Cretaceous system of South America

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Five Diastrophic Phases

- Between Late Jurassic and the Late Cretaceous
  - The Araucanian Phase
    - General uplift in central-west Argentina
  - The Catan Lil Phase
    - Unconformity, related to eustatic fall of Sea level
  - The Avile Phase
    - Conspicuous sandstone levels within the Agrio fm of The Neuquen Basin
  - The Mirano Phase
    - Andean uplift
    - Ended marine sediment, initiated continental sedimentation
  - The Laramic or Early Magallanian Phase
    - Angular unconformity on the Upper Cretaceous and the lower Tertiary volcanic sedimentary units

Paleogeography of the Cretaceous

- Berriasian-Hauterivian (122-144Ma)
- Berremian-Cenomanian(93.5-127 Ma)
- Turonian-Campanian (71.3-93.5 Ma)
- Maastrichtian (65-71.3 Ma)

BERRIASIAN-HAUTERIVIAN  
127-144Ma

- Sedimentary patterns within the Andean Basin were related to Episodic development of two distinctive volcanic arcs with intra-arc subbasins
- Western belt of the Andean Basin, a volcanic pile 5,000-8,000km thick was formed
  - Andesitic flow Breccias (Upper Part)
  - Basalt flows (Lower-middle parts)
- Argentina and Bolivia - tectonism gave rise to a block structure with NW/SE and NE/SW fractures

BARREMIAN-CENOMANIAN  
93.5-127Ma

- Magmatic arc of Andean basin
  - Eastward migration
- Initial uplift of the Cordillera Principal of Argentina and Chile
  - Caused complete reversal of regional slope
  - Continental basins were developed on the site of the back-arc basin
TURONIAN-CAMPANIAN
71.3-93.5 Ma
- Uplift of the Western areas of Central and Northern Chile
- Thick volcanic sequences were deposited to the west and east of the Abanico Paleovolcanic Range
- Near shore and continental sediments deposited
  - Widespread presence of red beds

MAASTRICHTIAN
65-71.3 Ma
- Continental basins of central and northern Chile disappeared due to folding and uplift
- Volcanism was still present in most areas
- Small fore-arc basins were developed along the western margin of the Principal Cordillera
- Cratonic subsidence produced continental sedimentation on a broad stable platform
  - End of Cretaceous General uplift resulted in new erosion cycle

The Logos La Plata and Fontana Thrust Belt
- Thermal subsidence was suddenly interrupted by orogenic uplift in the middle cretaceous
- 130-120 Ma- the volcanic front migrated to the foreland for the first time since the breakup of Gondwana
- 120 Ma- The southern Atlantic ocean opened triggering the westward drift of the Patagonian block
- The Cordillera Patagonica

RIO Mayo Embayment
- The westernmost part of the Patagonian Batholith correlates with the opening of the RIO Mayo embayment 140-125 Ma
- Extentional topography mostly filled by nonmarine volcaniclastic and cratonic-derived sediments
- Neocomian Depocenters connected by major W-NW trending horsts and grabens segmented by NE trending Normal faults
Conclusions

- Thrusting that began in the end of the Cretaceous strengthened into the Cenozoic
- The Andean Orogeny continued into the Tertiary where it reached its present altitude

References

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