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Evolution profiles of annual cycle in global temperature fields during last 50 years

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This study used the pseudo-2D wavelet transformation to identify distinct regions of annual cycle, as well as its changes and shifts in temperature fields during the time period of 1951-2000. The temperature fields taken from the NCEP/NCAR reanalysis project were analyzed globally at different geopotential heights.

The pseudo-2D wavelet transformation is a new advanced technique that transforms the datasets, which yields information about presented oscillations, as well as their location in time and space. To describe annual cycles the analysis was set to identify variations with periods between 0.8 and 1.2 years only. Results point to several interesting peculiarities of the annual cycle in temperature fields, e.g. shape of the region where close to no annual cycle was detected, location of the most noticeable regions, temporal evolution of oscillatory patterns etc.