Human impact on the hydrology of the páramo ecosystem

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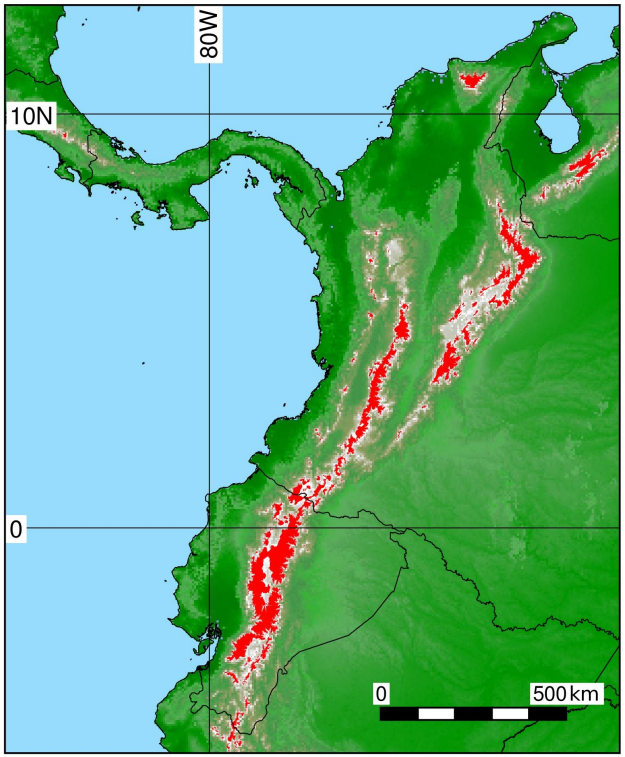
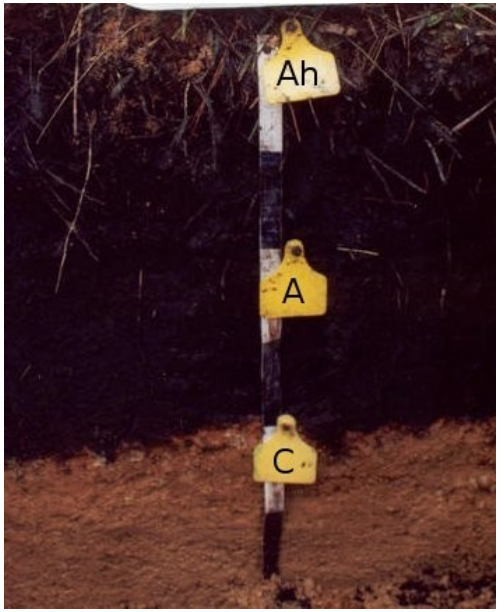
The páramo

- Tropical alpine wetland ecosystems
- 3500 – 5000 m altitude
- Cold and wet climate
- High water storage and regulation
- Socio-economic importance:
    - urban water supply
    - agricultural water supply
    - hydro power



Páramo soils

- Volcanic origin
- Elevated organic carbon content
- Low bulk density
- High porosity
- Extreme pF curves



The páramo

Soils

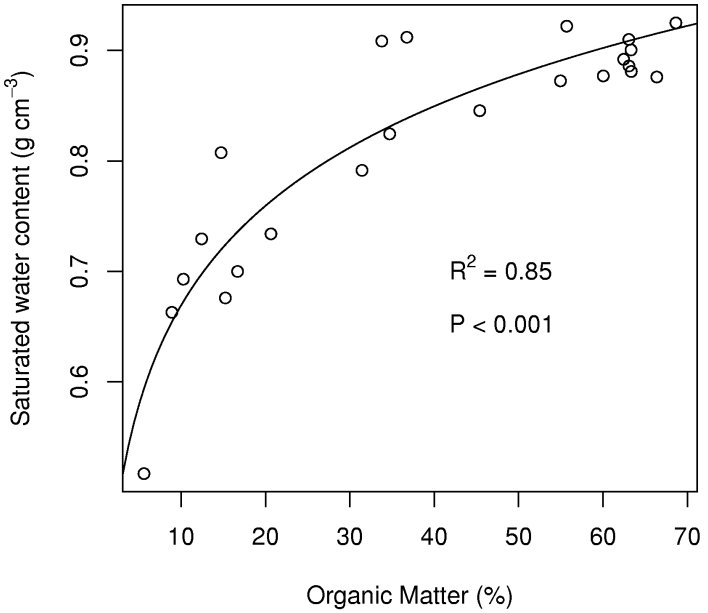
Hydrology

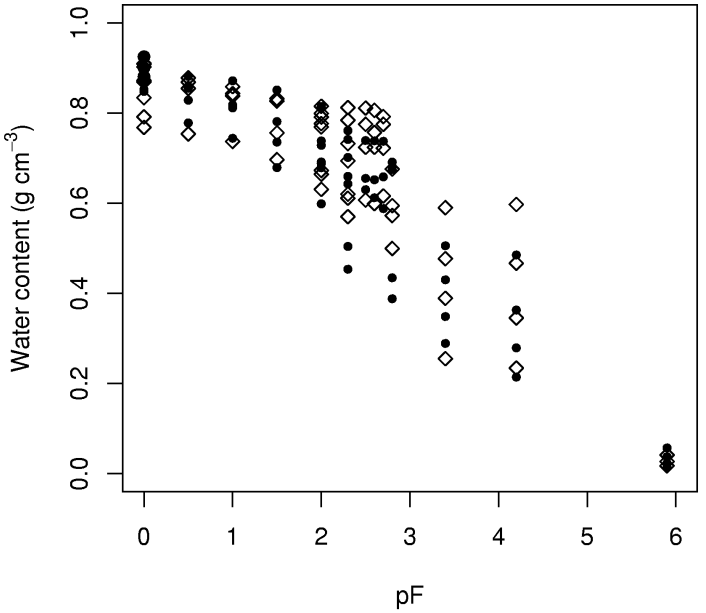
Climate

Land use

Climate change

Páramo soils (2)





The páramo

Soils

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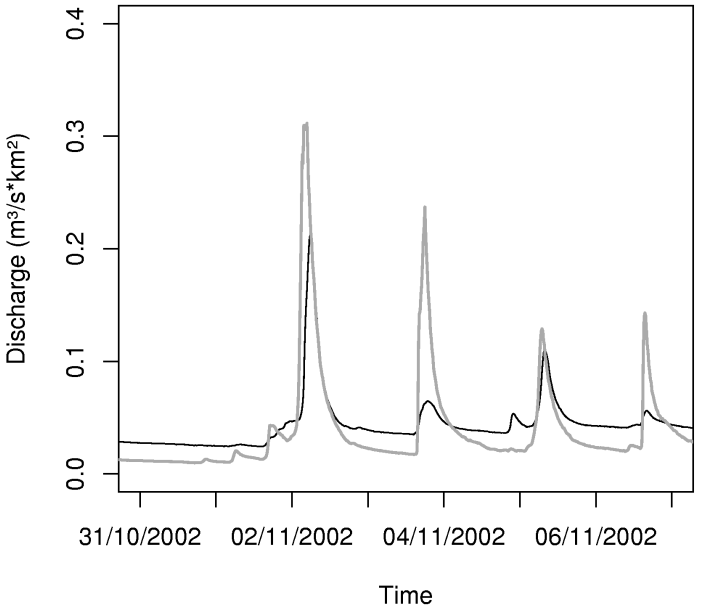
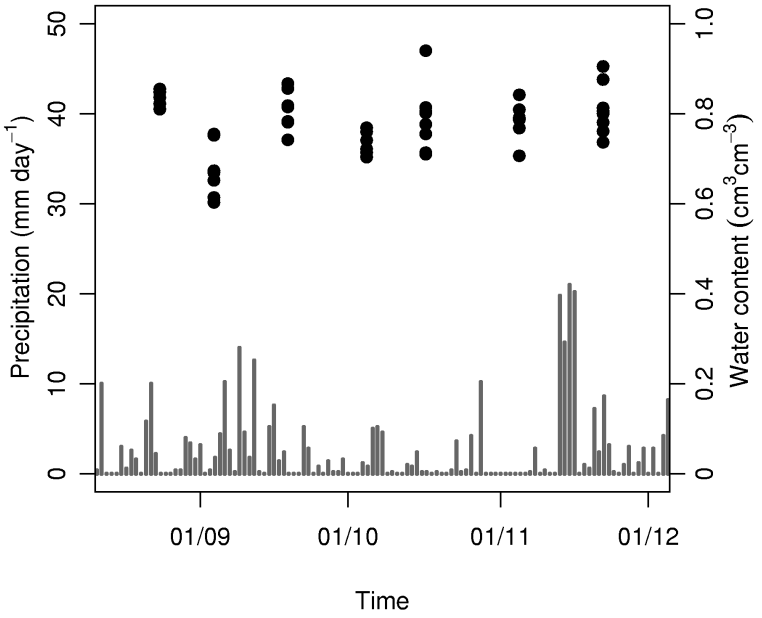
Hydrological response

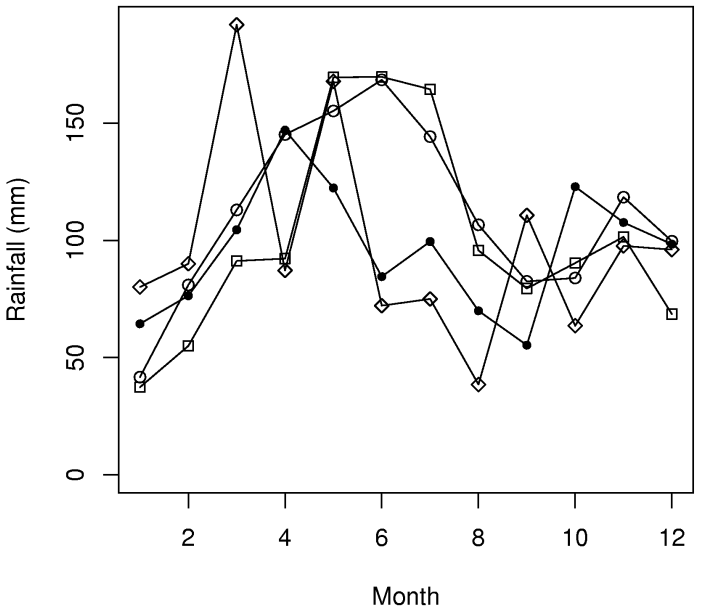
- High water storage and regulation capacity
- Sustained base flow

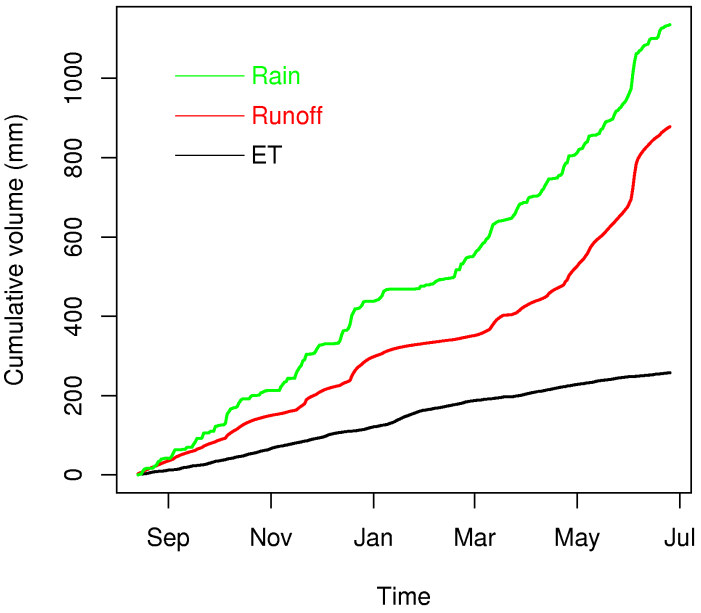




Climate of the páramo

- Tropical alpine climate
- Daily cycle dominant over the annual cycle
- Very low seasonal variability





The páramo

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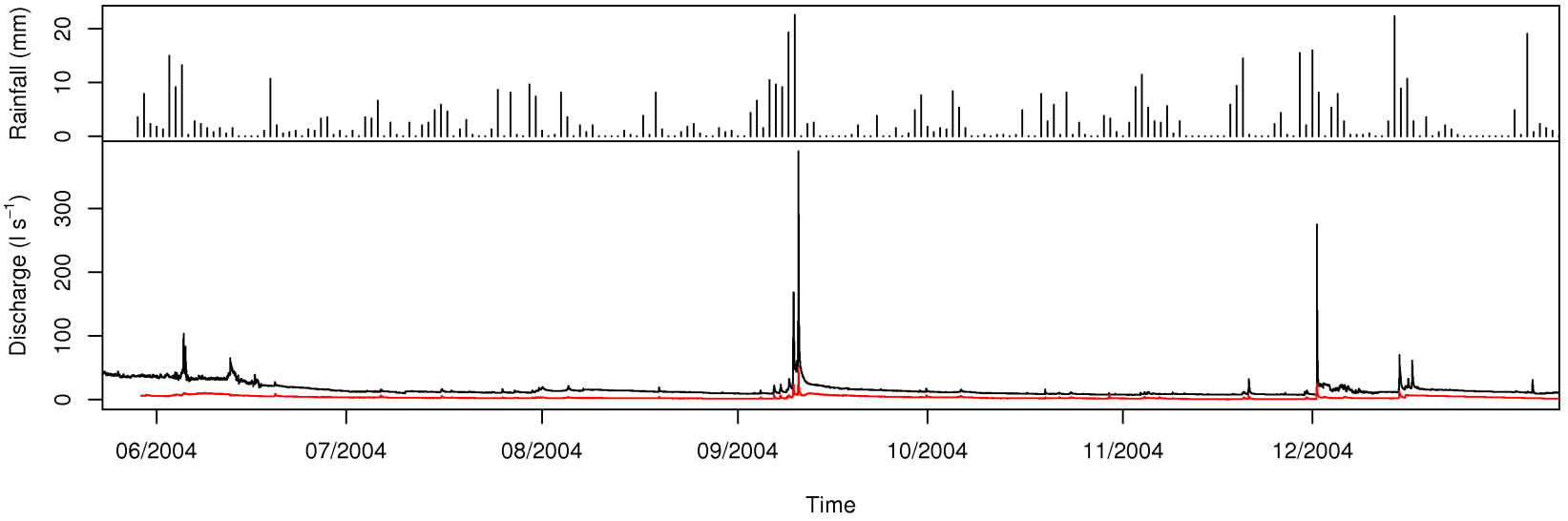
Climate change

The impact of land use changes

- Cultivation, drainage, pine planting
- Irreversible destruction of soil structure
- Organic carbon reduction
- Impact on hydrology



The impact of climate change

- Increase/decrease of precipitation
    - Direct impact on the hydrological response
    - Impact on the soil properties

- Increase of temperature
    - Impact on soil organic carbon content
    - Impact on vegetation
    - Uplift of the ecosystem
    - Decrease in surface area

The páramo

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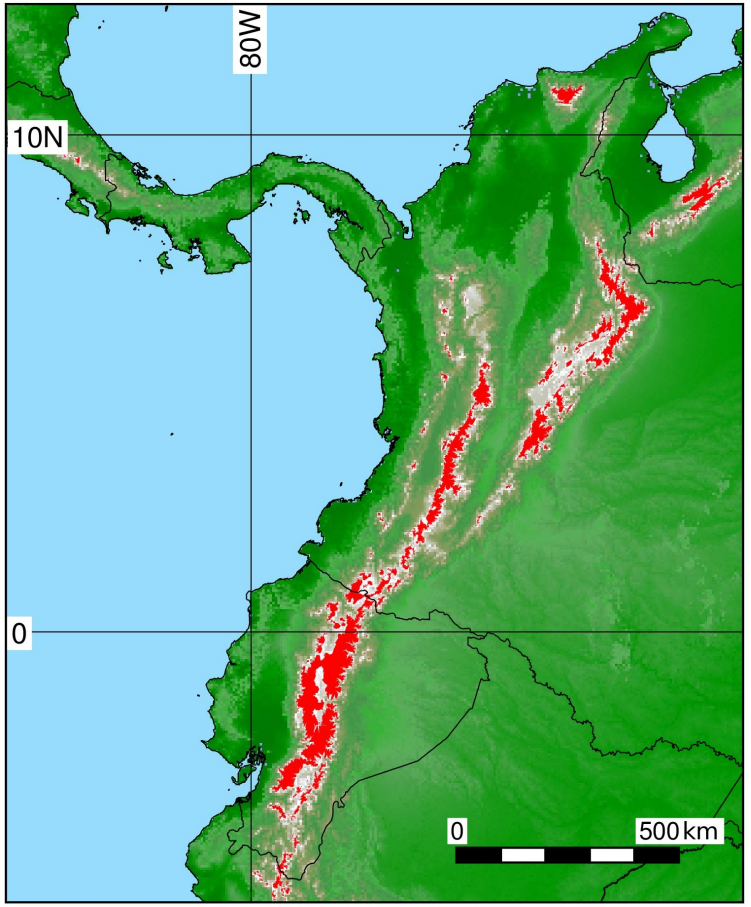
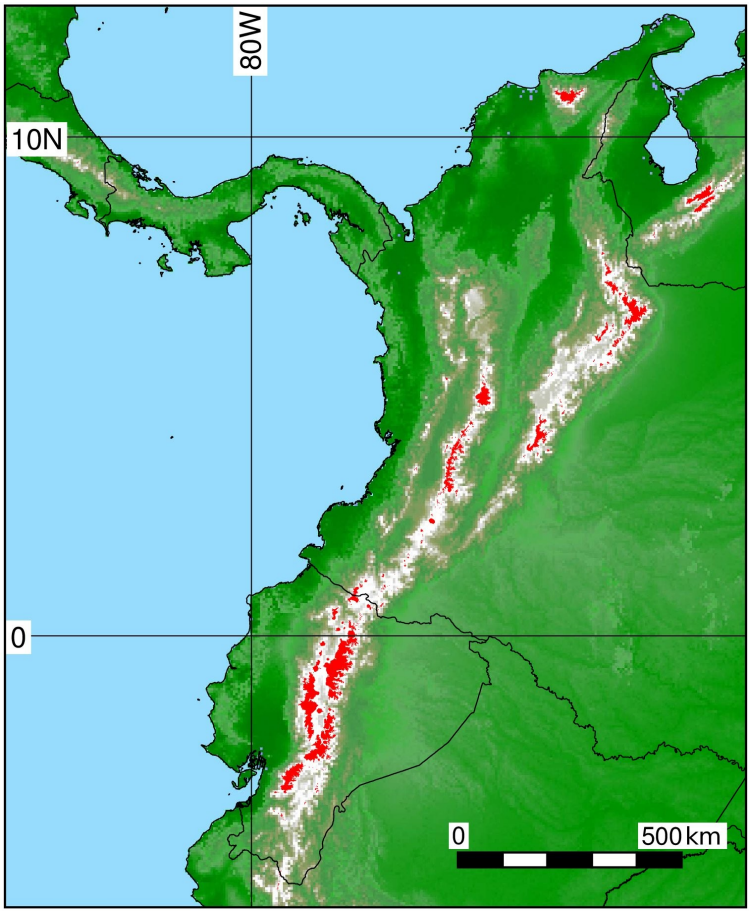
Climate change

The impact of climate change (2)






Thank you