Noise characteristics in GPS coordinate time series

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The aim of this paper is to assess the noise characteristics in weekly solutions time series of residual coordinates for 11 GPS stations, using the Allan variance analysis after a trend and periodic components have been removed by wavelet transform. The noise level is determined by the Allan deviation and the noise type by the slope of the Allan variance graph.

The data used are the weekly solution of residual coordinate sets of GPS stations, provided by CODE Analysis Centre of the IGS using the BERNES Software and referred to ITRF2000. The selected stations are well distributed and represent good measurements without observation gaps. The application of wavelet transform on these time series permits to better assess their trends and periodic components. The three position components (north, east and vertical) are affected by a combination of white and flicker noise. Both white and flicker noise levels are smallest in the east component and the largest in the vertical component.