

Interactive comment on “Influence of meteorology on PM₁₀ trends and variability in Switzerland from 1991 to 2008” by I. Barmpadimos et al.

Anonymous Referee #2

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The submitted paper presents an interesting, long-term data set of 13 different measurement sites placed throughout Switzerland which are exposed to different emission and meteorological conditions. The variability of the locations, regarding types of the sites as well as meteorological environment, ensured an excellent basis for the planned evaluations and modeling activities. The paper addresses relevant scientific questions within the scope of ACP. The title reflects the content of the paper. The abstract is sound with the aims, research work and conclusions and it provides concise and complete summary. The literature review presented in the sections Introduction, Description of the statistical model as well as used for the discussion of the results and outlook shows good knowledge of the related literature. The number and quality of references are appropriate. The structure of the paper is adequate.

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The used methodology is in line with the aims, is clearly and sufficiently described. The quality assurance of the data (TSP, PM₁₀, Teom, beta attenuation, meteorological parameters) and validation of the modeling activities is adequate. The scientific methods and assumptions are valid and clearly outlined.

The consideration of possible influence variables/parameters (several meteorological variables, ABL, AWS, NAO) on the PM₁₀ concentrations was very thoughtful. The description, selection, quality control and validation (FAC2, Pearson correlation coefficient) of the statistical models (GAMs) are correct. Considering above mentioned the paper presents interesting concepts, ideas and tools.

The content of tables and figures supports the explanation and discussion of the results. The tables and figures are of good quality. The amount and quality of supplementary material is appropriate and sufficient. The quality of the English language is good, the manuscript is clearly and fluently written.

For me, the real value of the paper is a statistical verification of often assumed, but seldom confirmed relations and causes for distinct PM₁₀ behaviors during different seasons of the year and distinct meteorological situations. The gathered results were intensely discussed by authors and showed many interesting relations and causes for elevated or low concentration levels.

Another positive outcome of the study is that abatement strategies in Switzerland and regionally have shown positive results. The fact, that even shorter time series of PM₁₀ data sets can provide identification of PM₁₀ trends in concentration levels is a clear invitation for international research community to reproduce the study in their geographical areas/regions. The results are sufficient to support the interpretations and conclusions. The conclusions are interesting for broader community and substantial.

I found only one minor mistake: page 26987, line 1 and 11: “Table 4” should be changed with “Table 5”.

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I do strongly recommend publication of the proposed paper.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 26961, 2010.

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