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The Impact Of Snow Melt On Surface Runoff Of Sava River In Slovenia

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Snow is a type of precipitation in the form of crystalline water ice, consisting of a multitude of snowflakes that fall from clouds. Snow remains on the ground until it melts or sublimates. Spring snow melt is a major source of water supply to areas in temperate zones near mountains that catch and hold winter snow, especially those with a prolonged dry summer. In such places, water equivalent is of great interest to water managers wishing to predict spring runoff and the water supply of cities downstream.

In temperate zone like in Slovenia the snow melts in the spring and contributes certain amount of water to surface flow. This amount of water can be great and can cause serious floods in case of fast snow melt. For this reason we tried to determine the influence of snow melt on the largest river basin in Slovenia – Sava River basin, on surface runoff. We would like to find out if snow melt in Slovenian Alps can cause spring floods and how serious it can be. First of all we studied the caracteristics of Sava River basin - geology, hydrology, clima, relief and snow conditions in details for each subbasin. Furtermore we focused on snow and described the snow phenomenom in Slovenia, detailed on Sava River basin. We collected all available data on snow – snow water equivalent and snow depth. Snow water equivalent is a much more useful measurement to hydrologists than snow depth, as the density of cool freshly fallen snow widely varies. New snow commonly has a density of between 5% and 15% of water. But unfortunately there is not a lot of available data of SWE available for Slovenia. Later on we compared the data of snow depth and river runoff for some of the 40 winter seasons. Finally we analyzed the use of satellite images for Slovenia to determine the snow cover for hydrology reason.

We concluded that snow melt in Slovenia does not have a greater influence on Sava River flow. The snow cover in Alps can melt fast due to higher temperatures but the water distributes and runs off slowly and does not cause floods. About use of satellite images we concluded that first of all, weather is unfavorable – lots of cloudiness in winter, and furthermore a grater part of land is covered by forest which prevents to see the snow cover on image clearly.