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Supplement of

Quantifying the mass loading of particles in an ash cloud remobilized from tephra deposits on Iceland

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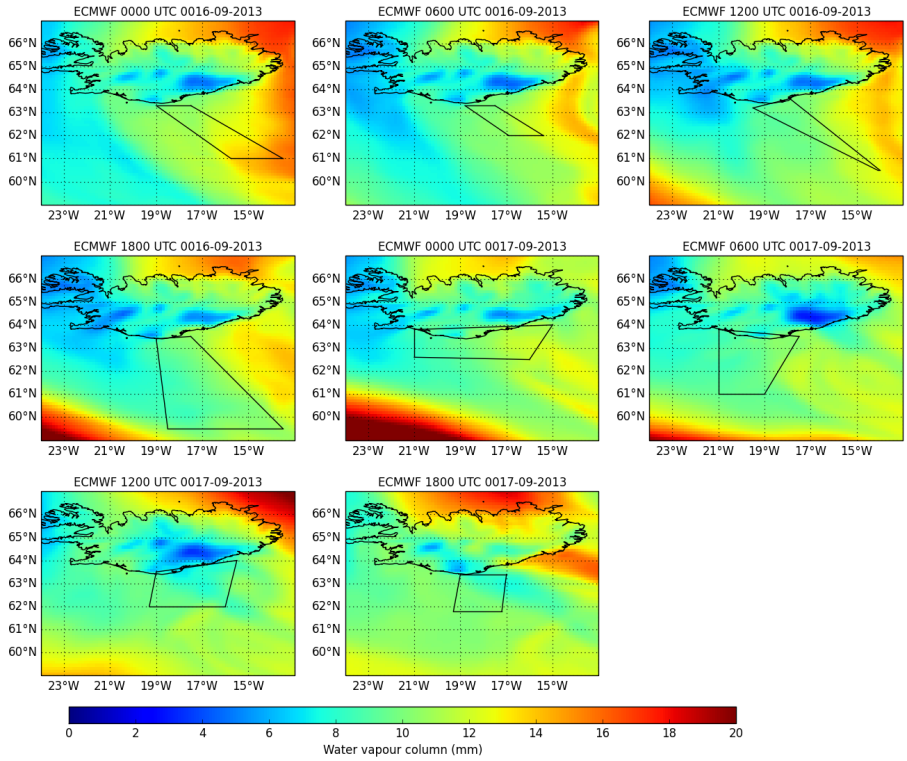

Figure S1: The ECMWF water vapour column for 16-17 September 2013. Areas identified as containing resuspended ash, see Section 3.1.2, are enclosed within the black polygons.

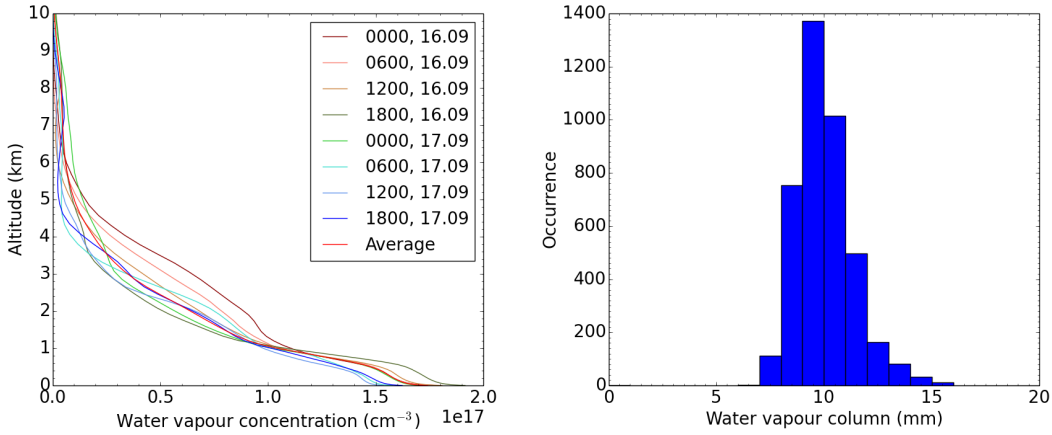

Figure S2: (Left) Averaged ECMWF water vapour profiles for each of the plots in Fig. S1 and one profile (red line) averaged over all plots. Note that only profiles within the areas enclosed by the black rectangles in Fig. S1 are included in the averages. (Right) The occurrence of water vapour columns within the areas enclosed by the black rectangles in Fig. S1. Mean water column of all profiles is 10.02 mm.

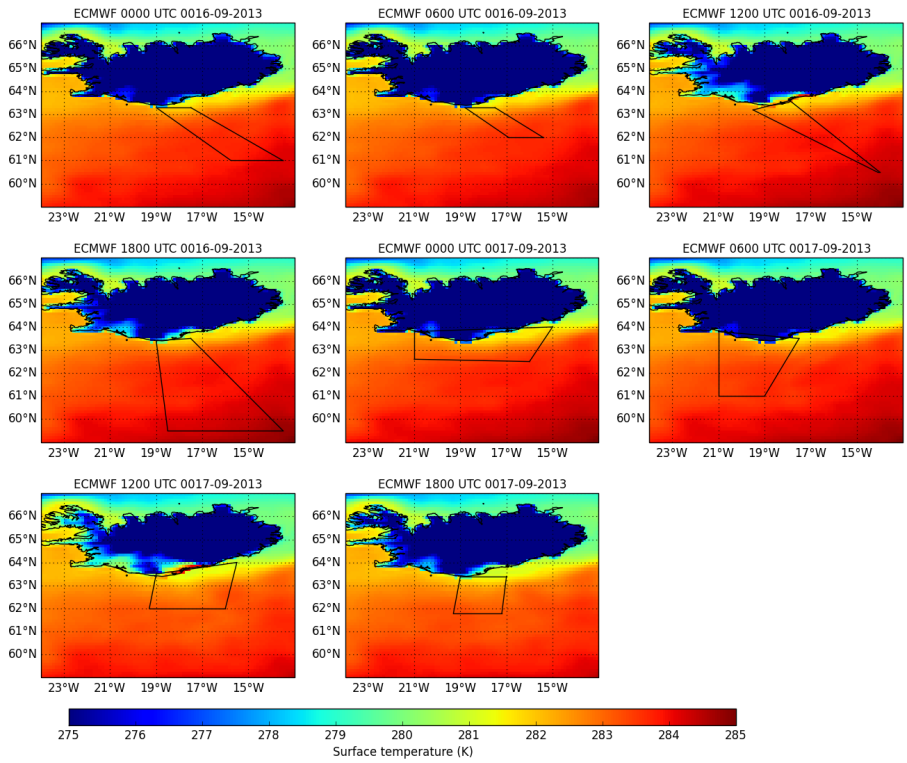

Figure S3: The ECMWF surface temperature for 16-17 September 2013. Areas identified as containing resuspended ash, see Section 3.1.2, are enclosed within the black polygons.

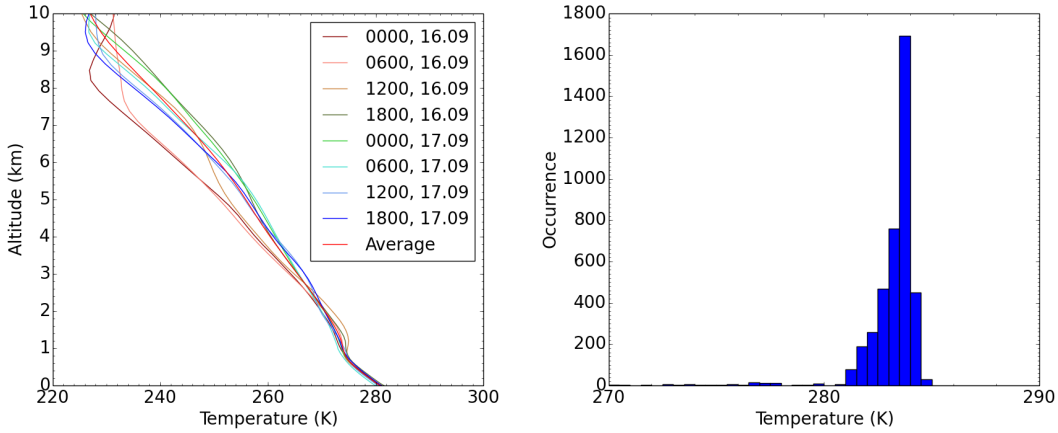

Figure S4: (Left) Averaged ECMWF temperature profiles for each of the plots in Fig. S3 and one profile (red line) averaged over all plots. Note that only profiles within the areas enclosed by the black rectangles in Fig. S3 are included in the averages. (Right) The occurrence of skin temperatures within the areas enclosed by the black rectangles in Fig. S3. The mean skin temperature is 283.12 K.

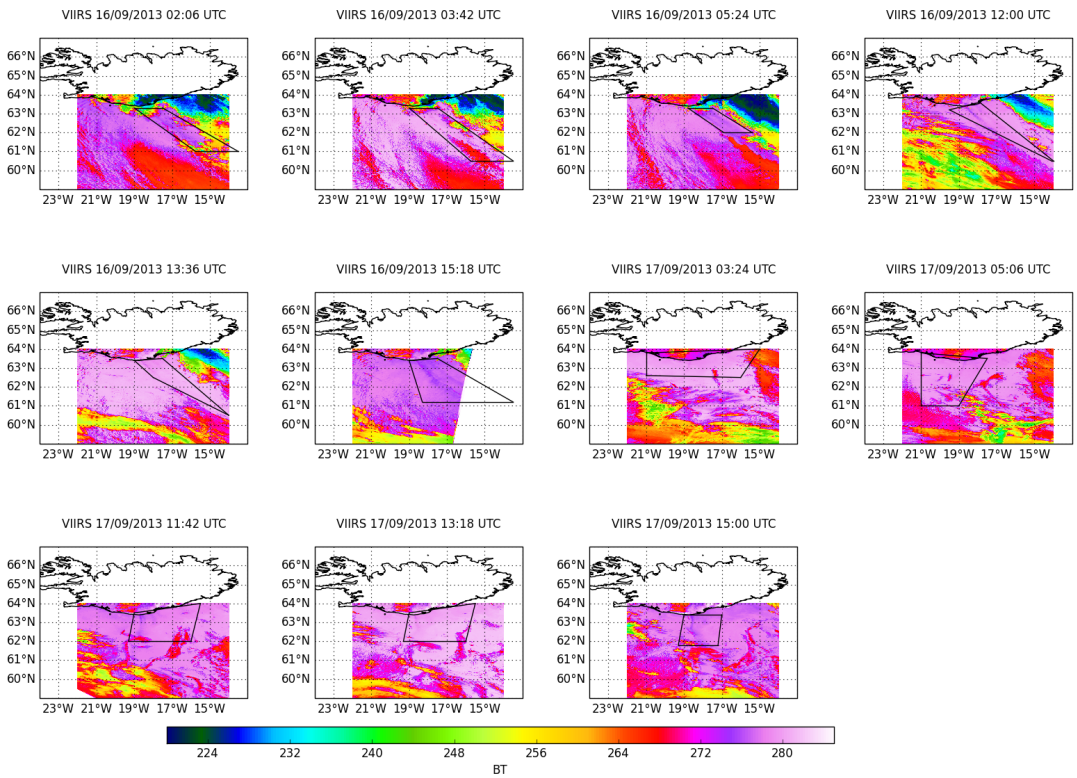

Figure S5: VIIRS M15 band brightness temperatures for 16-17 September 2013. Areas identified as containing resuspended ash, see Section 3.1.2, are enclosed within the black polygons.

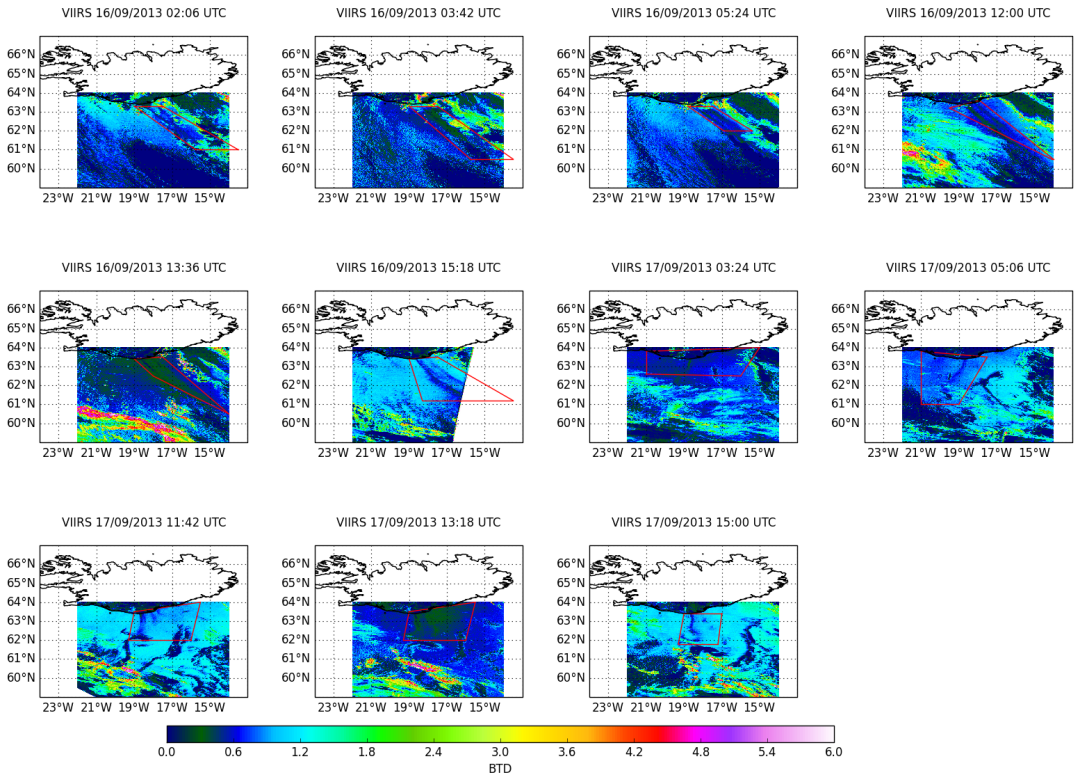

Figure S6: VIIRS brightness temperatures differences, M15-M16, for the 16–17 September 2013. Areas identified as containing resuspended ash, see Section 3.1.2, are enclosed within the red polygons.

S7. Shell script used to download the VIIRS data.

```
#!/usr/bin/env sh
# NASA VIIRS Atmosphere SIPS, UW SSEC
# http://sips.ssec.wisc.edu
# Status: success
# Code: 200
# Message:
# Results: 50
# Fields: url
xargs -t -n1 -P4 curl -sO <<EOF
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