One–dimensional spectral approach to the baroclinic instability estimation*

Nadežda Šinik

Geophysical Institute, Faculty of Science, University of Zagreb, Yugoslavia

The zonal flow baroclinic instability implies an eddy available potential energy (AP)' generation. This process is being accomplished primarily through a meridional temperature advection by the perturbation wind field. Therefore one can estimate the intensity of an air stream baroclinic instability over a given region in a quasigeostrophic and hydrostatic atmosphere by means of the temperature and geopotential fields correlation. Obviously such correlations depend upon the mutual position of these fields. Since they are often very irregular, their spectral decomposition turns out to be a necessary systematic approach to their correlation analysis. A simple analysis of the geopotential and the temperature T cospectra along a given isobaric cross-section may give an insight into a possible baroclinic development of various perturbations provided an „experienced" choice of the cross-section position and length.

In spite of the method crudeness several cases of its application indicated that it might be helpful in the weather forecasting over a smaller region since it provides a determination of the relevant perturbation magnitude.