

***Interactive comment on* “Relationship between
particulate matter and childhood asthma – basis
of a future warning system for Central Phoenix”
by R. Dimitrova et al.**

Anonymous Referee #2

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The study found a 12.6% increase in the log odds of asthma emergency room visits/hospitalisations for a 36 microgram*m⁻³ PM₁₀ increase among the 5-17 yr old - a finding well in line with e.g. the 5% increase per 10 microgram*m⁻³ PM₁₀ reported by Sicard et al. (The Aggregate Risk Index: An intuitive tool providing the health risks of air pollution to health care community and public. Atmospheric Environment (2011). It is a common finding that boys are more at risk than girls and therefore somewhat worrying that the study did not observe any gender differences. Do the authors have any explanation for this? Other important risks than PM exposure for asthma exacerbations exist, which were not accounted for. Effects of temperature, humidity and in particular aeroallergens were not included in the model and such effects are likely

to vary with time so that the case-crossover does not outbalance them. This weakens the results and should be discussed. It is stated in the paper that the goal "to clarify the association of asthma incidents (primarily emergency department visits and hospital admissions with a diagnosis of asthma)". In the text, however, the word incidence is used, though it would be more appropriate to use "emergency visits and hospitalisations". Distinguishing between these is not necessarily trivial, as the differences observed could be related to changed severity rather than changed incidence of asthma. Differences in behaviour such as spending more time outdoors or turning on air conditioning are likely to affect the incidence of asthma attacks and hospitalisations and could affect whether PM10, ozone or another pollutant is found to be most strongly associated with the disease. These issues are not discussed either. Despite the long introduction (which could be shortened, in my opinion) there is no strong evidence that PM10 is the most important causative pollutant. The purpose of the study is to support development of a future warning system. In this respect, the focus on PM10 may be well chosen. The study does not address other pollutants and could thus not inform decision makers on whether PM10 warning is more efficient than, e.g. ozone or whether there is a risk of false sense of security among asthmatics with a PM10 warning system not warning on "low PM10 high ozone days". In my view, the manuscript in its current form is unbalanced in favour of PM10. A warning system not integrating aeroallergens, weather and possibly ozone may not give best value for the money.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 28627, 2011.

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