

Interannual Variations in Snowfall and Continuous Snow Cover Duration in Pelso, Central Finland, Linked to Teleconnection Patterns, 1944-2010

Authors : M. Irannezhad, E. H. N. Gashti, S. Mohammadighavam, M. Zarrini, B. Kløve

Abstract : Climate warming would increase rainfall by shifting precipitation falling form from snow to rain, and would accelerate snow cover disappearing by increasing snowpack. Using temperature and precipitation data in the temperature-index snowmelt model, we evaluated variability of snowfall and continuous snow cover duration(CSCD) during 1944-2010 over Pelso, central Finland. MannKendall non-parametric test determined that annual precipitation increased by 2.69 (mm/year, $p<0.05$) during the study period, but no clear trend in annual temperature. Both annual rainfall and snowfall increased by 1.67 and 0.78 (mm/year, $p<0.05$), respectively. CSCD was generally about 205 days from 14 October to 6 May. No clear trend was found in CSCD over Pelso. Spearman's rank correlation showed most significant relationships of annual snowfall with the East Atlantic (EA) pattern, and CSCD with the East Atlantic/West Russia (EA/WR) pattern. Increased precipitation with no warming temperature caused the rainfall and snowfall to increase, while no effects on CSCD.

Keywords : variations, snowfall, snow cover duration, temperature-index snowmelt model, teleconnection patterns

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020