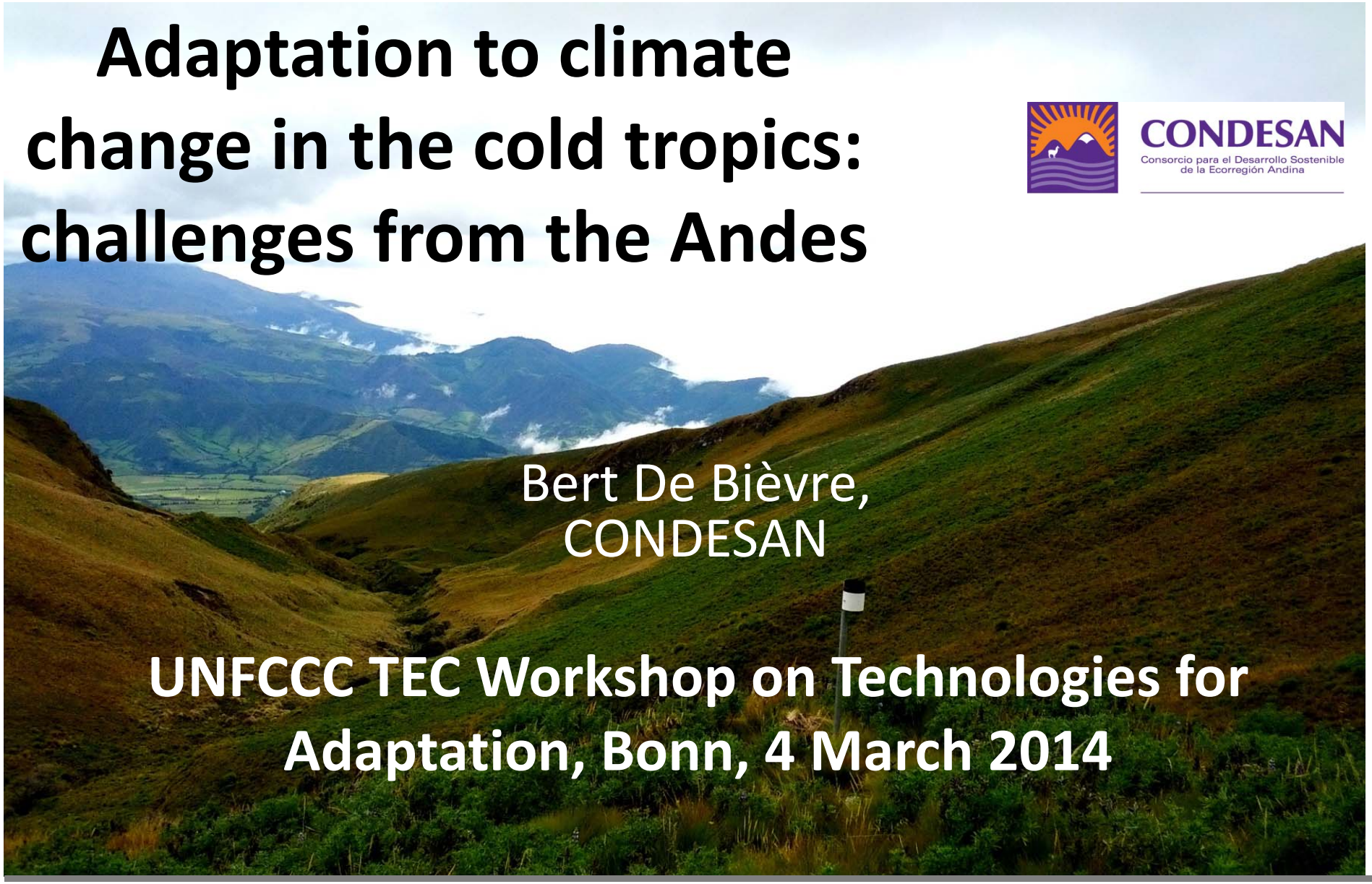
Adaptation to climate change in the cold tropics: challenges from the Andes



Bert De Bièvre,
CONDESAN

UNFCCC TEC Workshop on Technologies for Adaptation, Bonn, 4 March 2014

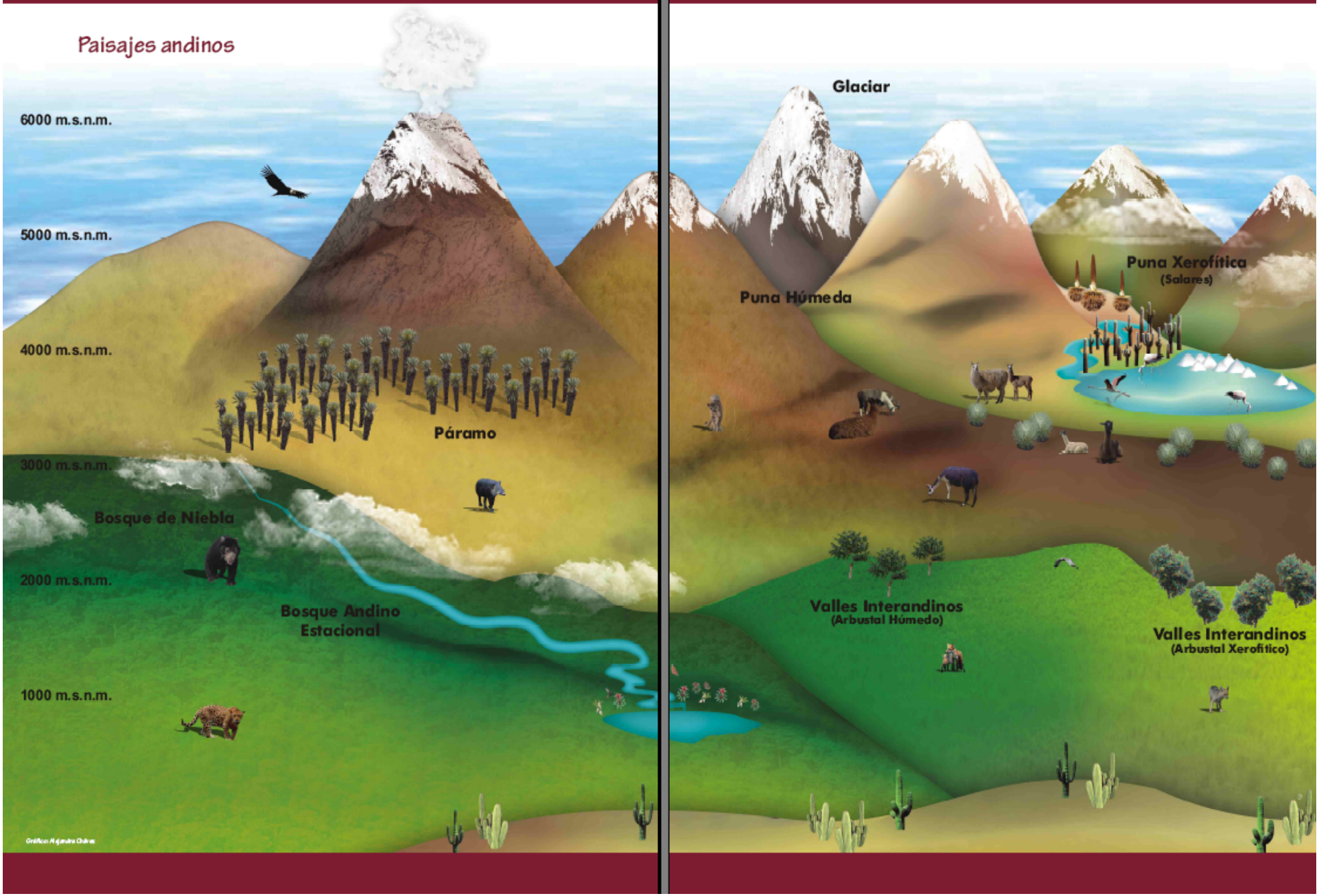
COMUNIDAD ANDINA

PRAA

Proyecto "Adaptación al Impacto del Retroceso Acelerado de Glaciares en los Andes Tropicales"

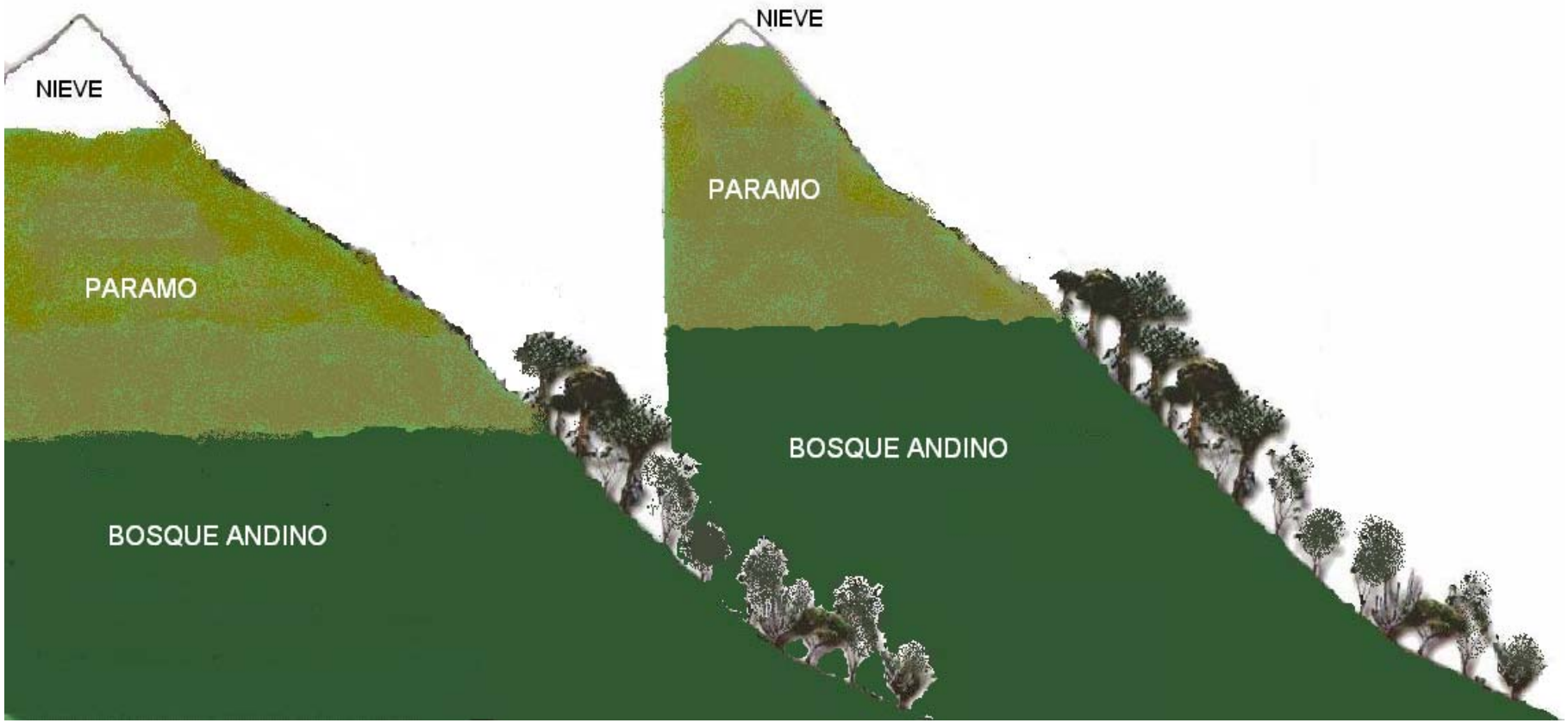
Ministerio del Ambiente

The Tropical Andes

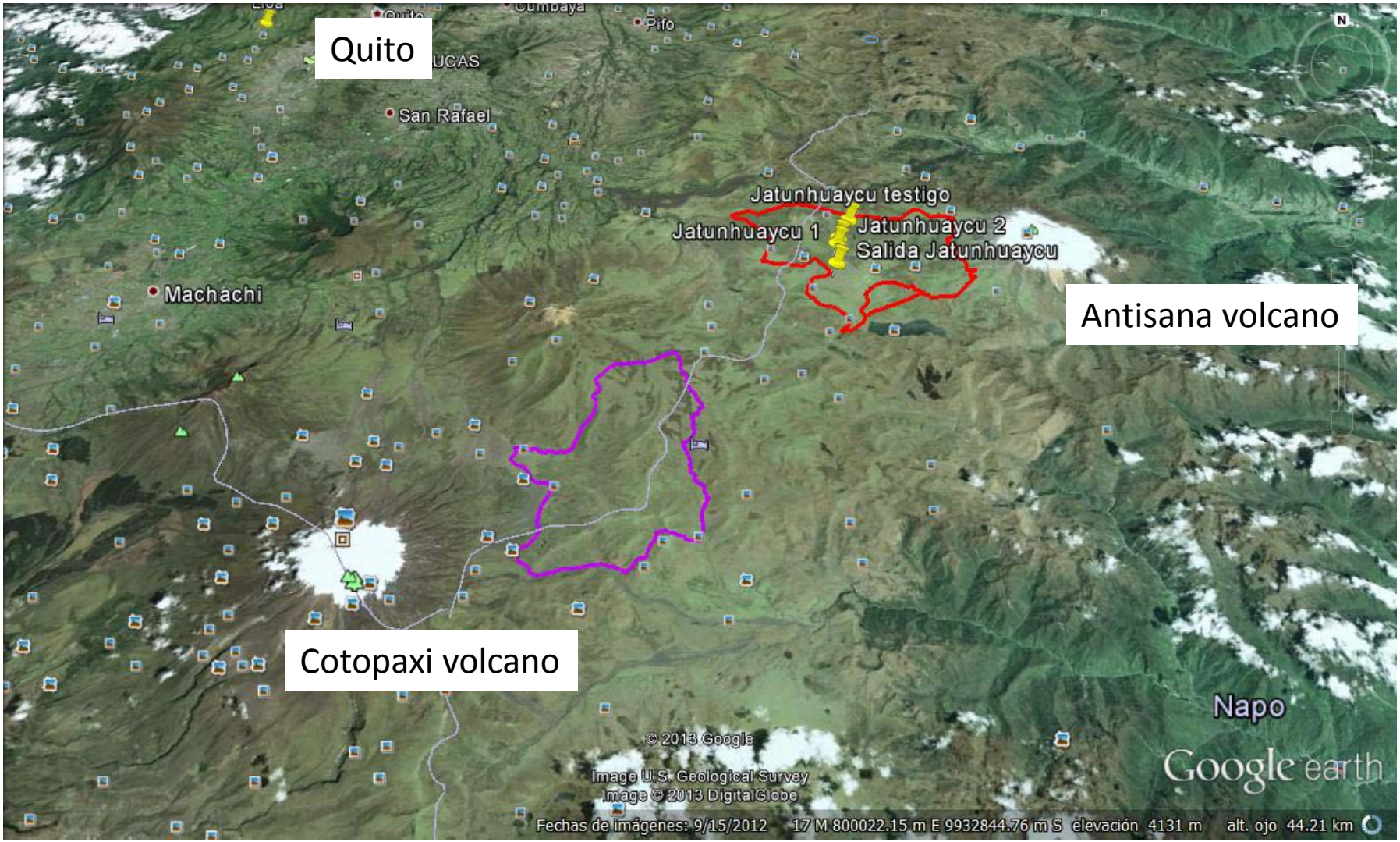

Paisajes andinos
6000 m.s.n.m.
5000 m.s.n.m.
4000 m.s.n.m.
3000 m.s.n.m.
2000 m.s.n.m.
1000 m.s.n.m.
Páramo
Bosque de Niebla
Bosque Andino Estacional
Glaciar
Puna Húmeda
Puna Xerofítica
(Salares)
Valles Interandinos
(Arbustal Húmedo)
Valles Interandinos
(Arbustal Xerofítico)

Climate Change in the Andes :

vertical altitudinal moves certain, everything else very uncertain



Water for Quito: Municipal Water Company purchased 15000 ha of degraded paramo



Go straight to the point

- What do people appreciate about water sources in mountains, where storage in reservoirs is limited?

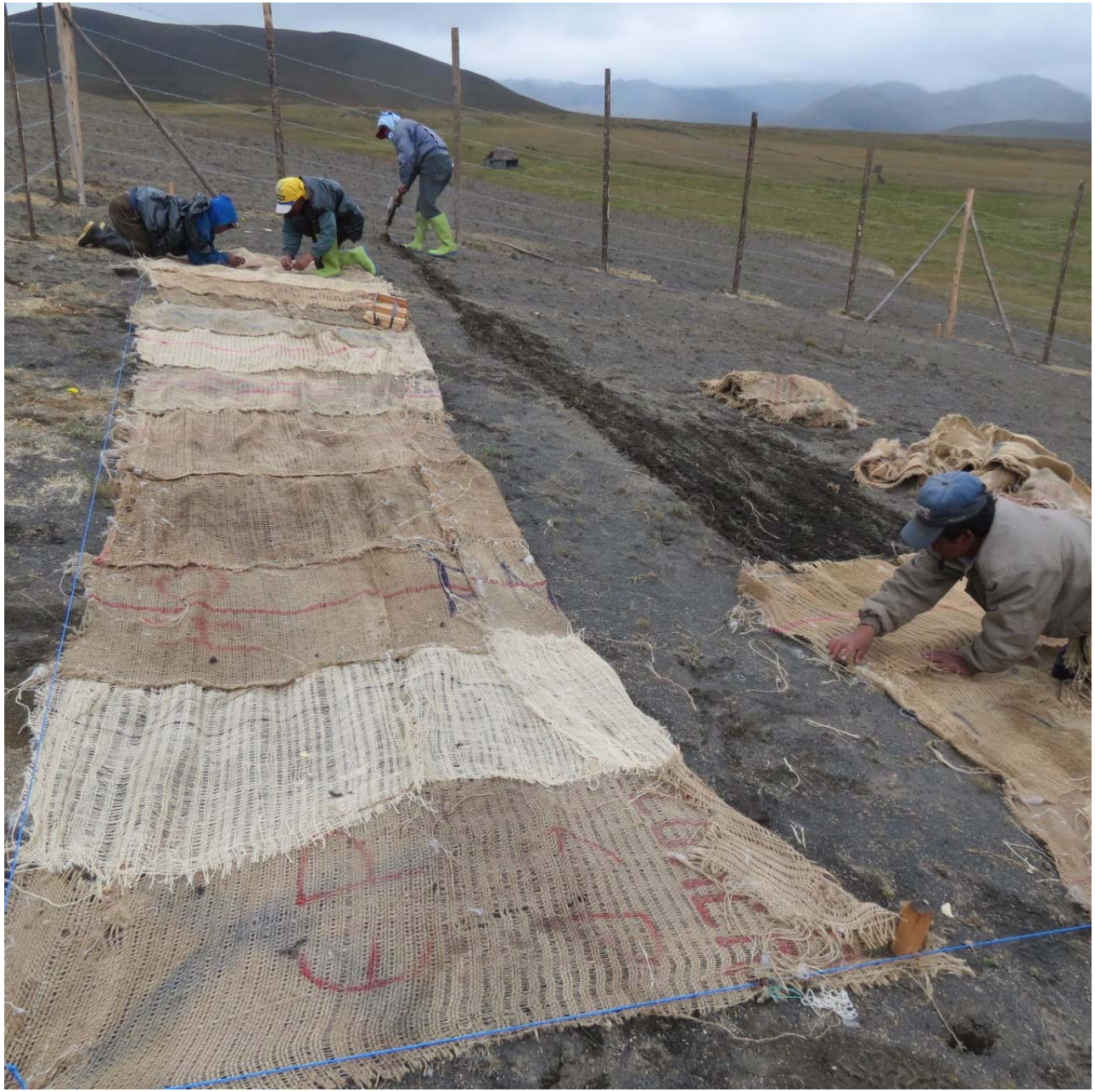
  Water Regulation capacity

Glacier retreat = loss of water regulation capacity
Paramos suffer also of loss of water regulation capacity (less visible, but at catchment scale more important!)

Adaptation technology = conserve or recover water regulation capacity of paramos
Restauration ≠ Reforestaton !

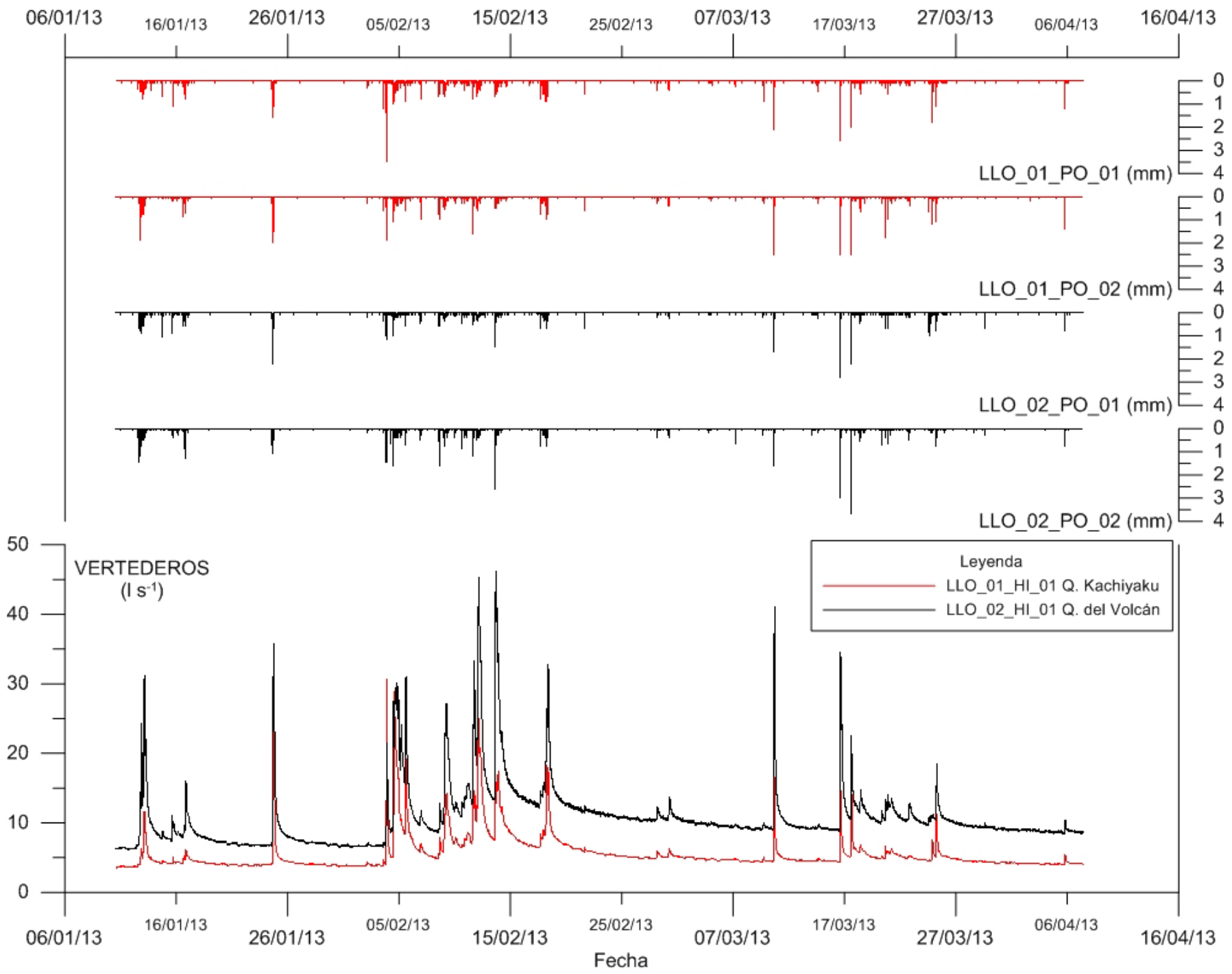
Experimental restauration plots

Experimental restauration plots on heavily degraded paramo



Monitoring: scales!

- Plot scale:
  - Plant diversity
  - Vegetative cover
  - Soil hydrophysical properties
  - After 2 years evaluation which plots to continue
- Microcatchment scale:
  - Rainfall – flow relation in paired catchments with different treatments
  - First 2 years = baseline, then selected restauration practices upscaled to microcatchment scale, and monitored


06/01/13
16/01/13
26/01/13
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15/02/13
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07/03/13
17/03/13
27/03/13
06/04/13
16/04/13
LLO_01_PO_01 (mm)
LLO_01_PO_02 (mm)
LLO_02_PO_01 (mm)
LLO_02_PO_02 (mm)
0
1
2
3
4
VERTEDEROS
(l s-1)
50
40
30
20
10
0
Leyenda
LLO_01_HI_01 Q. Kachiyaku
LLO_02_HI_01 Q. del Volcán
Fecha

Monitoring

- Monitoring of Climate Change ≠ Monitoring of adaptation measure!
- Monitoring of adaptation technology is for
  - adaptive management/optimization of the technology
  - providing evidence of its impact
  - Insight in upscalabality/outscalability
- Like with integrated catchment management in general, there is a general lack of evidence of hydrological benefits of implemented technologies, incl. Indigenous/traditional
- Need for development of indicators/language to discuss these benefits

Conclusions: Gaps and Challenges

- Logical connection: which lost ecosystem services to be replaced by which adaptation technology?
- Change in hydrological monitoring paradigm
- Lack of effectivity/evidence base of integrated catchment management measures, applies for climate change adaptation
- Therefore huge need for traing subnational governments and other stakeholders
- Appropiate Indicators/language for discussion of benefits
- Technologies not “one size fits all”, they are specific to climate, hydrology, soils, *precedent condition*, …
- South-South exchange between Mountain regions in the world very effective, even in expensive (coordination structures do exist)








Contacts:
bert.debievre@condesan.org
www.condesan.org