Dr. Ezequiel Medici is a research engineer in the Department of Mechanical Engineering-Engineering Mechanics at Michigan Technological University. Dr. Medici received a PhD in Mechanical Engineering from Michigan Technological University, a MS in Mechanical Engineering from University of Puerto Rico at Mayaguez, and a BA in Mechanical Engineering from the National University of Rio Cuarto in Argentina. He has an extensive background experience in numerical and experimental modeling of heat and mass transport for a broad range of interdisciplinary applications. His current projects include modeling heat and mass transport for fuel cell applications, modeling the acoustic signature of explosive volcanic eruption, and modeling phase in cryogenic fuel propellants.

Thursday, April 21, 2016

4:00 pm — 103 EERC

Acoustic Emissions of Explosive Volcanic Eruptions

The onset of explosive volcanic eruptions are characterized by the formation of an acoustic pressure wave followed by the discharge of a multiphase mixture jet into the atmosphere. Depending on the amount of energy released, the acoustic pressure wave and the multiphase mixture jet can reach supersonic speeds. There are many fundamental science aspects of the supersonic pressure waves (shock waves), and the flow dynamics of multiphase supersonic jets associated to explosive volcanic eruptions that are not well understood. The study of the initial pressure wave and the sound emitted by the multiphase jet can lead to a better technique for accessing the plume height in real time, better understanding of the conditions triggering the formation of pyroclastic flows, and complementing the combined analysis from different remote sensing techniques on retrieving the conditions at the volcanic vent during the eruption.