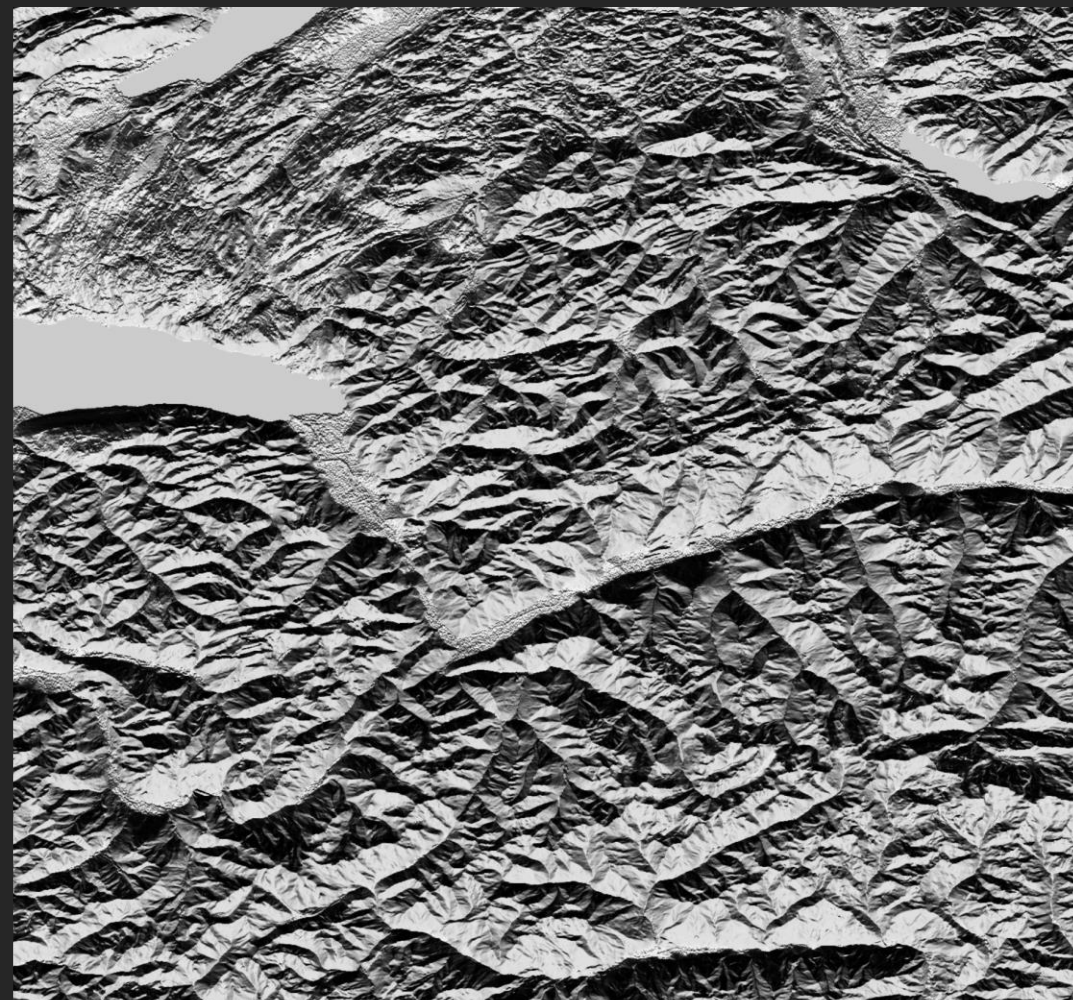


Considering topographic effects on surface radiation in a kilometre-scale climate model simulation with a focus on snow cover

Christian R. Steger, Jesus Vergara-Temprado, Nikolina Ban, Christoph Schär
Institute for Atmospheric and Climate Science, ETH Zurich, Zurich, Switzerland



SW-facing



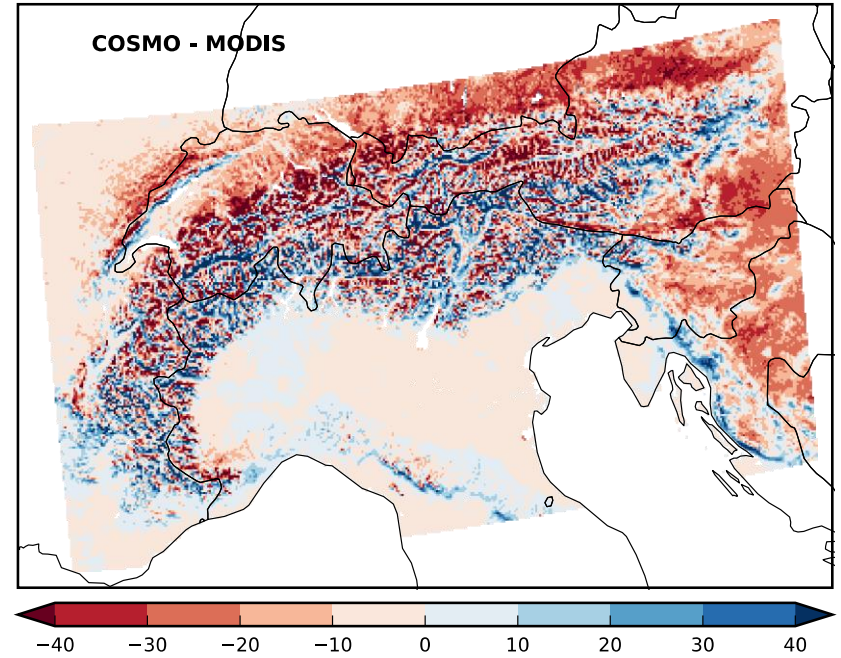
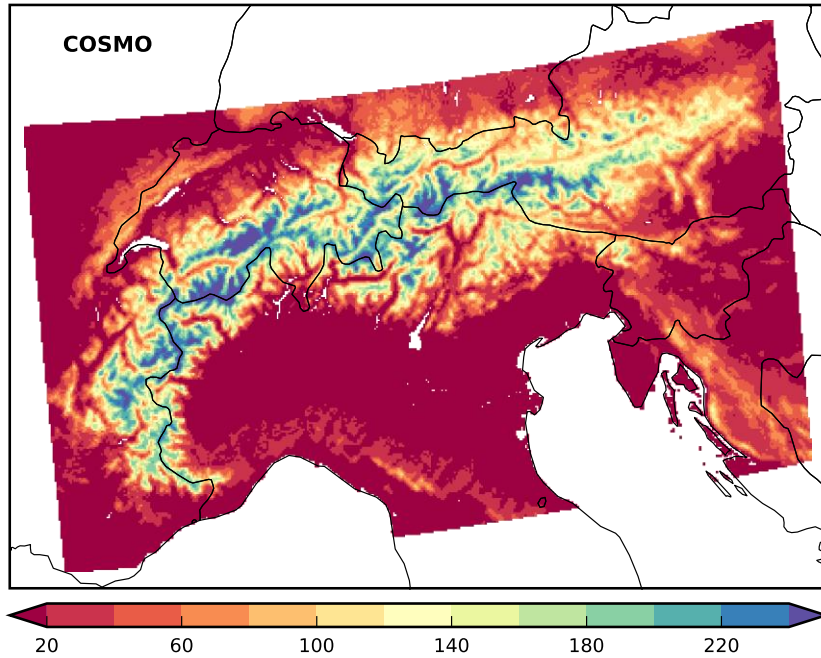
Tschierv, Val Müstair,
Switzerland, 30th March 2019

NE-facing

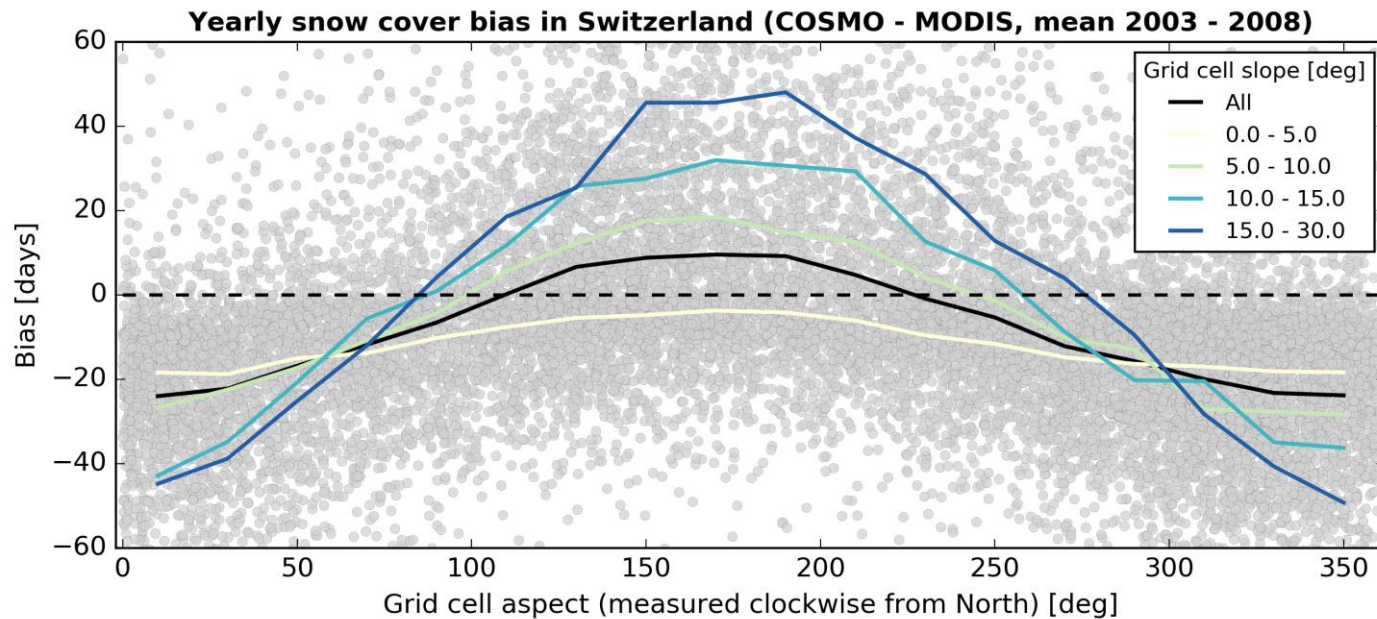
International Mountain Conference
8 – 12 September, 2019, Innsbruck, Austria

ETH zürich

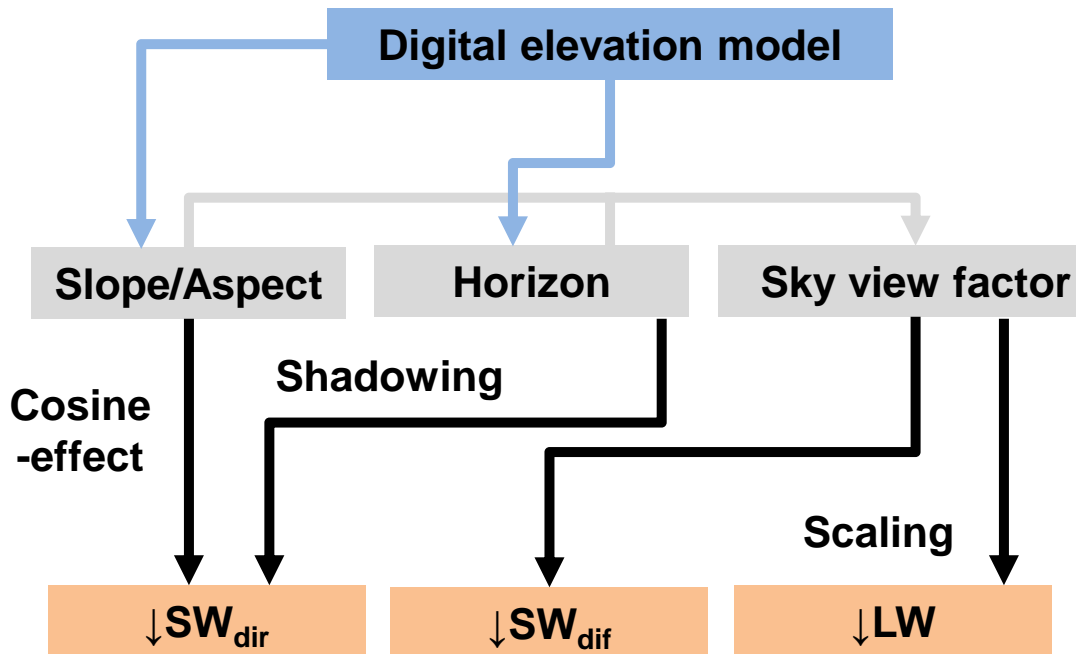
Snow cover duration bias (RCM COSMO – MODIS observation)



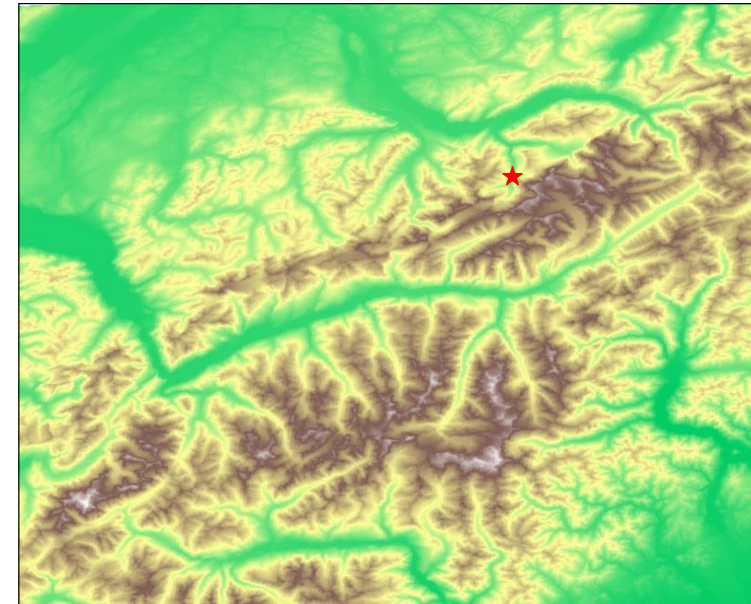
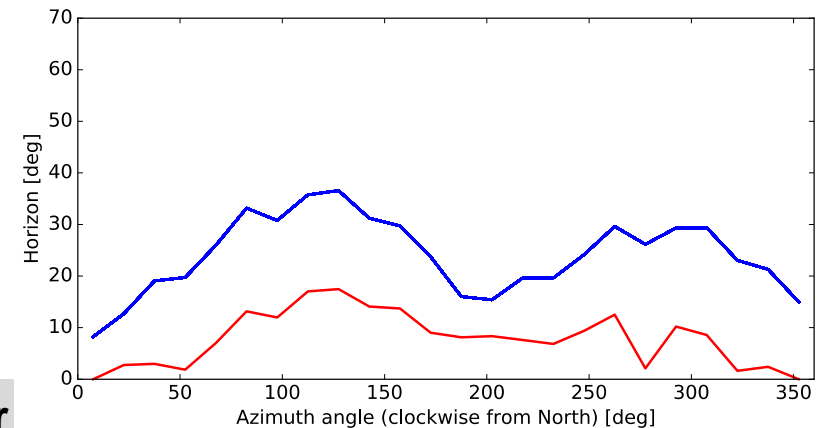
2 km, mean
2001 – 2008



Topographical correction of incoming surface radiation



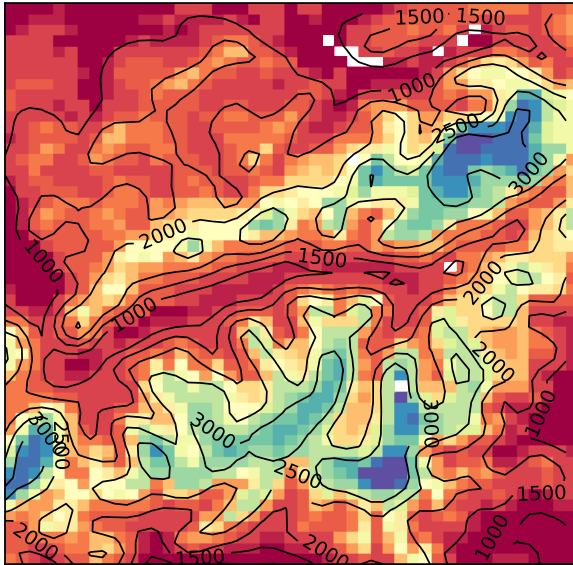
Overview of implementation in COSMO



Scale dependency of topographical parameters (horizon)

Preliminary sensitivity experiments with SNOWPACK

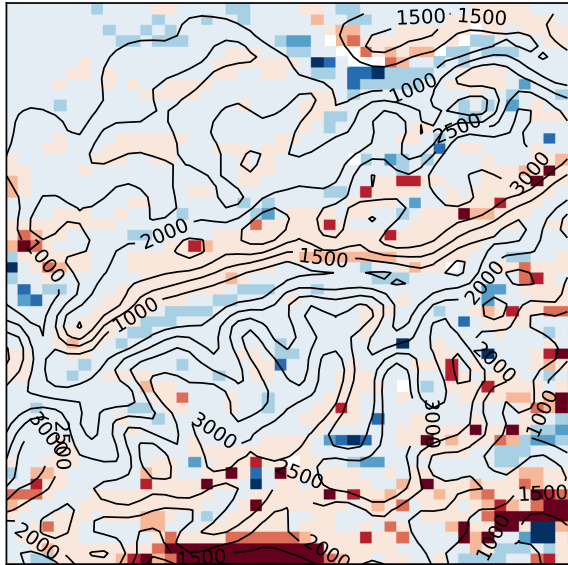
No correction



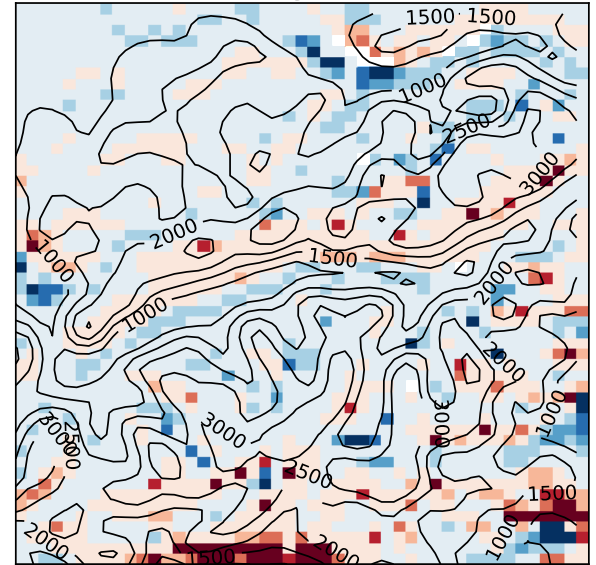
80 110 140 170 200 230 260 290 320 350
Snow cover duration [days]

Sept. 2005 – Aug. 2006

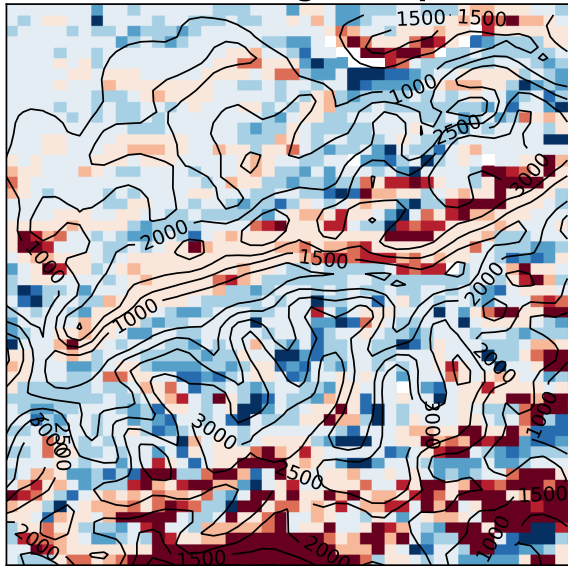
2.2km



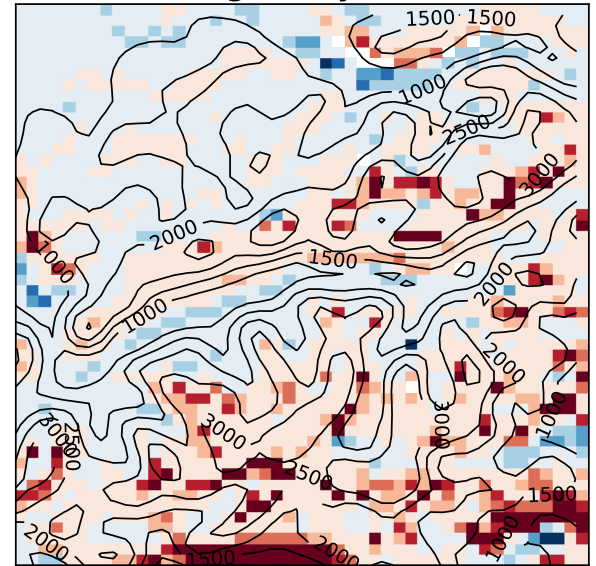
2.2km (subgrid horizon)



2.2km (subgrid slope)



2.2km (subgrid sky view factor)



-40 -20 0 20 40