



HAL
open science

Estimation of snow line elevation changes from MODIS snow cover data

Juraj Parajka, Nejc Bezak, John Burkhart, Ladislav Holko, Yeshewa Hundecha, Pavel Krajci, Walter Mangini, Peter Molnar, Aynur Sensoy, Philippe Riboust, et al.

► To cite this version:

Juraj Parajka, Nejc Bezak, John Burkhart, Ladislav Holko, Yeshewa Hundecha, et al.. Estimation of snow line elevation changes from MODIS snow cover data. EGU General Assembly 2017, Apr 2017, Vienna, Austria. Geophysical Research Abstracts, 19, pp.1, 2017. hal-02606259

HAL Id: hal-02606259

<https://hal.inrae.fr/hal-02606259v1>

Submitted on 16 May 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Estimation of snow line elevation changes from MODIS snow cover data

Juraj Parajka, Nejc Bezak, John Burkhart, Ladislav Holko, Yeshewa Hundecha, Pavel Krajčí, Walter Mangini, Peter Molnar, Aynur Sensoy, Phillippe Riboust, Jonathan Rizzi, Guillaume Thirel, and Berit Arheimer

Contact: Juraj Parajka (parajka@hydro.tuwien.ac.at)

This contribution evaluates changes in snowline elevation during snowmelt runoff events in selected basins from Austria, France, Norway, Slovakia, Slovenia, Sweden, Switzerland and Turkey. The main objectives are to investigate the spatial and temporal differences in regional snowline elevation (RSLE) across Europe and to discuss the factors which control its change.

The analysis is performed in two steps. In the first, the regional snowline elevation is processed from daily MODIS snow cover data (MOD10A1) by using the methodology of Krajčí et al., (2014). In the second step, the changes in RSLE are analysed for selected flood events in the period 2000-2015. The snowmelt runoff events are extracted from Catalogue of identified flood peaks from GRDC dataset (FLOOD TYPE experiment) available at <http://www.water-switch-on.eu/sip-webclient/byod/#/resource/12056>.

The results will be discussed in terms of: (a) availability and potential of MODIS snow cover data for identifying RSLE changes during snowmelt runoff events, (b) spatial and temporal patterns of RSLE changes across Europe and (c) factor controlling the RSLE change.

The analysis is performed as an experiment in Virtual Water Science Laboratory of SWITCH-ON Project (<http://www.water-switch-on.eu/>). All data, tools and results of the analysis will be open and accessible through the Spatial Information Platform of the Project (<http://www.water-switch-on.eu/sip-webclient/byod/>). We believe that such strategy will allow to improve and forward comparative research and cooperation between different partners in hydrology (Ceola et al., 2015).

References

Ceola, S., Arheimer, B., Baratti, E., Blöschl, G., Capell, R., Castellarin, A., Freer, J., Han, D., Hrachowitz, M., Hundecha, Y., Hutton, C., Lindström, G., Montanari, A., Nijzink, R., Parajka, J., Toth, E., Viglione, A., and Wagener, T.: Virtual laboratories: new opportunities for collaborative water science, *Hydrol. Earth Syst. Sci.*, 19, 2101-2117, doi:10.5194/hess-19-2101-2015, 2015.

Krajčí, P., Holko, L., Perdigão, R.A.P., Parajka, J., Estimation of regional snowline elevation (RSLE) from MODIS images for seasonally snow covered mountain basins, 2014, *Journal of Hydrology*, 519, 1769-1778