South American Mesozoic Batholiths

Gly 581
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Intro

- Major intrusions
- Batholith features
- El Indio intrusion

Major Intrusions

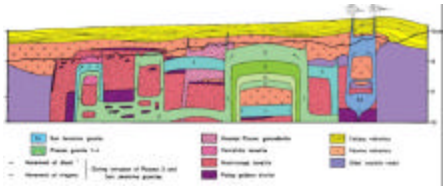
- Cordillera Central Batholith, Colombia
- Coastal Batholith, Peru
- Coast Range Batholith, Chile
- Patagonian Batholith, Chile

What is a batholith?

- General term applied to large intrusive bodies
- Generally associated with orogenic belts (Andes)
- Usually linear and parallel to the plate boundary
- Show sharp contacts with country rock

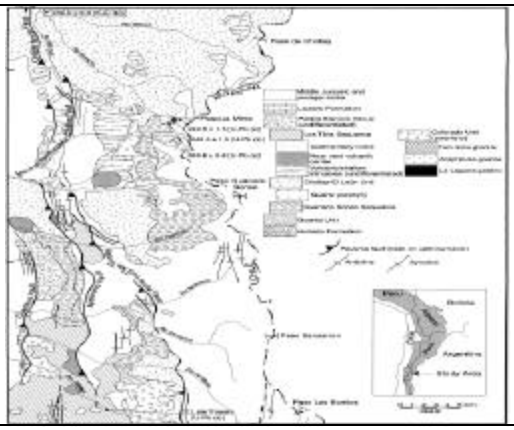
Batholith Features

- Show little to no distortion in wall rock
- 3-D maps display "bell-jar" shaped plutons
- Emplaced by cauldron subsidence



El Indio Region

- Made of at least 3 discrete pulses of intrusion spanning Middle Permian – Early Jurassic
  - Early Permian (280 – 270 Ma) ~ biotite granite
  - Early/Middle Triassic (242 – 238 Ma) ~ silica rich leucocratic granites and rhyolitic porphyries
  - Late Triassic/Early Jurassic (221 – 200 Ma)~ intrusive rhyolitic porphyries, extrusive domes, subordinate mafic intrusions, and both mafic and felsic dikes



El Indio Region

- Located along crest of High Andes on border of Argentina
- Named for gold mine located near center of region
- Formed mainly by a NS trending belt (300x60 km) of intrusive complexes from the Late Paleozoic to Early Mesozoic
  - Chollay, Pastos Blancos fm.

Chollay intrusion

•Coarse to medium grained granites
•Med – coarse grained biotite monzogranites
•Contacts gradational
•Mixed magma textures common throughout unit
•Dated to 238+/- 6.0 Ma

Pastos Blancos fm

- Most voluminous basement material
- Not a continuous succession of rock, but can be mapped in several self-consistant stratigraphic units

El Indio Region

- Likely formed during the extension after end of Carboniferous/Permian subduction
- Middle Triassic to Early Jurassic ~ bimodal volcanism, sub-volcanic magmatism and sedimentary basin formation main activity

Tectonic Implications

- Suggest that rocks were emplaced during post-subduction crustal relaxation
  - Possible large scale melting and extension along western facing margin of Gondwana
- Series of independent pulses of emplacement rather than one continuous outpouring during extension

References

- Martin, M.W, Clavero, J.R, Mpodozis, C.M (1999) Late Paleozoic to Early Jurassic tectonic development of the high Andean Principal Cordillera, El Indio Region, Chile (29 - 30° S) Journal of South American Earth Science
- http://snebulos.mit.edu/home/egoeke/lectures/pet/chp18-2.pdf last accessed 24 – Feb - 2005

- Questions?
- Comments?
- Ideas?
- Strange rambling stories about your Aunt and her trip to Darkest Peru? (oh, nevermind….)