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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The Total Solar Eclipse of March 2006: overview" *by* E. Gerasopoulos et al.

K. Aplin (Referee)

k.l.aplin@rl.ac.uk

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General

This is an overview paper which presumably will form the introductory part of the forthcoming Special Issue of ACP on the March 2006 total solar eclipse over south-Eastern Europe and Africa. It summarises and synthesises the measurements that took place and should be published, so that there is a summary document for what would otherwise be a disparate collection of papers. Figure 9 in particular does a good job at this synthesis. In some senses the paper does not present novel work since this is contained in the individual papers, but publication is recommended nevertheless, as an overview/introduction for the Special Issue is needed. I also see a role for a non-technical summary of all the papers published, so that researchers in one particular area can read non-specialist descriptions of other findings.

It was difficult to distinguish amongst the references the papers that are intended for the Special Issue from the general eclipse literature, particularly as some papers discuss the same eclipse but are not part of the Special Issue. Some cited papers are also not listed in the references (e.g. Zerefos et al, 2007) and it is not clear whether this is intentional or not. This could be made clearer if Table 1 was organised by the experiments carried out, to drive it by science rather than administrative entities. References to the Special Issue papers arising could then be included. Clearly some iteration will be needed as the specific papers go through the review process, but this would better define the role of the overview paper.

Specific comments

The abstract should be modified so that it contains qualitative scientific results rather than just a description of the experiments carried out. What is the single most important scientific finding from the suite of experiments undertaken?

Section 1

It is not universally accepted that Eddington's experiment proved general relativity - see The Golem by Collins and Pinch for an alternative discussion.

Rather than a list of the meetings organised on eclipses, which does not show anything, it would be more interesting to see a list of the scientific applications of eclipses to get a feel for why astronomers are especially interested in them.

Section 2

Figure 2: is difficult to see because the countries and the isobars are the same thickness. What is the star in the middle? What is the red text at the top?

It would be interesting to see a discussion of if and how the synoptic weather conditions were suppressed by the eclipse.

Section 3

ACPD

7, S7816–S7818, 2007

Figure 5: The comments made in the technical corrections before publication of the discussion paper still stand. They are repeated here: "The use of a single line for eclipse maximum is misleading as the maximum occurs at a slightly different time at each of the locations used. Also for the KAST station the single line for "maximum" is not appropriate since totality lasts a finite period of time." Also - is it necessary to have a second, identical, y-axis?

Figure 6 would be more useful if it were modified to show the region studied (like Figure 3).

The Dst and Ae indices should be explained, as not everyone with a general interest in eclipses will have heard of them.

Figure 7 needs to be labelled (a), (b), etc and a legend added to the plot. (a) should be rescaled. Are (a) and (b) averages?

Aspects of section 3.4 contained terms that not all readers of ACP will be familiar with. This section should be re-written to be understandable to the average atmospheric chemist or physicist, for example, defining terms such as mesophytic. The last sentence of section 3.4.2 was particularly difficult to understand.

Technical comments

The use of colour is heavily relied upon in the figures and the authors should take special care to make sure they are legible when printed out in black and white (e.g. Fig 4 could have one of the traces as a thicker or dotted line).

Throughout the paper the authors refer to "last contact", when the astronomical term is "fourth contact"

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