

Terrestrial lidar measurement of an ongoing calving event on Lange Glacier.

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Increased tourist and scientific marine traffic along the fronts of tidewater glaciers face a security risk due to possible calving-related hazards. A series of serious accidents involving the falling ice block, calving-generated tsunami wave and the ice projectile impacts were reported. Despite the large interest in calving mechanics, still little is known about the impact range of calving events. Three ongoing calving events on Lange Glacier, King George Island, South Shetland Islands were measured with a terrestrial lidar, giving an insight to the mechanics of the calving processes including the subsequent splash of sea water and the range of ice projectiles released from the front. During the acquisition of the point cloud of the ice front, three calving events of different size occurred. The volume of the calved ice, its potential energy and free-fall velocity was computed and compared with the range of the water splash and ice projectiles. Such measurements can be used in future to mitigate the risk of calving-related marine accidents.