

Sólheimajökull Video Worksheet

Watch the film right through once

Then watch it again, pausing at the appropriate points to attempt the following questions

00.38

1. Describe the landscape at the snout of the glacier.

2. How do you think the large boulder in the foreground got there?

Did You Know?

The main small ponds near the snout of the glacier are called kettle holes. They form when blocks of ice buried in sediment melt to form a hollow which then fills up with water.

00.52 /01.28

3. Describe the size and shape of the sediment (till) in the photograph.

4. What is the name of this landform of glacial deposition?

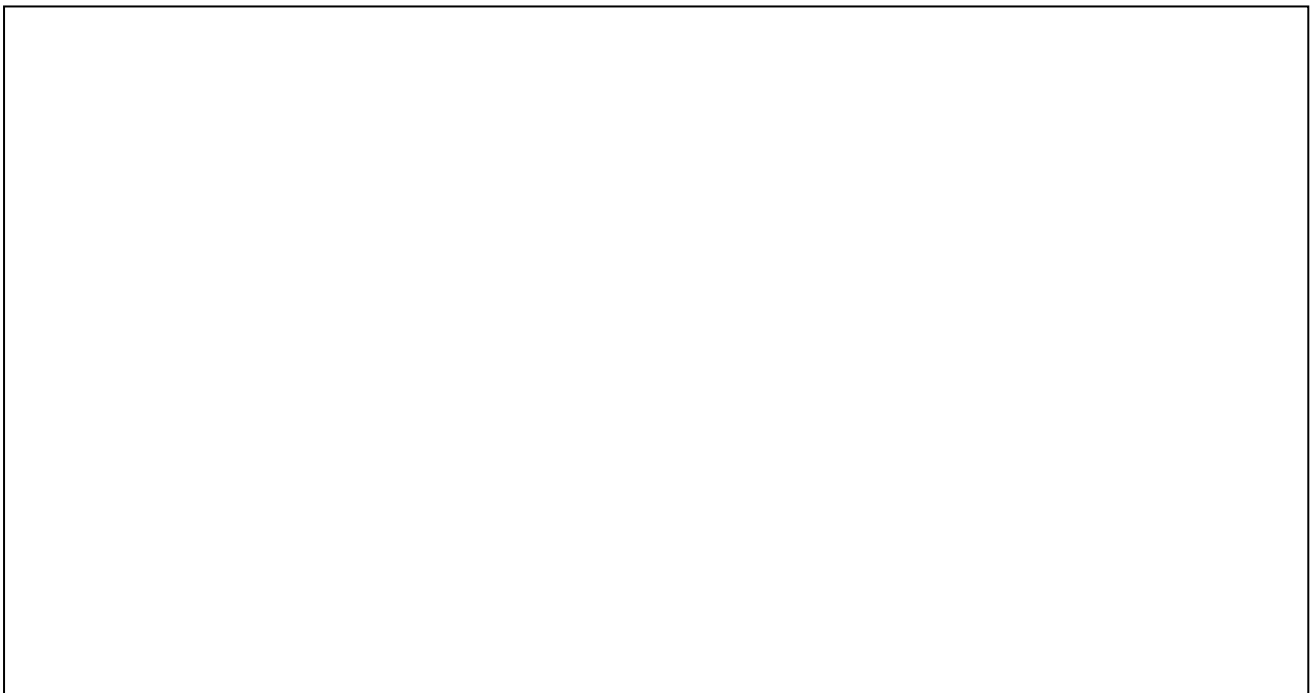
5. How does the location of this landform provide evidence of glacial retreat?

02.18

6. Why are cracks in the rock evidence of the process of freeze-thaw weathering?

Watch the clip describing the process of freeze-thaw weathering

7. Draw a series of simple labelled diagrams to describe the process of freeze-thaw weathering.



03.25-04.30

8. Describe the landscape of the outwash plain.

9. Can you suggest why it may be dangerous to walk across this area and to camp here in the summer?

03.45

10. How does the outwash material differ from till?

Did You Know?

In the UK, till forms an extensive deposit along the east coast of England. It is responsible for the rapidly eroding Holderness coast.

04.36

11. What is the evidence that rapid melting of the glacier is taking place?

04.56-05.37

This clip deals with the glacier budget by examining the ablation and accumulation zones

12. What is the difference between the ablation zone and the accumulation zone?

DIAGRAM

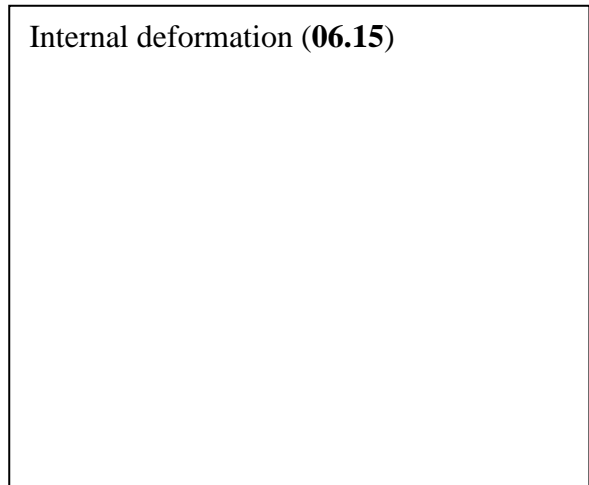
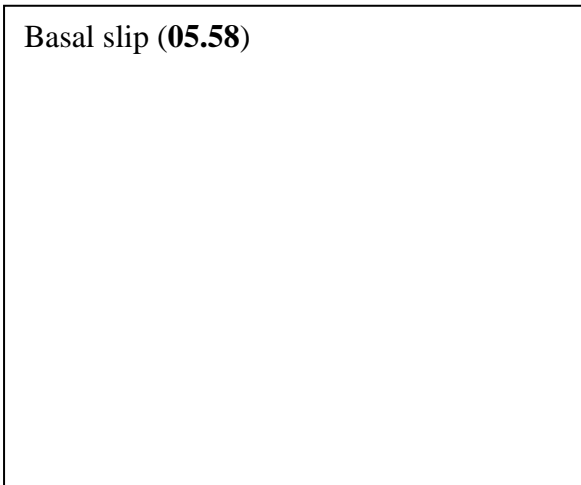
13. If there is more ablation than accumulation, how will the glacier respond?

05.49-06.50

This clip examines the two main processes of ice movement, basal slip and internal deformation. Pause the video to draw simple labelled sketches to show how these two processes operate.

Basal slip (**05.58**)

Internal deformation (**06.15**)



17. What is meant by the term 'dead ice' (09.22)?

09.35

18. Sólheimajökull is one of the most closely monitored glaciers in the world. Describe the techniques used to monitor the glacier.

10.59-11.45

19. What is the process of calving and how can it be dangerous?

20. Draw a simple diagram to show how calving may create a dangerous wave.



Did You Know?

In 2014, calving ice in Greenland created an enormous tsunami wave over 50m high!

11.57

21. How is Ragnar well prepared to work as a guide in this environment? Comment on his clothing, footwear and equipment.



How is Ragnar well prepared to work in this environment?

-
-
-
-
-

12.14

This next clip considers evidence of the glacial processes of abrasion and plucking

22. Draw simple labelled diagrams to describe the processes of abrasion and plucking

Abrasion (12.37)

Plucking (13.10)

Did You Know?

If abrasion involves very fine particles it can actually cause a rock face to become shiny and polished

23. What do scratches (striations) on rocks tell us about glacial processes and ice movement?

24. What evidence would you look for on a rocky surface to identify which process of erosion has taken place?

13.53

This next clip involves an interview with leading Icelandic glaciologist Thorsteinn Thorsteinsson

25. Thorsteinn Thorsteinsson is a glaciologist. Describe the work that he does.

Did You Know?

- Ice margins in Iceland have retreated by 20-50m annually since 1995
- Each year about 20 square km of new land is exposed by the retreating ice

14.25

26. Describe the changes that have taken place with Sólheimajökull glacier between 1997 and 2006.

27. Complete the table by writing the rate of advance/retreat in the blank boxes

Date	Rate of glacier advance/retreat (m)
Up to 1970	
1970-1995	
Since 1995	

28. Assuming a constant rate of retreat since 1995, calculate the total retreat of the glacier since 1995 to the present day.

29. Will Iceland's glaciers one day disappear?

15.32

This short clip of time lapse photography shows how the glacier changed between 2007 and 2015. You may want to watch it more than once.

30. Write a short commentary to describe the changes in the glacier from 2007-2015.

15.52

31. Why is Thorsteinn convinced that there is a clear link between rapid glacial melting and global warming?

16.34

32. Which groups of people may benefit from higher temperatures in the future?

33. What do you think Thorsteinn means when he describes the possible effects of global warming as being 'catastrophic'?
