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## Elevation based correction of snow coverage retrieved from satellite images to improve model calibration

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**Abstract.** The most widely used method for snow dynamic simulation relies on temperature index approach, that makes snow melt and accumulation processes depend on air temperature related parameters. A recently used approach to calibrate these parameters is to compare model results with snow coverage retrieved from satellite images. In area with complex topography and heterogeneous land cover, snow coverage may be affected by the presence of shaded area or dense forest that make pixels to be falsely classified as uncovered. These circumstances may have, in turn, an influence on calibration of model parameters.

In this paper we propose a simple procedure to correct snow coverage retrieved from satellite images. We show that using raw snow coverage to calibrate snow model may lead to parameter values out of the range accepted by literature, so that the timing of snow dynamics measured at two ground stations is not correctly simulated. Moreover, when the snow model is implemented into a continuous distributed hydrological model, we show that calibration against corrected snow coverage reduces the error in the simulation of river flow in an Alpine catchment.

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