

Antarctic-like temperature variations in the Tropical Andes recorded by glaciers during the last deglaciation (20 – 10 ka BP)

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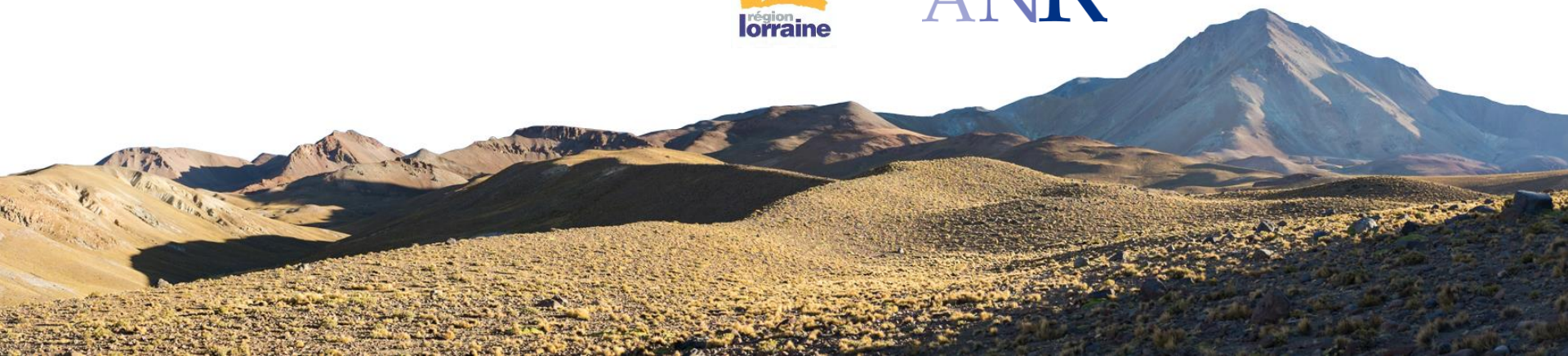
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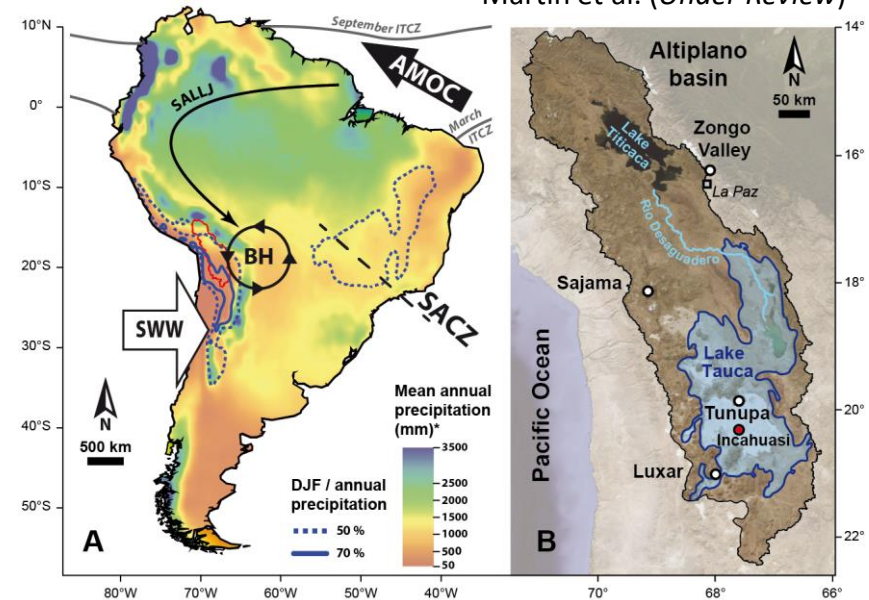
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The Bolivian Altiplano

- Endorheic basin of the southern tropical Andes, relatively arid region today
- Giant paleolake cycles during the Last Deglaciation : Lake Tauca and Lake Coipasa highstands, synchronous with regional glacial advances and with Northern Hemisphere Cooling events (*Blard et al., 2009*)
- Over the tropical Andes, glacial advances synchronous with Southern Hemisphere cooling events (*Jomelli et al., 2014*)

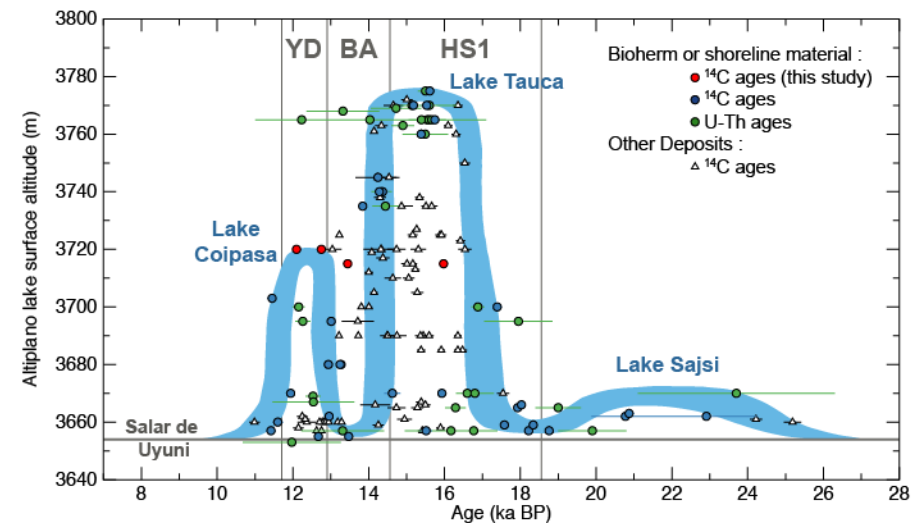
Martin et al. (Under Review)



Influence of major North and South climatic events in the tropics ?
Regional drivers of the glacial dynamics ?

For this study

- Four sites where glacial fluctuations are constrained for the Last Deglaciation : *Zongo, Sajama, Tunupa, Luxar*
- Updated dataset constraining the paleolake fluctuations in the basin



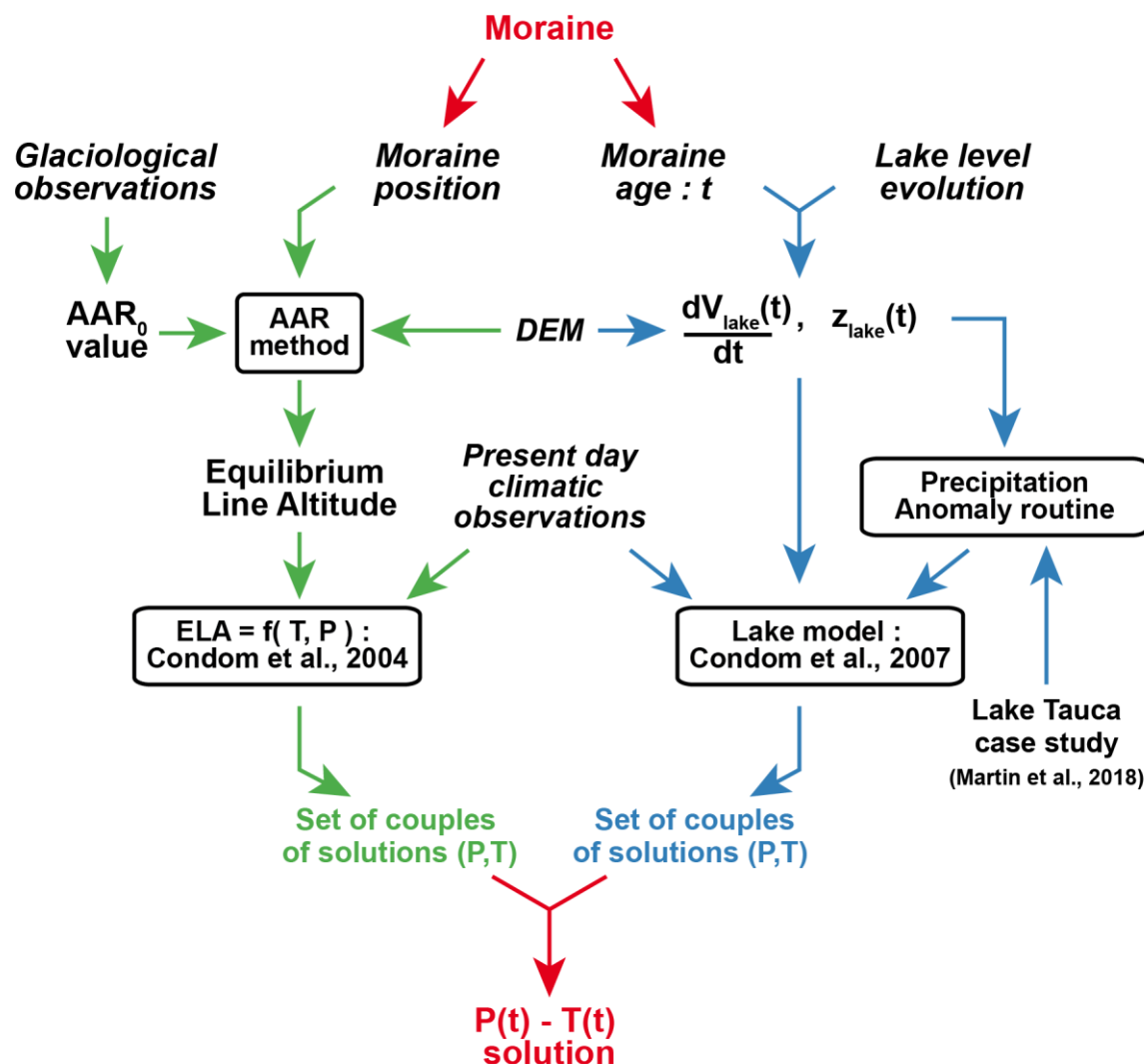
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Geochronology

- New cosmic ray exposure ages are merged with published ages to produce detailed homogenous up-to-date glacial chronology of the Last Deglaciation over the Altiplano basin at the four sites (^{10}Be , ^3He)

Paleoclimatic reconstructions

- Inversion of climatic conditions are based on the joint calculation of paleoglacier and paleolake hydrological budgets



Martin et al. (Under Review)

Main Results

- Temperature during the Last Deglaciation follow the Antarctic pattern (EPICA δD orange curve)
- Cold events in the Northern Hemisphere are synchronous with major precipitation increases over the Altiplano
- Large scale temperature variations is the main driver of the glacier fluctuations but under cold enough conditions, significant precipitation increases can drive glacial dynamics
- Framework to understand the particularities of the Altiplano paleoglaciers : superimposed Northern and Southern hemisphere influences through precipitation and temperature fluctuations

