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Interactive comment on "The Gregoriev Ice Cap length changes derived by 2-D ice flow line model for harmonic climate histories" *by* Y. V. Konovalov and O. V. Nagornov

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C36

Interactive comment on Solid Earth Discuss., 1, 55, 2009.



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Fig. 1. Temperature profiles in the steady-state glacier at different distances from the summit in the case of zero heat flux at the base.

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Fig. 2. Temperature profiles in the steady-state glacier at different distances from the summit in the case of Q=0.01 W/m².

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Fig. 3. Temperature profiles in the steady-state glacier at different distances from the summit in the case of $Q=0.02 \text{ W/m}^2$.

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Fig. 4. Basal temperature distributions along the flow line in the steady-state glacier obtained for different basal heat flux values.

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Fig. 5. Basal shear stress distribution along the flow line for t in the range 300..400 years of harmonic climate history with 500-years periodicity (glacier advance).



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Fig. 6. Basal temperature distribution along the flow line for t in the range 300..400 years of harmonic climate history with 500-years periodicity (glacier advance) in the case of Q=0.01 W/m^2 .



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W/m^2.

Fig. 7. Basal temperature distribution along the flow line for t in the range 400..500 years of

harmonic climate history with 500-years periodicity (glacier advance) in the case of Q=0.01



Fig. 8. Basal temperature distributions along the flow line after 500 years from the steady-state conditions obtained for different basal heat flux values.



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Basal Temperature after 500 years from the initial steady-state conditions, Q=0.05 W/nf -0.2 -0.4 -0.6 -0 ---- 0 - + - +10 a - * - · +20 a +30 a -1.2 +40 a +50 a +60 a +70 a -1.4 -+- +80 a -0 – +90 a + - +100 a -1.6 -1.8 1000 1500 2000 2500 3500 4000 4500 500 3000 Distance from the Summit, m

Temperature, 0C

Fig. 9. Basal temperature distribution along the flow line for t in the range 500..600 years of harmonic climate history with 500-years periodicity (glacier retreat) in the case of Q=0.05 W/m^2 .



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Fig. 10. Basal temperature distribution along the flow line for t in the range 600..700 years of harmonic climate history with 500-years periodicity (glacier retreat) in the case of Q=0.05 W/m².



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Fig. 11. Glacier length histories obtained for different basal heat flux values.

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