Vegetation dynamics in Bishkek, Kyrgyzstan

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Research area



Research questions

- Is tree cover in Bishkek increasing?
- What is the human impact on vegetation resources?
- What is the dynamics of vegetation resources?
- What is the spatial pattern of this dynamics?

Used data

• LANDSAT8

- free
- spatial resolution up to 15 m.
- temporal resolution up to 16 days
- covers vegetation phenology
- 2013 2018
 - the maximal available time span
- Spring, summer, autumn
 - to cover vegetation phenology for better discretization

Methods (data preparation)



Methods (discretization of classes)



Methods (identification of changes)



Methods (polynomial trends of NDVI)





Polynomial trend of NDVI



Polynomial trend of NDVI (NW)



Polynomial trend of NDVI (SE)



Polynomial trend of NDVI (Center)



NDVI~Precipitation determination coefficient R²

Change of tree-covered area



Conclusions

- Construction is the main source of greenery loss in Bishkek
- The amount of trees increase in already green areas like parks
- The amount of trees decrease in other parts of the city
- Geographically the southern and northern districts of Bishkek have positive tendency
- The city center at large have negative tendency
- Precipitation level has great impact on overall greenery
- Green areas in the center are sufficiently irrigated











Thank you!

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These agencies do not necessarily share the author opinion