

## Research Interests & Projects:

[*Petrology*    *Mineralogy*    *Pleistocene Glaciation*    *Environmental Petrology*]

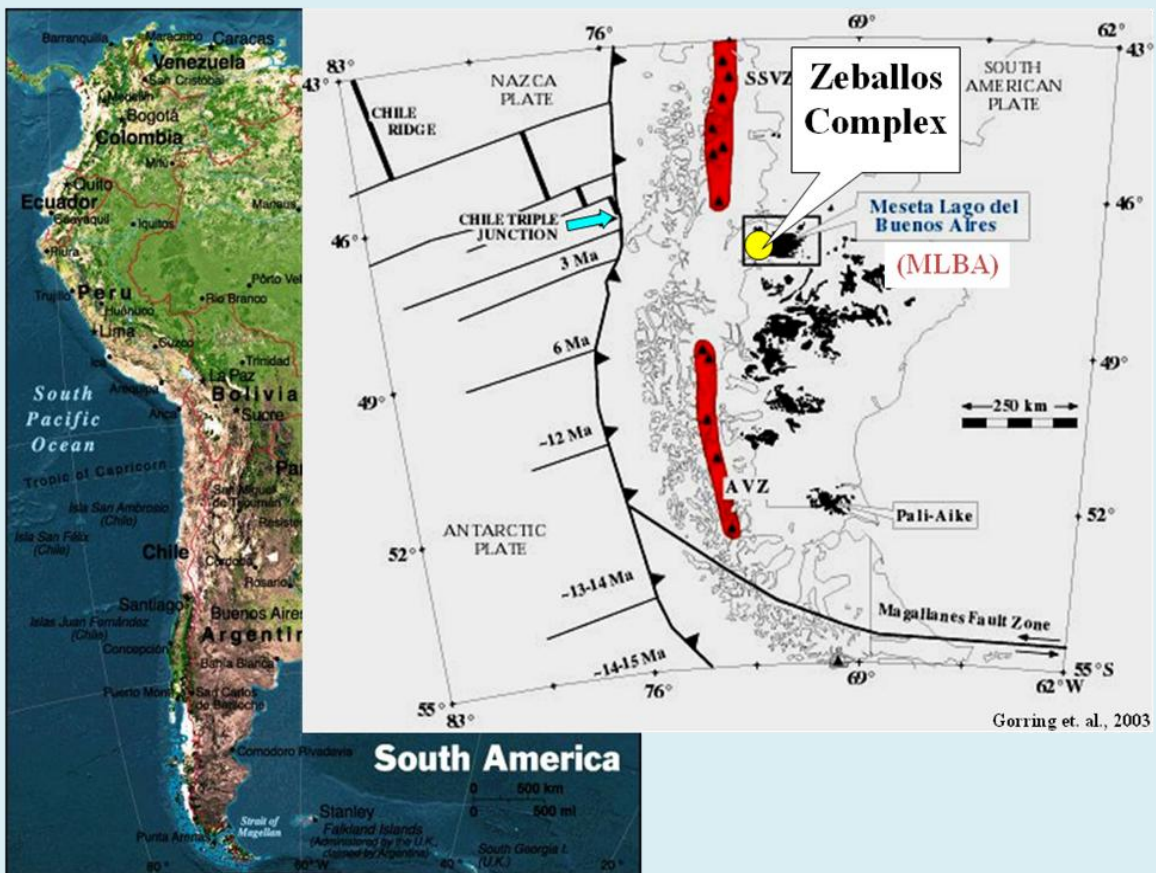
### ***“Subduction-related Volcanism in Patagonian Andes”***

My current research entitled “Ridge Subduction and Petrology of the Zeballos Complex, Southern Patagonian Andes” is an ongoing investigation (with Dr. Matthew Goring, Montclair State University) into the generation of felsic magmas in the back-arc region of the southern Andes. This region is tectonically very unique due to Neogene ridge subduction of the divergent Chile spreading center under the South American Plate forming a triple-junction and slab window-derived magmas. Understanding how these magmas are generated and fractionated is important to:

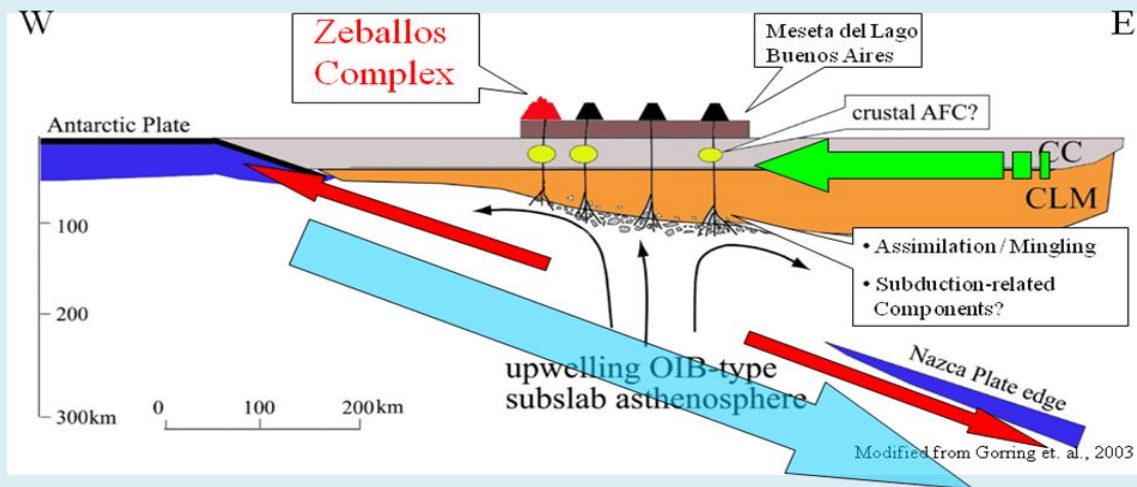
- Predict how ridge subduction processes influence the type of magma formed.
- Model conditions necessary to form a petrogenic link between silicic magmas and basalts.
- Apply results to modern-day analogs.



Field photos from Zeballos Complex (47.0°S, 71.4°W). Southern Andes in background.



Tectonic setting of southern South America modified from Gorrington et al., 2003. Approximate study area (Zeballos Complex). Red fields are southern Southern South Volcanic Zone (SSVZ) and Austral Volcanic Zone (AVZ) from Stern et al., 1990. Black fields are back-arc Neogene plateau basalts. Collision dates (Cande and Leslie, 1986).



**Diverging ridge**

**Subduction of ridge**

**Westward movement of S. American Plate**

Geodynamic model for the opening of the slab window and upwelling of upper mantle. Zeballos Complex represented by red volcanic structure. Meseta del Lago Buenos Aires (MLBA) Neogene basalt plateau, MLBA post-plateau volcanism (black cones). Subducted ridge between Antarctic and Nazca plates showing upwelling OIB (ocean island basalt)-type asthenosphere. CC (continental crust), CLM (continental lithospheric mantle), crustal AFC (assimilation, fractional crystallization); modified from Gorrington et al. (2003).