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 weak-
eNS 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 in-
cidence is used, though it would be more appropriate to use “emergency visits and 
hospitalisations”. Distinguishing between these is not necessarily trivial, as the differ-
ences 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 de-
cision 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.