

**Continuous Methane Emissions from the Oil and Gas Industry in the Permian Basin**

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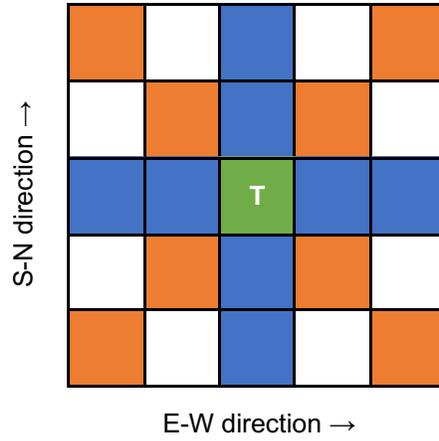
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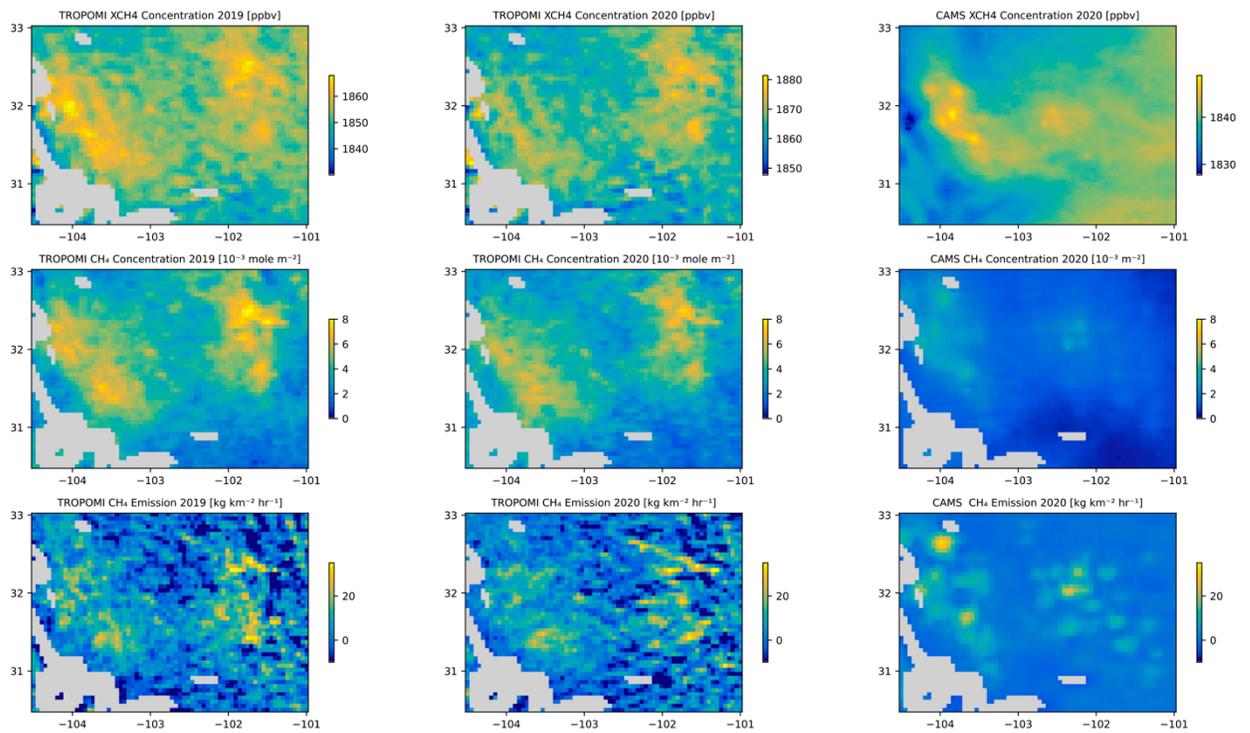
<sup>7</sup> National Center for Atmospheric Research, Boulder, CO, United States.

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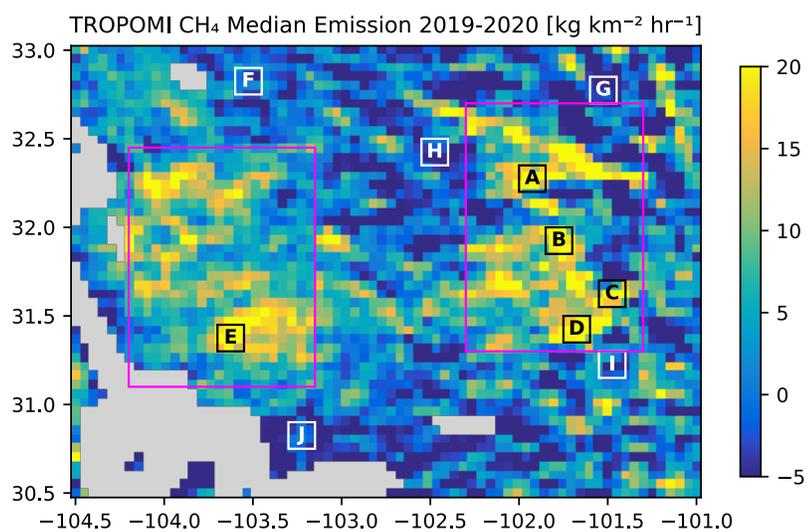
Figures S1 to S4



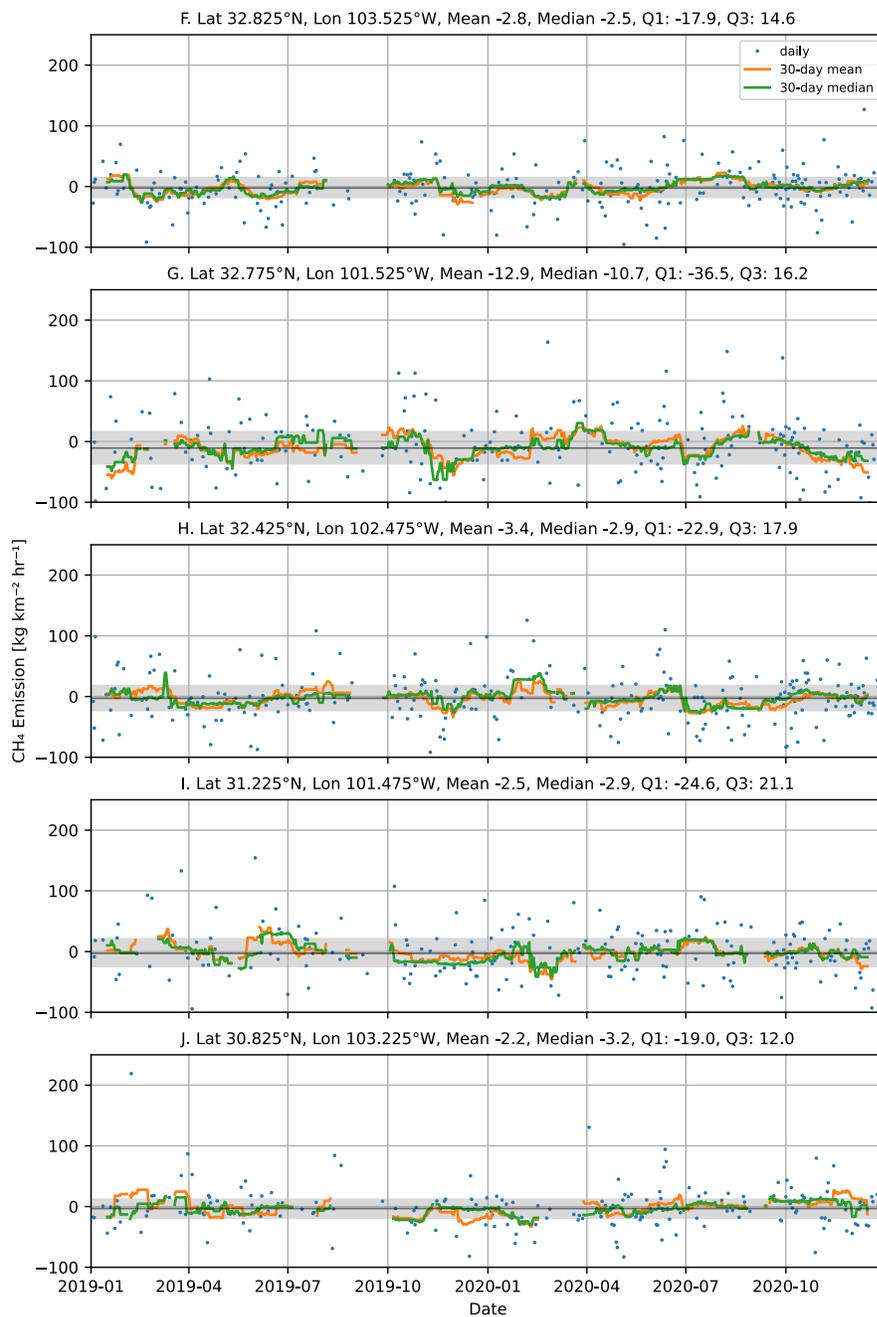
**Figure S1.** Schematic view of the ground pixels used to compute the divergence. For the green target pixel the standard divergence is computed based on the blue pixels. The rotated divergence is computed based on the orange pixels.



**Figure S2.** Top row: median XCH<sub>4</sub> for Tropomi for 2019 (left), 2020 (middle) and for the CAMS model data for 2020. Middle row: same as top row, but for the background corrected CH<sub>4</sub> column concentrations. Bottom row: same as top row, but for the CH<sub>4</sub> emissions derived with the divergence method.



**Figure S3.** CH<sub>4</sub> median emission with the five selected locations with high emissions (labeled A-E in black) and background emissions (labeled F-J in white). The pink boxes indicate the areas used for computing the statistics for the Delaware and Midland sub-basins



**Figure S4.** Time series for five locations with background CH<sub>4</sub> emissions. The blue dots are the daily data, the orange line the 30-day running mean and the green line represents the 30-day running median. Running mean and medians are only shown when at least 5 of the 30 days contain valid data. The grey area indicates the interquartile range and the black line the median over the whole time period.