Water, Ice and Climate Change Webinar Worksheet

Before Watching the Webinar:

What I already know about water, water quality, climate change and glaciers?

What do I want to learn about water, water quality, climate change and glaciers?

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Sample Questions:	Questions I'd like to ask an expert: Tweet your questions using the hashtag #albertaglacierslive
• How does climate change affect our water quality?	

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Where do I live in relation to the Columbia Icefield and Glaciers found in our National Parks? Try to locate your city/town on the maps below. What watershed do you live within? Where is the Columbia Icefield from there? What glaciers make up the Columbia Icefield?

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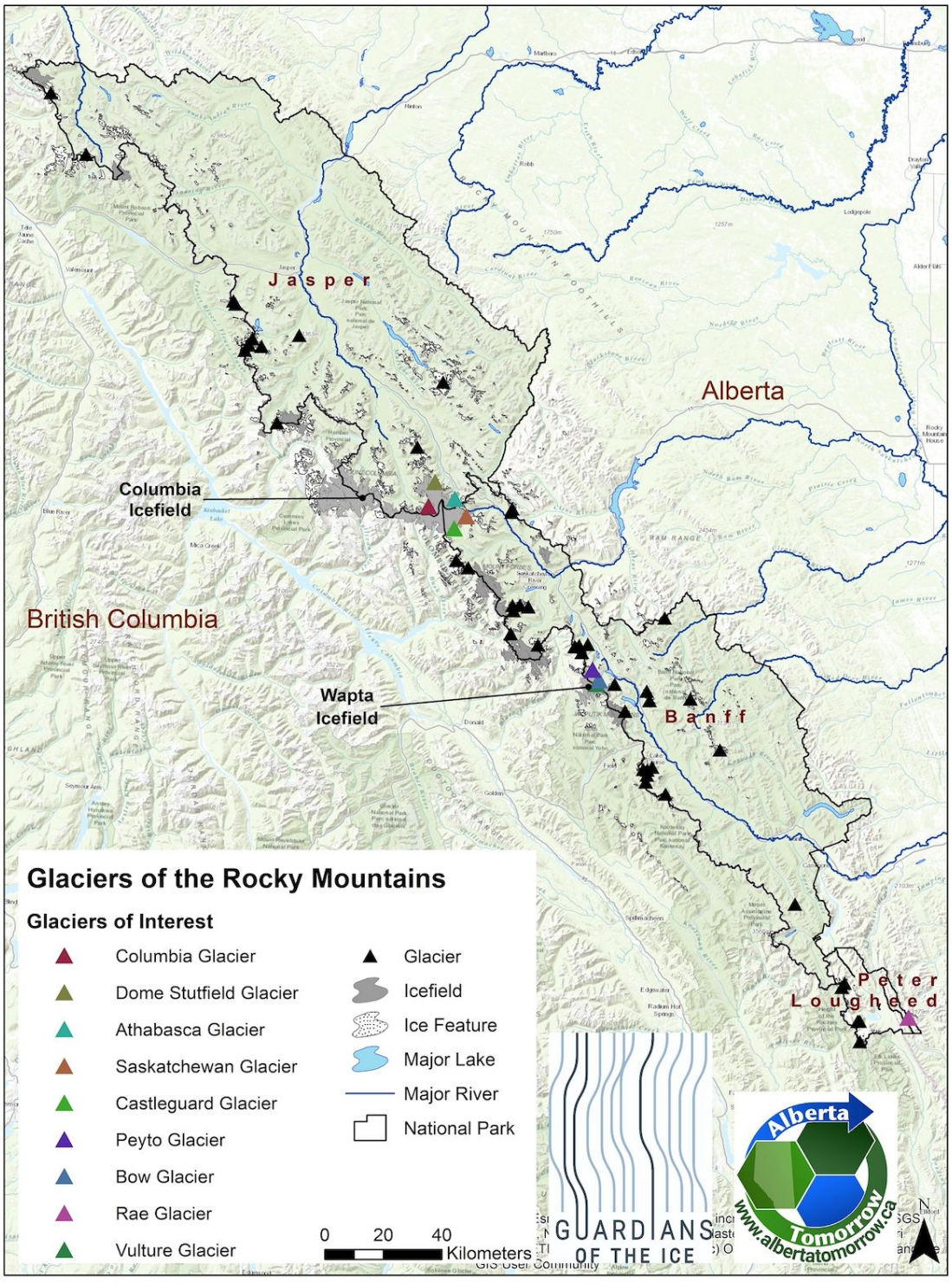

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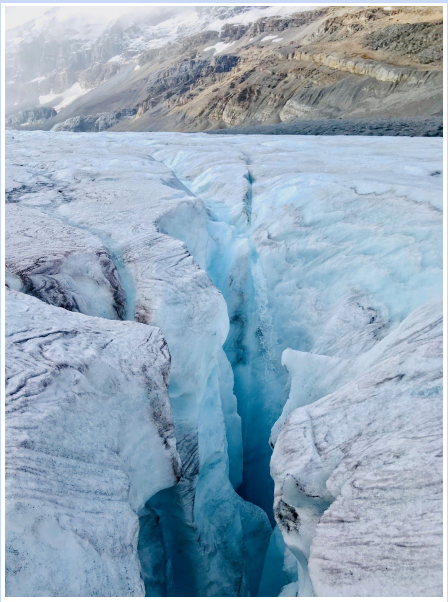
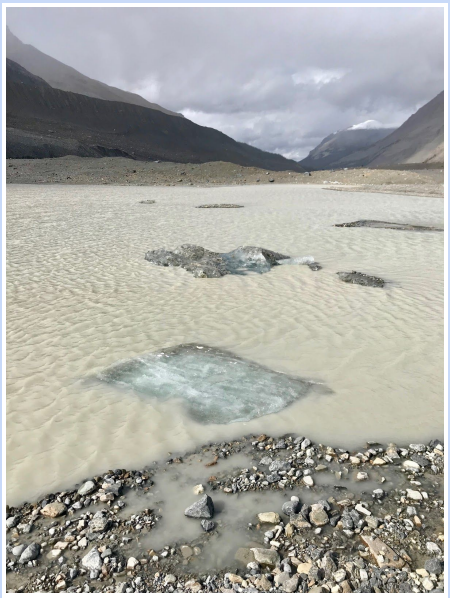
Glacier Landforms: Match the word with the picture:

Moulin, Lateral Moraine, Striation, Crevasse, Calving, Terminal Moraine



1.



2.

3.

4.

5.

6.

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Glacier Vocabulary Matching:

- ❑ **Striations**
- ❑ **Terminal moraine**
- ❑ **Moulin**
- ❑ **Retreat**
- ❑ **Calving**
- ❑ **Ablation**
- ❑ **Crevasse**
- ❑ **Glacier**
- ❑ **Lateral moraine**
- ❑ **Rock Flour**

1. Multiple, generally parallel, linear grooves, carved by rocks frozen in the bed of a glacier into the bedrock over which it flows.
2. A large, perennial accumulation of ice, snow, rock, sediment and liquid water originating on land and moving down slope under the influence of its own weight and gravity; a dynamic river of ice. Glaciers are classified by their size, location, and thermal regime.
3. A cross-valley, ridge-like accumulation of glacial sediment that forms at the farthest point reached by the terminus of an advancing glacier. Also called an End Moraine.
4. Fine-grained, silt-size sediment formed by the mechanical erosion of bedrock at the base and sides of a glacier by moving ice. When it enters a stream, it turns the stream's color brown, gray, iridescent blue-green, or milky white. Also called Glacier Flour or Glacier Milk
5. The process by which pieces of ice break away from the terminus of a glacier that ends in a body of water or from the edge of a floating ice shelf that ends in the ocean. Once they enter the water, the pieces are called icebergs.
6. A decrease in the length of a glacier compared to a previous point in time. As ice in a glacier is always moving forward, its terminus retreats when more ice is lost at the terminus to melting and/or calving than reaches the terminus. During retreat, ice in a glacier does not move back up the valley.
7. A narrow, tubular chute or crevasse through which water enters a glacier from the surface. Occasionally, the lower end of a moulin may be exposed in the face of a glacier or at the edge of a stagnant block of ice
8. A sediment ridge, located on a glacier's surface adjacent to the valley walls, extending down glacier to the terminus. It forms by the accumulation of rock material falling onto the glacier from the valley wall, rather than by water deposition
9. A crack or series of cracks that open in the surface of a moving glacier in response to differential stresses caused by glacier flow. They range in shape from linear to arcuate, in length from feet to miles. Their orientation may be in any direction with respect to the glacier flow. The deepest crevasses may exceed 100 feet.
10. The loss of ice and snow from a glacier system. This occurs through a variety of processes including melting and runoff, sublimation, evaporation, calving, and wind transportation of snow out of a glacier basin.

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What I learned from the webinar:.

Interesting things that I have learned are:

1. 2.	

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Further Class Discussion Questions:

• Why should we be concerned about the glaciers melting? Why or Why not? • How might the melting glaciers affect my health? • What can we do to try to prevent the further melting of glaciers?	Think of your own glacier or climate change related questions to discuss with the class:

Further Questions:

What would you like to ask an expert now?	-
Write your question here:	

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Use the space below to personalize what you've learned about water, climate change and glaciers in Alberta. You could:

- Draw a picture (creative or scientific)
- Write a short story
- Use pencil crayons or pastels to create a work of art
- Make up a haiku or song about climate change and Alberta glaciers.
- or, come up with your own idea!

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Take Action:

Challenge option #1

Make an infographic for your class, home or community about Alberta glaciers and water. Post it in your community or on your parents social media platforms!

Challenge option #2

Take Action! Get a group of students together and create a list of actions to help protect Alberta glaciers. Create a pledge for individuals or classes of personal steps to reduce our impact on Alberta glaciers.

- SHARE your work by creating an observation and uploading it on www.albertatomorrow.ca

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Answer Key:

❑ **Striations**	1.Multiple, generally parallel, linear grooves, carved by rocks frozen in the bed of a glacier into the bedrock over which it flows
❑ **Terminal moraine**	3. A cross-valley, ridge-like accumulation of glacial sediment that forms at the farthest point reached by the terminus of an advancing glacier. Also called an End Moraine.
❑ **Moulin**	7. A narrow, tubular chute or crevasse through which water enters a glacier from the surface. Occasionally, the lower end of a moulin may be exposed in the face of a glacier or at the edge of a stagnant block of ice
❑ **Retreat**	6. A decrease in the length of a glacier compared to a previous point in time. As ice in a glacier is always moving forward, its terminus retreats when more ice is lost at the terminus to melting and/or calving than reaches the terminus. During retreat, ice in a glacier does not move back up the valley.
❑ **Calving**	5. The process by which pieces of ice break away from the terminus of a glacier that ends in a body of water or from the edge of a floating ice shelf that ends in the ocean. Once they enter the water, the pieces are called icebergs.
❑ **Ablation**	10. The loss of ice and snow from a glacier system. This occurs through a variety of processes including melting and runoff, sublimation, evaporation, calving, and wind transportation of snow out of a glacier basin.
❑ **Crevasse**	9. A crack or series of cracks that open in the surface of a moving glacier in response to differential stresses caused by glacier flow. They range in shape from linear to arcuate, in length from feet to miles. Their orientation may be in any direction with respect to the glacier flow. The deepest crevasses may exceed 100 feet.
❑ **Glacier**	2. A large, perennial accumulation of ice, snow, rock, sediment and liquid water originating on land and moving down slope under the influence of its own weight and gravity; a dynamic river of ice. Glaciers are classified by their size, location, and thermal regime.
❑ **Lateral moraine**	8. A sediment ridge, located on a glacier's surface adjacent to the valley walls, extending down glacier to the terminus. It forms by the accumulation of rock material falling onto the glacier from the valley wall, rather than by water deposition
❑ **Rock Flour**	4. Fine-grained, silt-size sediment formed by the mechanical erosion of bedrock at the base and sides of a glacier by moving ice. When it enters a stream, it turns the stream's color brown, gray, iridescent blue-green, or milky white. Also called Glacier Flour or Glacier Milk

Picture Answers: 1. Moulin, 2. calving, 3. lateral moraine, 4. terminal moraine, 5. striations, 6.crevasse