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Hydrol. Earth Syst. Sci., 11, 1353-1360, 2007
www.hydrol-earth-syst-sci.net/11/1353/2007/
doi: 10.5194/hess-11-1353-2007

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Commentary on comparison of MODIS snow cover and albedo products with ground observations over the mountainous terrain of Turkey

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Abstract. The MODerate-resolution Imaging Spectroradiometer (MODIS) snow cover product was evaluated by Parajka and Blösch (2006) over the territory of Austria. The spatial and temporal variability of the MODIS snow product classes are analyzed, the accuracy of the MODIS snow product against numerous in situ snow depth data are examined and the main factors that may influence the MODIS classification accuracy are identified in their studies. The authors of this paper would like to provide more discussion to the scientific community on the "Validation of MODIS snow cover images" when similar methodology is applied to mountainous regions covered with abundant snow but with limited number of ground survey and automated stations.

Daily snow cover maps obtained from MODIS images are compared with ground observations in mountainous terrain of Turkey for the winter season of 2002–2003 and 2003–2004 during the accumulation and ablation periods of snow. Snow depth and density values are recorded to determine snow water equivalent (SWE) values at 19 points in and around the study area in Turkey. Comparison of snow maps with in situ data show good agreement with overall accuracies in between 62 to 82 percent considering a 2-day shift during cloudy days. Studies show that the snow cover extent can be used for forecasting of runoff hydrographs resulting mostly from snowmelt for a mountainous basin in Turkey.

MODIS-Terra snow albedo products are also compared with ground based measurements over the ablation stage of 2004 using the automated weather operating stations (AWOS) records at fixed locations as well as from the temporally assessed measuring sites during the passage of the satellite. Temporarily assessed 20 ground measurement sites are randomly distributed around one of the AWOS stations and both MODIS and ground data were aggregated in GIS for analysis. Reduction in albedo is noticed as snow depth decreased and SWE values increased.

[Final Revised Paper](#) (PDF, 6584 KB) [Discussion Paper](#) (HESSD)

Citation: Şorman, A. Ü., Akyürek, Z., Şensoy, A., Şorman, A. A., and Tekeli, A. E.: Commentary on comparison of MODIS snow cover and albedo



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