



Kamb Ice Stream Surge History

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A basal zone up to 20 m thick of debris-laden ice was directly observed in Kamb Ice Stream, West Antarctica, using a video camera system lowered into boreholes drilled by hot-water jets. The debris content varies, sometimes abruptly, forming a sequence of layers that reflect the complex history of ice bed interaction. In most parts, the concentration of debris is low, a few percent by volume, with particles, often mud clots, dispersed in a matrix of clear ice. The nature of the debris distribution can be interpreted for information on specific time intervals in the history of Kamb Ice Stream flow dynamic including processes leading up to the recent termination of its streaming behavior. The surge behaviour of Kamb Ice Stream in a tide water environment is potentially a crucial trigger for the repeat disintegration of the West Antarctica ice sheet with corresponding sea level rise. Present rapid climate change will destabilize Kamb Ice Stream even more.