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Peer reviewed

In the version of the article initially published, several errors were present and have been corrected in the HTML and PDF versions of the article and Supplementary Information. The main results, conclusions, and our interpretations of the data remain unchanged. See the new Supplementary Information Section S15 for a more detailed description of the errors corrected and the resulting effects on the analysis.

1. Data Processing and Method Corrections

- a. *Overflight count correction*: We previously used pre-computed source coverage data for some Carbon Mapper campaigns that was computed differently than was required for our analysis. We have re-computed Carbon Mapper source coverage based on flightline polygons and source coordinates.
- b. *Transition point computation, well sites*: The updated version now correctly compares the cumulative emissions distribution of simulated well site emissions with that of aerially detected sources (rather than plumes) when computing the transition point.
- c. *Transition point computation, midstream*: Additionally, the transition point calculation has been corrected to exclude aerially detected midstream emissions below the transition point, which was previously leading to double counting of these emissions. This error was not present for upstream (well site) emissions.

2. Calculation Errors

- a. *Unit error*: We corrected a specific unit conversion error affecting well site emissions in the Kairos Fort Worth dataset. Across all datasets, we also correct the conversion factor for converting from standard volume to mass for midstream emissions.
- b. *Sorting error*: We correct code that was applying incorrect sorting when computing correction factors to account for partial detection at well sites.

3. Small typographical corrections were made in Figure 1b and SI Section S4.1.

The following practices may help researchers conducting similar analyses avoid making similar errors: 1) Clear, accessible documentation explaining the interpretation of all columns in data input tables and all internal variables within the model, 2) Simple cross-check calculations computed before and after unit conversions.

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