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Applications of Digital Remote Sensing to Quantify Glacier Change in Glacier and Mount Rainier National Parks

Digital remote sensing and geographic information systems were employed in performing change over time area and volume calculations on glacial landscapes. Characteristics of glaciers from two geographic regions, the Intermountain Region (between the Rocky Mountain and Cascade Ranges) and the Pacific Northwest, were estimated for the years 1985, 2000, and 2015. Glacier National Park was studied for the Intermountain Region, whereas Mount Rainier National Park was representative of the glaciers in the Pacific Northwest. Within the thirty year period of the study, the glaciers in Glacier National Park decreased in area by 27.5 percent while those on Mount Rainier only decreased by 5.7 percent. The differences in these percentages can be attributed to the warmer temperatures of the Intermountain Region coupled with lower amounts of snowfall when compared to the Pacific Northwest. Volume loss calculations were also performed, but digital remote sensing and GIS were less successful at estimating this glacial parameter. ■

Biographical Sketch



BRIANNA CLARK received the Associates Degree in General Studies in 2015 from San Jacinto Community College in Houston, TX. She graduated with the Bachelor of Arts in English with a minor in Environmental Science from Stephen F. Austin State University in 2017. Brianna spent a year in South Korea teaching English as a second language to secondary education students.

In Fall 2018, she returned to the United States to pursue a Master of Science in Environmental Science with a minor in Geospatial Science. She completed the MS from Stephen F. Austin in May 2020. Currently, she remains at SFA pursuing a PhD in Forestry, serving as instructor for a Natural Resource Policy course.

