

Interactive comment on “Changes in glacier Equilibrium-Line Altitude (ELA) in the western Alps over the 1984–2010 period: evaluation by remote sensing and modeling of the morpho-topographic and climate controls” by A. Rabatel et al.

M. Zemp (Referee)

michael.zemp@geo.uzh.ch

Received and published: 28 July 2013

Antoine Rabatel and colleagues present time series of end-of-summer snowlines derived from satellite images between 1984 and 2010. They use the end-of-summer snowline altitudes (SLA) as a proxy for the annual ELA and investigate spatio-temporal change patterns with respect to summer temperature, winter precipitation and morpho-topographic parameters. They present a statistical variance decomposition model to

C1213

reconstruct spatio-temporal ELA fluctuations based on morpho-topographic and climatic drivers.

This is a generally well presented study based on and extending earlier work by Rabatel and colleagues. The results are not too surprising but are an important step towards scaling detailed mass balance measurements at few glaciers to entire mountain ranges using satellite-based (snow line) observations. I recommend publishing this paper in The Cryosphere after a moderate revision based on the specific comments listed in the supplement.

Please also note the supplement to this comment:

<http://www.the-cryosphere-discuss.net/7/C1213/2013/tcd-7-C1213-2013-supplement.pdf>

Interactive comment on The Cryosphere Discuss., 7, 2247, 2013.

C1214