

Variations in the Northern Hemisphere teleconnections since 1871

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Principal component analysis is a widely used statistical tool for identifying low-frequency modes of variability in climatology. Results of the analysis may differ significantly if we slightly shift the analyzed period. We applied moving PCA of 30, 40 and 50 years periods with one year step. This allows us to get more precise information about changes in explained variance, order and geographical position of modes. The winter (DJF) monthly means of 500 hPa geopotential heights of the long term reanalyses, 20CR were employed. We also calculated correlations between modes given for the whole period 1871-2010 and modes identified in the shorter seasons. The total number of 9 modes, which fits best for the whole period, were set for all shorter periods. We found out that results may vary a lot even if the analyzed period is almost the same (with one year difference only). We hypothesize that the total number of 9 modes does not fit for all shorter periods even in the case that the following period includes more than 97 % of the same data.