## **Group Project 02**

Goal: to use simple Python-based simulations to explore glacial flow and to develop a sense of how a simple simulation can be used to inform your intuition about glaciers.

All groups.

(A) download the Jupyter notebook GroupProject\_02.ipynb

(B) open it in jupyter lab and run all the cells to verify that it works

(C) be warned that if you specify conditions in which the ice temperature T is outside the -50 to 0 degree V range in which A(T) is defined, and error will result.

Group 1, using Simulation 1.

(A) Critically discuss all the plots made by this simulation, so that you're confident that you know what they mean.

(B) Examine the effect of changing the geothermal gradient on the velocity of the glacier.

(C) Create a 5-minute PPTX of your results that you can present in class. Discuss what you learned and how it might help you understand actual glaciers.

Group 2, using Simulation 1.

(A) Critically discuss all the plots made by this simulation, so that you're confident that you know what they mean.

(B) Examine the effect of changing the bedrock slope on the velocity of the glacier.

(C) Create a 5-minute PPTX of your results that you can present in class. Discuss what you learned and how it might help you understand actual glaciers.

Group 3, using Simulation 2.

(A) Critically discuss all the plots made by this simulation, so that you're confident that you know what they mean.

(B) Examine the effect of making the temperature jump parameter TsO negative, so that the surface of the glacier is suddenly cooled.

(C) Create a 5-minute PPTX of your results that you can present in class. Discuss what you learned and how it might help you understand actual glaciers.

Group 4, using Simulation 3.

(A) Critically discuss all the plots made by this simulation, so that you're confident that you know what they mean.

(B) Examine the effect of period shorter and longer.

(C) Create a 5-minute PPTX of your results that you can present in class. Discuss what you learned and how it might help you understand actual glaciers.

Group 5, using Simulation 4.

(A) Critically discuss all the plots made by this simulation, so that you're confident that you know what they mean.

(B) Examine the effect of making the geothermal gradient larger.

(C) Create a 5-minute PPTX of your results that you can present in class. Discuss what you learned and how it might help you understand actual glaciers.

Group 6, using Simulation 5.

(A) Critically discuss all the plots made by this simulation, so that you're confident that you know what they mean.

(B) Examine the effect of making the geothermal gradient larger.

(C) Create a 5-minute PPTX of your results that you can present in class. Discuss what you learned and how it might help you understand actual glaciers.

**Group 7**, using Simulation 5.

(A) Critically discuss all the plots made by this simulation, so that you're confident that you know what they mean.

(B) Examine the effect of making the basement slope larger.

(C) Create a 5-minute PPTX of your results that you can present in class. Discuss what you learned and how it might help you understand actual glaciers.