The Coastal Batholith, Mesozoic Peru
Rebecca Williams

OUTLINE
- Why Coastal Batholith, Peru?
- Geological Setting
- Tectonic Setting
- Crustal Rock
- Structure
- Petrology
- Contribution to Andes
- Interpretation
- Relation to Sierra Nevada

WHY COASTAL BATHOLITH?
- CB Major plutonic phase of Mesozoic magmatism in Peru.
- Typical of Western American batholiths.
- 100-37Ma
- Start of major plutonic activity that continued up until 3Ma with Cordillera Blanca Batholith

GEOLOGICAL SETTING
- Intruded into rifted continental margin parallel to today's trench.
- Albian volcanogenic marginal basin, along major crustal, extensional lineament. (1600km long.)
- Basinal systems related to continental margin extension which started in Jurassic.
- Uplifted in Upper Cretaceous and Lower Tertiary.

TECTONIC SETTING
- Marginal rifting in Albian marginal basin and crustal dilation.
- Basin filled in with basaltic lavas, sills, hyaloclasts, turbidites and gabbros: dense materials.
- Basin inverted and batholith intruded.
- Shallow melting of Albian basin basaltic fill produced CB magmas- derived from NEW basaltic material.

CRUSTAL ROCK
**STRUCTURE**

- Calk-alkaline suite, dominated by Tonalites. Also some diorites, grano-diorites, and granites.
- Grouped into Super Units e.g., Santa Rosa Tonalite: 2/3 of batholith.
- Super units show basic-acid sequence related to fractionation.
- Bimodal magmatism characteristic of many cordilleran batholiths.
- Zoned tonalite super units typically rich in plag, cpx and hornblende ± zircon.
- I type basalts and island arc andesites: wedge derived magmas.

**PETROLOGY**

- CB started the plutonic addition stage of the Andes 100 mya that continued pass through the Cordilleran Blanco Batholith to 3 Ma.
- Consists of multiple plutons (estimates up to 1000), all of a thin, tabular structure that added a thin veneer to the crust.
- Growth by intrusion and under-plating, caused great crustal thickening.

**CONTRIBUTION TO ANDES**

- I type magmas that show an eastward change in composition and isotopic signature, related to increase in continental crust component.
- Increase K2O and incompatible element abundances. Indicates increasingly enriched continental mantle rather than depth.
- Migration towards the interior of continent related to subduction direction.

**INTERPRETATION**

- Similar processes for room-making in crust for intrusions.
- Extensional processes more dominant for CB.
- Similar zoning patterns seen in both batholiths.

**RELATION TO SIERRA NEVADA**

- SN U. Jurassic-Cretaceous.
- Similar aspect ratios as CB.
- Similar processes for room-making in crust for intrusions.
- Extensional processes more dominant for CB.
- Similar zoning patterns seen in both batholiths.

**QUESTIONS? & REFERENCES**