UNT SBC Program and Chemistry join in collaboration at UNT Cape Horn Field Station in Puerto Williams, Chile

Pictured left to right: Dr. Ricardo Rozzi, Professor of Philosophy and Religion Studies and Dr. Guido Verbeck, Professor of Chemistry

In 2015 UNT Chemistry Department and the Sub-Antarctic Biocultural Conservation (SBC) Program are initiating an exciting new research collaboration to measure atmospheric contaminants in the Cape Horn Biosphere Reserve. To formalize this collaboration that will begin field work in December 2015 in Puerto Williams, Chile, Dr. Ricardo Rozzi (Director of the SBC Program, Professor of Philosophy and Religion Studies), Dr. Guido Verbeck (Director of the UNT Laboratory of Imaging Mass Spectrometry and Associate Professor of Chemistry and Biochemistry), Phillip Mach (Chemistry doctoral student), Judy DeLay (Administrative Coordinator for the SBC Program at UNT), and Kelli Moses (International Coordinator for the SBC Program in Puerto Williams) met on February 19, 2015.

This formal agreement has confirmed that Dr. Verbeck and four UNT Chemistry students, including doctoral student Phillip Mach, will be based at UNT's Cape Horn field station, which is the scientific center of Chile's pristine Cape Horn Biosphere Reserve, to conduct novel research in the extreme southern tip of southwestern South America. For two weeks, Dr. Verbeck and his team will analyze air and water quality using highly-sensitive mass spectrometry equipment that he has developed. They will collect air and water readings from this pristine region to obtain a better understanding of how modern day environmental issues are unfolding in the CHBR.

This innovative new collaboration will build upon the research of Dr. Rozzi and collaborators (2012, see link to article in Bioscience 2012), that have discovered that the CHBR possesses some of the cleanest streams and rainwater in the world. Southwestern South America is positioned outside the air streams carrying industrial pollutants and receives rainstorms that originated over the southern Pacific Ocean. For this reason, the austral forests and associated ecosystems are to a largely free of atmospheric pollution. Precipitation chemistry taken previously in this region shows that nitrate concentrations in rainwaters are of the lowest concentrations ever recorded.

Dr. James Kennedy (Co-Director of the SBC Program) and Dr. Tamara Contador (UNT alumni, and Research Coordinator at the Cape Horn Field Station) have been long-term ecological research for the last 10 years collecting baseline data for stream health and water quality in the CHBR, and this timely and new collaborative research project will help add baseline data to study the linkages between atmosphere and biosphere under conditions similar to those that prevailed prior to the industrial revolution.

During this trip, Dr. Verbeck will also present as an invited guest speaker at seminars in Santiago at the Institute of Ecology and Biodiversity (IEB, based on two of Chile's leading universities, University of Chile, and Chilean Catholic University), and will meet with the director and other researchers of IEB, one of the Millennium Scientific Initiative's center's for excellence.