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Dr. Milton A. Garcés holds a B.S. degree in Physics from the Florida Institute of Technology (1989) and a Ph.D in Oceanography from the University of California, San Diego (1995). He served as a Postdoctoral Fellow in Volcanology at the University of Alaska, Fairbanks. Dr. Garcés joined the University of Hawaii in 1997. He has also served as a Visiting Professor at the Aso Volcanological Laboratory, Kyoto University, Japan.

Dr Garcés extended his work in volcano acoustics to the study of global infrasound from man-made and geophysical sources in the atmosphere, ocean, and solid Earth, and to the integration of acoustic methods with seismic and imaging technologies. He established the Infrasound Laboratory (ISLA) of the University of Hawaii as a US facility for the development of infrasound research and technology in the Pacific and Indian Oceans. One ISLA's primary missions is the operation and exploitation of stations that are part of the global infrasound network of the International Monitoring System (IMS) of the UN Comprehensive Nuclear-Test-Ban Treaty. The ISLA is also supported directly by the US Department of Defense for basic R&D projects and to address issues of national interest. As part of the US effort, we are expanding the global infrasound network into regions of tactical and/or geophysical interest. Dr. Garcés is also supported by the National Science Foundation to incorporate infrasound into the US Geosciences program. Recent projects include the study of infrasonic radiation from the 06-07 Winter surf season in the North Shore; real-time acoustic monitoring of eruptions in Kilauea, Mount St. Helens, Ecuador, and S. Colombia; participation in rocket and ground explosion tests for atmospheric model evaluations; and incorporation of infrasound into the GEOSS planning strategy. Upcoming projects include the deployment of an underwater cabled observatory off Keahole Point, Kona, and the development of ocean monitoring systems in Panama and Hawaii.

Selected Peer-Reviewed Publications

- Garcés, M., D. Fee, and Andrea Steffke; D. McCormack; R. Servranckx; H. Bass and C. Hetzer; M. Hedlin and R. Matoza; H. Yepes and Patricio Ramon (2008). *Prototype ASHE volcano monitoring system captures the acoustic fingerprint of stratospheric ash injection*. (in press, EOS).
- Garcés, M. and A. Le Pichon (2008). *Infrasound: Applications for earthquakes, tsunamis and volcanoes, Section on Earthquakes, Tsunamis, and Volcanoes*, Encyclopedia of Complexity and Systems Science. Edited by W. H. K. Lee, Springer (in press).
- Park, J., M. Garcés, and D. Fee (2008). *Collective bubble oscillations as a component of surf infrasound*, J. Acoust. Soc. Am. **123**, 2506.
- Garcés, M., J. Aucan, D. Fee, P. Caron, M. Merrifield, R. Gibson, J. Bhattacharyya, and S. Shah (2006), *Infrasound from large surf*, Geophys. Res. Lett., 33, L05611, doi:10.1029/2005GL025085.
- Garcés, M., P. Caron, C. Hetzer, A. Le Pichon, H. Bass, D. Drob, and J. Bhattacharyya (2005). *Deep Infrasound Radiated by the Sumatra Earthquake and Tsunami*, EOS, 86, No 35, 30 August 2005.
- Garcés, M, C. Hetzer, H. Bass, M. Hedlin, K. Lindquist, J. Olson, C. Wilson, D. Drob, and M. Picone (2004). *Forensic studies of infrasound from massive hypersonic sources*, EOS, 85, no 43, 433,440.
- Garcés, M., M. Willis, C. Hetzer, A. Le Pichon, and D. Drob (2004). *On using ocean swells for continuous infrasonic measurements of winds and temperature in the lower, middle, and upper atmosphere*, Geophys. Res. Lett., 31, L19304.

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- Willis, M., M. Garcés, C. Hetzer, and S. Businger (2004). *Infrasonic observations of open ocean swells in the Pacific: Deciphering the song of the sea*, Geophys. Res. Lett., 31, L19303.
- Garcés, M., C. Hetzer, M. Merrifield, M. Willis, and J. Aucan (2003). *Observations of surf infrasound in Hawai'i*, Geophysical Research Letters, Vol. 30, No. 24, 2264 (2003).

Synergistic Activities

- Ongoing: Participation in Acoustic Surveillance for Hazardous Eruptions (ASHE) program in Ecuador and Mount St. Helens Volcanoes for ash hazard mitigation. In collaboration with ICAO and FAA/NOAA.
- Ongoing: Infrasonic volcano monitoring at Kilauea.
- Ongoing: Deployment of Kona Ocean Monitoring Network (KOMNet) as part of HiOOS cabled observatories and in coordination with GEOSS.
- September 2007: Site survey for two infrasound arrays in Panama as part of hurricane tracking project.
- Winter 2006-2007: Infrasound array deployment in North Shore, Oahu, for ocean wave height monitoring. In collaboration with Honolulu NWS/NOAA.
- First International Workshop of Acoustic Remote Sensing of Volcanoes, January 2006, <http://www.isla.hawaii.edu/volcano/iwars06.shtml>.
- February 2003: Invited Speaker at the Annual Meeting of the American Academy for the Advancement of Sciences.
- July 2003: Organized first NSF Infrasound Workshop.
- February 2002: Invited presentation at United Nations in Vienna on the state of the art of Infrasound (17th Session of the Working Group B).
- Founder of the Infrasound Laboratory and operator for International Monitoring System infrasound stations I59US, Hawaii, I39PW, Palau, and I52GB, Diego Garcia, British Indian Ocean Territory.
- Recipient of University of Hawaii 2006 Regents' Medal for Excellence in Research.

Collaborators

Henry Bass and Ken Gilbert, National Center for Physical Acoustics. Mark Merrifield, Geno Pawlak, Fai Cheung, Seven Businger, Ben Brooks, Andy Harris, University of Hawaii, Manoa. Paola Campus, Comprehensive Nuclear Test Ban Treaty Organization. Douglas Drob, Naval Research Laboratory, Washington, DC. Chris Hayward and Gene Herrin, Southern Methodist University. Michael Hedlin, Scripps Institution of Oceanography. Alexis Le Pichon, Commissariat à l'Énergie Atomique. Roger Bowman, Science Applications International Corporation. Curt Szuberla and John Olson, University of Alaska, Fairbanks. Davida Street and Grace Swanson, NOAA Volcanic Ash Advisory Center, Washington, DC. Mark Willis, NOAA, NC. David McCormack, Geological Survey of Canada. Rene Servranckx, Montréal Volcanic Ash Advisory Center. Hugo Yepes, Instituto Geofísico, Ecuador. Jaime Toral, Instituto Geográfico, Panama.

Graduate Students Supported

Mark Willis, MS in Meteorology, now at NOAA
Jerome Aucan, Ph.D., presently at UH Manoa
Robin Matoza, Ph.D. (in progress), University of California, San Diego
David Fee, Ph.D. (in progress), UH, Manoa
Andrea Steffke (in progress), UH Manoa