



## A persistent fog in Sofia in January 2014: Analysis by equivalent potential temperature

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During the period 03-10/01/2014 in Sofia remained persistent fog. This led to difficulties in land transport, air traffic and increased general and especially respiratory morbidity. In this context, the prediction of similar episodes of prolonged and intense fog is of undeniable interest. Unfortunately, at this stage there is still much to be desired in terms of the forecasts' reliability. There are a number of reasons, but apparently the main reasons are the unclear links between specific synoptic situation, its dynamics and specific mechanisms for fog formation and especially the maintenance of its persistence in Sofia. Of great interest are also alternative raw data parameters for a more effective analysis of the fog situation.

The aim of this study is to reveal the conditions and the weather situation in their dynamics, the emergence and maintenance of this persistent fog. Our analysis is based on data from surface meteorological observations in basic and intermediate synoptic terms and soundings in Sofia. A number of surface and altitude maps for the weather situation over Europe and the Balkan Peninsula during that period were also used. The methods of our study are statistical modelling of time series and synoptic analysis. Essential tool in our consideration is the pseudo-potential temperature (Belinski, 1948), known in the literature as the equivalent potential temperature (Holton, 1973).

### References

Belinskii, B. A. Dynamic Meteorology, OGIZ, Gostehizdat, Moscow, St. Petersburg, 1948.  
Holton, J. R. An introduction to dynamic meteorology, Academic press, New York and London, 1973.