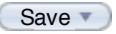


From: Archie Paulson <archie.paulson@colorado.edu>
Subject: **more glacier climate controls**
Date: February 13, 2008 3:58:59 PM MST
To: Chris Malley <cmalley@pixelzoom.com>
 1 Attachment, 16.9 KB 

Chris,

Here is how to get the climate settings from the second climate panel (the one where the user can edit the mass balance).

This second climate panel will have only two controls, not three as shown in the design doc. These two will be "Equilibrium Line Altitude" and "Maximum snowfall" (we will not need or use the "Mass Balance Slope"). They might be better as sliders rather than numerical fields, since their range needs to be constrained (ie, we can't let the user enter just any values there).

The stuff below still assumes that the temperature and snowfall are set as in my previous specifications (as reference values about zero). They do not use the absolute values that you have been using, but the difference is just a constant in either case.

You may refer to the "Climate" class in the python code (attached), or get back to me if you have any questions.

-Archie

#####

16. ELA control:

range from 1e3 to 5e3 (units m of elevation)
call this variable 'ela'
initial default ela should be calculated from the initial default climate

17. snowfall_max control:

range from 0 to 5 (units m/yr of accumulation)
call this variable 'snowfall_max'
initial default snowfall_max=2
note: this variable is used in the accumulation (see 4)

18. conversion of ELA to temperature and snowfall

given the ELA set from the control (see 16), called 'ela',
first calculate the ref_temp:
$$\text{ref_temp} = (\text{ela} - 4\text{e}3) / 200.$$

next calculate the ablation at the elevation of the ELA (see 5),
call this 'ablation_ela'
then find the snow_transition_elev from:
$$\text{snow_transition_elev} = \text{ela} - \text{snow_transition_width} * \tan(\pi * (\text{ablation_ela} / \text{snowfall_max} - 0.5))$$



[model.py \(16.9 KB\)](#)