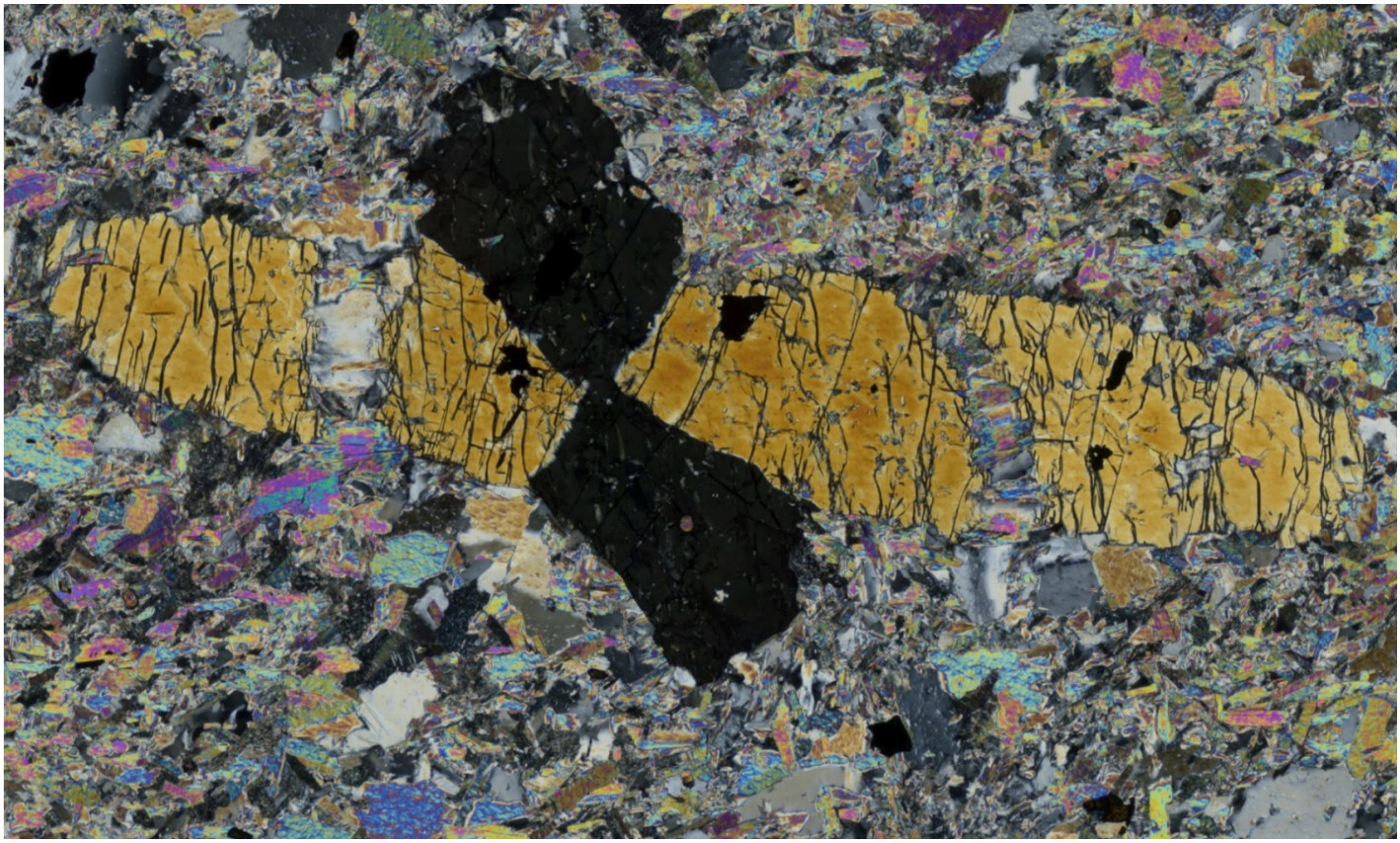
Mineralogical Society

Metamorphic Studies Group

40th anniversary Research in Progress meeting



29–31 March 2021

MSG 2021 CONFERENCE - SCHEDULE

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Notes:

*Keynote/invited/prize talk (30 minutes)

All times = British Summer Time = BST = GMT+1

All sessions hosted on Zoom except for the poster sessions, which will be on Gather.Town

Medium-high grade igneous-metamorphic basement unit in Central Patagonia, Argentina at its relation with the Terra Australis Orogen.

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During the Late Neoproterozoic to middle Paleozoic time span, the southwestern margin of Gondwana has been exposed to protracted subduction [1,2,3,4], which has been considered as part of the widespread Gondwanan Terra Australis Orogen (TAO) [2]. In southwestern Gondwana, the TAO comprises a series of accretionary systems which are associated with crustal extension and back-arc basin development [2]. This tectonic setting alternates with sporadic contractional episodes related with increased plate coupling, accretion of oceanic material, or collision of allochthonous/para-autochthonous crustal blocks [1,2,3,4].

In this context, the Patagonian continental block has been considered as a peri-Gondwanan block, accreted either in Early or Late Paleozoic times [5,6,7]. In recent years, compelling evidence points out to an Early Paleozoic accretion of the northern part of Patagonia [7,8], within the tectonic framework of TAO. However, the Middle to Late Paleozoic tectonic history of central and southern Patagonia, the tectonic setting of Gondwanide orogeny, and therefore the proper assessment of the culmination of TAO in this area are yet a matter of debate [9,10].

In the past decades, a Middle-Late Paleozoic igneous-metamorphic belt was described in Central Patagonia[5,6], a key area for integrating central and southern Patagonia, and its precise location, crossing this area with a ~NNW-SSE structural trend, was defined by geophysical means [9]. This belt comprises a series of fault-controlled basement blocks, formed by medium-high grade metamorphic complexes and coeval magmatism [5,10,11]. Recently, the Lagunita Salada Igneous-Metamorphic Complex was defined in this area. The regional metamorphism of this complex attained upper amphibolite-lower granulite facies, constrained by Th-U-Pb EPMA monazite ages between ca- 379-320 My [12]. Based on dated syn- and post-tectonic granitoid intrusions in the area an isotopic system re-opening could not be discarded for the ~320 Ma isochron monazite model age. Moreover, a magmatic lull of ~20 My coeval or slightly posterior to the medium-high grade metamorphism [12], could present important implications for the tectonic regime for the the TAO in this area, previous to the syn- to postectonic Upper Carboniferous – Early Permian magmatism and the initiation of Gondwanide orogeny in southwestern Gondwana.

References:

[1] Dalziel I W D (1997) GSA Bulletin 109:16-42
[2] Cawood P A (2005) Earth-Science Review 69:249-279
[3] Cawood P A & Buchan C (2007) Earth-Science Reviews 82:217-256
[4] Oriolo S et al. (2021) Geoscience Frontiers 12:109-130
[5] Pankhurst R et al. (2006) Earth-Science Reviews 76:235-257
[6] Ramos et al. (2020) Ameghiniana 57:464-479
[7] González P D et al. (2018) Gondwana Research 63:186-225
[8] González P D et al. (2020) International Journal of Earth Sciences in press
[9] Calderón, M. et al. (2016) Geodynamic evolution of Southernmost Andes pp- 7-36
[10] Suárez et al. (2019) Journal of South American Earth Sciences 102256
[11] Renda E M et al. (2019) Tectonophysics 772:228232
[12] Marcos P et al. (2020) Lithos 376-377:105801
[13] Renda E M et al. (2021) Journal of South American Earth Sciences 106:103045