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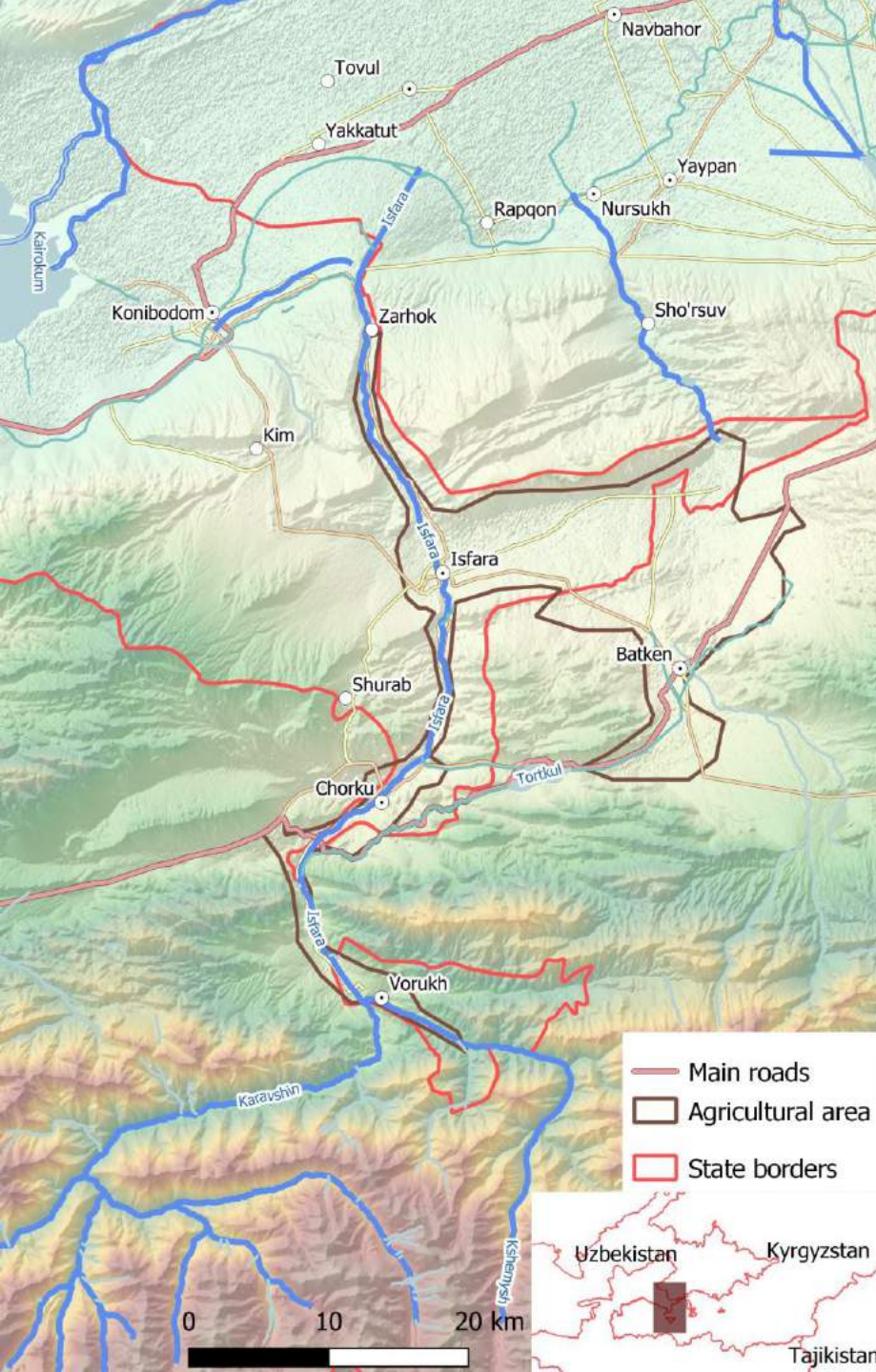
Vegetation trend analysis in Batken oblast of Kyrgyzstan

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Bishkek

Research area



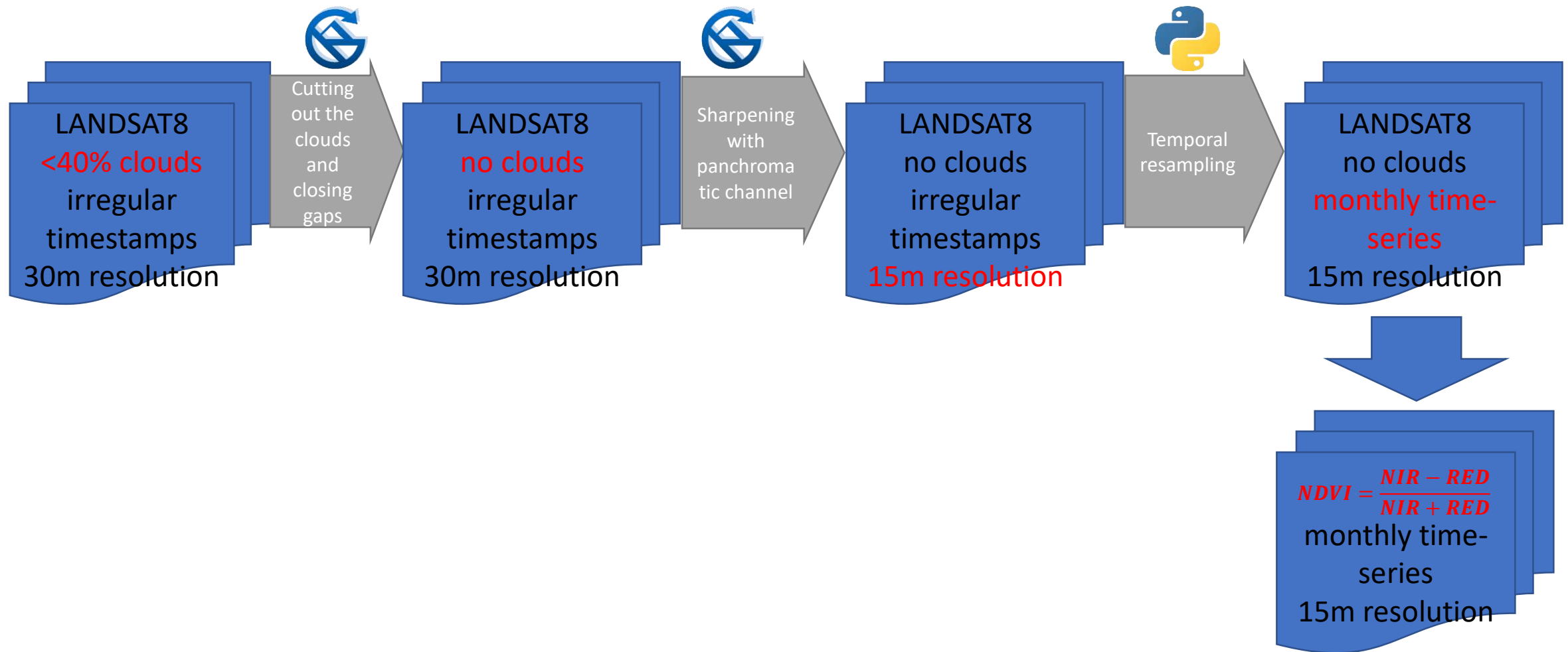
Research questions

- What are the vegetation trends in the Isfara river catchment?
- What are the spatial patterns of the vegetation trends?
- What are the main driving factors of crops development?
- What are the spatial and temporal relations between vegetation and abiotic factors?

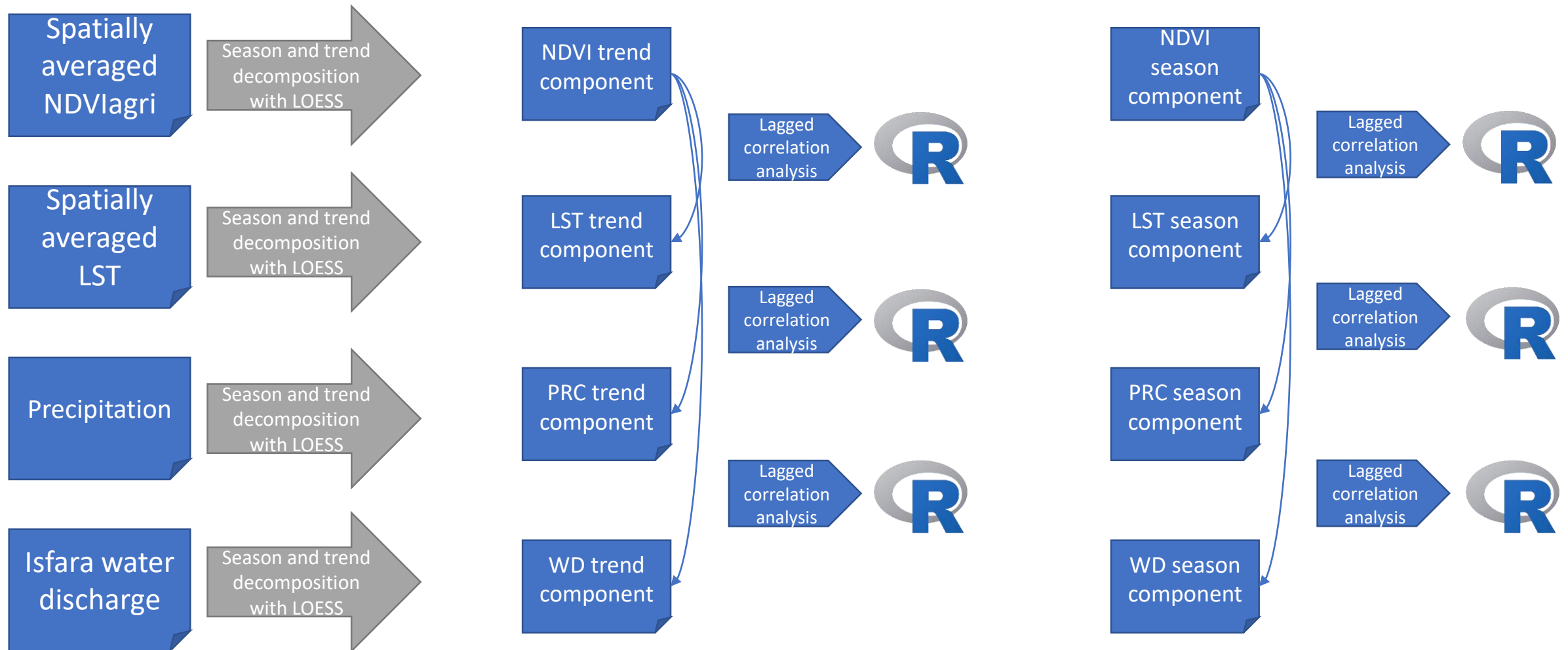
Used data

- LANDSAT8 2013 - 2018
 - spatial resolution up to 15 m.
 - temporal resolution up to 16 days
 - covers vegetation phenology
- Land Surface Temperature (MOD11C3)
 - spatial resolution – 0,05°
 - monthly temporal resolution
- Precipitation (KyrgyzHydromet)
 - spatially averaged
 - monthly temporal resolution
- Isfara river water discharge
 - monthly temporal resolution

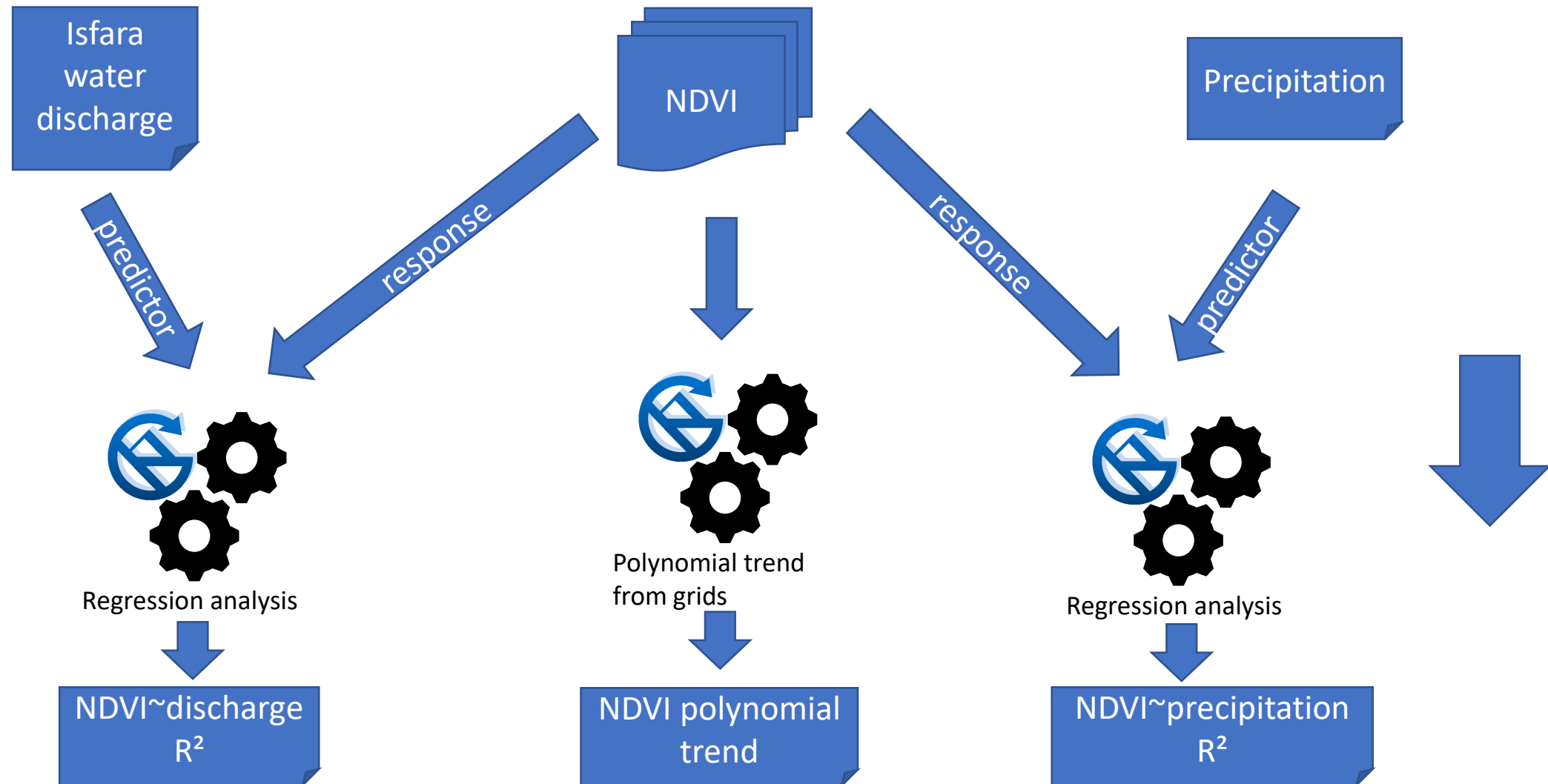
Methods (data preparation, LANDSA8)

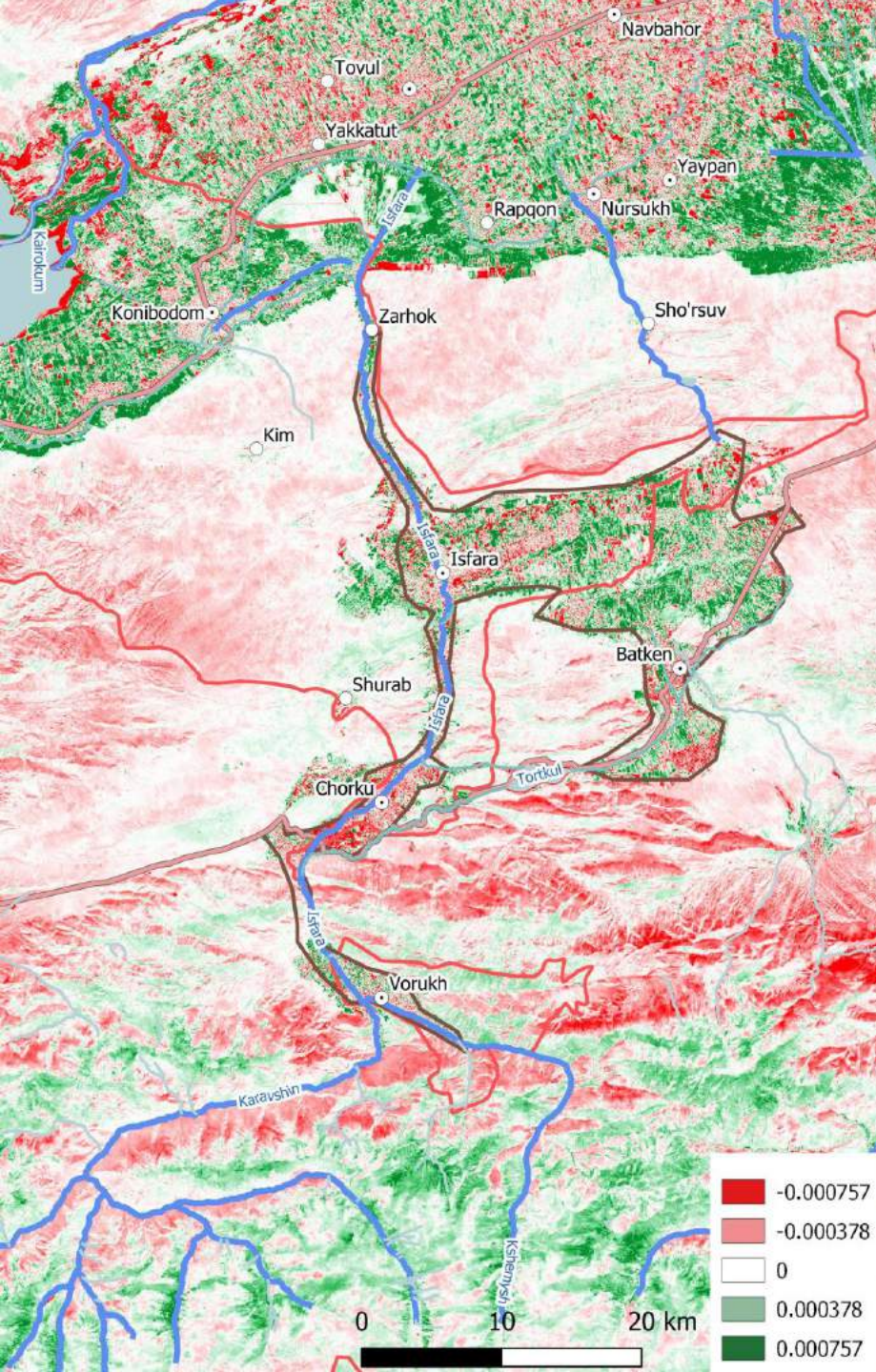


Methods (data analysis)

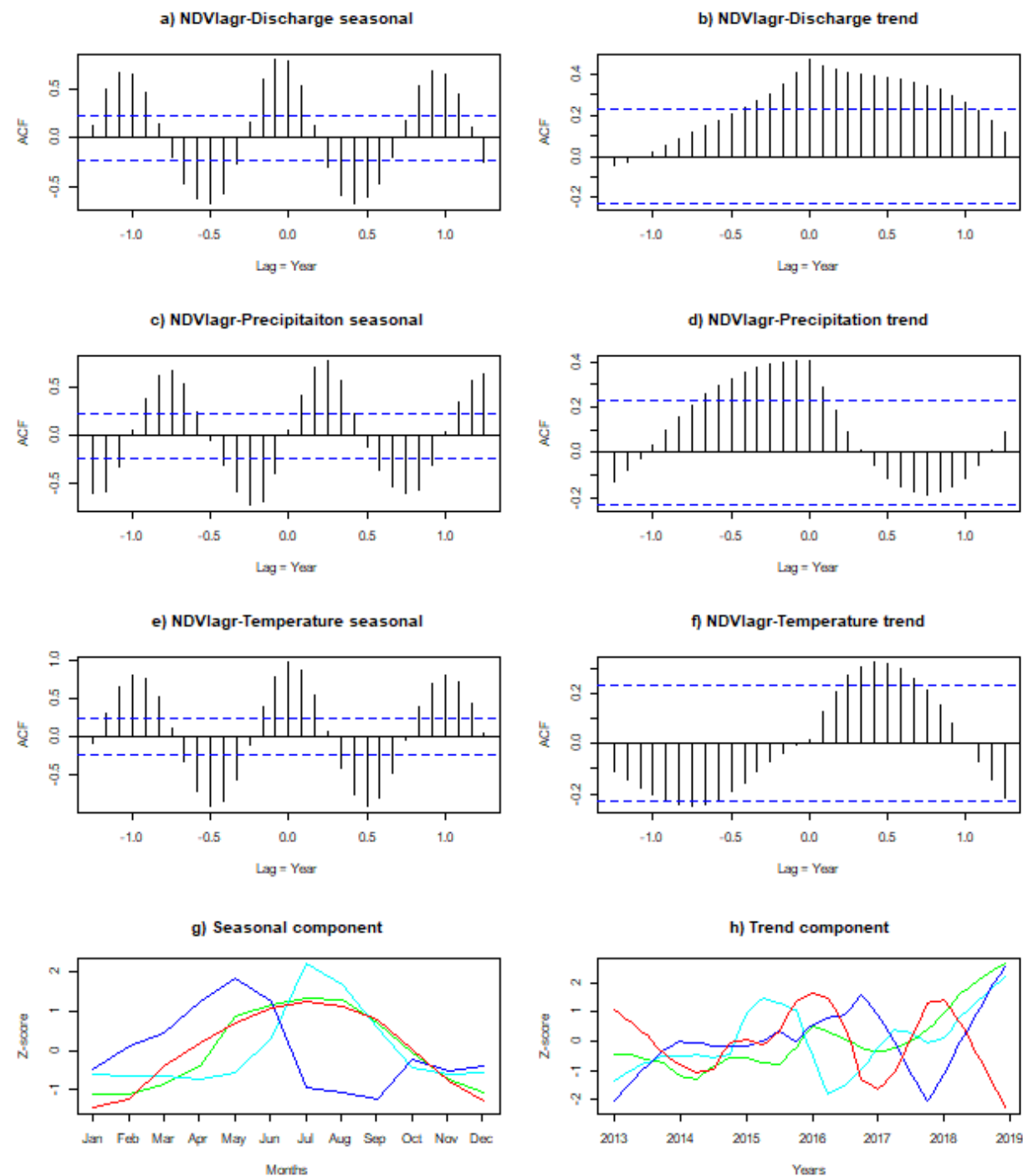


Methods (data analysis)





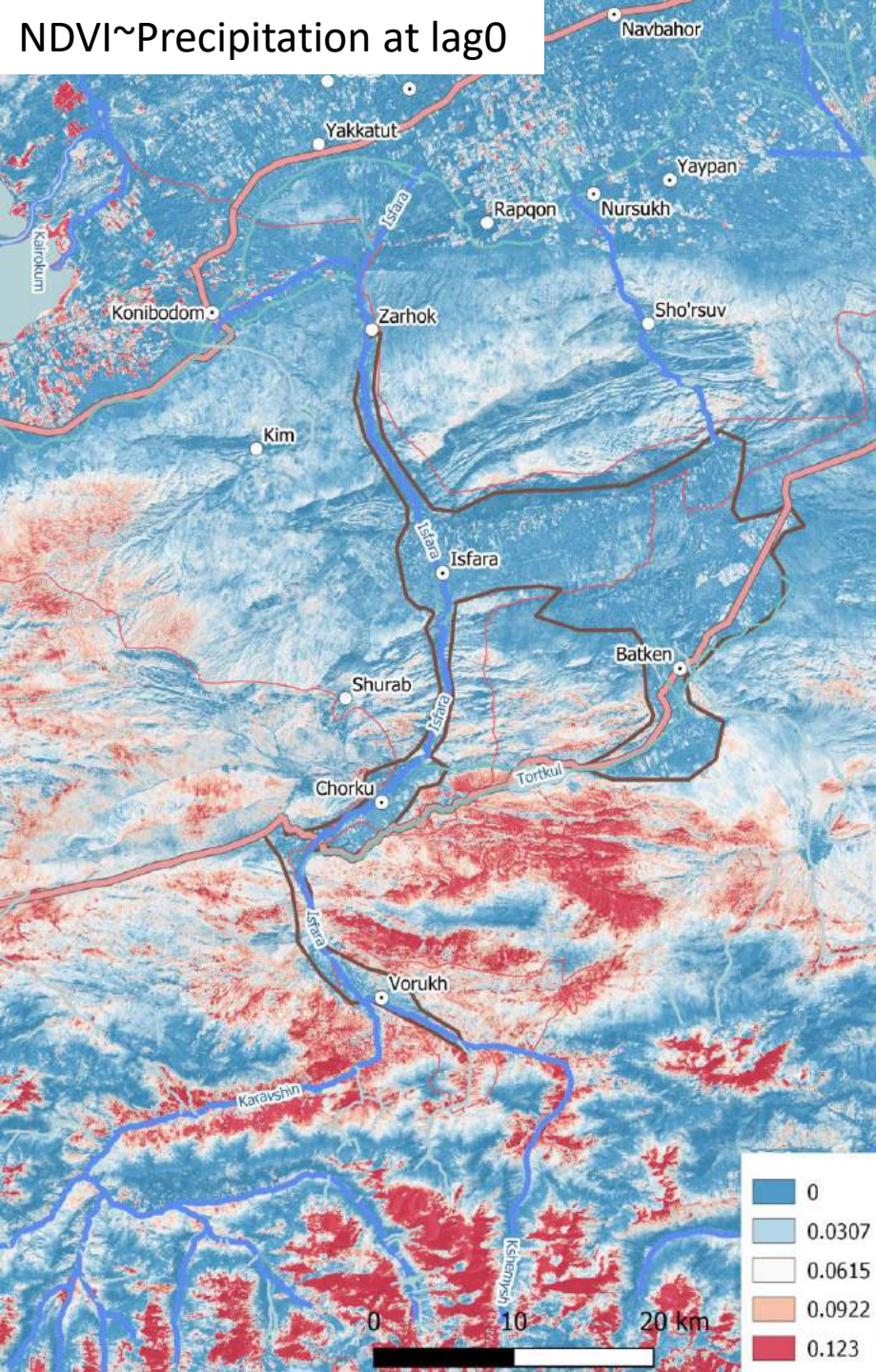
Results (NDVI polynomial trend)



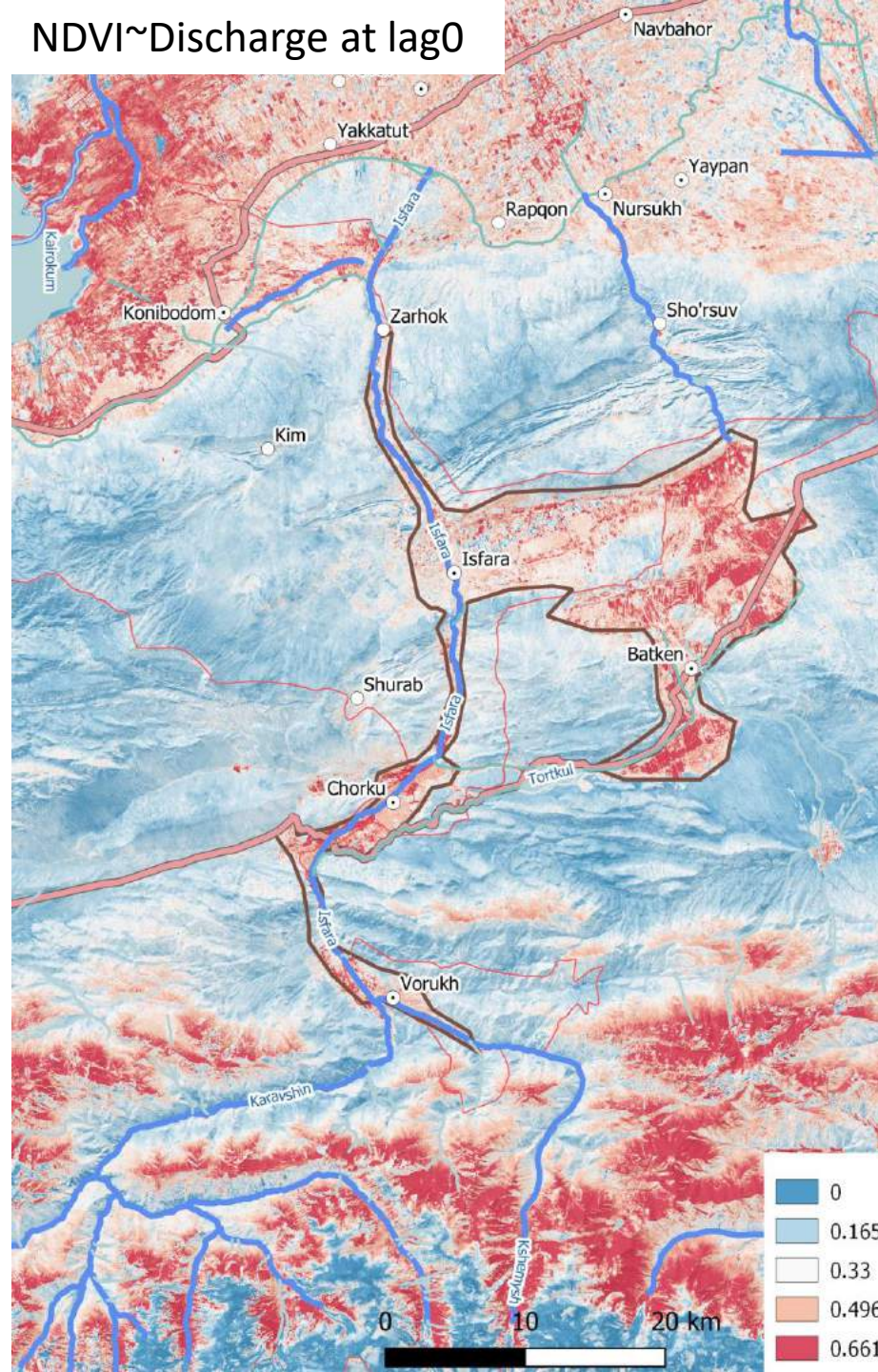
Results (lagged correlation analysis)

— NDVI
— Temperature
— Precipitation
— Runoff

NDVI~Precipitation at lag0



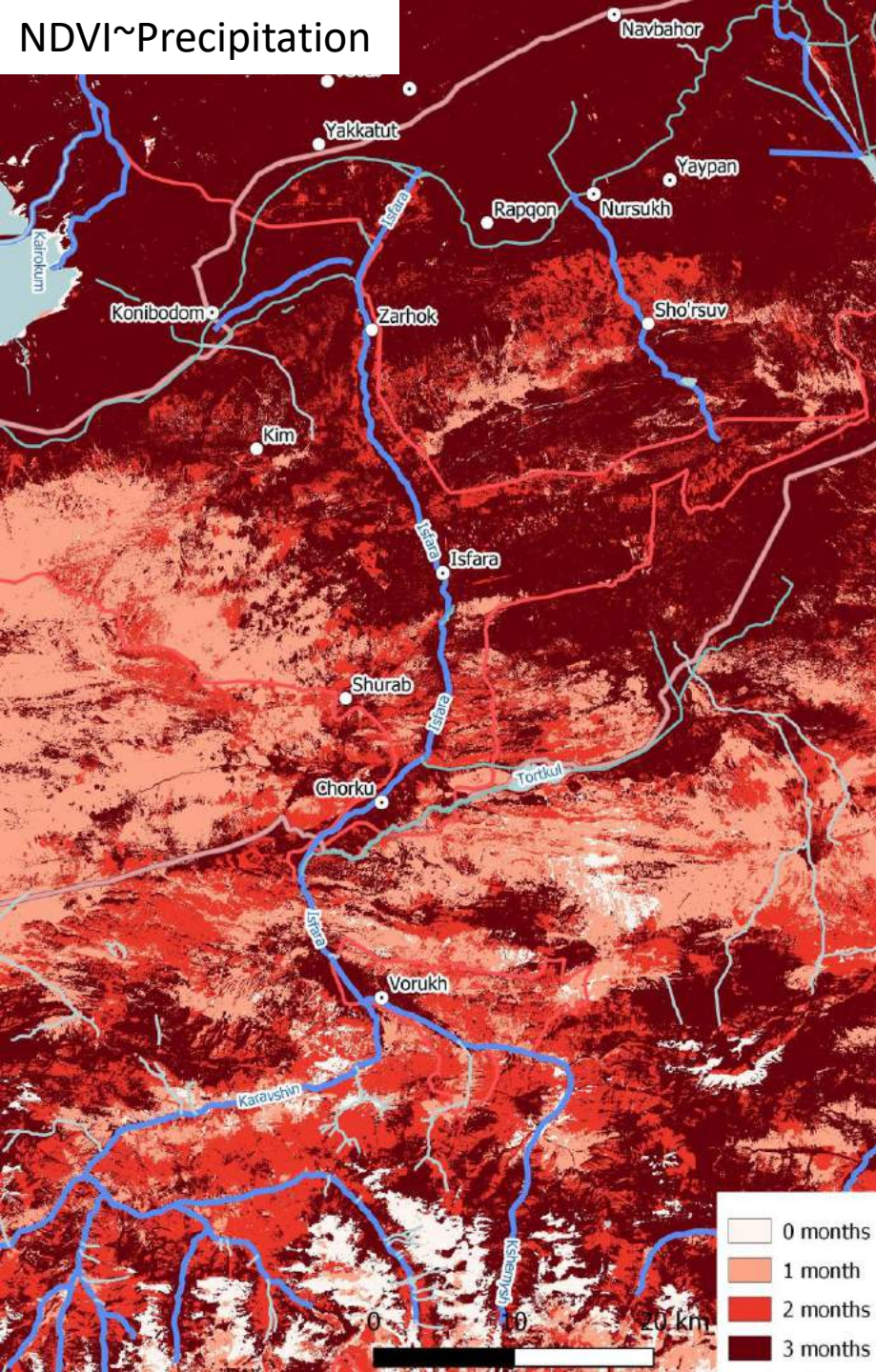
NDVI~Discharge at lag0



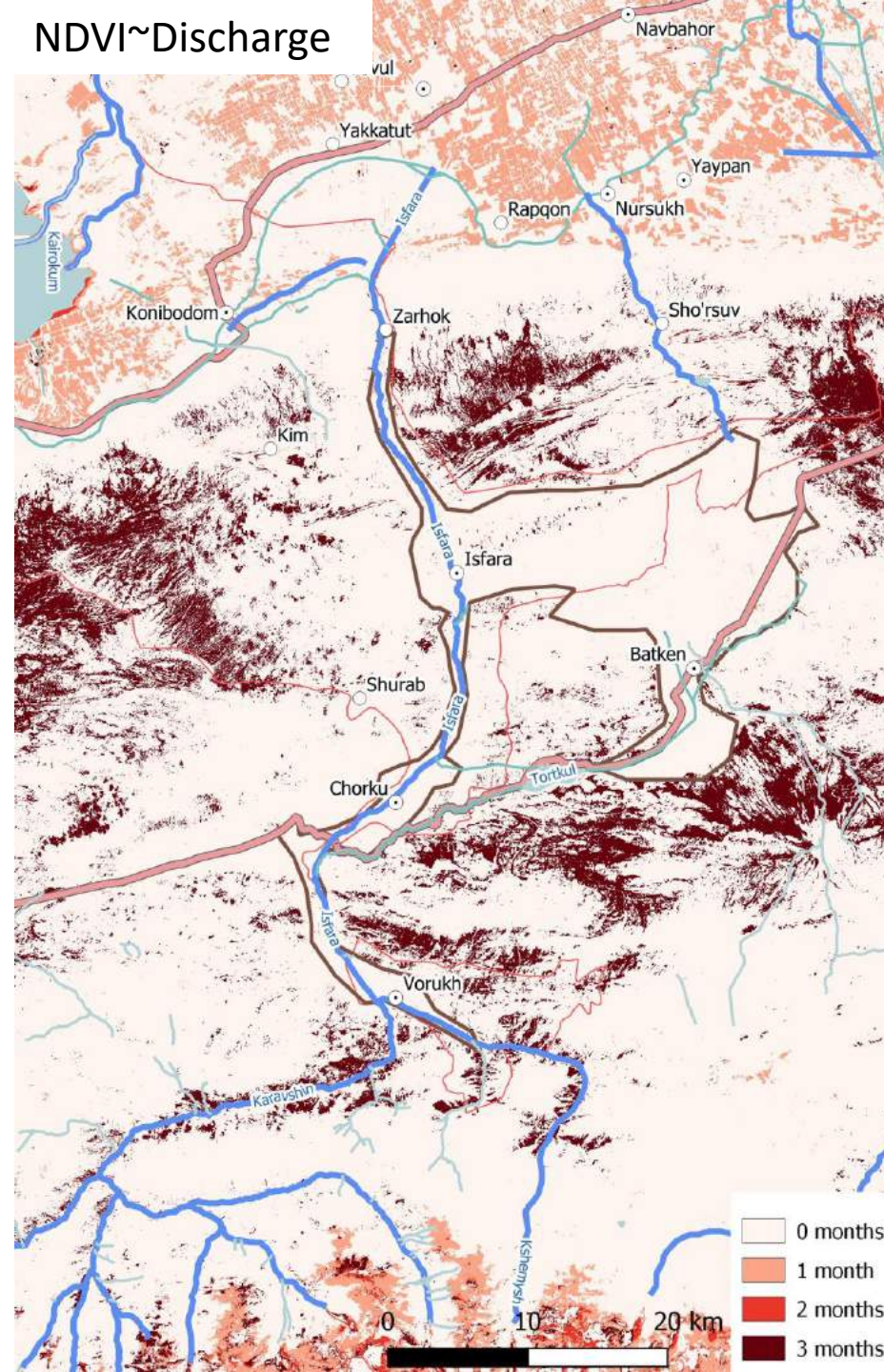
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Results
(determination
coefficient R^2)

NDVI~Precipitation



NDVI~Discharge



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Results (lag of
the highest R^2)

Conclusions

- The Isfara river runoff has greater direct impact on croplands than precipitation
- Whereas precipitation has greater direct impact on the rangelands
- However, precipitation has delayed positive impact on croplands as well
- Temperature has direct positive effect on croplands and is not a limiting factor (like elsewhere)
- Which may indicate overall irrigation sufficiency



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Thank you!



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ГИС – это просто



These agencies do not necessarily share the author opinion