Supplementary Materials

**Analysis of non-methane hydrocarbon data from a monitoring station affected by oil and gas development in the Eagle Ford shale, Texas**

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**Summary**

This supplementary file consists of two large Tables referred to from sections 3.1 and 3.3, respectively, three additional Figures (Figures S1-S3) referred to from sections 3.2 and 3.4, respectively, and four independent files. The first three of these files are animated gif images of plume dispersion calculations carried out by NOAA’s Air Resources Laboratory (ARL) HYSPLIT dispersion model, available at <http://ready.arl.noaa.gov/HYSPLIT_disp.php>. The model was initially run in fall 2014, but reruns were produced in summer 2015 to achieve a uniform model output and display for this manuscript. The model runs depict plume dispersion calculations for 5-7 March 2014 for south Texas (Figures S4-S6). The model runs used the NAM (Eta) 12-km Forecast data set (<http://ready.arl.noaa.gov/data/archives/nam12/README.TXT>) but were also performed using the Edas 40-km resolution data sets (<http://ready.arl.noaa.gov/edas40.php>) with no significant differences. Release amounts were set to a “generic mass” of 1, and the model was run for 24 hours in each case. All models were started at 2000 h UTC, 1400 h local standard time. Release height was set between 10 and 20 m above ground, for 24 hours, and the plumes depict integrated surface layer (0-100 m) abundances. Note that the Floresville monitor location is approximately at 29.13 degrees N and 98.15 degrees W, which is 36 km from the presumed source, southeast of San Antonio, and can be found following the depicted road from San Antonio toward the source.

A pdf file containing all graphics is available from the corresponding author.

The last two files comprise a photograph (Figure S7) taken in the vicinity of the presumed emitter site on 6 March 2014, and a mpeg-4 video, both taken by Sharon Wilson, the Texas organizer for Earthworks (<https://www.earthworksaction.org/>). Both the photograph and video illustrate local conditions at the time. The white “haze” in the video occurs due to IR absorbing hydrocarbons, and is clearly delineated from a dark sky, which illustrates a shallow atmospheric boundary layer restricting the emitted hydrocarbons to the surface air layer.

**References**

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