Maps of coherence of GPS noise in the USA, 2013-2017
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Red points present positions of 16 reference points for which multiple coherence functions were estimated within moving time window of the length 5 days with mutual shift 1 day from 10 nearest operable GPS stations. Positions of reference points were found as centers of clusters by using k-means clustering procedure for cloud of GPS stations positions.

For all estimates of multiple coherence functions their maximum values with respect to frequencies were found and values of periods corresponding to these maximums were found as well.

Examples of several multiple coherence functions for different reference points estimated within time windows of the length 5 days (1440 samples with 5 minutes sampling step) from 10 nearest operable GPS stations for vertical component using vector autoregression model of 5th order.

Averaged maps of maximums of multiple coherence functions. Let’s take regular grid of the size 125×50 nodes which cover the rectangular domain (127°W, 65°W) and (30°N, 50°N). Each node of this regular grid will be regarded as reference point for which the sequence of multiple coherence functions will be estimated from 10 nearest operable stations within moving time window of the length 5 days with mutual shift 1 day. Thus, each time window presents some “elementary” map of spatial distribution of maximums of multiple coherence functions for 3 components of GPS signals. Let’s average all elementary maps from all time windows. This operation provides average maps of multiple coherence maximums.