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Masterarbeiten Fernerkundung

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Open Master-Projects: Fire & Ice

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- Lake Ice Detection based on Landsat data
- Spatial and temporal variability of frozen soil, Bale Mountains.
- Snow cover monitoring using AVHRR data
- Snow cover monitoring using Webcam imageries
- Quantification of the limits of AVHRR for the determination of diurnal fire cycles
- Impact of meteorological conditions on fire activity in Europe

Lake Ice Detection using Landsat data

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- Background:
  - Project: Lake Ice detection – a feasibility study (GCOS-CH, MeteoSwiss)
  - Partners: ETHZ, EAWAG
  - Future: pot. contribution for ESA CCI+ call “lakes”
- Lake Ice Phenology Derived from Landsat Data for Swiss Lakes
  - The aim of this Msc project is to process Landsat satellite imagery with focus on lake ice phenology of about six target lakes of variable area and surrounding topography. Satellite data for the target lakes is expected to be processed for selected periods of the winters 2012/13, 2013/14, 2015/16, and 2016/17and to constitute a reliable validation framework within the GCOS project.

Spatial and temporal variability of frozen soil, Bale Mountains

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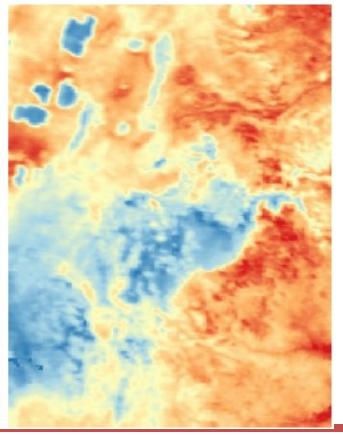
- Background: Bale Mountains plateau is the highest in Africa (4.000m) with frozen soil; Project of Paleogroup with remote sensing support from RSGB. More information needed: → Alexander Groos, 414
- Aim: retrieval Land Surface Temperature (LST))
  - Time series of based on MODIS data (2000 – 2016)
  - Diurnal cycle of LST using Meteosat-SEVIRI data
  - Analysis of spatial distribution of LST considering Landsat data





Snow monitoring using AVHRR data

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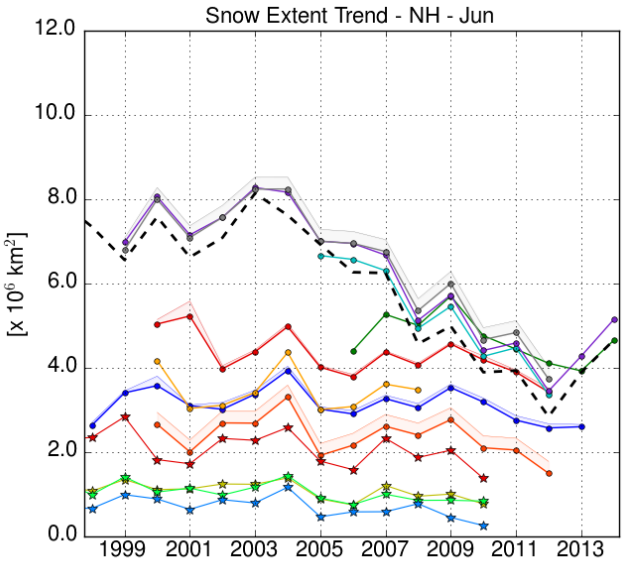
- Background:
  - Preparatory work for the next call ESA CCI+ “snow”
  - Feasibility study for global application of snow retrieval

- Aim: Analysis of accuracy of snow retrieval using different data sets.
  - AVHRR GAC (4km), AVHRR LAC (1km)
  - MODIS snow product (500m)
  - IMS (Interactive Multisensor Snow and Ice Mapping System; 190km – 4km)



Snow cover monitoring using webcams

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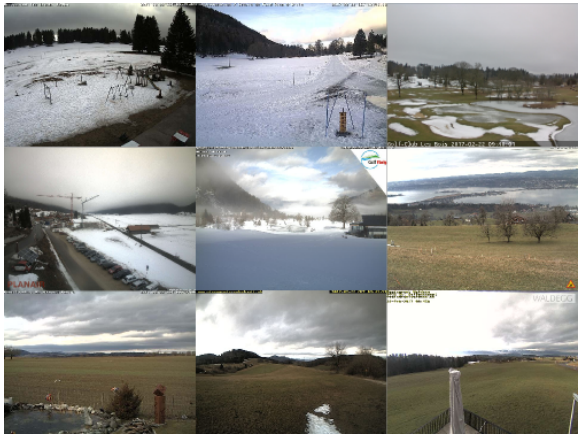
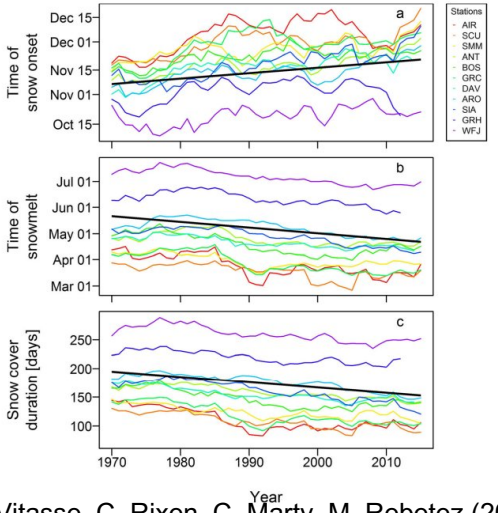
Automatic (point-wise) snow cover monitoring using webcam images; near SLF snow depth measurement station; compare snow depth with snow yes/no information



Automatic feature detection (cloud/fog, forest, people, etc.)

Snow cover analyses in different sites in Switzerland (2011 – 2017)



Klein G., Y. Vitasse, C. Rixen, C. Marty, M. Rebetez (2016) Shorter snow cover duration since 1970 in the Swiss Alps due to earlier snowmelt more than to later snow onset. Climatic Change 3, pp 637–649. doi: 10.1007/s10584-016-180

Quantification of the limits of AVHRR for the determination of diurnal fire cycles

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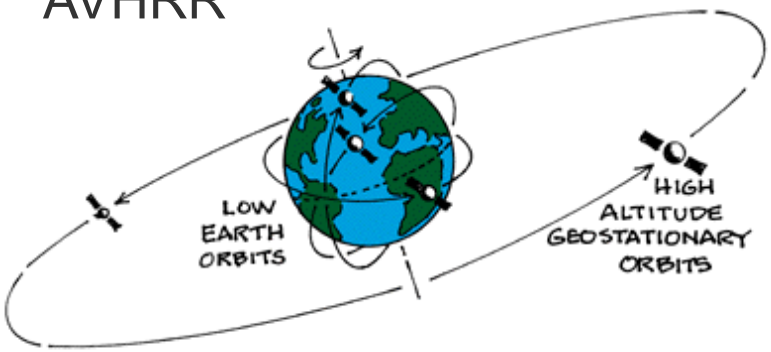
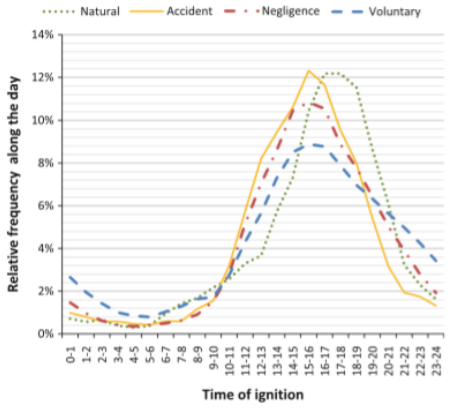
- Background: In Europe, more than half of the fires start between 12:00h and 18:00h, and more than half of the area is burned also during this period (EC, 1996, 1998). Linked to Ph.D. thesis: ‚Compilation and accuracy assessment of long-term fire products retrieved from satellite data‘.
- Aim: Analyses of diurnal fire cycles Amazonia (Europe)
  - Diurnal fire cycles analysis using GOES and TRMM (Meteosat-SEVIRI)
  - Quantification of missed active fires due to the overpass time of AVHRR





Impact of meteorological conditions on fire activity in Europe

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- Background: Meteorological factors play a crucial role in setting and spreading of wildfires as well as fire sevirity in Europe. Linked to Ph.D. thesis: ‚Compilation and accuracy assessment of long-term fire products retrieved from satellite data‘.
- Aim: Statistical analysis of active fires and meteorological conditions
  - Analysis of spatial distribution of daily active fires based on different fire products e.g. AVHRR, MODIS, and VIIRS
  - Assessment of the role of meteorological conditions incl. weather-based indices like the Build-Up index or Fire Weather Index for different European ecosystems