Spatio-temporal interpolation of gaps in time series

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Calculation of characteristic flows or design values are usually based on permanent streamflow records on a continuous or daily-mean basis. In case of failure of the measurement device hydrograph time series may exhibit erroneous values or gaps, which may be estimated from at-site and regional information in order to achieve the full time series. This paper proposes a space-time geostatistical method for interpolating low flow time series. The method is based on space-time cross-covariances between the subject time series and nearby, similar time series. We use a cross-validation approach based on hypothetical gaps. It is shown how the method performs for gaps of various length for a set of long-term time series in the Austrian province Burgenland.