jean Lynch-Stieglitz**. (Spring, 2013).

2. Teaching Assistant for EAS 2600. "Earth Processes". (Spring, 2013)

### **Invited Talks/Public Lectures**

1. Recurring Slope Lineae on Mars. University of Arkansas. *March 2012. Invited.*
2. Recurring Slope Lineae on Mars. New Mexico State University. *March 2012. Invited.*
3. Present day water formation on Mars: Lunar and Planetary Laboratory, Astrobiology Class led by Dr. Veronica Bray. *November 2011.*
4. Mars Seminar. JPL. *Summer 2013.*
5. Summer Intern Final Presentation. JPL. *Summer 2013.*
6. Mars: Beyond Life. *Atlanta Science Tavern. August 2015.*
7. Dynamic Surface Processes on Mars. Laboratoire de Planétologie et Géodynamique de Nantes. *September 2015.*
8. Lunar and Planetary Institute (LPI). November 2015. *Invited.*
9. SpaceUp Atlanta. November 2015. *Invited. Keynote Speaker*
10. TEDx Gateway. December 2015. *Invited.*
11. University of Georgia. February 2016. *Invited.*

### **Service**

**Reviewer for:** *Geophysical Research Letters, Journal of Geophysical Research: Planets, Planetary and Space Science.*

**NASA review panelist**