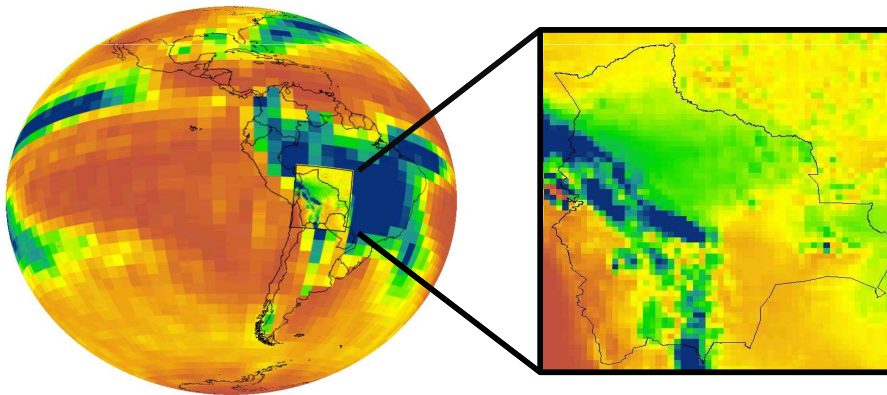




Climate Change in Bolivia:

Projecting forest resilience and fire risks in tropical dry forests



Natalia Calderón
Verónica Ibarnegaray
Christian Seiler
Robert Müller

Side event: “Integrating adaptation needs in REDD+ sub-national schemes”
Dec 1st, Room Mamey at Cancunmesse



Content



1. Projecting climate change

- Can we detect climate change in Bolivia?
- Are climate models in consensus with detected trends?

2. Ecosystems

- How sensitive is Bolivia's carbon cycle to climate change?

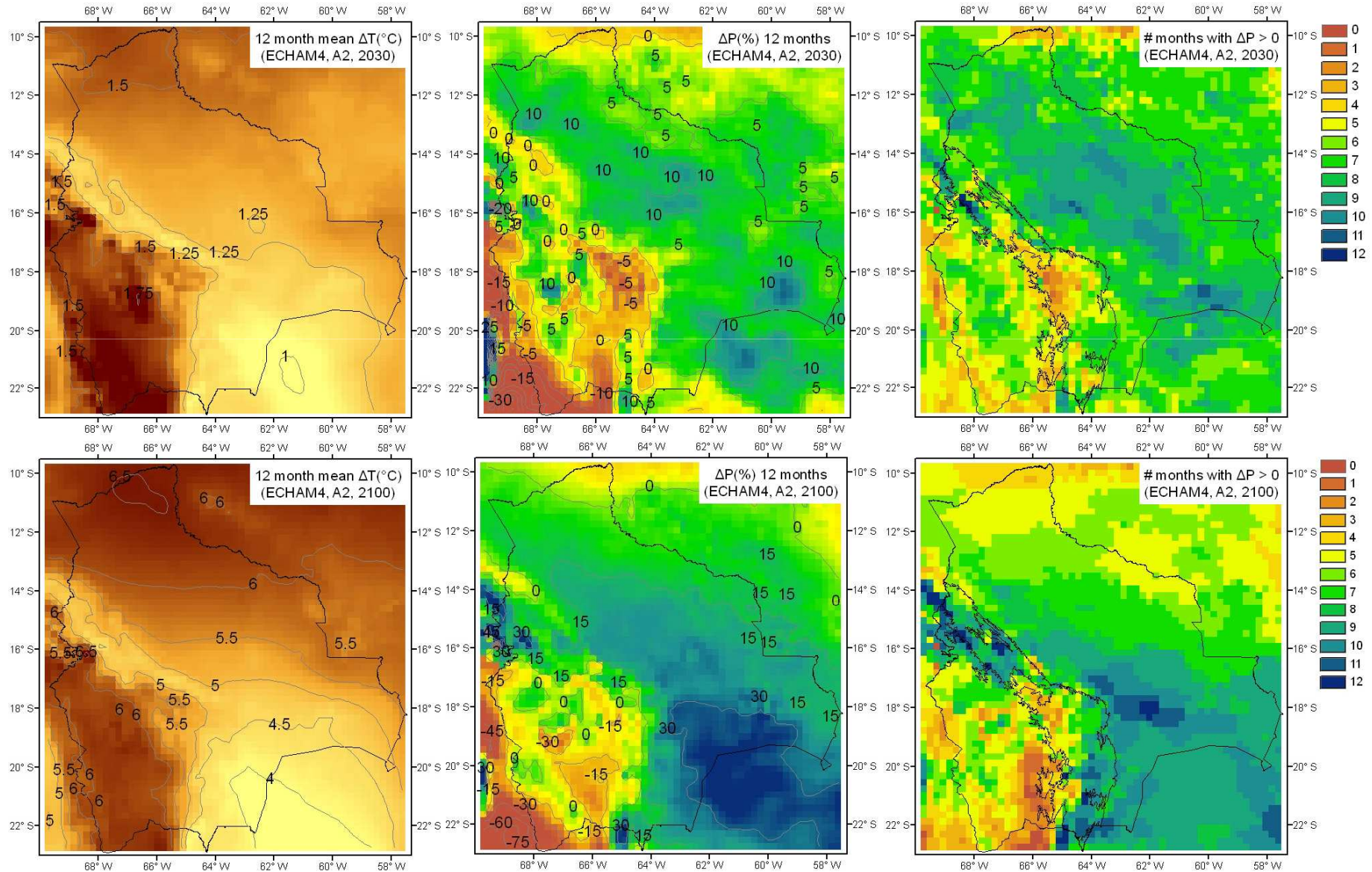
3. Fires

- Can we predict fires?

4. Conclusions

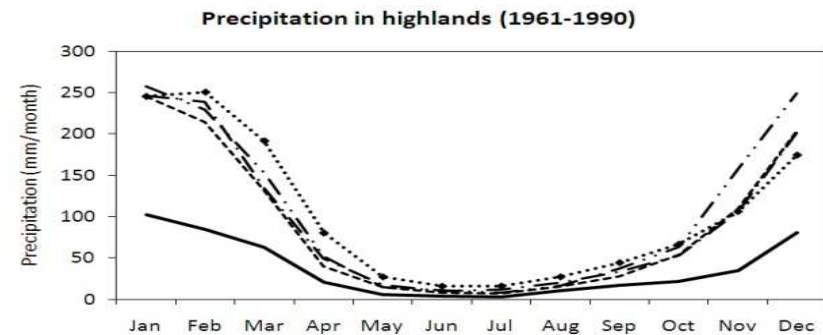
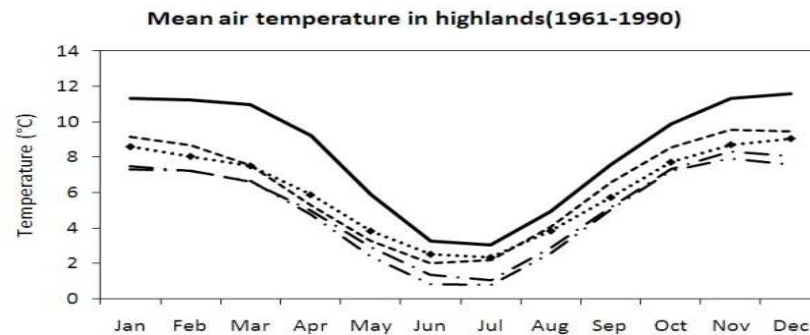
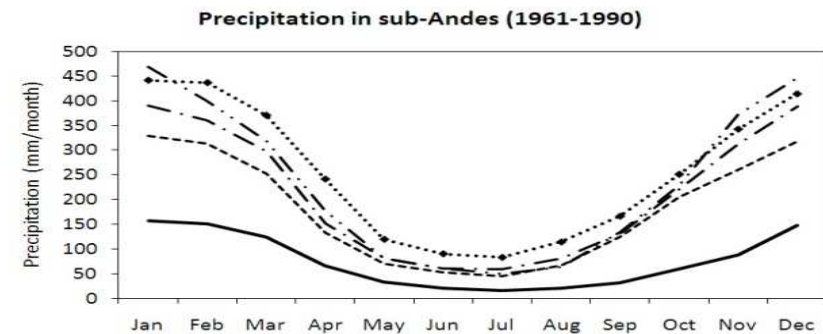
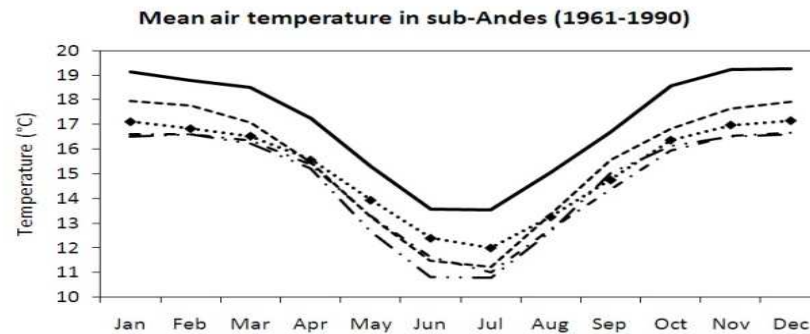
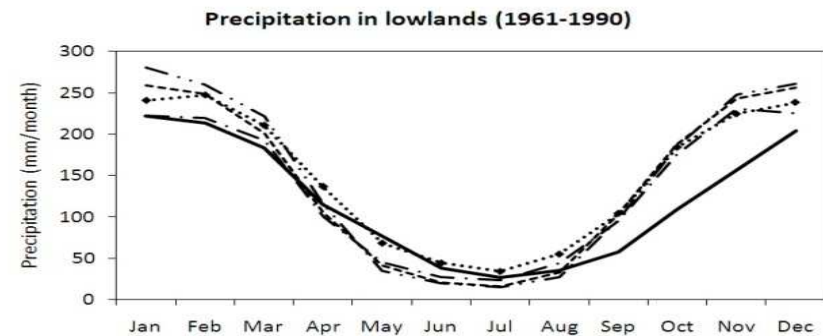
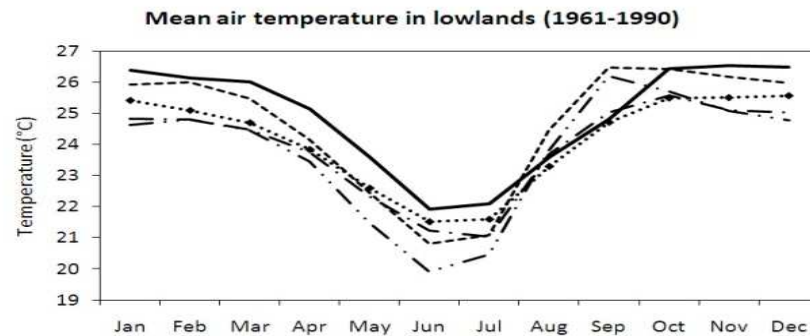


Climate: Can we predict climate change?





Climate: Can we predict climate change?



— observation - - - ECHAM4 - · - HadAM3P - · · HadCM3Q ···♦·· ERA40



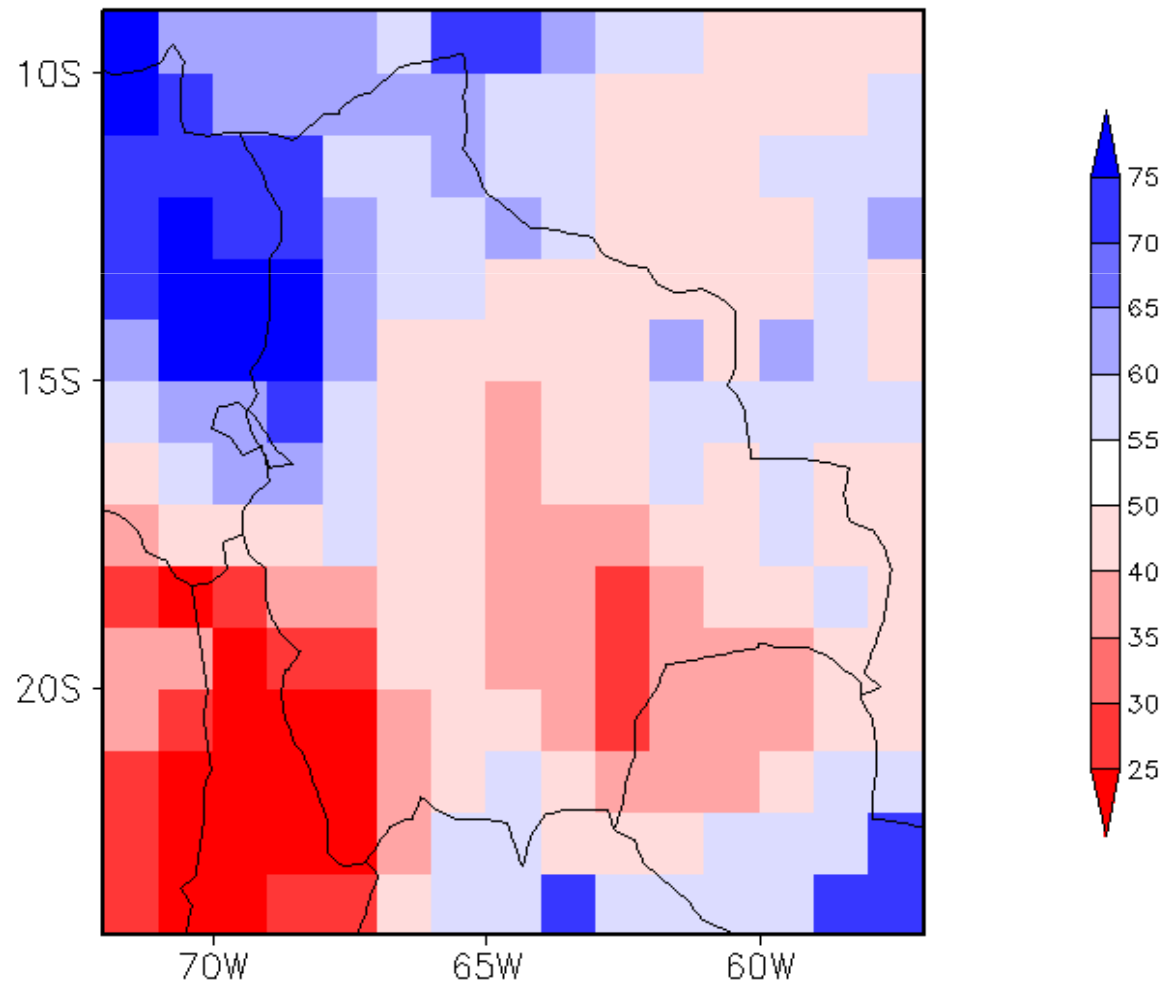
Climate: Are climate models in consensus with detected trends?



Multi GCM analysis

Agreement on directional change of precipitation

Agreement of GCMs (%) dP

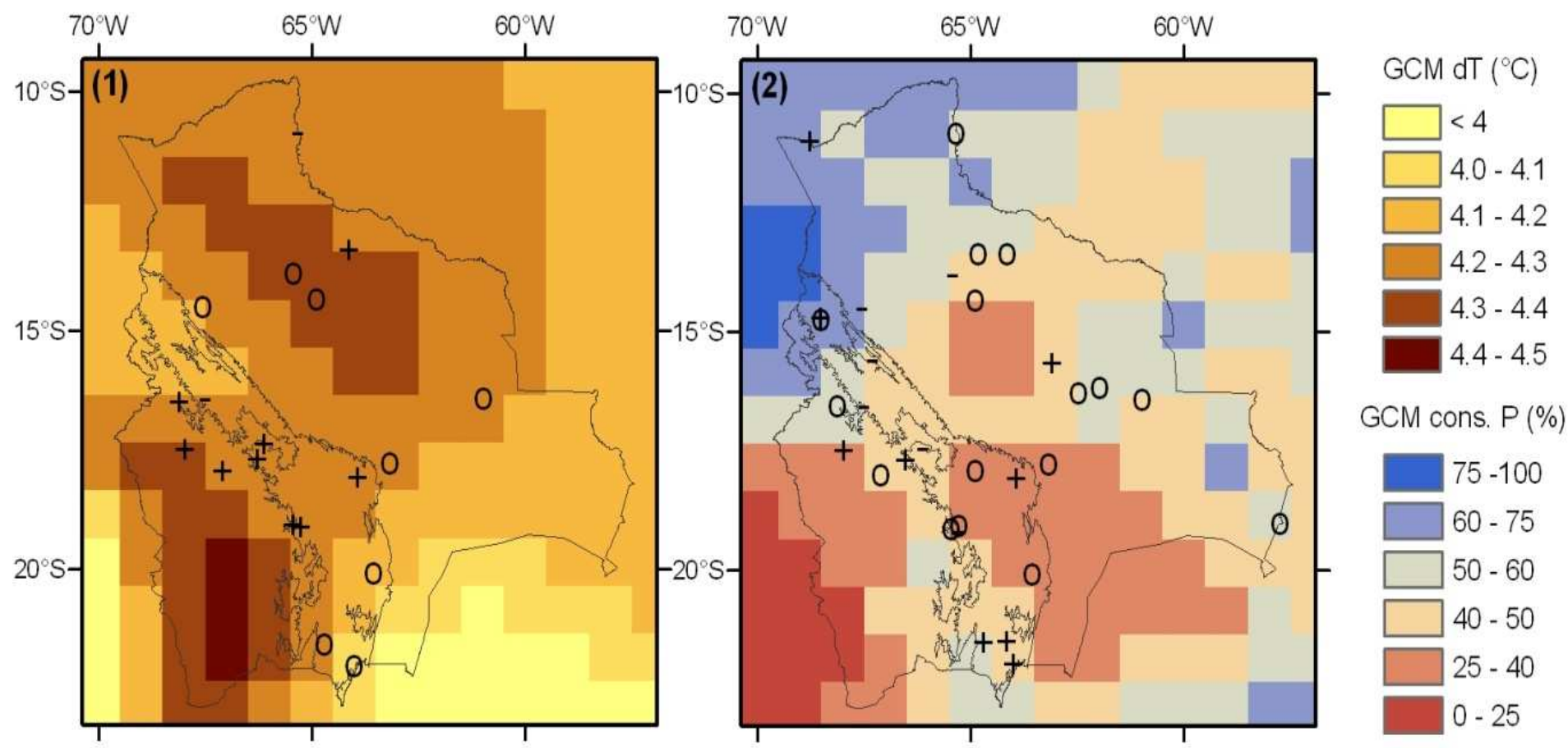




Climate: Are climate models in consensus with detected trends?



Climate Change Indices Observational trends vs. GCMs



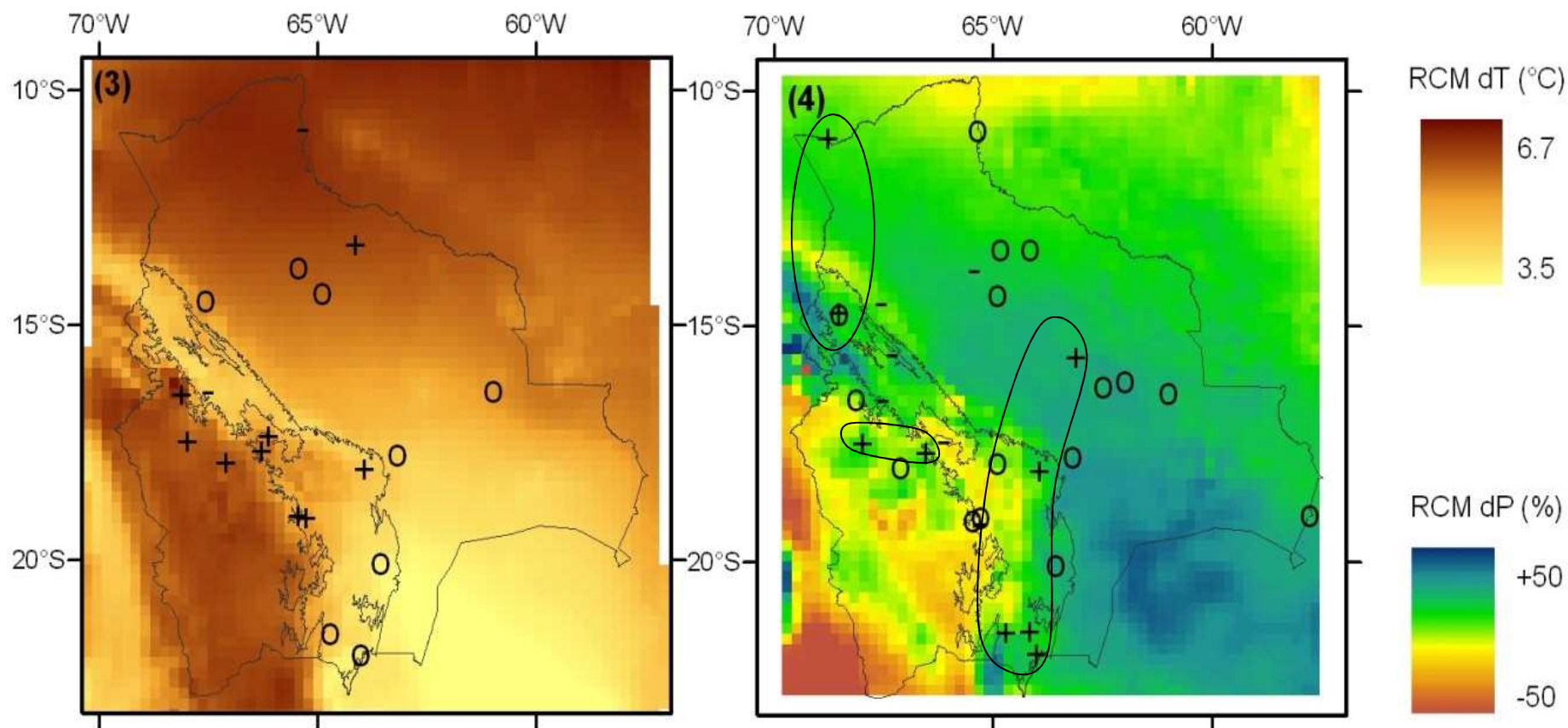


Climate: Are climate models in consensus with detected trends?



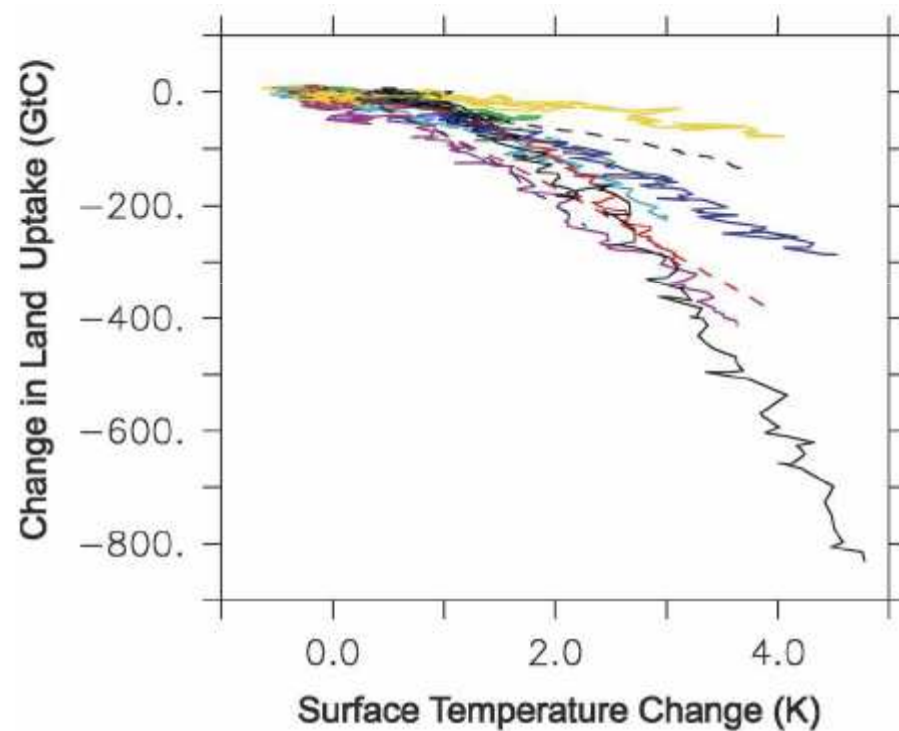
Climate Change Indices

Observational trends vs. RCM (PRECIS – ECHAM4, SRES A2)

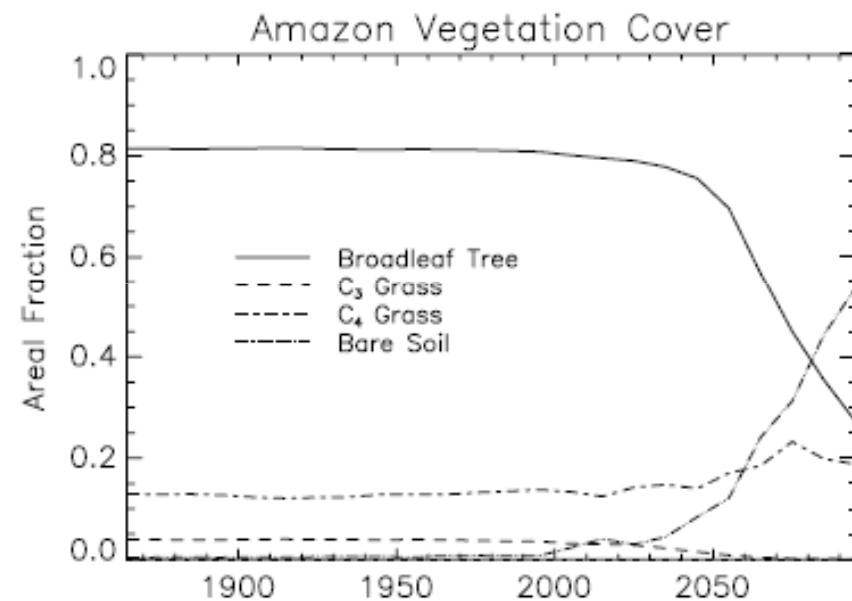




Ecosystems: How sensitive is Bolivia's carbon cycle to climate change?



Friedlingstein *et al.*, 2006 (11 models)



Cox *et al.*, 2004 (HadCM3, TRIFFID)

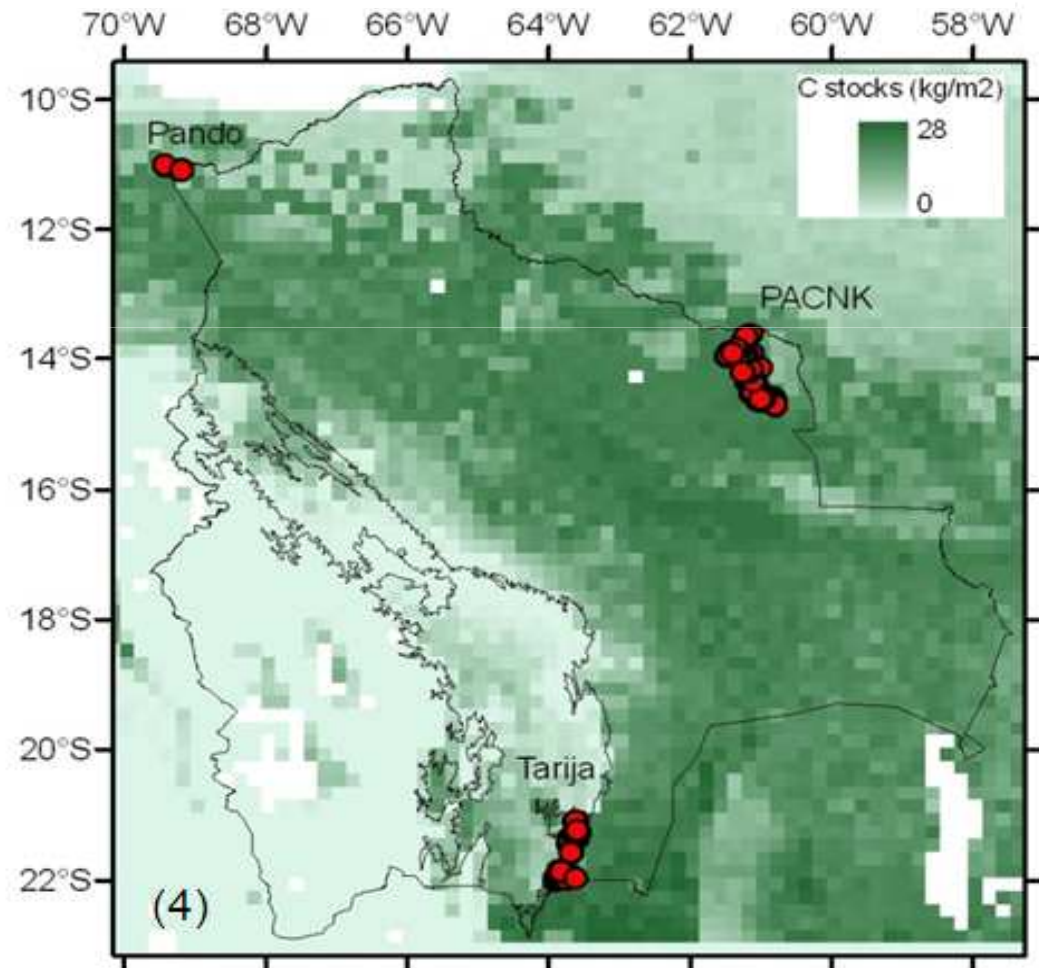


Ecosystems: How sensitive is Bolivia's carbon cycle to climate change?



Coupling climate and ecosystem model (BRAMS, LPJ-GUESS)

- Main inputs
 - Solar radiation
 - Temperature
 - Precipitation
 - Soil texture
- Synergies mitigation & adaptation





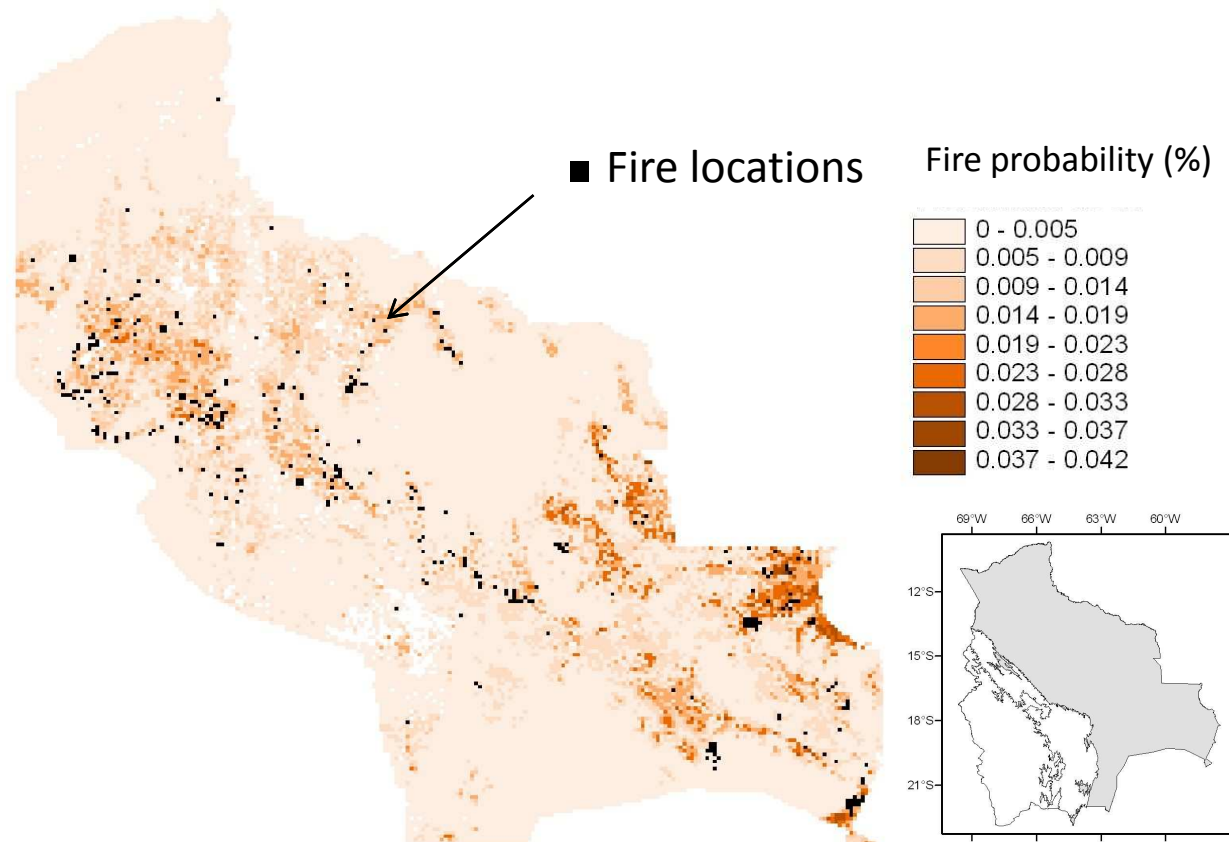
Fires:

Can we predict fires?



Fire probability map

- Logistic regression function
- Fire probability is a function of
 - Humidity of dead biomass
 - Wind speed
 - Distance from previous fires
 - Land cover





Conclusions



- We can project climate change scenarios for Bolivia at an adequate scale.
- We detect significant changes in temperature and precipitation.
- Consensus among observation and models:
 - Stronger temperature increase in Andes
 - Increase of total precipitation in NW Bolivia
- Many regions where precipitation changes remain uncertain!



Conclusions



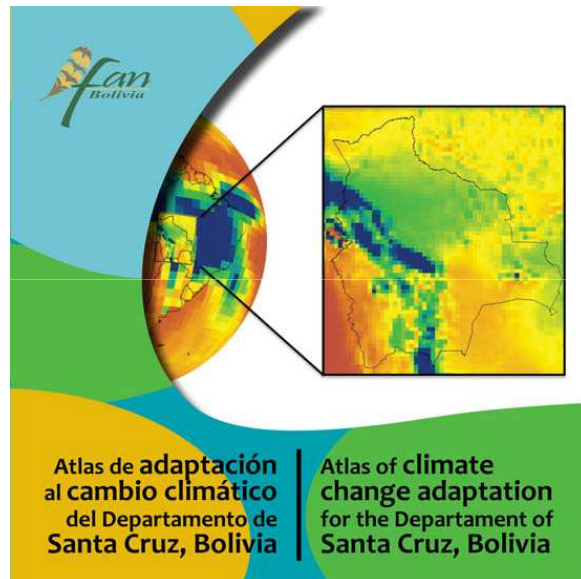
- We investigate the sensitivity of Bolivia's carbon cycle with a coupled climate and ecosystem model.
- We can predict fire from remote sensing data and meteorological observations.
- Synergies between mitigation and adaptation!



Supporting material



- Atlas of Adaptation to Climate Change



- FAN's website:



www.fan-bo.org

Thanks you for your attention!

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Coordinator

Climate Change and Environmental
Services Department



Ejecutado por:



Gobierno
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Santa Cruz

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