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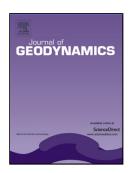
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ACCEPTED MANUSCRIPT

- 1 Tectonic inversion and magmatism in the Lautaro Basin, northern Chile, Central Andes: A
- 2 comparative approach from field data and analogue models

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Abstract

- We present the results of a series of analogue models addressing the relationships between
- 12 tectonic inversion and magmatism, taking the Lautaro Basin in northern Chile (27°-28°S),
- 13 Central Andes as a natural case. The experiments consisted of extension and orthogonal
- shortening of sand–silicone models to reproduce the tectonic inversion of a previous extensional
- 15 system synchronous with the emplacement of analogue magma. We analyzed how the variation
- 16 in the rate of magma intrusion, shortening, and syn-compressive sedimentation may affect the
- 17 final configuration of an inverted system, and the results were compared with field observations.
- Our results showed that (i) folding of syn-rift deposits and increased steepness of the master
- 19 faults accommodate the shortening of the extensional system, (ii) magmatic intrusions condition
- 20 the final geometries (top view and cross-section) of inverted normal faults in the models and in
- 21 the Lautaro Basin, (iii) magma tends to migrate preferentially along the inverted faults, and
- accumulates beneath the faults and in the core of the inversion anticlines, (iv) the syn-inversion
- 23 magmatism may indicate the migration pathways, which favor major lubrication and slip on the
- 24 structures during their reactivation.
- 25 **Key words:** Tectonic inversion, magmatism, Lautaro Basin, inverted faults, inversion anticlines.

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