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An international research team's fieldwork, drilling and measuring melt rates and ice sheet movement in Greenland is showing that things are, in fact, more complicated than we thought.

Although the Greenland Ice Sheet initially speeds up each summer in its slow-motion race to the sea, the network of meltwater channels beneath the sheet is not necessarily forming the slushy racetrack that had been previously considered.

Observations of moulins (vertical conduits connecting water on top of the glacier down to the bed of the ice sheet) and boreholes in Greenland show that subglacial channels ameliorate the speedup caused by water delivery to the base of the ice sheet in the short term.

By mid summer, however, the channels stabilize and are unable to grow any larger.

The researchers' observations identify a previously unrecognized role of changes in hydraulically isolated regions of the bed in controlling evolution of subglacial drainage over summer.

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