Geophysical Research Abstracts
Vol. 18, EGU2016-12433, 2016
EGU General Assembly 2016

Building up knowledge on resilience of fragile lands in subarctic climate – a metadatabase for land degradation and restoration in southern Iceland

David C. Finger (1), Alban de Lavenne (2), and Jóhann Þórsson (3)

(1) Reykjavik University, School of Science and Engineering, Reykjavík, Iceland (fingerd@gmx.net), (2) Irstea, Hydrosystems and Bioprocesses Research Unit (HBAN), Antony, France, (3) Soil Conservation Service of Iceland, Gunnarsholti, IS851 Hella, Iceland

Resilience is the capacity of an ecosystem to respond to a perturbation or disturbance by resisting perturbations and recovering quickly. Natural catastrophes, such as floods, droughts, landslides, storms and volcanic eruptions can have devastating impacts on natural and build environment. Nevertheless, researchers worldwide have identified anthropogenic impacts to be the cause for enhanced consequences of natural catastrophes. Iceland, the small island on the mid Atlantic ridge is an ideal location to investigate anthropogenic impacts on the resilience of natural ecosystems. The dramatic deforestation after the arrival of the first settlers ∼1100 years ago, the subsequent year round livestock grazing along with devastating ash emissions during volcanic eruptions and a harsh sub-polar oceanic climate have led to severe degradation of large areas of Icelandic soils. Since the beginning of the 20th century diverse restoration measures have been implemented at a large-scale on lowland areas of Iceland making them an ideal case study to investigate the effects of restoration on the resilience of water resources. Since over 100 years the Soil Conservation Service of Iceland (SCSI) has been restoring and investigating degraded landscapes, collecting valuable information and data on restoration research in Iceland. In a joint effort to provide an overview of terminated and ongoing research project, the SCSI and Reykjavik University have established a metadatabase summarizing all relevant restoration projects in the Rangárvellir area, a representative study site in southern Iceland. The SCSI and other governmental agencies have conducted numerous research and restoration projects in the area, including land restoration, land management, reforestation, hydrometeorological monitoring, vegetation mapping, to name just a few. The combination of these projects provides a valuable set of observational data and knowledge regarding the history of land restoration in Rangárvellir. Simultaneously, the Icelandic Meteorological Office (IMO) has been monitoring weather patterns and discharge of Ytri- and Eystri-Rangá, the two main rivers in Rangárvellir. The collected data have been categorized in a metadatabase providing an overview for complementary research projects. The presentation will conclude by demonstrating various topics for research collaborations.