Duration of Snow Cover in the Western U.S. Measured using MODIS and VIIRS Cloud-Gap-Filled Snow Cover Products

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ABSTRACT

A great deal of recent work has shown that the duration of snow cover in North America has been decreasing since the satellite snow-cover record began in the late 1960s. This reduction in snow-cover duration, notably resulting in increasingly earlier snowmelt, has been particularly evident in coastal ranges in western North America such as the Pacific Northwest. In this work, we use the new MODerate-resolution Imaging Spectroradiometer (MODIS) and Visible Infrared Imaging Radiometer Suite (VIIRS) cloud-gap-filled daily snow-cover products to study changes in the duration of snow cover in selected mountain ranges along the western coast of the United States such as the Cascade Range. We also investigate changes in the continental interior such as the Wasatch, Wind River, and Sierra Nevada mountain ranges over an 18-year period, from the winter of 2000-2001 through the winter of 2017-2018.

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