

Trends in floods in small Norwegian catchments – instantaneous vs daily peaks

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Abstract This study compares trends in both the magnitude and frequency of high flow events in small catchments in Norway, using both daily and instantaneous data. Datasets of 31 annual maxima and 24 peak over-threshold series were analysed to detect spatial and temporal changes, addressing the question of whether floods have increased and/or become more frequent in Norway, and for improving flood estimates for climate change adaptation. All series were assessed for temporal autocorrelation prior to analysis. The Mann-Kendall trend test was applied to study changes, with trends evaluated for field significance. Results suggest that trends in the frequency of high flow events are stronger than the trend in the magnitude of annual maxima flood events. Similar spatial patterns are obtained when using daily and instantaneous flood peak data, but the number of stations showing a trend in both annual maxima and peak over threshold series is less pronounced when comparing daily with instantaneous data.

Key words flood; streamflow trends; annual maxima; peak-over-threshold; small catchments; Norway