

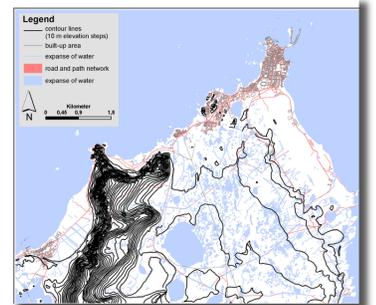


Remote Sensing Investigations on Polar Vegetation Systems

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Motivation

Remote sensing is a growing field of interest due to scientific and commercial reasons. The data analysis is routine work nowadays for central Europe and the USA. Still, there are some open questions, e.g., for the polar regions. Therefore, we combine vegetation investigations and remote sensing optical investigations on the Andoya island, north of the polar circle.



Basics of the Data Analysis

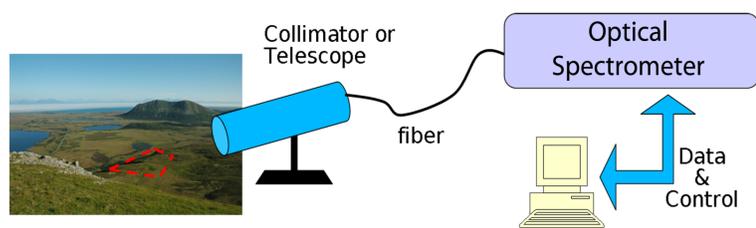
- Vegetation reflects IR and absorbs visible red (R) light for photosynthesis
- The NDVI is a popular index describing the vitality state of the vegetation:

$$NDVI = (NIR - R) / (NIR +$$

R)

- NDVI varies between -1 and +1

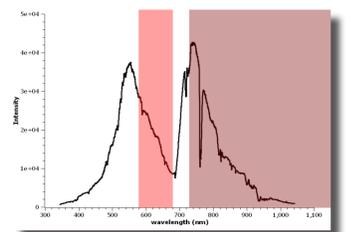
Experimental Setup



An optical reference foil used for calibration was located close to the vegetation area thereby eliminating day time effects.

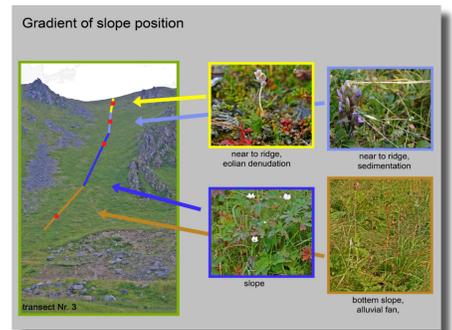
Optical Spectra

The data analysis routines use the light intensity of the red (580-680 nm) and near infra-red (730-1100 nm) band.



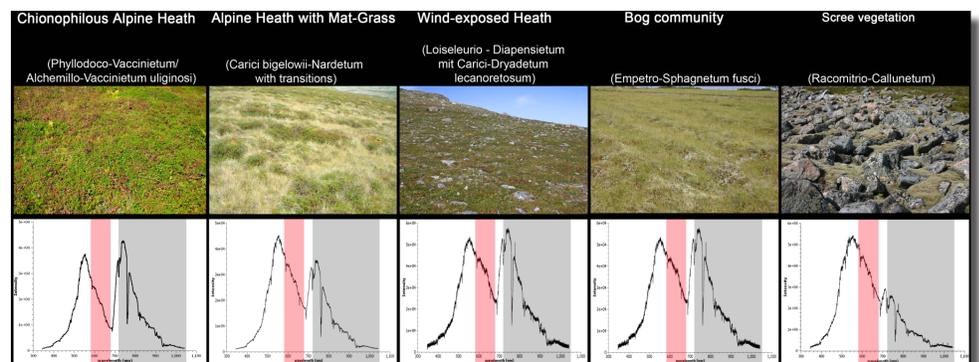
Vegetation Investigations

- Vegetation analysis includes, e.g., type and coverage
- Total plant coverage depends on macro/micro climate, geology, soil, land use
- Area mapping and transect related investigations



Results and Discussion

- Optical spectra are fine scale finger prints of the vegetation
- Our additional optical reference probe has clearly shown to be vital for the data interpretation
- Further air borne investigations required.



Vegetation and optical spectra for several areas on the Andoya island.

Acknowledgement

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