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Debris Degree Day Factor Glacier Melt Model in the Everest Region of Nepal

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Debris-covered glaciers have important implications on glacier melt and the development of glacial lakes. Detailed energy balance models have been greatly improving; however, these models require detailed meteorological data making them difficult to be used to estimate future melt in response to a changing climate. This study develops a debris degree day factor (dDDF) map for glaciers in the Everest Region of Nepal based on meteorological data and melt rates between 2003 and 2011. The dDDF map accounts for variations in debris thickness and the topography over the glacier. The performance of the dDDF model is assessed via comparison with more traditional energy balance models.