

Резюмета
от научните публикации на Николай Такучев, гл. ас. д-р,
във връзка с участието му в конкурса за доцент по „Екология и опазване
на екосистемите“, към АФ на Тракийски университет

Автореферат на дисертацията на тема:

1. ПРОУЧВАНЕ ВЛИЯНИЕТО НА КЛИМАТА И РЕЛЕФА В РАЙОНА НА ГР. СТАРА
ЗАГОРА ВЪРХУ ПОВЕДЕНИЕТО И МИГРАЦИЯТА НА ЗАМЪРСИТЕЛИ В
АТМОСФЕРНИЯ ВЪЗДУХ

STUDY OF THE INFLUENCE OF CLIMATE AND RELIEF IN THE REGION OF STARA ZAGORA ON
THE BEHAVIOR AND MIGRATION OF POLLUTANTS IN AMBIENT AIR

Summary

Introduction: The location of Stara Zagora determines specifics of air currents in the area, which in turn induce specific behavior and migration of air pollutants.

Goal: The aim of the study is to contribute to a better understanding of behavior and migration of air contaminants in the region.

Material and methods: Data from automatic measurement stations (AMS) in the region, Data from Regional Environmental Agency, Stara Zagora.

Results. As a result of the study it was found that:

1. Minimum wind speed in the area around the Automatic Measurement Station " Green wedge" has a decreasing trend in recent years from 2007 to 2012, respectively, the November's Planetary boundary layer dynamic stability increases. These phenomena are a prerequisite for above-threshold increased exposure to pollution by nitrogen dioxide around AMS "Green wedge" if no measures are taken to reduce urban emissions of nitrogen oxides .
2. Morning and evening peaks in the diurnal variation in the concentration of nitrogendioxide measured by AMS "Green wedge" in Stara Zagora are due to meteorological phenomena with diurnal periodicity:
 - a. Synthesis and decomposition of ozone
 - b. Local atmospheric circulation and
 - c. Diurnal variation of the planetary boundary layer dynamic stability. They are not due to the sudden increase in emissions at the beginning and the end of the workday.
3. In the time of research interest from 2007 to 2012 , in the region of Stara Zagora, increase: the minimum concentration of sulfur dioxide; concentration of fine particles, the minimum concentration of nitrogen dioxide, hydrogen sulfide concentrations , the concentration of carbon monoxide.
4. Military range " Zmeyovo " is not a source of migrating to Stara Zagora pollution of nitrogen dioxide.
5. Energy Complex "Maritza East" was and remains a major source of migrating contamination to the city of Stara Zagora.

2. Takuchev N., 2008. Analysis of Stara Zagora Air Pollution in the Period 2002 – 2004, type of pollutants, Regime, Climatic and Relief Prerequisites, Sources. Ecology and Future, Vol.VII, No 2, 3 – 12 p.

Abstract

Introduction. Stara Zagora town, South-East Bulgaria suffered of frequent intensive contaminations of the air in the period 2002-2004.

Goal. The contaminations were studied and the conclusions were reported in this article.

Material and method. The daily data from the observations in six stations for environmental monitoring with manual sampling, working together in the mentioned period, published in Internet, are used for the analysis. Three of them were situated in "Maritza Iztok" energy complex - with coal mining and thermal energy plants, and the rest three were in Stara Zagora – 40 kilometers to the North-West from the "Maritza Iztok" energy complex. The data for the discussed period contain the daily concentrations on some air pollutants as well as the daily meteorological characteristics. After the mentioned period the governmental Regional Agency of Environmental Monitoring in Stara Zagora stopped posting on its site daily data, suitable for analysis, without giving any explanation on the cause of this decision.

Results. Conclusions were drawn after the above mentioned analysis:

- Most intensive and frequent are the dust contaminations in the air over the city. The threshold limit values (TLV) frequently are exceeded. The contaminant increases
- in the mentioned period.
- Next by volume and frequency are the contaminations of the sulphuric dioxide. TLV are frequently exceeded. The contaminations with the sulphuric dioxide also become more frequent in the period.
- The contaminations with nitrogen dioxide increase in the period also but they remain under TLV.
- The analysis of the meteorological conditions in combination with the relief shows that the peak contaminations with the above-mentioned three pollutants were recorded in cases of air transportation to the city from South, South-East.
- The analysis of the contaminations with nitrogen dioxide (possibly released at blasts) in combination with the meteorological data and the relief excludes the military zone "Zmevo" as a source of intensive air contaminations for Stara Zagora.
- The analysis showed that the main source of dust is the city Stara Zagora itself. The contaminations of the air with dust are largest in the cases of air transport from south and from north as well. That effect has as climatic as well as urban prerequisites - the streets of the city are strait and are South-East, East-West situated, which coincides with the main wind directions for the city (from North). The contaminations can be reduced by regular street cleaning.