

# VIRGIL L. SHARPTON, Ph.D.

## *Curriculum Vitae*

Contact: Lunar and Planetary Institute  
3600 Bay Area Blvd  
Houston, TX 77058  
281-244-2017 (office)  
Sharpton@lpi.usra.edu



UAF photo by Todd Paris

## EDUCATION AND PROFESSIONAL PREPARATION:

### **Natural Sciences and Engineering Research Council Post-doctoral Fellow**

Geological Survey of Canada, Geophysical Observatory, 1984-1985

**Ph.D.**, Geological Sciences, Brown University, November, 1984

**Sc.M.**, Geological Sciences, Brown University, June, 1981

**B.S.** (High Honors), Geology, Grand Valley State University, June, 1979

## PROFESSIONAL BACKGROUND:

07/12 – present: **LPI ASSOCIATE DIRECTOR**

11/11 – present: **LPI SENIOR STAFF SCIENTIST**

11/11 – present: **AFFILIATED FACULTY, DEPARTMENT OF GEOLOGY AND GEOPHYSICS, UAF**

09/10 - 11/11: **LPI VISITING SCIENTIST (Part-time)**

06/02 - 11/11: **DIRECTOR, GEOGRAPHIC INFORMATION NETWORK OF ALASKA**

05/05 - 07/10: **UAF VICE CHANCELLOR FOR RESEARCH**

06/02 - 11/11: **PRESIDENT'S PROFESSOR OF REMOTE SENSING**

10/01 - 11/11: **UA PRESIDENT'S PROFESSOR OF REMOTE SENSING**

09/98 - 10/01: **PROFESSOR OF GEOPHYSICS**

06/90 - 09/98: **SENIOR STAFF SCIENTIST, LUNAR AND PLANETARY INSTITUTE, HOUSTON, TX**

07/85 - 06/90: **STAFF SCIENTIST, LUNAR AND PLANETARY INSTITUTE, HOUSTON, TX**

## EXPERIENCE:

### **RESEARCH**

- *Three decades of planetary research experience* including field validation studies, remote sensing and image processing, *synthetic aperture radar (processing and interpretation)* geophysical exploration techniques, petrographic microscopy (including u-stage and refractive index measurements), and instrumental geochemical techniques.
- Emphasis on *impact cratering and evolution of terrestrial planets*.
- Coauthored over *80 papers* in subjects ranging from the morphological *analysis of Venus landforms* to the role of impact in Earth's biological record.
- Member of the *Magellan Mission* to Venus as a Guest Investigator
- Past Member of the *Lunar Exploration Science Working Group*
- Project Scientist for the *Mars: Evolution of Volcanism, Tectonics and Volatiles Project*
- Serves on the Executive Committee of the *Venus Exploration Advisory Committee (VEXAG)*

## LEADERSHIP

- Professor Sharpton is founder and former director of the Geographic Information Network of Alaska (GINA; <http://www.gina.alaska.edu/>) which has attained an international reputation for providing timely and open access to university geospatial data and information services. He created the AlaskaView consortium in 2003 and in 2004-2005 was elected board chair of AmericaView, Inc., a national consortium promoting remote sensing education, research, and geospatial applications (<http://www.americaview.org>). During his tenure, the AmericaView consortium expanded from 11 to 23 states. In 2004, Dr. Sharpton also began working through the Alaska governor's office and the state legislature to identify ways that the research capabilities centered at the University of Alaska (UAF) could be utilized more effectively within state agencies.
- In June, 2005, Dr. Sharpton was selected as UAF's chief research officer. As **Vice Chancellor**, he was responsible for **strategically growing** UAF's \$150+ million per year research enterprise, setting the research agenda at UAF, and ensuring a close tie between the research and instructional elements of the university's mission. He oversaw all pre-award administration, as well as research compliance, engagement, and technology transfer activities through the Center for Research Services, which he created. He also **directly supervised four research institutes, and three programs (>200 staff) with a combined annual budget exceeding \$95 million**.
- While at UAF, he sat on Alaska's State Committee on Research (SCoR), and was a member of the Alaska Governor's *Subcabinet on Climate Change*, and the Executive Committee of Alaska's Statewide Digital Mapping Initiative.
- In 2007, he presented testimony at the *Review of Federal Arctic Policy* convened by the U.S. Department of State and previously has testified before the U.S. Senate on the importance of America playing a leadership role in the 4th International Polar Year.
- In 2008, **President Bush** appointed Dr. Sharpton to the **US Arctic Research Commission** and, in 2010, **President Obama** appointed him as chairperson. He is currently leading the development of an integrated Arctic Research Policy that will provide a framework for effectively utilizing the \$400 million the nation spends on arctic research each year.
- In 2010, Dr. Sharpton resigned from his position as vice chancellor so that he could lead the development of a 2010 Discovery Mission proposal to send an orbital radar to Venus in order to gather high-resolution elevation data and imagery and address major questions about this planet's evolution and present state lingering from the Magellan era.
- In 2011, Dr. Sharpton accepted a position at the Lunar and Planetary Institute to further pursue his interests in planetary research.
- Dr. Sharpton is currently involved in organizing an LPI/VEXAG Workshop on Venus Exploration Targets, to be held May 19-21, 2014.

**EXPERIENCE AS PRINCIPAL INVESTIGATOR OR EQUIVALENT (LAST 10 YEARS):**

- 2012-15: NASA LASER Program: Outcrops on Lunar Crater Walls: Exposing Ejecta Thicknesses, Target Deformation, and Volcanic Stratigraphy.
- 2009-11: NSF EPSCoR Cyberinfrastructure Program: The Pacific Area Climate Monitoring and Analysis Network, a partnership between UAF (lead institute) and University of Hawaii.
- 2008-11: *Department of Homeland Security, Center of Excellence for Maritime and Extreme Environment Security, Partnership between University of Hawaii (lead institute), UAF, and University of Puerto Rico.*
- 2006-10: *U.S. Department of State, Support for International Polar Year Activities.*
- 2003-11: *AmericaView Inc. Member Services Program, Participation in AmericaView.*
- 2003-06: *NASA Planetary Geology and Geophysics Program, Large Body Impact and Its Planetary Implications.*
- 2002-03: *U.S. Fish and Wildlife Service Research Award, Developing New Satellite-based Tools for Monitoring the Surface Temperatures of Near-coastal Waters of the Arctic National Wildlife Refuge.*
- 2001-03: *UA Foundation Award, Geographic Information Network of Alaska (GINA).*
- 2001-03: *NASA Mars Data Analysis Program, Morphology of Small Craters on Mars and the properties of Martian Surface Units.*
- 2000-03: *NASA Planetary Geology and Geophysics Program, Large Body Impact and Its Planetary Implications.*
- 2000: *NSF EPSCoR Program, A MODIS Receiving Station at the University of Alaska Fairbanks.*
- 1999-02: *NASA Joint U.S./Russian Research in Space Sciences Program, Russian-U.S. Partnership to Study the 23-km-Diameter El'gygytgyn Impact Crater, Northeast Russia.*
- 1999-01: *NSF Continental Dynamics Program, (with L. Marín and J. Urrutia [UNAM, Mexico]), Preparing for drilling ((300K per year) leading to *International Continental Drilling Program*, Chicxulub Scientific Drilling Project beginning in 2001.*

**HONORS AND MERITS**

- Presidential appointments to USARC (2008) and its chair (2010)
- AmericaView Legacy Award for Outstanding Leadership (2005)
- UA President's Professorship in Remote Sensing (2001)
- Geophysical Institute Director's Faculty Achievement Bonus (2001)
- Distinguished Alumni Award, Grand Valley State University (1995)
- Government of Canada Group Achievement Award (1992)
- NASA Group Achievement Award (1992)
- William F. Marlar Scholarship (1981-1984); Sigma Xi Society (since 1981)
- Tulip City Rock and Mineral Club Award (1979).\

### **RELEVANT PEER-REVIEWED PUBLICATIONS**

- Sharpton, V.L.**, Outcrops on lunar crater rims: Implications for rim construction mechanisms, ejecta volumes and excavation depths, *J. Geophys. Res. Planets*, 119, doi:10.1002/2013JE004523, 2014.
- Sharpton, V.L.**, R. Krochuk, and R.R. Herrick, Characterization and morphological reconstruction of the Terny impact structure, central Ukraine, *Meteoritics and Planetary Science*, 48, 806-818, 2012.
- Herrick, R.R., D.L. Stahlke, and **V.L. Sharpton**, Fine-scale Venusian topography from Magellan stereo data, *EOS, Transaction, American Geophysical Union*, 93, No. 12, 125-126, 2012.
- Rebolledo-Vieyra, M., L.E. Marín, A. Trejo-García, and **V.L. Sharpton**, Chapter 16: The Chicxulub Impact Crater and its influence on the regional hydrogeology in Northwest Yucatan, Mexico, in N.A. Buster and C.W. Holmes, (eds), *Gulf of Mexico Origin, Waters, and Biota*, Vol. 3, *Geology*, Texas A&M University press, College Station, pages 279-290, 2011.
- Calef, F. J. III, R. R. Herrick, and **V. L. Sharpton**, Geomorphic analysis of small rayed craters on Mars: Examining primary versus distant secondary impacts, *J. Geophys. Res.*, 114, E10007, doi:10.1029/2008JE003283, 2009.
- Barlow, N.B., **V.L. Sharpton** and R. Kuzmin, Impact structures on Earth and Mars, in Chapman, M. and Skilling, I. (eds.), *The Geology of Mars: Evidence from Earth-based Analogs*,. Cambridge University Press, pages 47-70, 2007.
- Chappelow, J.E. and **Sharpton, V.L.**, Atmospheric variations and meteorite production on Mars, *Icarus*, 184, p. 424-435, 2006.
- Calef, F.J. and **Sharpton, V.L.**, Enigmatic linear features in the Northern Hemisphere of Mars: Their formation process, *Geophysical Research Letters*, 32, L24202, doi:10.1029/2005GL023868, 2005.
- Dressler, B.O., **Sharpton, V.L.**, Schwandt, C.S., Ames, D.E., Impactites of the Yaxcopoil-1 drilling site, Chicxulub Impact Structure: Petrography, Geochemistry and Depositional Environment, *Meteoritics and Planetary Science*, 39, 857-878, 2004.
- Chappelow, J.E. and **Sharpton, V.L.**, Influences of atmospheric variations on Mars's record of small craters, *Icarus*, 178, 40-55, 2004.
- Dressler, B.O., **Sharpton, V.L.**, Morgan, J., Buffler, R., Moran, D., Stoffler, D, and Urrutia, J., Investigating a 65-Ma-old smoking gun: Deep drilling of the Chicxulub Impact Structure, *EOS, Transactions, American Geophysical Union*, 84, 125-130, 2003.
- Nolan, M., Liston, G.E., Prokein, P., Huntzinger, R., Brigham-Grette, J., and **Sharpton, V.L.**, Analysis of lake ice dynamics and morphology on Lake El'gygytyn, Siberia, using SAR and Landsat, *Journ. Geophys. Res.*, 108, D2, 8162, 2003.
- Chappelow, J.E. and **Sharpton, V.L.**, An improved shadow measurement technique for constraining the morphometry of simple impact craters, *Meteoritics and Planetary Science*, 37,479-486, 2002.

- Wong, A.M., Reid, A.M., Hall, S.A. and **Sharpton, V.L.**, Reconstruction of the subsurface structure of the Marquez impact crater in Leon County, Texas, based on well-log and gravity data. *Meteoritics & Planet. Sci.*, 36, 1443-1456, 2001.
- Herrick, R.R. and **Sharpton, V.L.** Implications from stereo-derived topography of Venusian impact craters, *J. Geophys. Res.*, 105, 20,245-20,262, 2000.
- Dressler, B.O. and **Sharpton, V.L.** The Sudbury Structure 1997 - Ontario, Canada: A persistent enigma. In B.O. Dressler and V.L. Sharpton (eds.), *Large Meteorite Impacts and Planetary Evolution II*, GSA Special Paper 339, 299-304, 1999.
- Dressler, B.O., **Sharpton, V.L.**, and Copeland, P. Slate Islands, Lake Superior, Canada: A mid-size, complex impact structure. In B.O. Dressler and V.L. Sharpton (eds.), *Large Meteorite Impacts and Planetary Evolution II*, GSA Special Paper 339, 109-124, 1999.
- Dressler, B.O., and **Sharpton, V.L.** Comment on "Isotopic evidence for distinct crustal sources of North and South Range ores, Sudbury Igneous Complex" by A.P. Dickin, M.A. Arten, and J.H. Crocket. *Geochim. Cosmochim. Acta*, 62, 315-319, 1998.
- Dressler, B.O., **Sharpton, V.L.**, and Schuraytz, B.C. Shock metamorphism and shock barometry at a complex impact structure: Slate Islands, Canada. *Contrib. Mineral. Petrol.*, 130, 275-287, 1998.
- Dressler, B.O., **Sharpton, V.L.**, and Schuraytz, B.C. Shock metamorphism and shock barometry at a complex impact structure: Slate Islands, Canada. *Contrib. Mineral. Petrol.*, 130, 275-287, 1998.
- Sharpton, V.L.**, Comment on 'The surface expression of the Chicxulub Crater'. *Geology*, 25, 567-569, 1997.
- Sharpton, V.L.** and Dressler, B.O., Reply to Comment on 'New constraints on the Slate Islands impact structure, Ontario, Canada', *Geology*, 25, 666-669, 1997.
- Sharpton, V.L.** and Marín, L.E., The Cretaceous-Tertiary impact crater and the cosmic projectile that produced it. Near Earth Objects, J. Remo, ed.. *Annals N.Y. Acad. Sci.*, 822, 353-380, 1997.
- Dressler, B.O. and **Sharpton, V.L.**, Breccia formation at a complex impact crater: Slate Islands, Lake Superior, Ontario, Canada. *Tectonophysics*, 275, 285-311, 1997.
- Herrick, R.R., **Sharpton, V.L.**, Malin, M.C., Lyons, S.N. and Feely, K., Morphology and Morphometry of Impact Craters, In *Venus II*, Bougher, S.W., Honten, D.M., and Phillips, R.J., eds. University of Arizona Press, Tucson, 1015-1047, 1997.
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- Sharpton, V.L.**, L.E. Marín, J.L. Carney, S. Lee, G. Ryder, B.C. Schuraytz, P. Sikora, and P.D. Spudis, A Model of the Chicxulub Impact Basin Based on Evaluation of Geophysical Data, Well Logs, and Drill Core Samples, *Geological Society of America Special Paper* 307, 55-74, 1996.

- Sharpton, V.L.**, B.O. Dressler, R.R. Herrick, J. Scott, and B. Schneiders, New constraints on the Slate Islands impact structure, Ontario, Canada, *Geology*, 851-854, 1996.
- Sharpton, V.L.**, The Chicxulub Impact : A Cosmic Event 65 Million Years Ago that Changed the Course of Life on Earth, *Earth in Space*, January issue, 1996.
- Herrick, R.R., and **V.L. Sharpton**, Geological History of the Mead Impact Basin, Venus, *Geology*, 24,11-14, 1996.
- Sharpton, V.L.**, Exploring the KT Source Crater: Progress and Future Prospects, *Eos*, 76:52, 534; cont'd on 538, 1995.
- Dressler B.O., **V.L. Sharpton**, B. Schnieders, and J. Scott, New Observations at the Slate Islands Impact Structure, Lake Superior. Ontario Geological Survey, MP. 164, 53-61, 1995.
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- Sharpton, V.L.**, Meteorite Impact and Mass Extinctions, in Scientific Rationale for an International Continental Scientific Drilling Program, edited by M.D. Zoback and R. Emmermann, Potsdam, Germany, 16-27, 1994.
- Sharpton, V.L.**, Evidence from Magellan for unexpectedly deep complex craters on Venus, Proceedings of the Conference on Large Body Impacts and Planetary Evolution, Geological Society of America Special Paper 293, 19-28, 1994.
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- Koeberl, C., **V.L. Sharpton**, B.C. Schuraytz, S.B. Shirey, J. D. Blum, and L.E. Marín, Confirmation of a meteoritic component in impact melt rock from the Chicxulub Structure, *Geochim. Cosmochim. Acta*, 58, 1679-1684, 1994.
- Urrutia-Fucugauchi, J. L. Marín, and **V.L. Sharpton**, Reverse polarity magnetized melt rocks from the Cretaceous/Tertiary Chicxulub Structure, Yucatan peninsula, Mexico, *Tectonophysics*, 237, 105-112, 1994.
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- Schuraytz, B.C., and **V.L. Sharpton**, Chicxulub - KT connection: Complexities of impact melt rock petrogenesis, *Nature*, 362, 503, 1993.
- Blum, J.D., C.P. Chamberlain, C. Koeberl, L.E. Marín, B.C. Schuraytz, and **V.L. Sharpton**, Isotopic comparison of K-T boundary impact glass with melt rock from the Chicxulub and Manson impact structures, *Nature*, 364, 325-327, 1993.
- Krogh, T., S. Kamo, **V.L. Sharpton**, L.E. Marin, and A.R. Hildebrand, U-Pb ages of single shocked zircons linking distal K/T ejecta to the Chicxulub crater, *Nature*, 366, 731-734, 1993.

- Sharpton, V.L.**, G.B. Dalrymple, L.E. Marín, G. Ryder, B.C. Schuraytz and J. Urrutia-Fucugauchi, New links between the Chicxulub Impact Crater and the Cretaceous-Tertiary boundary, *Nature*, 359, 819-821, 1992.
- Fegley, B., A.H. Treiman, and **V.L. Sharpton**, Venus surface mineralogy: Observational and theoretical constraints, *Proceedings of Lunar and Planetary Science*, 22, 3-20, 1992.
- Janes, D.M., G. Baer, D.L. Bindschadler, G. Schubert, **V.L. Sharpton**, S.W. Squyres, and E.R. Stofan, Geophysical Models for the Formation and Evolution of Coronae on Venus, *Journal of Geophysical Research*, 97, 16,055-16,068, 1992.
- Squyres, S.W., G. Baer, D.L. Bindschadler, D.M. Janes, G. Schubert, **V.L. Sharpton**, and E.R. Stofan, The morphology and evolution of coronae and novae on Venus, *Journal of Geophysical Research*, 97, 13,611-13,633, 1992.
- Stofan, E.R., **V.L. Sharpton**, G. Schubert, G. Baer, D.L. Bindschadler, D.M. Janes, and S.W. Squyres, Global distribution and characteristics of coronae and related features on Venus: Implications for origin and relation to mantle processes, *Journal of Geophysical Research*, 97, 13,347-13,378, 1992.
- Thomas, M.D., R.A.F. Grieve, and **V.L. Sharpton**, Structural fabric of the North American Continent as defined by gravity trends, *Basement Tectonics*, 7, 257-276, 1992
- Grieve, R.A.F., **V.L. Sharpton**, and D. Stöffler, Shocked minerals and the K/T controversy, *Eos*, 71, 1792, 1991.
- Pilon, J.A., R.A.F. Grieve, and **V.L. Sharpton**, The subsurface character of Meteor Crater, Arizona, as determined by ground probing radar, *Journal of Geophysical Research*, 1991.
- Zimbelman, J.R., S.C. Solomon, and **V.L. Sharpton**, The evolution of volcanism, tectonics, and volatiles on Mars: an overview of recent progress, *Proceedings of Lunar and Planetary Science*, 21, 613-626, 1991.
- Sharpton V.L.** and P.D. Ward, editors, *Proceedings of the Global Catastrophes in Earth History: An Interdisciplinary Conference on Impacts, Volcanism, and Mass Mortality*, GSA, Special Paper, GSA Special Paper 247, 480 pages, 1990.
- Sharpton V.L.** and G. Ryder, editors, *Proceedings of the 18th Lunar and Planetary Science Conference*, 591 pages, 1990.
- Sharpton V.L.**, and R.A.F. Grieve, Meteorite impact, cryptoexplosion, and shock metamorphism: A perspective on the evidence at the K/T boundary: GSA Special Paper 247, 301-318, 1990.
- Sharpton V.L.**, B.C. Schuraytz, K. Burke, A.V. Murali, and G. Ryder, Detritus in K/T boundary clays of Western North America: Evidence against a single oceanic impact, GSA Special Paper 247, 349-357, 1990.
- Bechtel T.D., D.W. Forsyth, **V.L. Sharpton**, and R.A.F. Grieve, Variations in effective elastic thickness of the North American lithosphere. *Nature*, 343, 636-638, 1990.

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- Grieve, R.A.F., D. Stöffler, and **V.L. Sharpton**, Shocked minerals and the K/T controversy, *Eos*, 71, p. 1792, 1990.
- Koeberl C., **V.L. Sharpton**, A.V. Murali, and K. Burke, Kara and Ust-Kara impact structures (USSR) and their relevance to the K/T boundary event, *Geology*, 18, 50-53, 1990.
- Koeberl C., **V.L. Sharpton**, T.M. Harrison, D. Sandwell,, A.V. Murali, and K. Burke, The Kara/Ust-Kara twin impact structure: A large scale impact event in the late Cretaceous, GSA Special Paper 247, 233-238, 1990.
- Schuraytz, B.C., S. O'Connell, **V.L. Sharpton**, Iridium and other trace element measurements from the Cretaceous/Tertiary boundary ODP Site 752, Broken Ridge, Indian Ocean, Proceedings of ODP Scientific Results, Leg 121, J. Pierce and J.K. Weissel, eds., 913-918, 1990.
- Thomas, M.D., R.A.F. Grieve, and **V.L. Sharpton**, Reply to Comment by W.A. Sauck on "Gravity Domains and Assembly of the North American Continent by Collision Tectonics," *Nature*, 1990.
- Sharpton V.L.**, and B.C. Schuraytz, On reported occurrences of shock-deformed clasts in the volcanic ejecta from Toba caldera, Sumatra, *Geology*, 17, 1040-1043, 1989.
- Ryder, G. and **V.L. Sharpton**, editors, Proceedings of the 18th Lunar and Planetary Science Conference, 760 pages, 1989.
- Sharpton, V.L.**, and J.W. Head, Lunar mare ridges: Analysis of ridge-crater intersections and implications for the tectonic origin of mare ridges, Proc. 18th Lunar Planet. Sci. Conf., 307-317, 1988.
- Sharpton, V.L.**, Glasses sharpen impact views, *Geotimes*, 33, 10-12, 1988.
- Grieve, R.A.F., **V.L. Sharpton**, A.K. Goodacre, and J. Rupert, Detecting a periodic signal in the terrestrial cratering record, Proc. 18th Lunar Planet. Sci. Conf., 375-382, 1988.
- Thomas, M.D., R.A.F. Grieve, and **V.L. Sharpton**, Gravity trends and domains of the North American Continent, *Nature*, 331, 333-334, 1988.
- Sharpton, V.L.**, R.A.F. Grieve, M.D. Thomas, and J.F. Halpenny, Horizontal gravity gradient: An aid to the definition of crustal structure in North America, *Geophys. Res. Lett.*, 14, 808-811, 1987.
- Thomas, M.D., **V.L. Sharpton**, and R.A.F. Grieve, Gravity patterns and Precambrian structure in the North American Central Plains, *Geology*, 15, 489-492, 1987.
- Sharpton, V.L.**, and J.W. Head, A comparison of the regional slope characteristics on Venus and Earth: Implications for geological processes on Venus, *J. Geophys. Res.*, 91, 7545-7554, 1986.
- Sharpton, V.L.**, and J.W. Head, Analysis of regional slope characteristics on Venus and Earth, *J. Geophys. Res.*, 90, 3733-3740, 1985.



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