

Predictive mapping of plant communities in Bulgan river basin



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Introduction and Objectives

The Bulgan river basin is a central part of the ecosystems and thus also livelihoods in the Dzungarian Gobi. Our research has two main goals:

- To describe plant communities in their environmental context, map the vegetation.
- To understand effects of abiotic and biotic drivers including grazing.



Figure 1. Study regions and location of sites (red dots).

Materials and Methods

- In 2012 & 2013 we sampled 251 plots along the Bulgan river using a modified Braun-Blanquet approach: Relevés 10 m x 10 m in size; vascular plant cover estimated in percentages.
- Sites were deliberately chosen to represent relevant vegetation types from mountains to oases.
- Data on biomass, soil and environment were collected.

- Landsat predictors were obtained from Global Land-cover facility (<http://glcf.umiacs.umd.edu>): southern and northern Landsat scene (path 141, rows 27 and 28, from date 08.08.2012).
- Altitude, slope and aspect served as predictors, processed based on SRTM (<http://srtm.csi.cgiar.org>) with spatial resolution 90 m x 90 m.

Results

- We found four different main vegetation types encompassing 16 communities.
- Main vegetation types: mountain, mountain steppe, desert and oases.
- DCA analysis revealed close correlation between altitude, species composition and productivity.

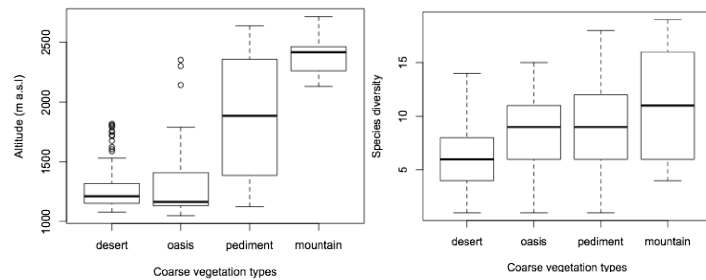


Figure 2. Vegetation types differ: A. Altitudinal extent, B. Species richness per plot

- Vegetation map currently processed based on remote sensing imagery and plant community classification.
- We are working on correct base images and will produce a classification using ArcGIS 10.2.

Conclusions

- Bulgan river basin has 16 plant communities representing four different habitats.
- Strong abiotic controls, grazing effects smaller.

