Data Description

Xiao Lu, 6 January 2023
Contact: luxiao25@mail.sysu.edu.cn

This repository contains data for "Observation-derived 2010-2019 trends in methane emissions and intensities from US oil and gas fields tied to activity metrics" by Lu et al. (2023).

1. In-situ methane measurements from the GLOBALVIEWplus CH4 ObsPack product is available from https://search.datacite.org/works/10.25925/20210401, with release note described in https://gml.noaa.gov/ccgg/obspack/release_notes.html#obspack_ch4_1_GLOBALVIEWplus. These data support analyses of Fig.1a.

2. The University of Leicester GOSAT Proxy v9.0 XCH4 data are available from the Centre for Environmental Data Analysis data repository at https://doi.org/10.5285/18ef8247f52a4cb6a14013f8235cc1eb. These data support analyses of Fig.1a.

3. Prior_emissions*.nc describe sectoral methane emissions over the North America at 0.5°×0.625° resolution used prior estimate for the inversion. The same prior emissions in North America are used for all years, so there is no trend in prior assumption. These data support analyses of Fig.1b.

4. Posterior_emissions*.nc describe yearly posterior sectoral methane emissions methane emissions over the North America at 0.5°×0.625° resolution, 2010-2019. These data support analyses of Fig.1c and 1d.

5. Region_emission*.csv describe yearly posterior oil/gas emissions from the BASE inversion and range from the inversion ensemble, as well as activity metrics (oil/gas production, number of active wells and new wells) for the US and individual regions, 2010-2019. These data support analyses of Fig.2 and Fig.3.

6. Methane_intensity.csv describe yearly methane intensity for US and individual regions, 2010-2019. Mean methane intensity and trends, as well as the respective range from the inversion ensemble are also calculated. These data support analyses of Fig.4.