

Effect of precipitation seasonality on glacier mass balance

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The author have pointed out that glaciers under the summer monsoon were vulnerable against warming rather than those under the winter accumulation climate. Under the summer-accumulation type climate, warming will change the precipitation phase from snow to rain. This will induce not only reduce of accumulation, but also lowering of surface albedo will cause drastic melt. Since many climatic variables will affect glacier mass balance and its climatic sensitivity, however, it has been questioned whether only precipitation seasonality dominates them. The author examined a comprehensive model calculation changing annual amount, degree of seasonal concentration and seasonality of precipitation under different latitudes. The other meteorological variables are set as very simple periodic patterns. The result clearly supports our assertion that glacier mass balance and its climatic sensitivity are strongly affected by precipitation seasonality rather than the annual amount.