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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The Eyjafjöll explosive volcanic eruption from a microwave weather radar perspective" *by* F. S. Marzano et al.

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P. Speirs (Referee 2) pjs27@st-andrews.ac.uk Received and published: 13 July 2011

1 General comments This is an important and interesting paper detailing the application of the VARR technique developed by Marzano to the Icelandic eruption. Very definitely worthy of publication. »> We thank the reviewer for his appreciation of the contents of the submitted work. Our replies follow the symbol "»>" and the modifications are highlighted in "yellow" within the revised text.

I am very happy with the paper overall, but there are many places where the language needs adjusted. The meaning is always clear, but it would be good if the language is

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corrected before final publication. I have listed those that I found (but there will undoubtedly be more) in the Technical Corrections section below along with some suggestions of what things might be changed to. »> We thank the reviewer for his patient reading and suggestions of the English wording. We have accepted all indications and, where possible, improved the language if needed.

There are also a couple of other very minor points, also noted in Technical Corrections. »> These points have been taken into account within the revised text.

2 Specific Comments No specific comments. Quite happy with the content of the paper as-is. »> Thanks for the appreciation: we believe that our effort to illustrate the potential of weather radar based products for ash cloud monitoring was worth of doing.

3 Technical Corrections

3.1 Language Page 2, line 2/3 ". . .and volcanic ash radar retrieval. . ." should perhaps be either ". . .and the volcanic ash radar retrieval. . ." or ". . .and a volcanic ash radar retrieval. . .". »> Agreed.

Page 2, line 7 ". . .20km far from. . ." should probably be ". . .20km from. . ." »> Agreed.

Page 2, line 24 ". . .affect fly safety. . ." should be ". . .affect flight safety. . .". »> Corrected.

Page 2, line 24 ". . .and have huge recoils on air traffic control, imposing a necessary re-routing of airways. . ." should perhaps be something like ". . .and have huge knock-on effects on air traffic control, making necessary the re-routing of airways. . ." or similar. »> Agreed.

Page 2 line 26/page 3 line 1 ". . .people living in the nearby volcano area" should perhaps be ". . .people living near the volcano" or ". . .people living in the area near the volcano" »> Agreed.

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Page 3, line 10 ". . .eruption has been lasting for. . ." to ". . .eruption lasted for. . ." »> Corrected.

Page 6, line 7: "Last Sect. 4 is. . ." to "Lastly, Sect. 4. . ." or similar. »> Agreed.

Page 7, line 12 ". . .to north of the volcano" to ". . .to the north of the volcano" »> Corrected.

Page 10, line 9 I would suggest that "viz.", "specifically", "namely" (or nothing at all) might be better than "i.e." in this case. »> Agreed.

Page 14, line 10 suggest replacing "e.g." with "i.e." or similar. »> Corrected.

Page 15, line 7 ". . .increase also the detected. . ." to "..increase the detected. . ." »> Corrected.

Page 17, lines 15 and 16 Perhaps change to ". . . The two approaches do not necessarily provide the same result, as will be shown later. . . ." »> Corrected.

Page 23, line 10 "complicate" to "complicated" »> Corrected.

3.2 Other

Page 11 lines 17-23. Here you give the parameters for the Gaussian random distributions, but you do not include the standard deviation for Dn here. It is given in the caption for Table 1, but I think it should also appear in the main text. »> We agreed with reviewer so that the text has been modified.

Page 14 line 24/25. I think you can drop "vice versa, _/180 converts decimal degrees into radians". Also not sure that you need to define asin or atan2, but it doesn't do any harm. »> Agreed (we left the definitions of asin and atan2).

Page 17, lines 15 and 16 You state here that the two approaches do not necessarily produce the same result. I am not entirely clear on why this is the case. Perhaps I am just missing something obvious, but could you provide a little more explanation

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on this? »> The two approaches do not necessarily provide the same result due to the different and independent adopted thresholds in terms of radar reflectivity and ash concentration. Of course, if the thresholds are related by the power law relation given by Eq. (4), the results should be the same. We have specified this aspect in the revised text.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/11/C7706/2011/acpd-11-C7706-2011-supplement.pdf

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Interactive comment on Atmos. Chem. Phys. Discuss., 11, 12367, 2011.