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A Spatially transferable Drought Modelling Approach based on Remote Sensing Data

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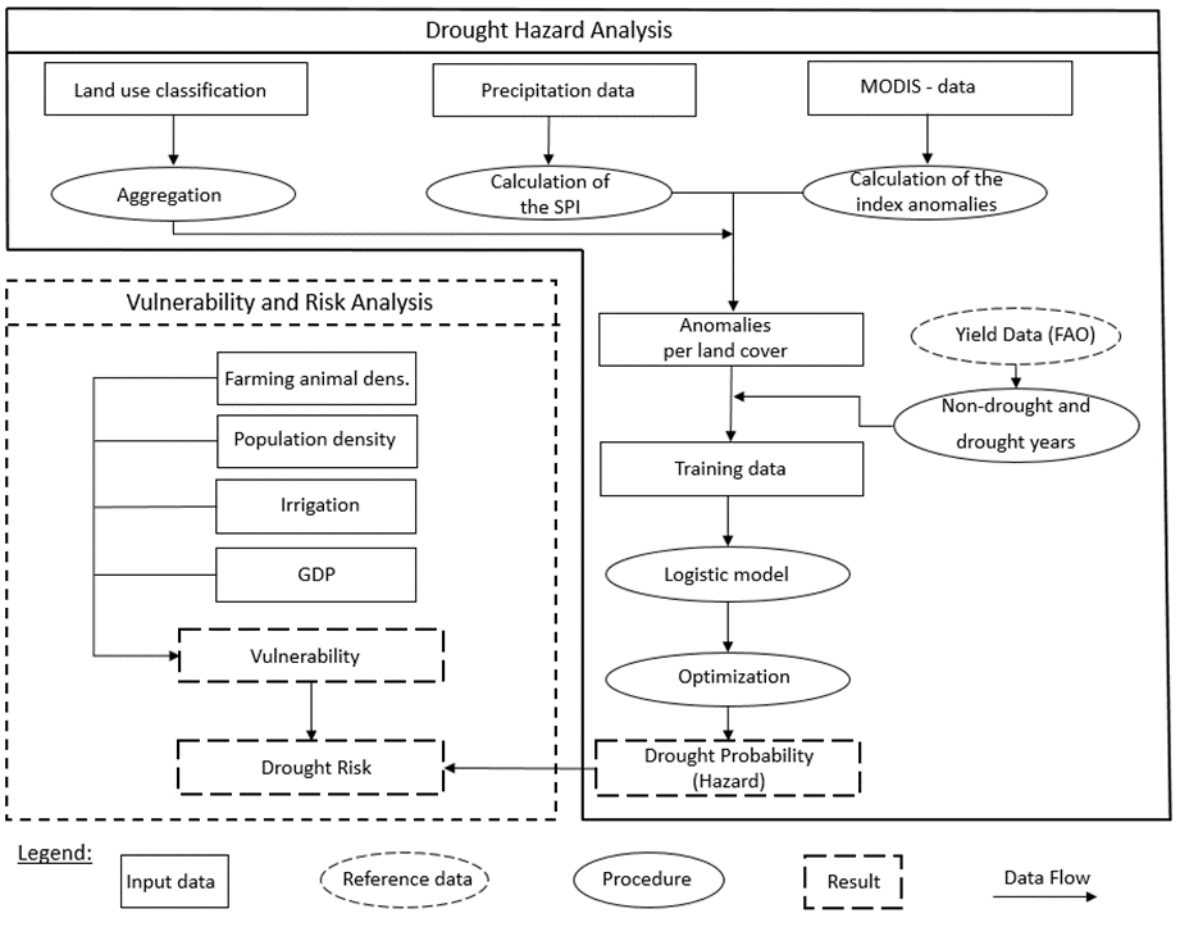
Aim of the study

- Current drought models: no spatially explicit data, not spatially transferable, low spatial resolution or too specific

- Aim of our drought model:
  - Close the gap between global drought models (cannot capture regional drought effects) and subregional drought models (explicit but not spatially transferable)
  - Spatially explicit modelling framework to capture drought hazard, vulnerability and risk for crop- and rangeland

Methods



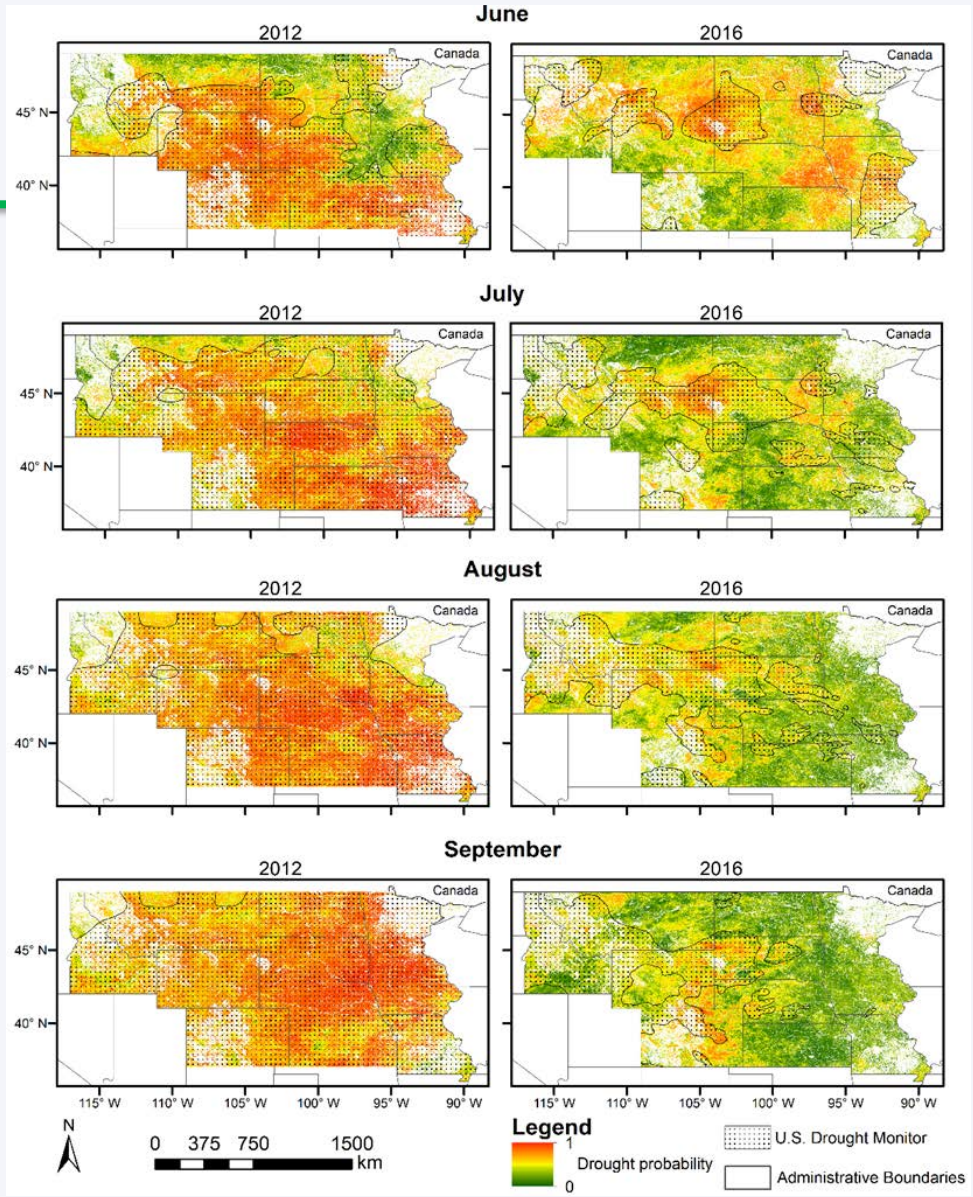
Workflow of the drought hazard, vulnerability and risk analysis.

Evaluation of the Model Results

- United States Drought Monitor (USDM) for USA
- Global Drought Observatory (GDO)
- FEWS NET Southern Africa Food Security Outcomes
- Newspaper articles and drought reports
- Data on the El Niño event 2015/2016 (known teleconnections: hot and dry conditions between December and February in the southeastern part of Africa

Results

Modeled drought hazard in the Missouri Basin (USA) compared to the U.S. Drought Monitor (dotted polygons) for agricultural, grass- and shrubland in a drought (2012, left) and non-drought year (2016, right).



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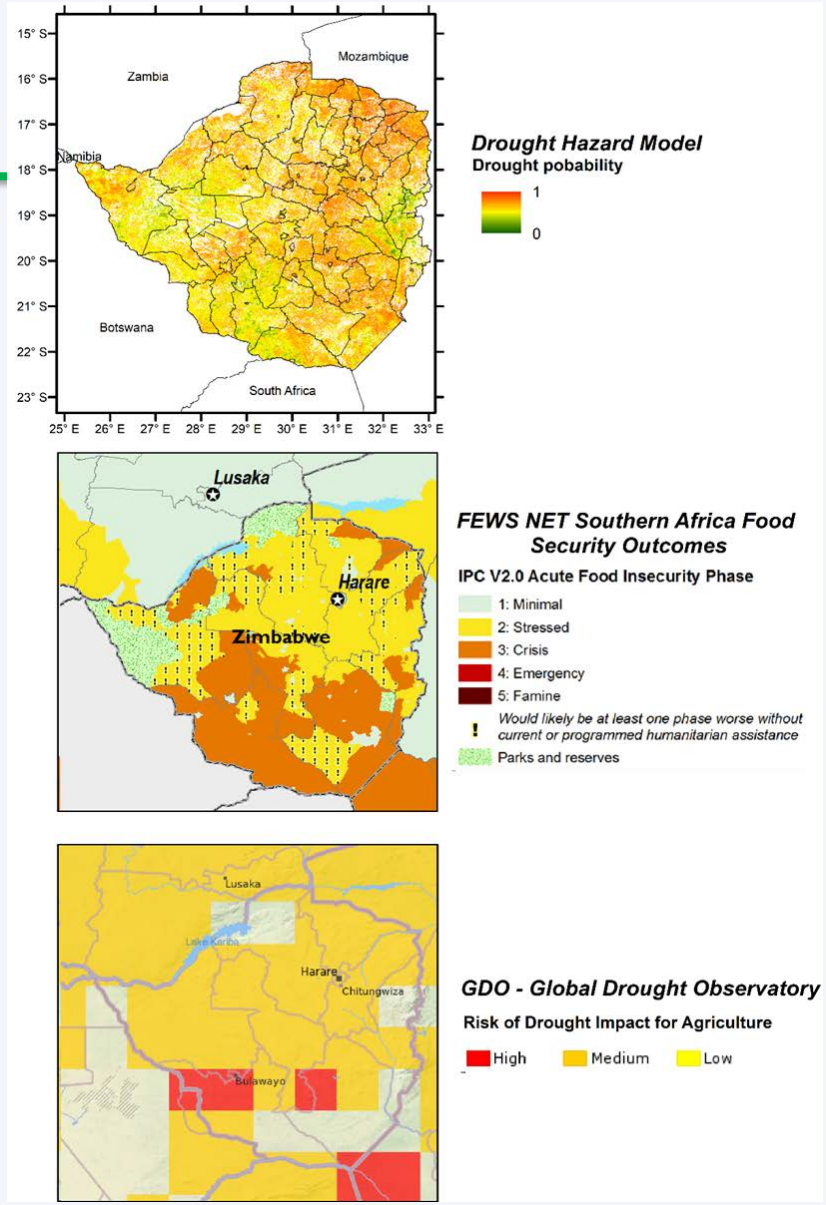
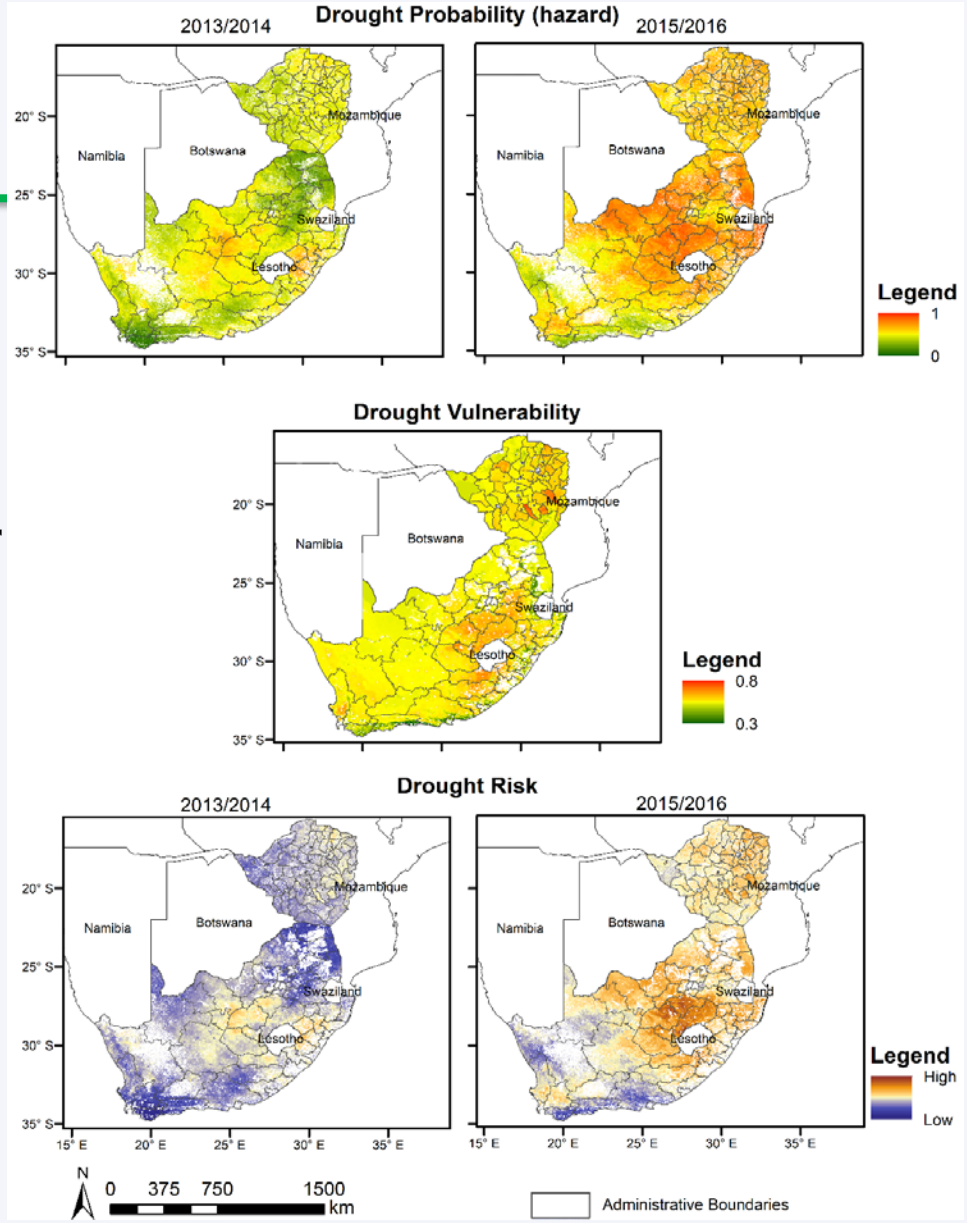
Results

Comparison of the drought hazard model results (top) with food security classification data from FEWS NET (center) and the Global Drought Observatory (bottom) for the month February in 2016.



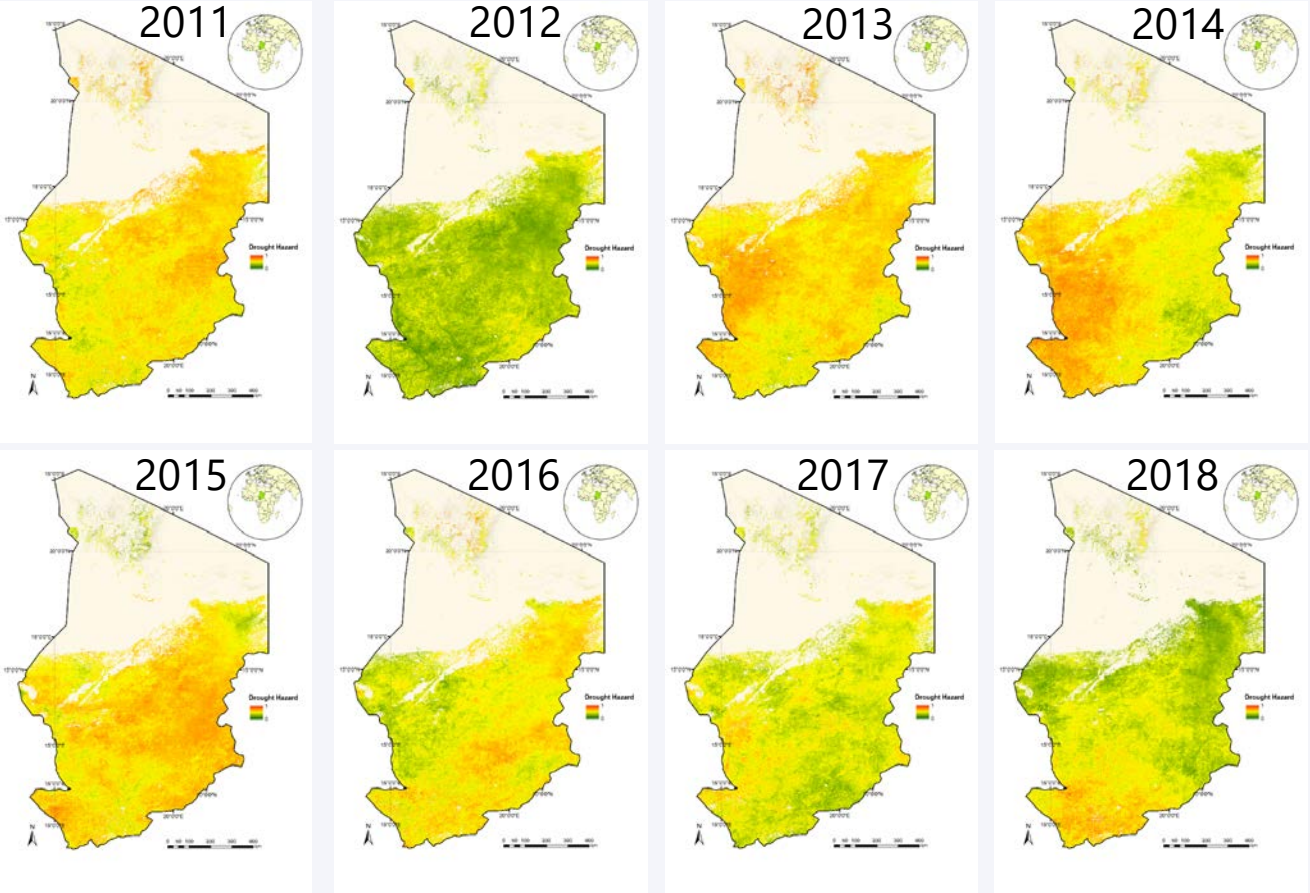
Results

Drought hazard, vulnerability and risk for South Africa and Zimbabwe for the growing seasons December to March 2013/14 and 2015/16. Drought hazard is only presented for crop-, grass- and shrubland, drought vulnerability excludes urban areas.



Transfer

Drought hazard for Chad (growing season: May – October)

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THANK YOU!