

Parameterize a snow slide routine (SnowSlide) on the basis of Remotely sensed data

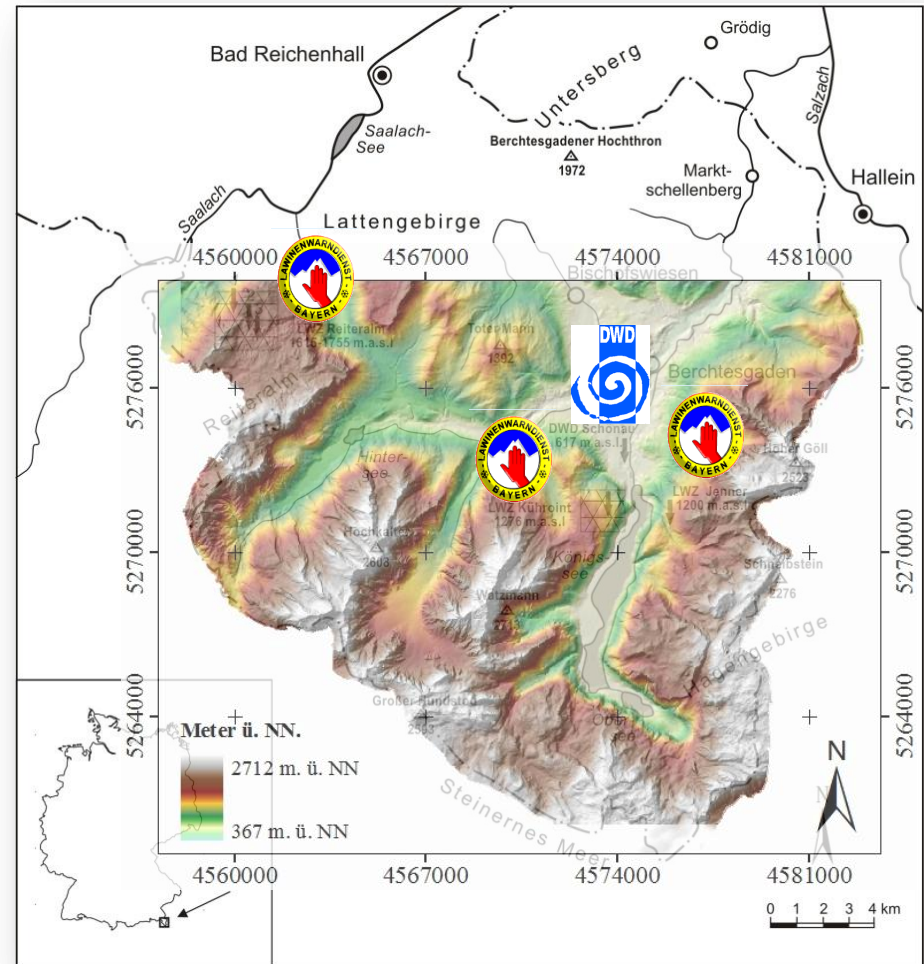


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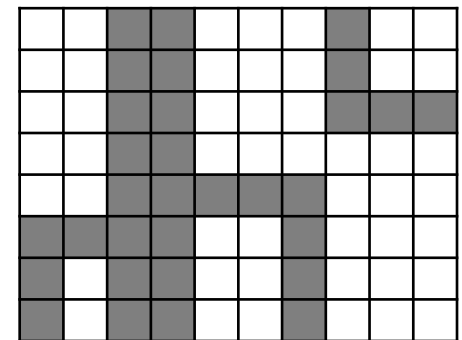
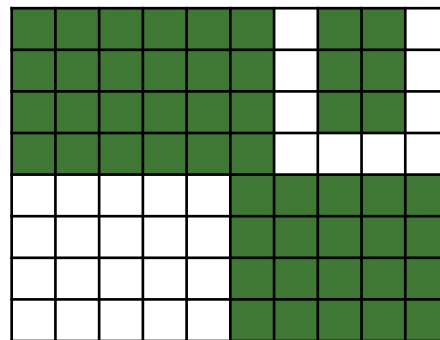
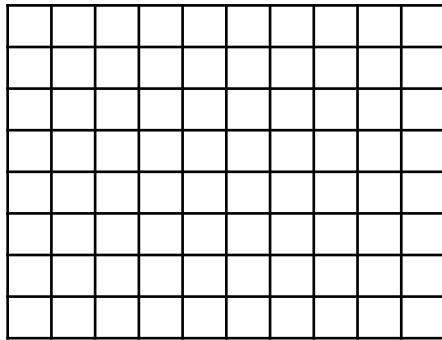
- Area: ca. 210 km²
- Good instrumentation
- Two sites for field measurements
- Rough topography



Challenge



The pattern
can be
extremely
different



Challenge

THE COUPLING OF TWO MODELS. A SCALE ISSUE.



Centimeters to tens of meters

INTERACTIONS BETWEEN SNOW AND VEGETATION



Tens of meters to +/- 200 hundred meters

WIND INDUCED SNOW TRANSPORT

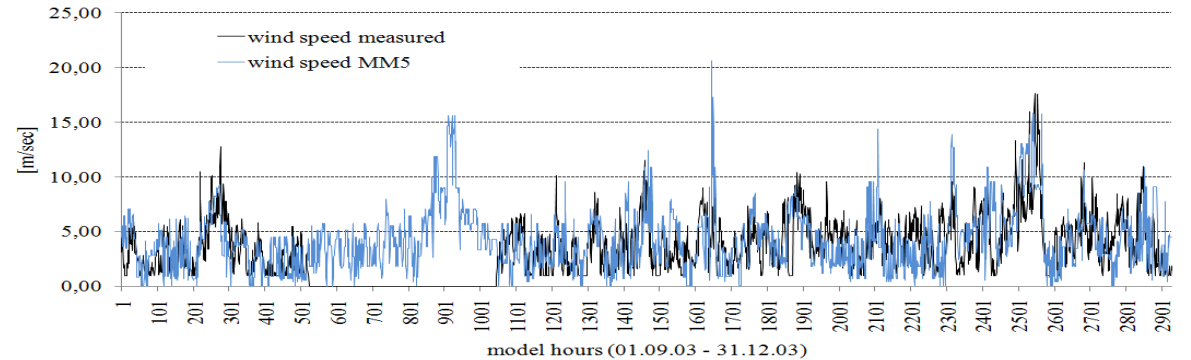
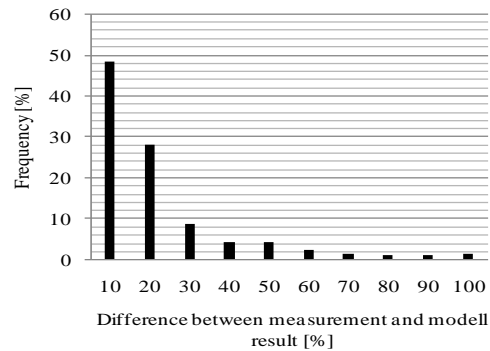
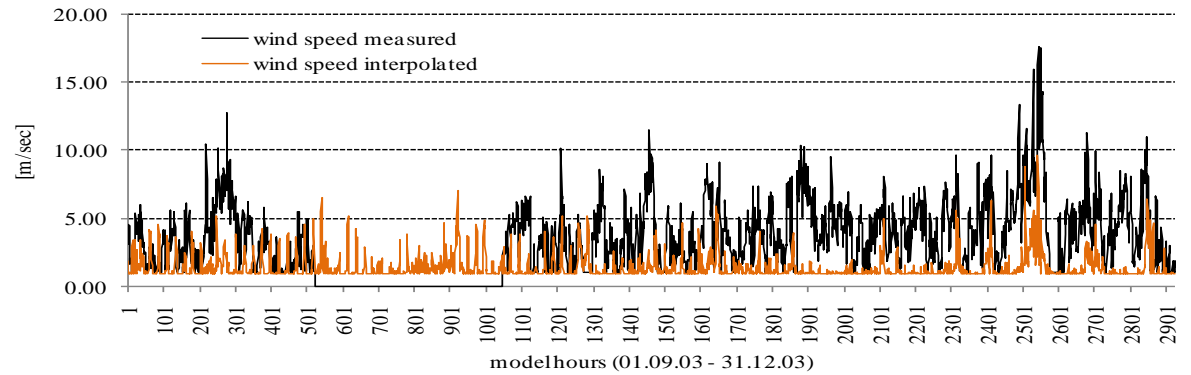
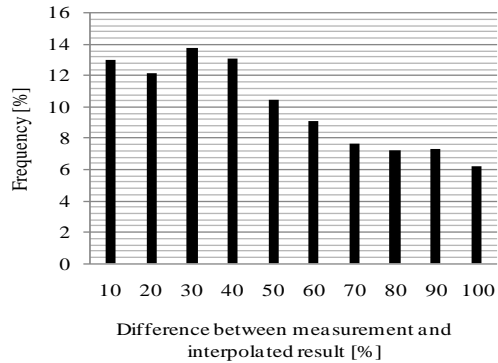


Hundreds to thousands of meters

OROGRAPHIC DRIVEN EFFECTS

Challenge

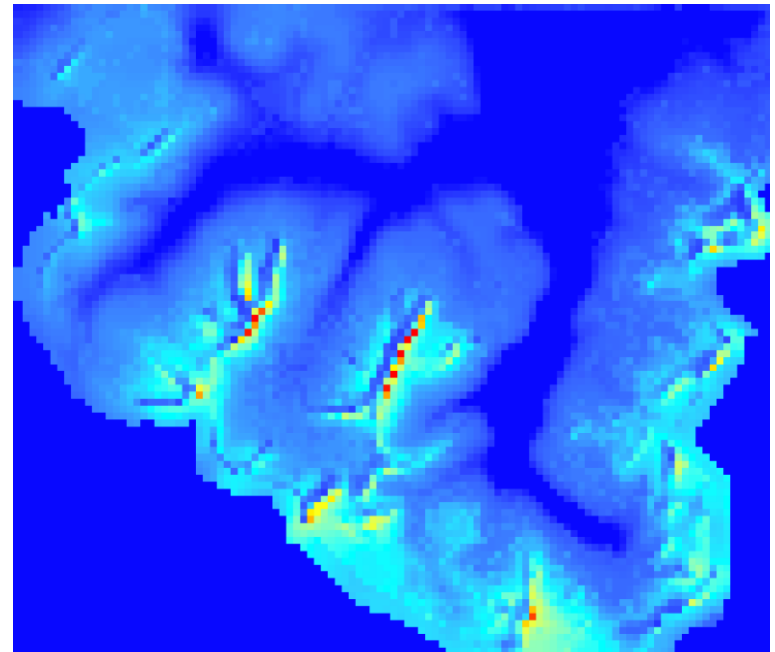
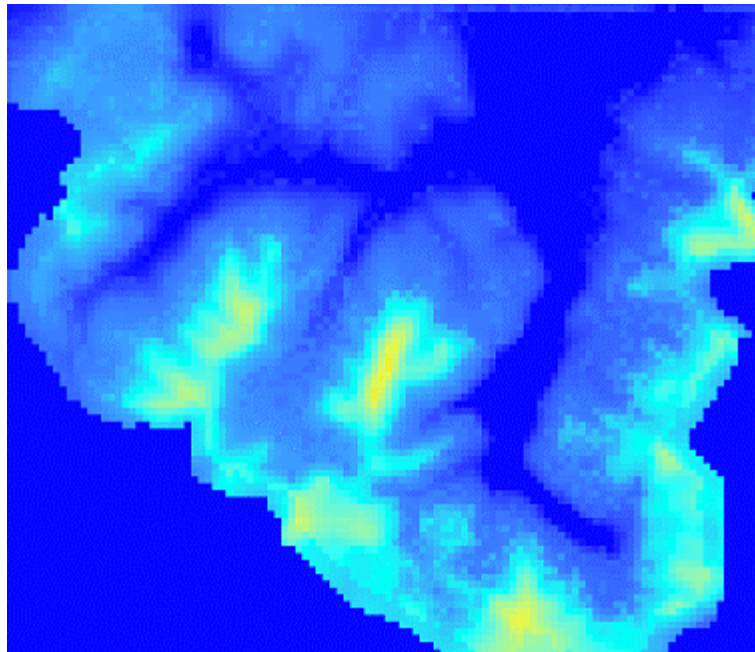
INTERPOLATION



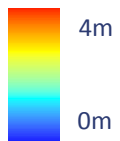
MM5

Challenge

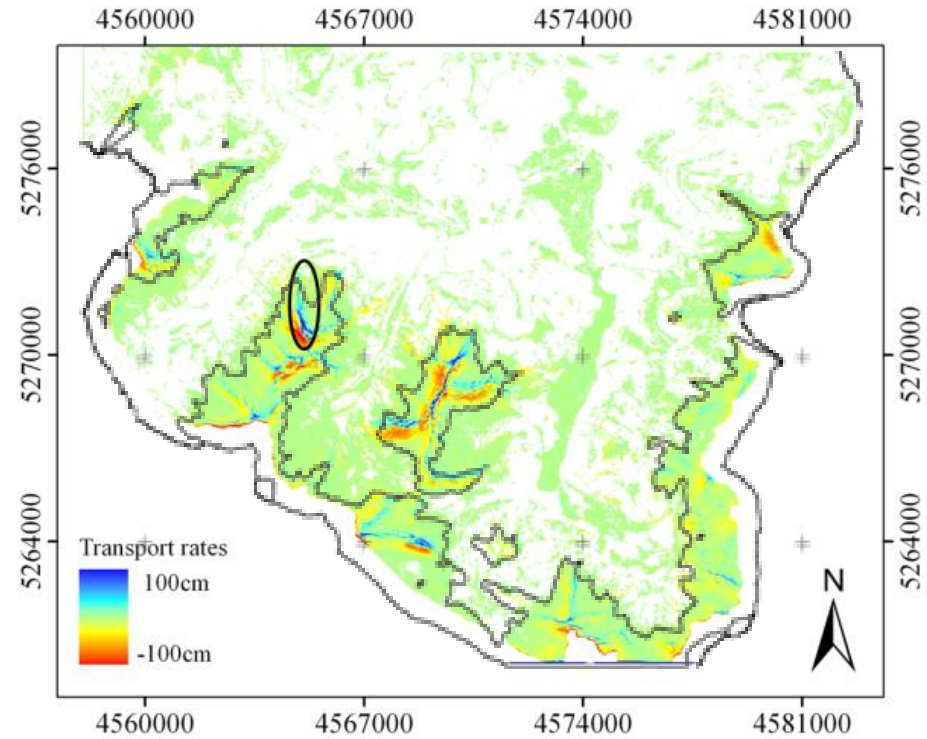
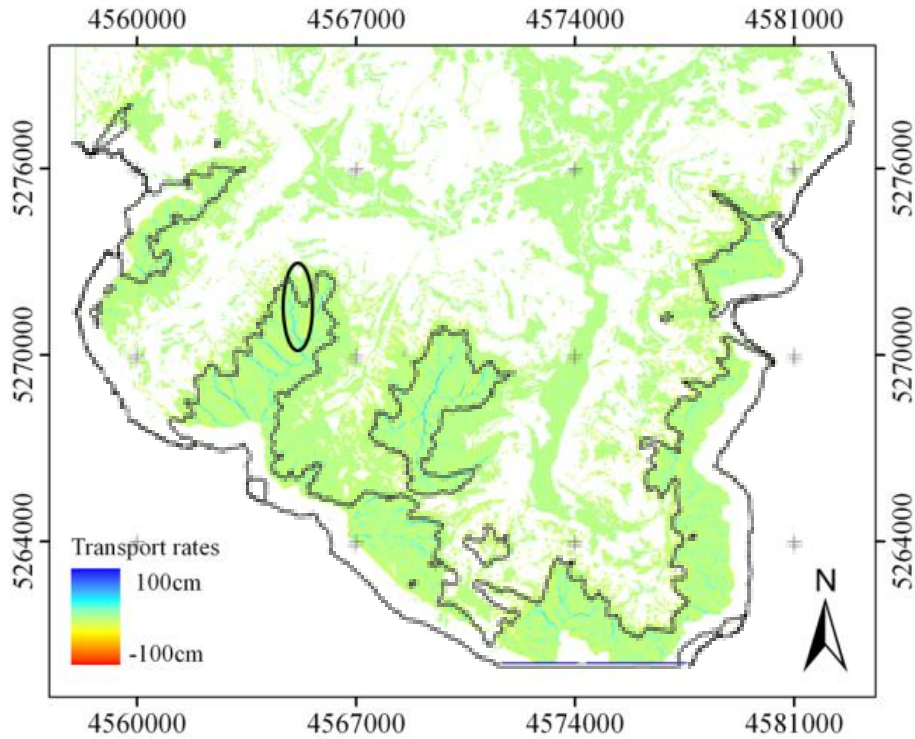
February 1, 2004



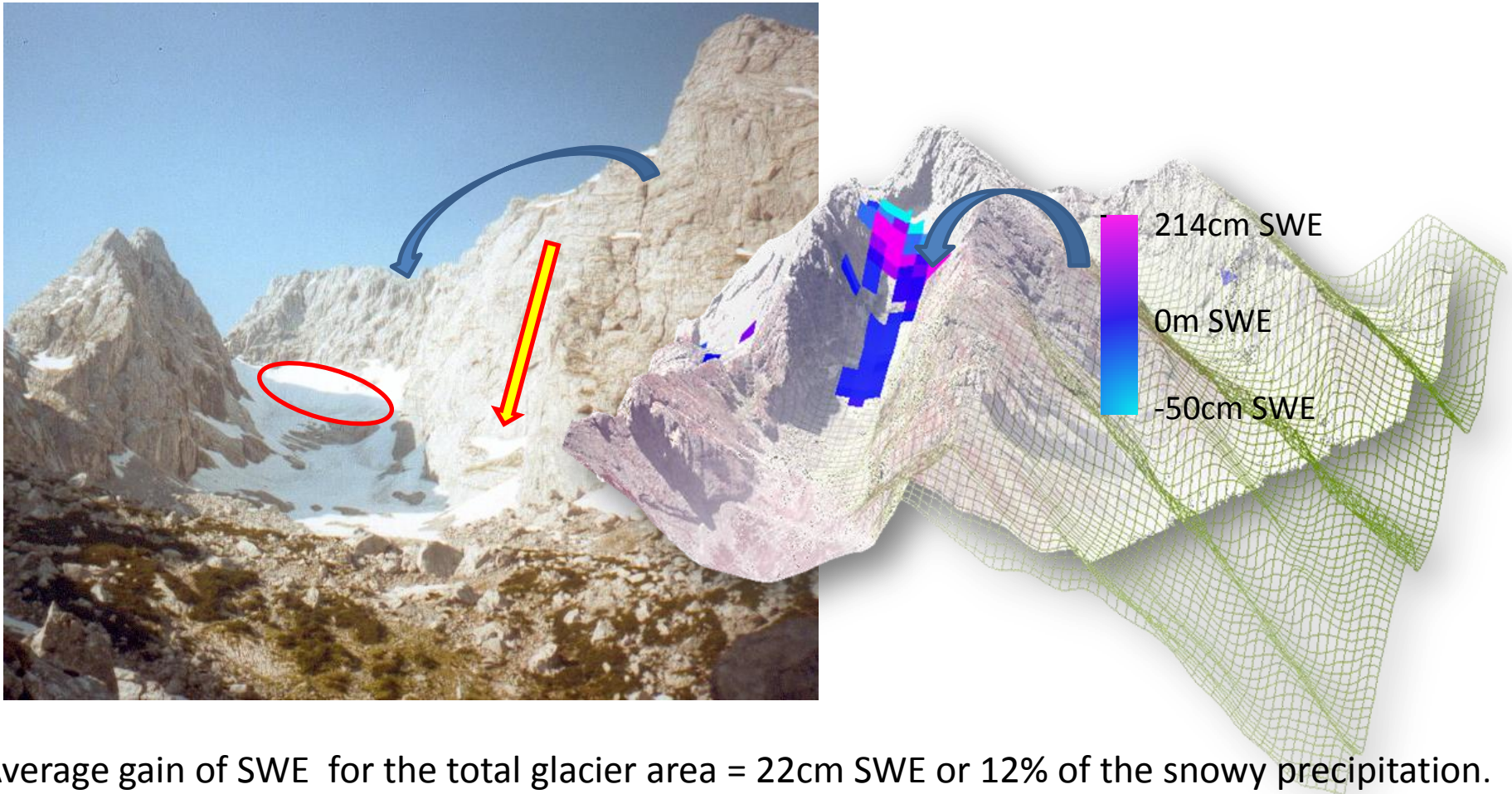
Snow depth

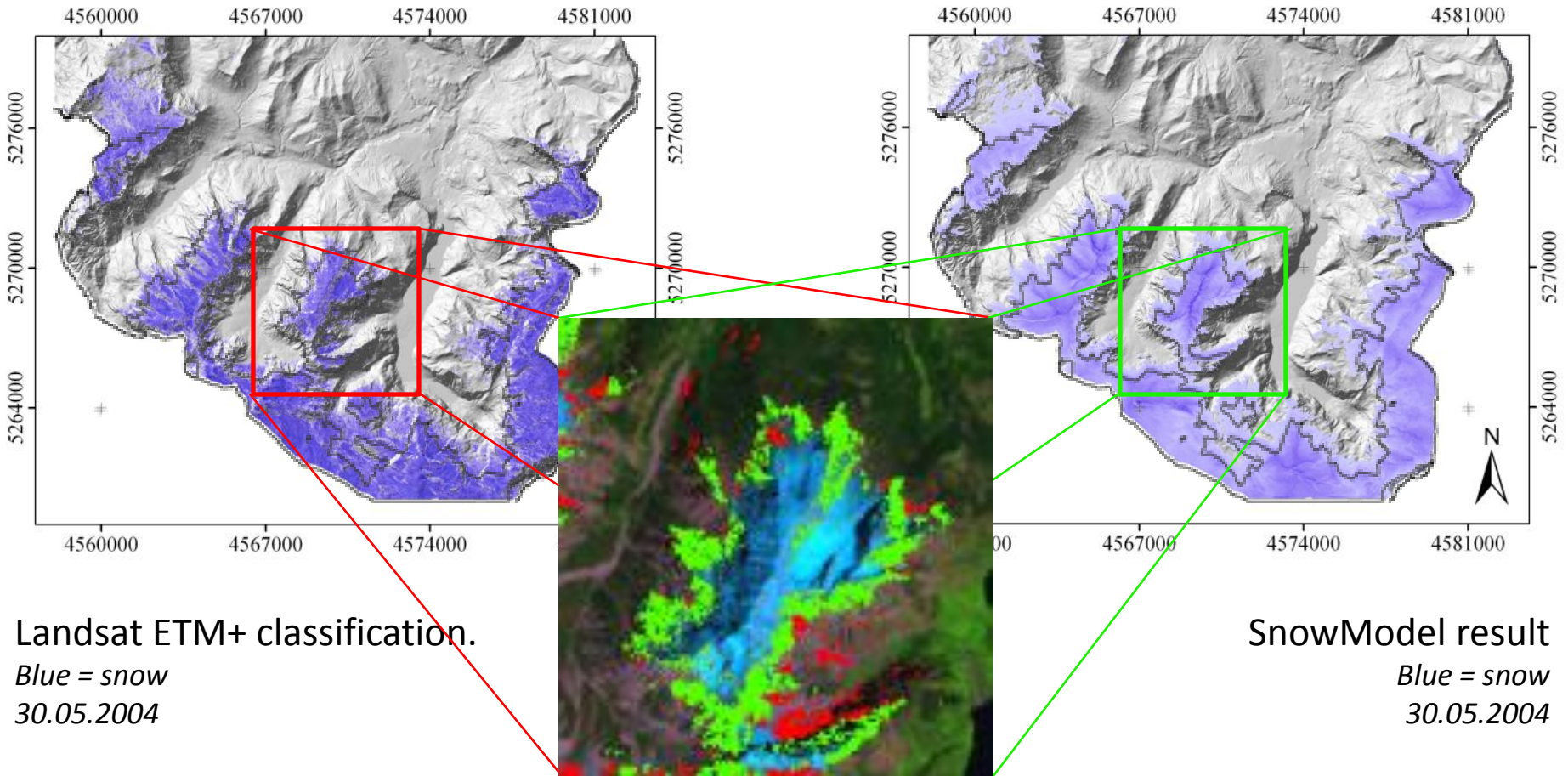


Challenge



Challenge





SnowSlide

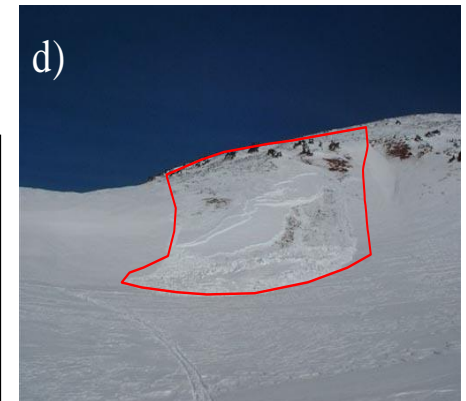
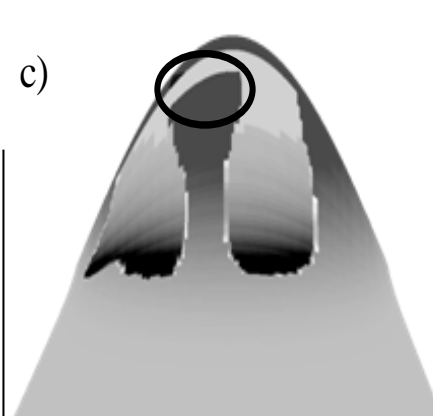
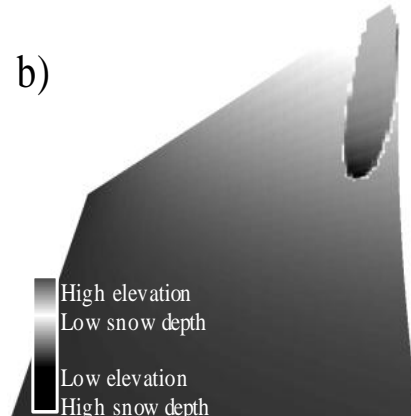
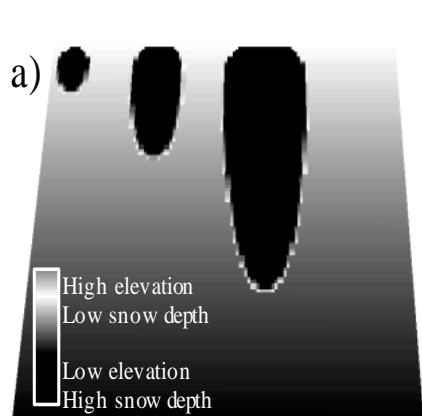
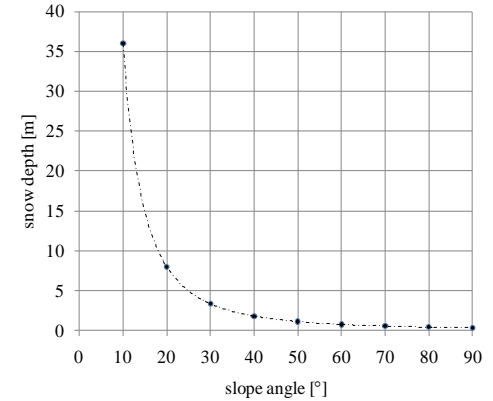
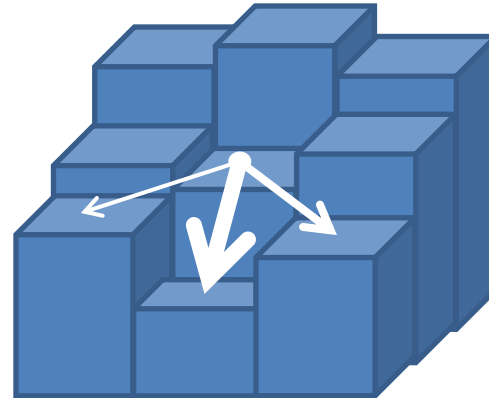
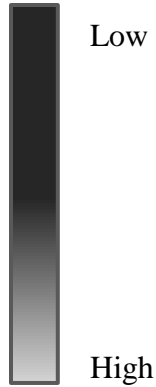


Is this process relevant for the runoff generation of Alpine catchments?

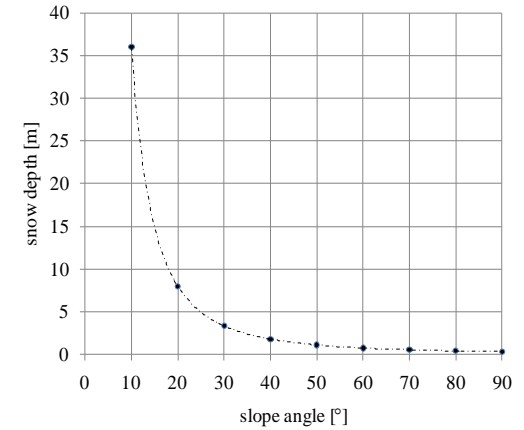
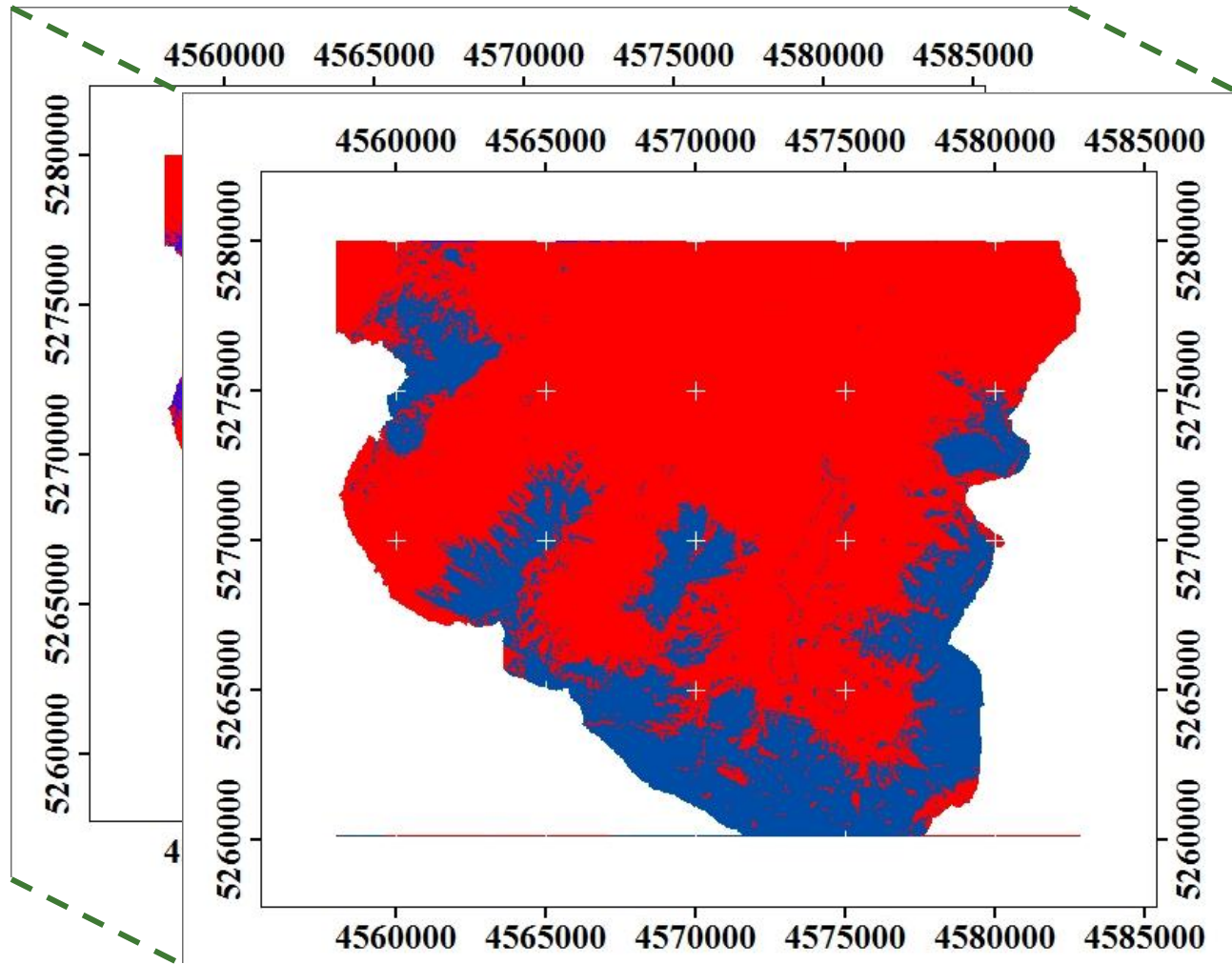


SnowSlide

c8-1 r8-1	c8-1 r8	c8-1 r8+1
c8 r8-1	c8 r8	c8 r8+1
c8+1 r8-1	c8+1 r8	c8+1 r8+1



SnowSlide: a simple routine for calculating gravitational snow transport
 Bernhardt M. and Schulz K.
 Geophysical Research Letters 2010 (accepted)



5 Landsat images of 2003/04



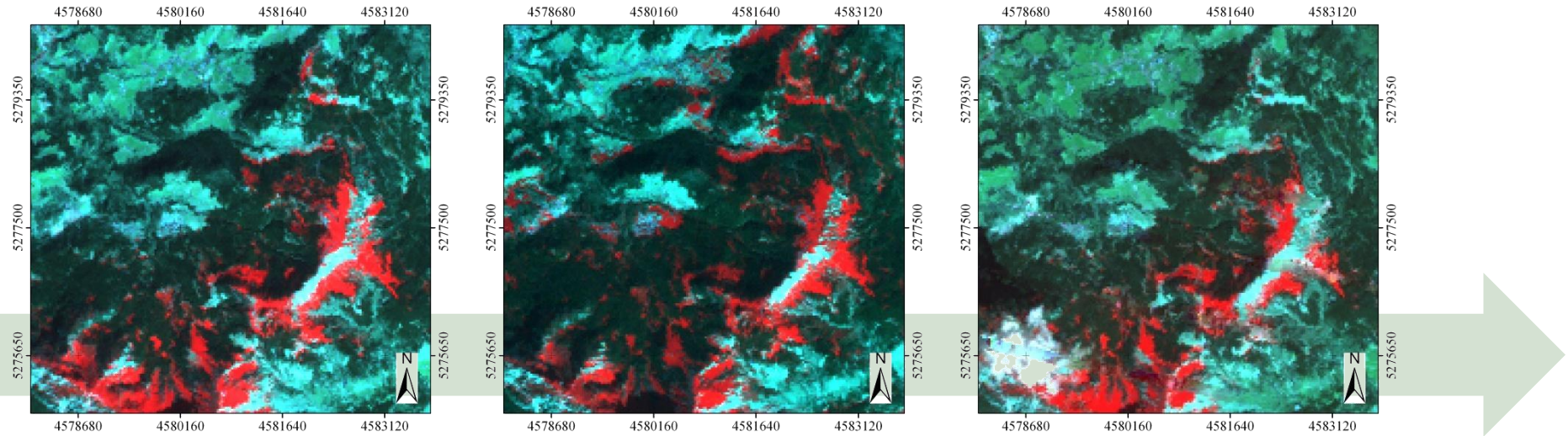
SnowSlide

The spatial characteristics of the snow distribution is very similar from year to year

April 2002

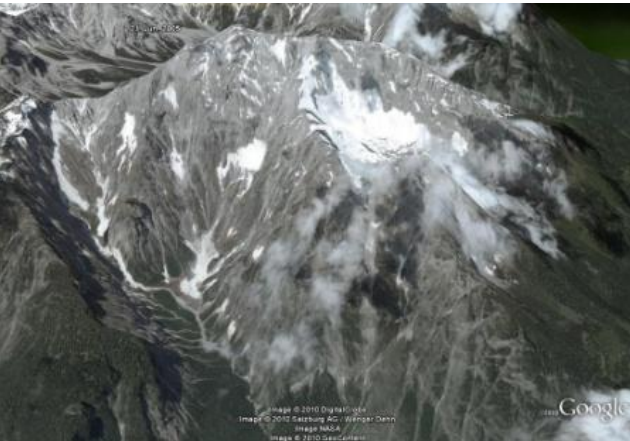
April 2003

April 2004

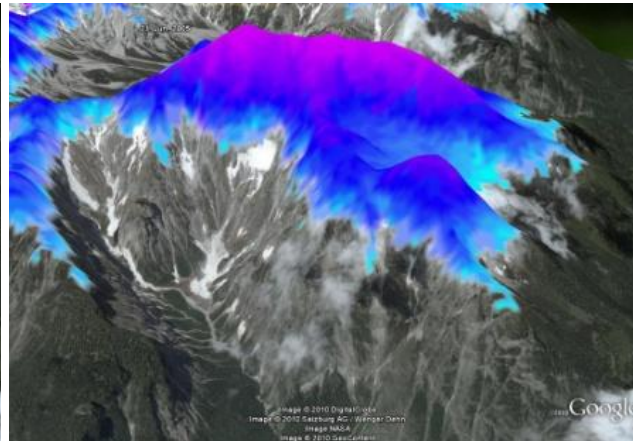


SnowSlide

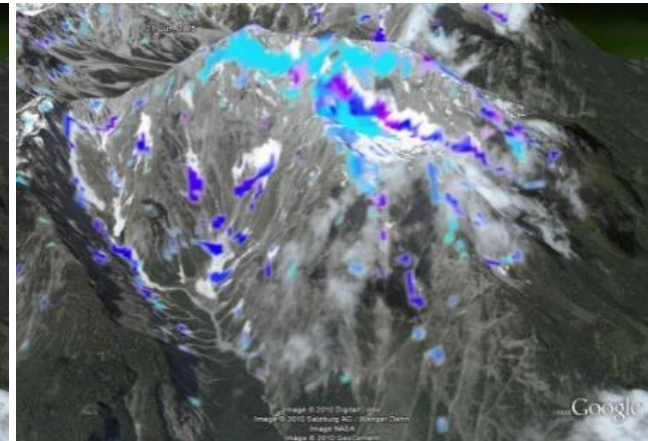
Reality



Model result
without transport



Model result
with transport

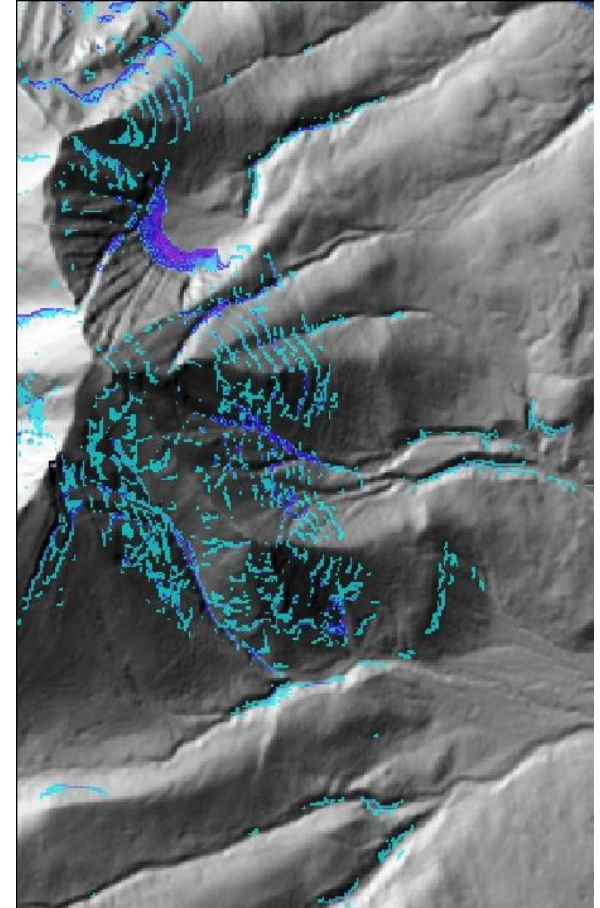
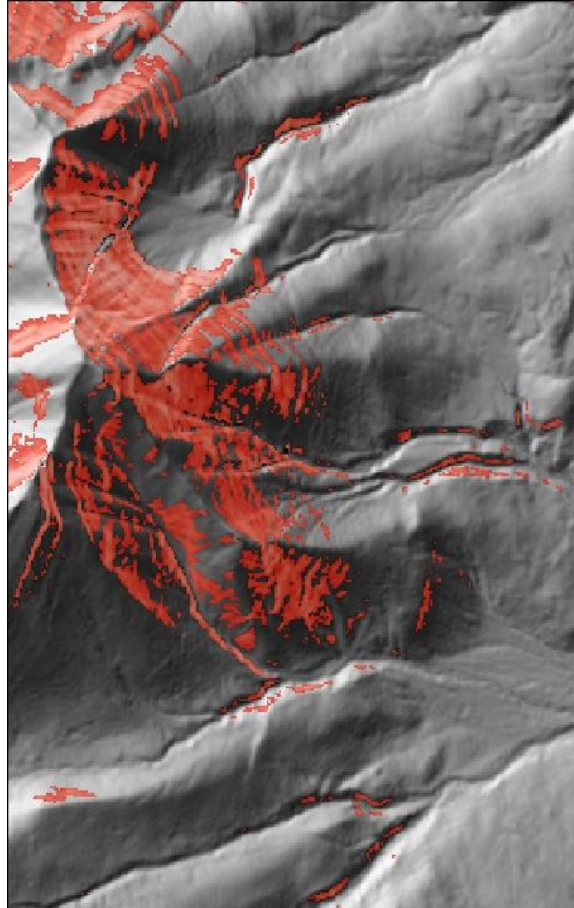
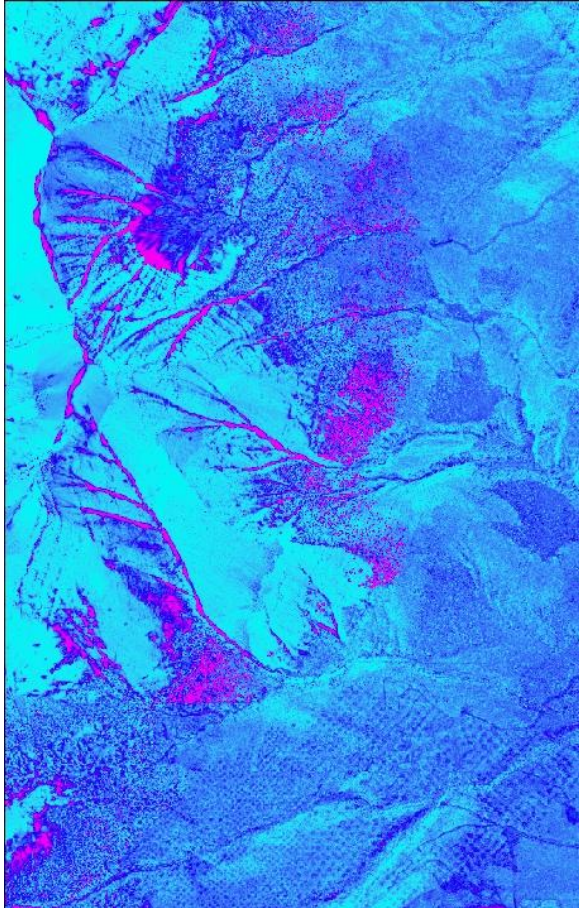


SnowSlide

2700 m a.s.l. 1700 m a.s.l.

Accumulation

Erosion



0m

2m snow depth



Thank you for your attention !

For further information, comments and suggestions, please contact:

Department of Geography, LMU: www.geographie.uni-muenchen.de

