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ISOSTATIC EQUILIBRIUM GROUNDING LINE BETWEEN THE WEST ANTARCTIC ICE SHEET AND THE ROSS ICE SHELF

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ABSTRACT. Taking various retreat-rates for the presumed grounded ice sheet in the Ross embayment during Wisconsin time, as calculated by Thomas (Thomas and Bentley, 1978), and assuming a time constant of 4 400 years for isostatic rebound, a sea-floor uplift of 100 ± 50 m still to be expected in the grid western part of the Ross Ice Shelf can be calculated. The expected uplift diminishes from grid west to grid east, and is probably negligible in the eastern half of the shelf area. There are extensive areas near the present grounding line where the water depth beneath the shelf is less than 100 m, so that uplift would lead to grounding. As grounding occurred, the neighboring ice shelf would thicken, causing grounding to advance farther. This process would probably extend the grounding line to a position running grid north-eastward across the shelf from the seaward end of Roosevelt Island, deeply indented by the extensions of the present ice streams. Floating ice would remain in the grid south-eastern half of the shelf.

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A NUMERICAL INVESTIGATION OF THE LARGE SCALE DYNAMICS OF SEA ICE

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ABSTRACT. Several numerical simulations of the Arctic ice cover over a seasonal cycle are carried out. Two different types of constitutive laws are examined: rigid plastic and linear viscous. In both cases, the strength of the ice interaction is taken as a function of ice thickness