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AgriAdapt –

Agricultural adaptation to climate change and its impacts on groundwater resources

A. Holzkämper*, O. Rössler**, P. Brunner***, D. Hunkeler***

*Agroscope**, *University of Bern***, *University of Neuchâtel****

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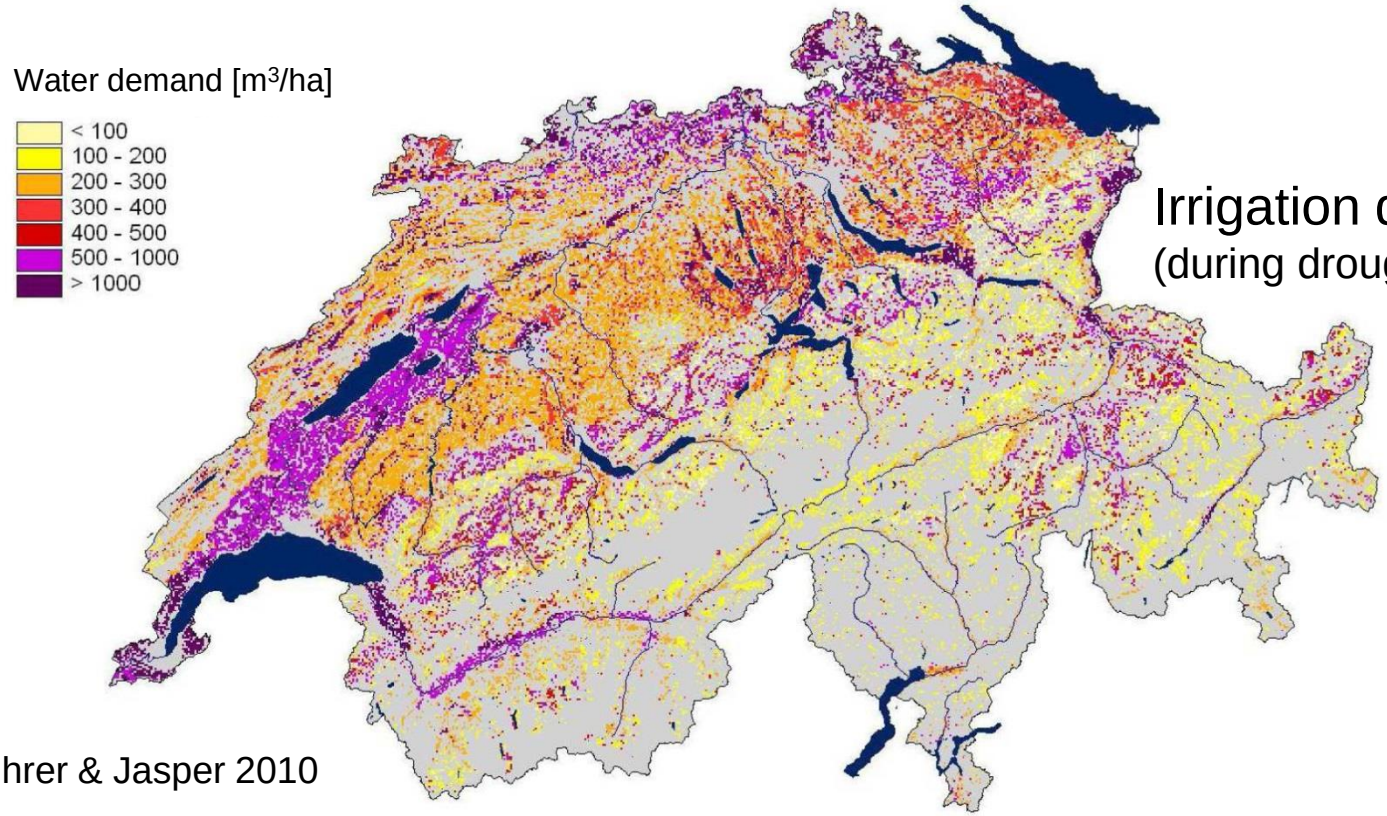
Background

- Climate change affects both agricultural production and water resources
- Agricultural production is expected to be increasingly limited by water stress in some regions of Switzerland



Irrigation demand
(during drought year 2003)

Fuhrer & Jasper 2010

Background

- Increasing irrigation can be considered an appropriate adaptation option in some regions
- BUT, also water resources can be negatively impacted by climate change

→ as a result, water use conflicts can increase and water resources may be overexploited

Irrigation – an unsustainable adaptation option?

Research questions

- What are the impacts of climate change on irrigation demands and on groundwater resources?
- What are the combined impacts of climate change and increased irrigation on groundwater resources? (is there a risk of maladaptation through irrigation from groundwater?)
- Which alternative adaptation strategies could reduce the risk of maladaptation on the long term (e.g. changes in crop types, changes in cultivation zones)?

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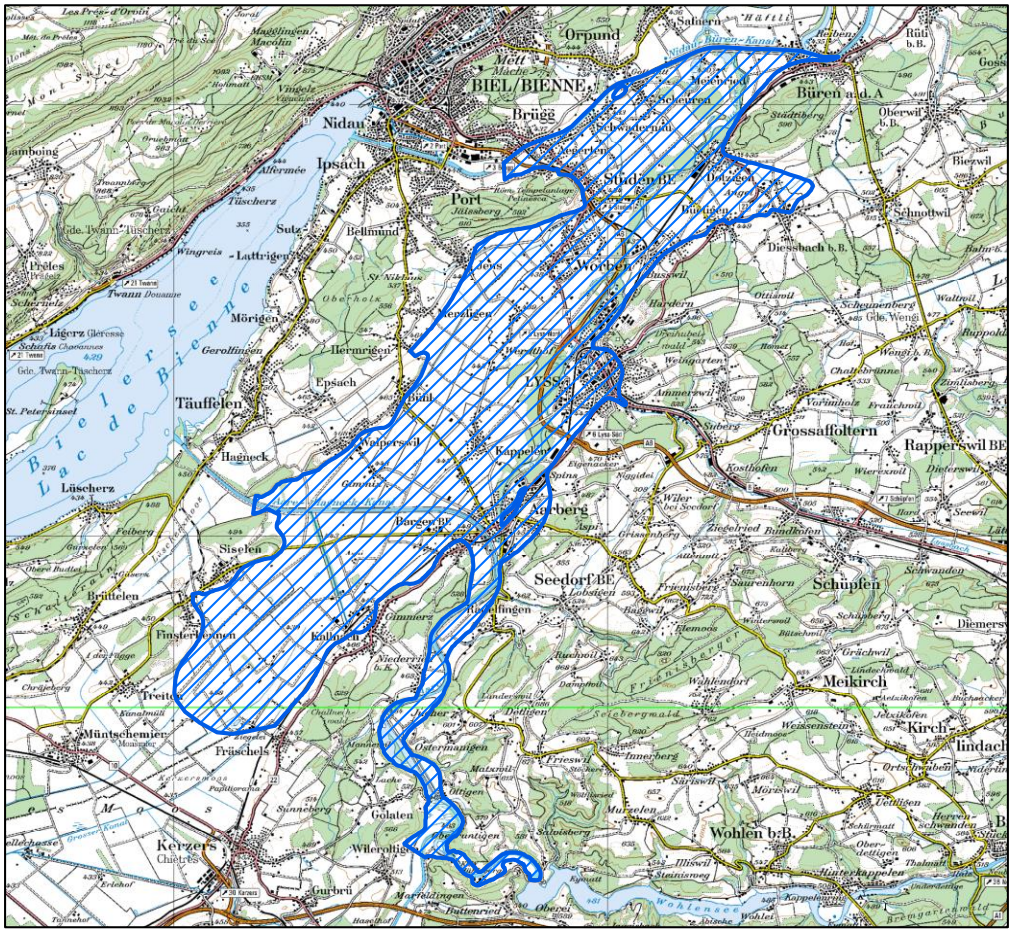
Case study region: Seeland aquifer



- 65% arable land use
- irrigated agriculture widespread
- water abstraction from ground- and surface water
- important aquifer for drinking water supply

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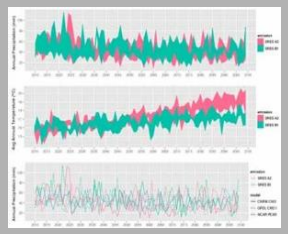
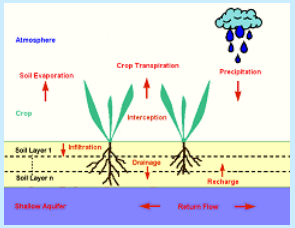
The project structure

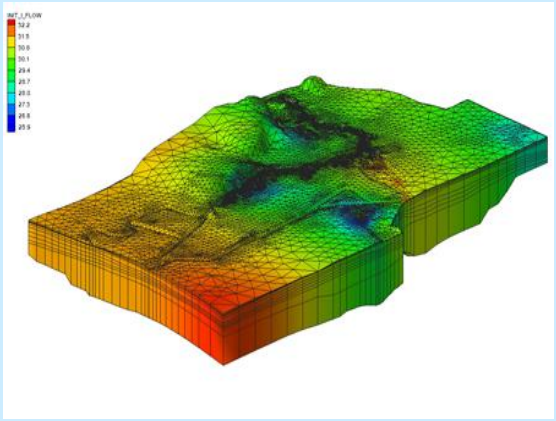
CH2018-Scenarios



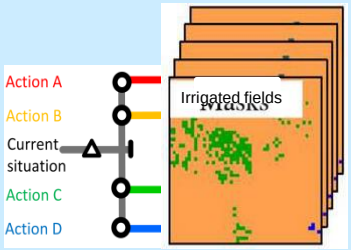
WP2: Crop model *(Agroscope)*



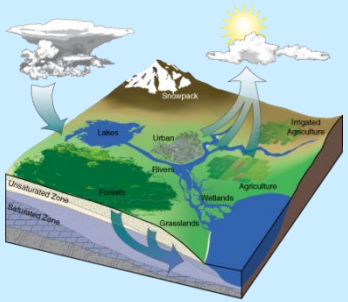
WP4: Groundwater model *(Uni Neuchâtel)*



WP1: Adaptation scenarios *(Agroscope)*



WP3: Hydrological model *(Uni Bern)*



WP5: Implications for GW-services (drinking water, irrigation, ecology)

(Uni Neuchâtel)

WP6: Model application and project synthesis *(all)*

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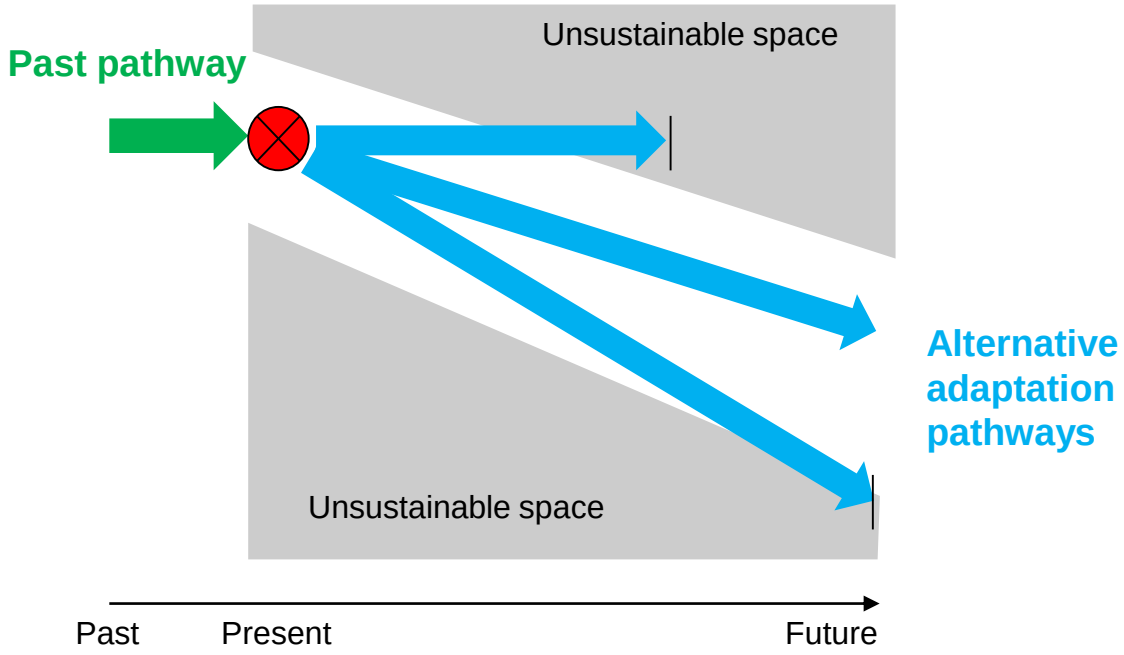
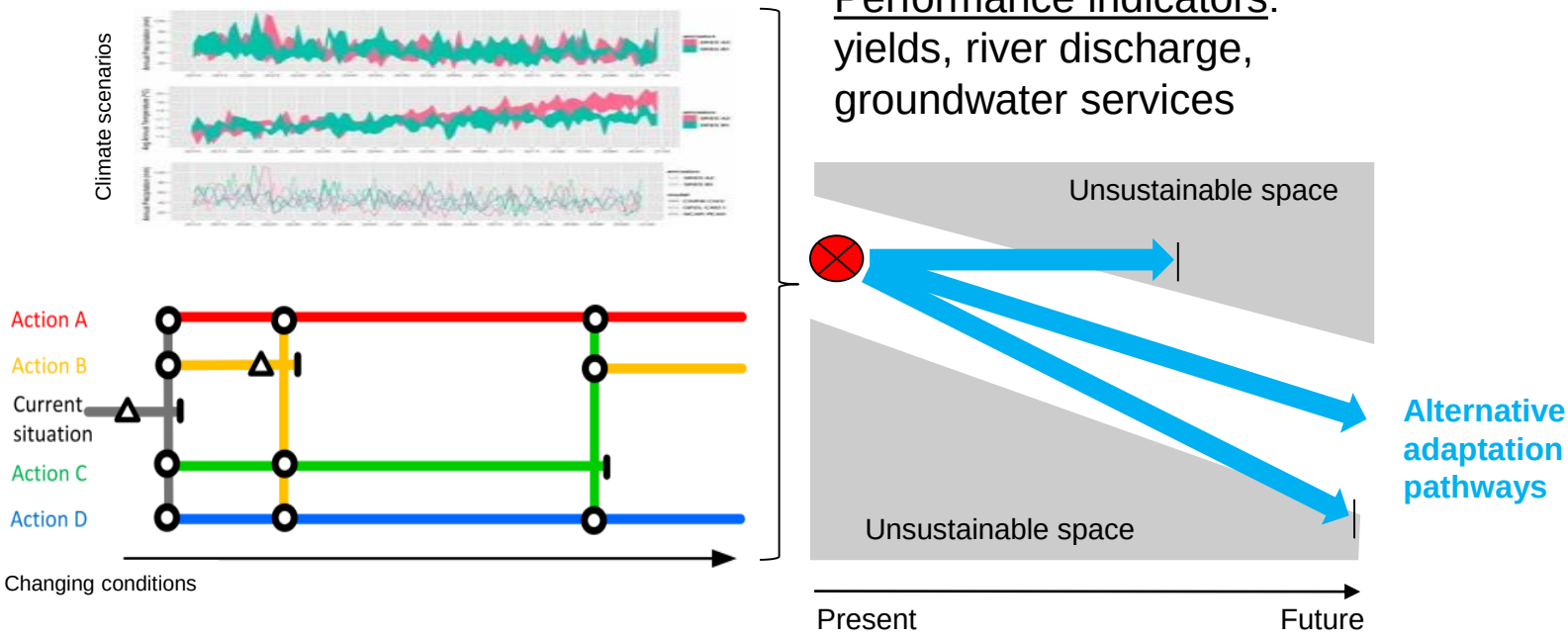
Which adaptation pathway performs best?



WP6: Model application and project synthesis

- Application of integrated modelling system to quantify the performance of different climate adaptation pathways:



Thank you for your attention