Using Satellite Images to Monitor Glacial Lake Outburst Floods—Lago Cachet Dos Drainage, Chile

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The U.S. Geological Survey (USGS) is monitoring and analyzing glacial-lake outburst floods (GLOFs) in the Colonia area of Chile. The area has been affected by multiple GLOFs since 2008 and is a region of concern for increased glacial lake outburst flooding due to climate change and the retreat of glaciers. The satellite images used in this study were acquired on December 1, 2011, and February 2, 2013.J.

Oblique aerial photograph looking southeast into the Colonia Valley and Lago Cachet Dos drainage. Lago Cachet Uno is the upper lake and Lago Cachet Dos is the lower lake. Cachet Dos, which is dammed by the Colonia Glacier, has recurred periodically since 2008. The water discharged during these GLOFs caused extensive erosion of lakebed deposits and an upstream expansion of Lago Cachet Dos by about 200 meters (m) during these GLOFs to better understand—and potentially predict—future GLOF events (Post and Mayo, 1971).

The lake area decreased from 4.84 square kilometers (km²) in 2011 (pre-GLOF) to only 0.30 km² in September 2013 (post-GLOF). The water surface lowered approximately 90 meters (m) between the pre- and post-GLOF satellite images, which reduced the surface elevation of Lago Cachet Dos from approximately 2,400 meters (m) above sea level to approximately 2,310 meters (m) above sea level. These changes could increase our understanding of GLOFs and their consequences. The USGS is collecting remotely sensed data, including the two lakes could merge. If the two lakes become connected, the volume of future GLOFs likely would be greater and thus could increase our understanding of GLOFs and their consequences. The USGS is collecting remotely sensed data, including

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