

The seasonal and dayly variation of meteorological parameters.

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The seasonal and daily variation of meteorological parameters is the main characteristics of climate. The convenient representation of the variations is the important task of regional meteorology. The decision is complicated because of the variations are observed simultaneously and must be described together.

We propose the method of description. The method uses the usual data of meteorological Services.

The method is based on the computation of sequential spectra. The sequential spectra differ from usual spectra, because in this method the spectrum is calculated several times. Each time the parameters of main harmonic is calculated and the harmonic is subtracted from the signal. The following calculation is conducted with subtracted signal. The procedure conducted until the investigated harmonics became a maximal ones. By using this method the harmonics of spectra of parameters on a combination of frequencies of Earth's rotations around the axis and around the Sun can be separated and parameters of the harmonics (period, amplitude and phases) can be calculated.

The sum of harmonics on the combination of frequencies of Earth's rotations around the axis and around the Sun is the representation of seasonal and daily variations of meteorological parameter.

The frequency of the combination is $\omega = i*D+k*S$, the value D is the frequency of Earth's rotation around the axis (period 1 day), S is the frequency of orbital motion of the Earth around the Sun (period 1 year). The sum of harmonics with different k and i = 0 is the seasonal variations. The sum of harmonic with different k and i=1 is the description of daily variations. This description changes during the season.

The method was tested by data of air temperature, air pressure and precipitation variations, recorded at point Terney (Russia, 46N, 137 E) for period 1966 –1984. The testing show that for description with proximity 5% we can use only harmonics with $i < 4$.For representation of seasonal variations it is necessary to take into account the harmonics with k =6, 8, which describe the variations caused by periodical changing of sea surface currents.

The method have been tested on Data of satellite mission Topex-Poseidon, recorded

the variation of air pressure. The data permit to reconstruct the harmonics with $i < 3$, $k < 8$. By using this data the spatial dependence of daily variations in tropical region of Pacific have been investigated.