

## Major Avalanches

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### Abstract

Avalanches are a mass movement of snow and ice down a hillside. They occur when unique circumstances of climate and topographic factors come together. This map shows major avalanches beginning with the Rogers Pass avalanche in 1906 and extending to the 1999 avalanche in Kangiqsualujjuaq, Quebec.

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Avalanches are a mass movement of snow and ice down a hillside, which take place when certain circumstances of topography and climate come together. The topographic factors include the steepness of slope, the slope inclination (the direction it faces), and the type of its surface.

A second set of circumstances concerns the amount and characteristics of each layer of snow. Repeated snowfall in a snow season creates layers of snow on mountain slopes. When layers differ (have discontinuities) with those above or below them, there may be circumstances promoting layers to slide along one another. One example is when a heavy layer falls on top of hardened snow below it. The nature of snow can also affect the nature of the sliding: when snow is dry or powderlike, it may contain a large volume of air, and can reach a high speed when going downslope. When the snow that is sliding is wet, it will slide as large blocks.

Descriptions for each of the major avalanches shown on the map are found below:

#### **Rogers Pass-1906**

Rogers Pass, British Columbia; 62 dead.  
Source: Emergency Preparedness Canada.

#### **Rogers Pass-1910**

Rogers Pass, British Columbia; 62 dead (CPR workmen), one survivor; an avalanche struck workers as they cleared the tracks of snow dumped by a previous slide.  
Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

#### **Cooper Mine-1915**

Cooper Mine, Jane Camp, British Columbia; 56 dead, approximately 22 injured; a rock avalanche from above a portal of a mine wiped out half the buildings at a mine campsite, catching many miners in their bunkhouses.  
Source: International Decade for Natural Disaster Reduction, Canadian National Report. Royal Society of Canada and the Canadian Academy of Engineering, 1994.

#### **Cooper Mine-1918**

Rogers Pass, British Columbia; 62 dead.

Source: International Decade for Natural Disaster Reduction, Canadian National Report. Royal Society of Canada and the Canadian Academy of Engineering, 1994.

**Mount Temple, Lake Louise-1955**

Mount Temple, Lake Louise, Alberta; 7 skiers killed; July 11, 1955 inexperienced climbers were swept away by an avalanche.

Source: Emergency Preparedness Canada, National Geographic and National Atlas of Canada. Natural Hazards Poster-Map, 1996.

**Granduc Mine-1965**

Granduc Mine, British Columbia; 26 dead, 22 injured; an avalanche destroyed a miners' camp.

Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

**Terrace-1971**

Terrace, British Columbia; seven dead, one survivor; eight people were waiting out a storm in a small café when an avalanche struck the building.

Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

**Purcell Range-1979**

British Columbia; an avalanche took the lives of seven heli-skiers in the Purcell Range southwest of Golden, British Columbia.

Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

**Conrad Icefield-1981**

British Columbia; an avalanche killed 3 heli-skiers near Conrad Icefield, west of Golden, British Columbia.

Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

**Blue River-1987**

Blue River, British Columbia; an avalanche took the lives of 6 American heli-skiers and their Canadian guide.

Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

**Banff-1990**

Banff, Alberta; four people from Calgary were killed by an avalanche while cross-country skiing in Banff National Park.

Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

**Purcell Mountains-1991**

Purcell Mountains, British Columbia; nine heli-skiers were killed in a massive avalanche in Bugaboo Glacier Provincial Park.

Source: Emergency Preparedness Canada. Significant Disasters in Canada, September, 1995.

### **Kangiqsualujjuaq-1999**

The Inuit community of Kangiqsualujjuaq, grieved after 9 died in Quebec's worst avalanche. Four adults and five children died in the tragedy after tonnes of snow came cascading down the sheer face of a 365-metre-high cliff at 1:30 am on January 1, knocking out a wall and swamping those inside the gymnasium where the New Year's Eve party was being held. Some of the 25 injured were in critical condition and 10 other buildings were evacuated. The school was located too close to the hill against safety regulations. Although human error has been noted as a possible cause, due to disregard of certain warnings, blame has not been placed.

Source: Emergency Preparedness Canada

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## **Map Sources**

### **Major Avalanches in Canada**

Disaster Database, Emergency Preparedness Canada, 1999.

## **Related Web sites (1999 – 2009)**

### **Federal Government**

Government of Canada. Public Safety

<http://www.safecanada.ca/>

The Public Safety Portal is your one-window entry to all public safety information from the Government of Canada.

### **Other**

American Avalanche Association.

<http://www.americanavalancheassociation.org/>

The American Avalanche Association (AAA) is comprised of a collective group of dedicated professionals engaged in the study, forecasting, control and mitigation of snow avalanches.

Canadian Avalanche Association

<http://www.avalanche.ca/>

The Canadian Avalanche Association is dedicated to bringing the avalanche community together to develop knowledge and understanding of avalanches, facilitate communication, promote professionalism, and provide quality avalanche education.

**Institute for Catastrophic Loss Reduction**

<http://www.iclr.org/>

Canada's property and casualty insurers founded the Institute in 1998. ICLR is a coordinated effort to reduce disaster losses involving member insurance companies, The University of Western Ontario and other partners.

