

# Eocene arc petrogenesis in Central Chile (c. 33.6 degrees S) and implications for the Late Cretaceous-Miocene Andean setting: tracking the evolving tectonic regime

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## JOURNAL OF THE GEOLOGICAL SOCIETY

Volumen: 177

Número: 2

Páginas: 258-275

DOI: 10.1144/jgs2019-042

Fecha de publicación: MAR 2020

Tipo de documento: Article

[Ver impacto de la revista](#)

### Abstract

The scarce Eocene geological record in the Andean region of Central Chile (c. 33.6 degrees S) is represented by the Estratos del Cordón de los Ratones unit. This is a c. 450 m thick, mainly volcanic, continental series with a bimodal character that hosts numerous subvolcanic intrusions. The igneous products show compositional features indicating a co-genetic character for the whole suite, relatively juvenile mantle signatures and arc-like affinities. This, along with age determinations of c. 42 Ma, indicate that the unit corresponds to the middle Eocene arc in the region. The geochemical data obtained complement the evolving arc magmatic record throughout Andean evolution. This allows us to track: (1) the earliest Late Cretaceous orogenic event; (2) neutral tectonic conditions from the latest Cretaceous to mid-Eocene times; (3) the Oligocene-early Miocene extensional episode; and (4) the onset of the prevailing compression. The record also indicates that the extensional event started no earlier than the mid-Eocene, with the deposition of the Estratos del Cordón de los Ratones, and no later than the earliest Oligocene. In addition, orogenic processes developed from early Miocene times are highlighted relative to those developed during the early Late Cretaceous, at least in the arc region.

### Palabras clave

**KeyWords Plus:** [SOUTHERN CENTRAL ANDES](#); [TRACE-ELEMENT](#); [NEUQUEN BASIN](#); [VOLCANIC ZONE](#); [EVOLUTION](#); [MAGMATISM](#); [EXTENSION](#); [ROCKS](#); [CONSTRAINTS](#); [32-DEGREES](#)

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## Financiación

Entidad financiadora <a href="#">Mostrar más información</a>	Número de concesión
Comision Nacional de Investigacion Cientifica y Tecnologica (CONICYT)	Fondecyt 11140012 1161806 PAI79160139
Universidad Andres Bello	

[Ver texto de financiación](#)

## Editorial

GEOLOGICAL SOC PUBL HOUSE, UNIT 7, BRASSMILL ENTERPRISE CENTRE, BRASSMILL LANE, BATH BA1 3JN, AVON, ENGLAND

## Información de la revista

- **Impact Factor:** [Journal Citation Reports](#)

## Categorías / Clasificación

**Áreas de investigación:**Geology

**Categorías de Web of Science:**Geosciences, Multidisciplinary

**Información del documento**

**Idioma:**English

**Número de acceso:** WOS:000537276100002

**ISSN:** 0016-7649

**eISSN:** 2041-479X