

Socio-economic vulnerability and adaptation to climate-related risks

The potential of user-tailored climate services in the agricultural sector in Peru

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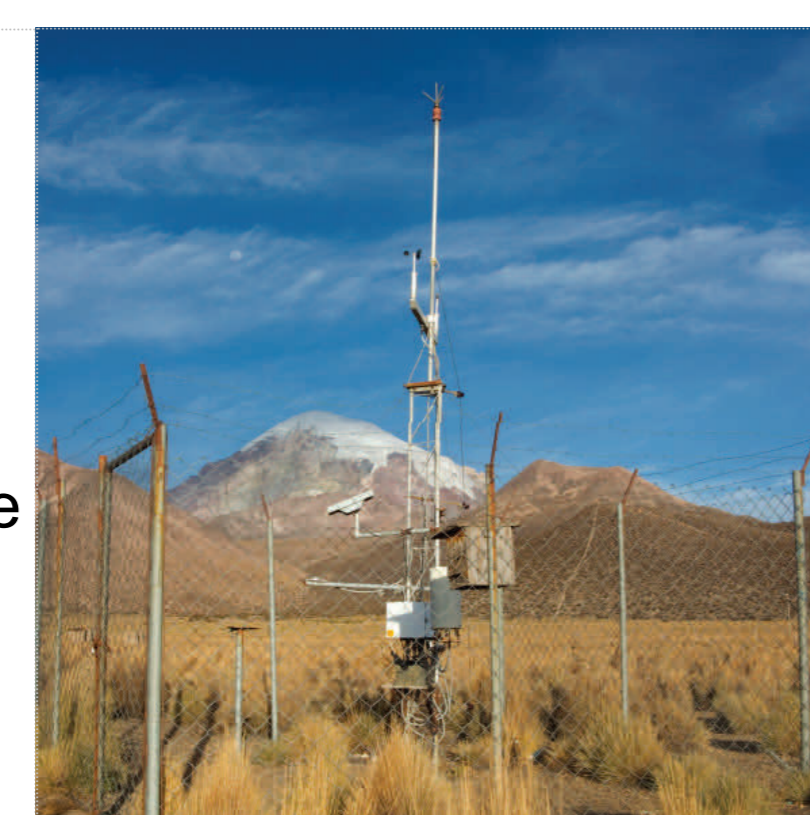
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Context



- ⇒ Semi-arid and high-altitude Altiplano in South-Eastern Peru
- ⇒ Agricultural sector exposed to climate-related risks
- ⇒ Negative repercussions of extreme events are threatening the livelihoods of smallholder subsistence farmers
- ⇒ Further exacerbated by changing climate patterns

- ⇒ Specific climate information can serve as an adaptation strategy to reduce the impact of natural hazards
- ⇒ Making such information useful for smallholders in a developing context remains a considerable challenge due to cognitive, cultural and institutional constraints (Patt & Gwata 2002)



- ⇒ The 2015/16 El Niño event revealed that a large part of the most vulnerable populations were uninformed and therefore unprepared when hit by the climate anomaly (Frey et al. 2016)
- ⇒ Strong link between poverty and natural disaster impacts (Hallegatte et al. 2017)

Rational

- ⇒ Design climate services based on reliable assessments of climate impacts on livelihoods to meet smallholders' needs and requirements
- ⇒ Bridge the gap between provision of services and its utilization to overcome key constraints
- ⇒ Explore the interaction between poverty, risk exposure, adaptive capacity and coping mechanism to identify the potential of climate services for improving socio-economic conditions

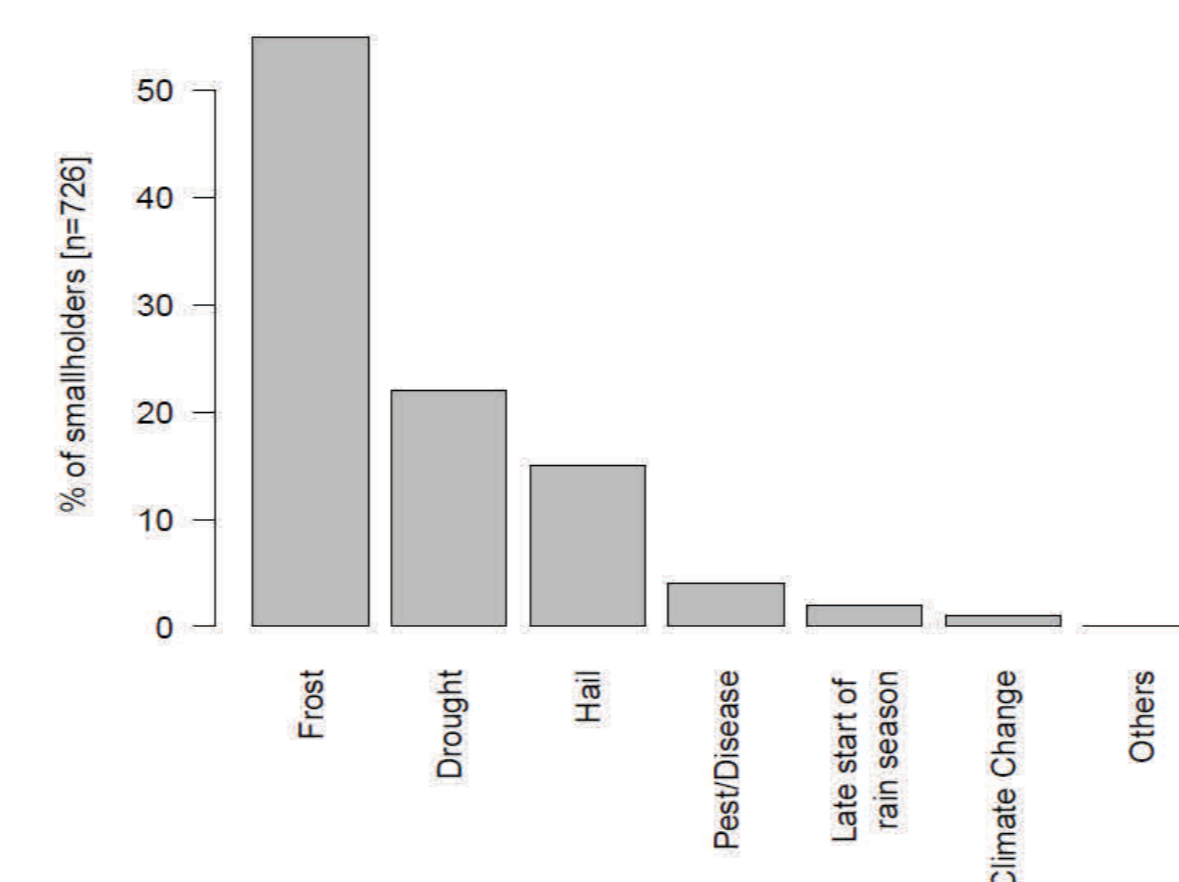
Methods

- ⇒ Key informant interviews
- ⇒ Cross-sectional data from a household survey with 726 respondents in 12 randomly selected districts in Puno
- ⇒ Quantitative and qualitative data analysis

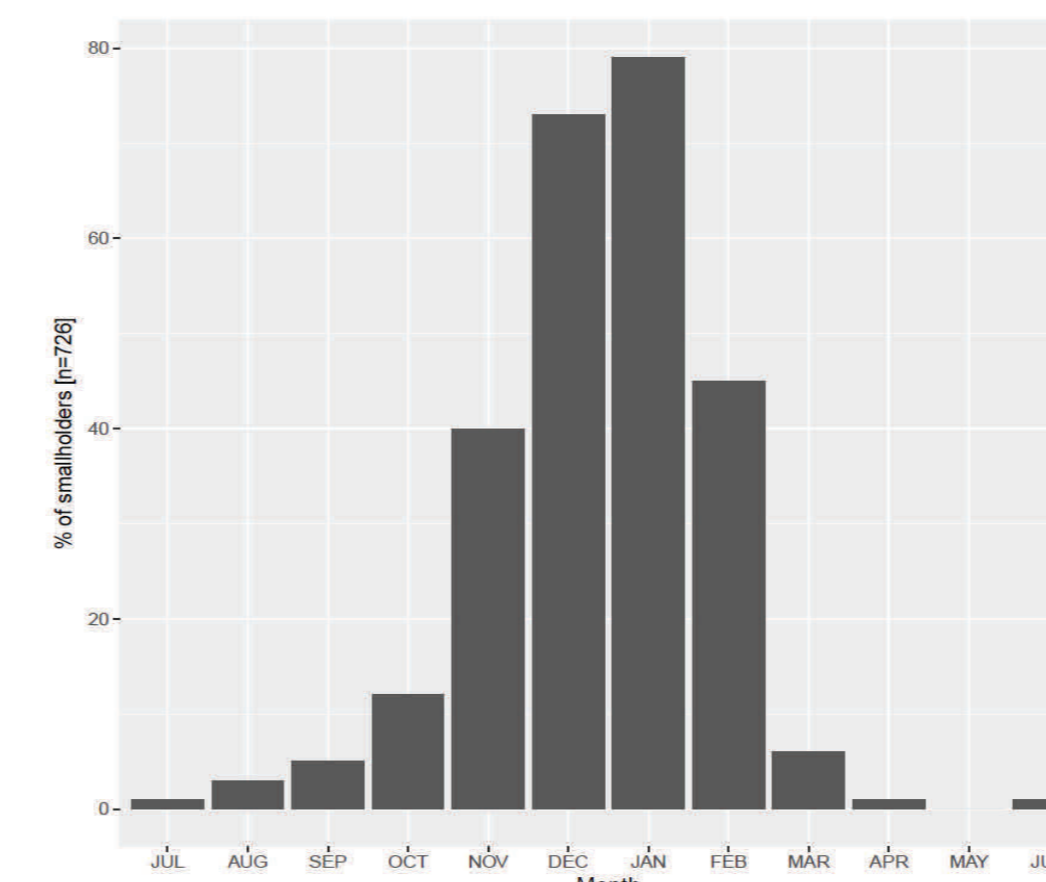


Socio-economic vulnerability

Main problem of agricultural production in Puno



Periods of food scarcity



Smallholders are frequently exposed to extreme events like frost, drought and hail (left). Those events can lead to significant yield losses and thus increase the problem of food scarcity (right) before the next harvest.

Potential of weather and climate services

Farmers informed about upcoming extreme events showed significantly lower negative impact on harvest than their uninformed counterparts. This was found for frost, heavy rainfall, hail and drought, but not for pests and diseases.

Constraints

- ⚡ 47% perceive traditional indicators as sufficient
- 👍 Incorporate local knowledge into forecasts
- ⚡ 40% find climate information not accurate enough for their specific area
- 👍 Improve accuracy or discuss local implications with farmers
- ⚡ Low understanding of climate information
- 👍 Improve communication & implement training
- ⚡ 77% want to receive forecasts despite high uncertainty
- 👍 Include uncertainty information into forecasts

Conclusion

- ⇒ There is a high potential for climate services in the specific development context
- ⇒ To guarantee an uptake and to maximize the socio-economic benefits of climate services, they must be designed in a participatory process with the end-users
- ⇒ The provision of climate services need to be accompanied with adequate capacity-building activities to guarantee correct understanding of the information

References:
[1] Patt, A., & Gwata, C. (2002). Effective seasonal climate forecast applications: examining constraints for subsistence farmers in Zimbabwe. *Global Environmental Change*, 12(3), 185-195.
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[3] Frey, H., Huggel, C., & Steinemann, M. (2016). The El Niño phenomenon and related impacts. SDC CC&E Network, Nexus Brief, 2.