

# **Modelling biodiversity and land cover changes and detecting their driving forces: an integration of satellite imagery and field inventory data**

## **Co-principal investigators:**

Dr. Marzban Faramarzi<sup>AB</sup>, Christoph Raab<sup>B</sup>, Prof. Dr. Johannes Isselstein<sup>B</sup>

<sup>A</sup>Rangeland and Watershed Management Group, Faculty of Agricultural Sciences, Ilam University, Ilam, Iran

<sup>B</sup>Institute of Grassland Science, Department of Crop Sciences, Faculty of Agricultural Sciences, Georg-August-Universität Göttingen, Göttingen, Germany

## **Summary**

Over the past decades, biodiversity has been trended to decline due to different driving forces on the natural ecosystems. Assessing biodiversity by satellite imagery and field inventory data have been advocated for modelling vegetation changes. This research is aiming at the development of a comprehensive method for detecting and simulating biodiversity and vegetation attributes. Therefore, satellite imagery and training sites of field inventory data are integrated. The selected study areas are two catchments in Kermanshah province in western Iran. Data acquisition of both field inventory and satellite imagery from the time period of 2006 and 2019 will be used to detect and simulate biodiversity components and vegetation changes. Satellite data (e.g. Landsat, Aster, Sentinel) will be used for further remotely sensed image analysis. Various driving forces on land cover and vegetation changes will be characterized by using three principal approaches, which are logistic regression (LR) model, climate data analysis and the socioeconomic survey to find a better understanding of the main causes of the changes of the natural resources. Furthermore, we will ask how diversity and vegetation attributes respond to environmental variables such as topography and soil characteristics as well as to grazing intensity over a long period of time. The findings will provide insights on practical implication for the rangeland managers as well as decision makers.