1. Introduction

The prognostic experiments were carried out for fast flowing ice streams on the north side of the Academy of Science Ice Cap in the Kongsfjorden Island, Svalbard Archipelago. The prognostic experiments are based on the

2. Field equations

2.1. Forward problem (the diagnostic equations)

The 2D flexural model includes the continuity equation for the ice sheet thickness, the horizontal momentum balance equation in terms of stress deviator components and the Glaci

2.2. Inverse problem for the friction coefficient

The friction coefficient n was calculated by the gradient minimization procedure for the "smoothing" functional (Thompson and Anfoss, 1977).

2.3. The prognostic equations

The 2D thermo-coupled prognostic experiments imply that the 2D flexural model includes the heat transfer equation (Pattyn, 2000, 2002)

2.4. References

Bassford et al., 2006

3. Results

3.1. C-C profile (Fig. 2): friction coefficient inversion and modelled histories

3.3. D-D profile (Fig. 2): modelled histories

3.4. D-D profile (Fig. 2): friction coefficient inversion and modelled histories

4. Summary

The prognostic experiments were carried out with those of the four fast flowing ice streams in the Academy of Science of Russia. The model used time- and stream index.

Fig. 3.3. The D-D profile evolution of the ice stream response to environmental impact which corresponds to the surface mass balance and the modelled temperature in Thompson et al. (2000)

Fig. 3.3. The D-D profile evolution of the ice stream response to environmental impact which corresponds to the surface mass balance in Thompson et al. (2000)

Fig. 3.2. The grounding line history, which shows the decline of the ice stream extent for the reference mass balance (Bassford et al., 2006)

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EGU2013-3486 Prognostic experiments for fast flowing ice streams in the Academy of Science Ice Cap: overall ice flux changes modelled by 2D ice flow line thermo-coupled model

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Ice flow velocity drops and this trend yield the diminution of ice flux into the North Pole and, thus, leads up the arctic ice decline. The modelled histories are in agreement with the observations and made a focus on the grounding zone. Ann. of Glac...