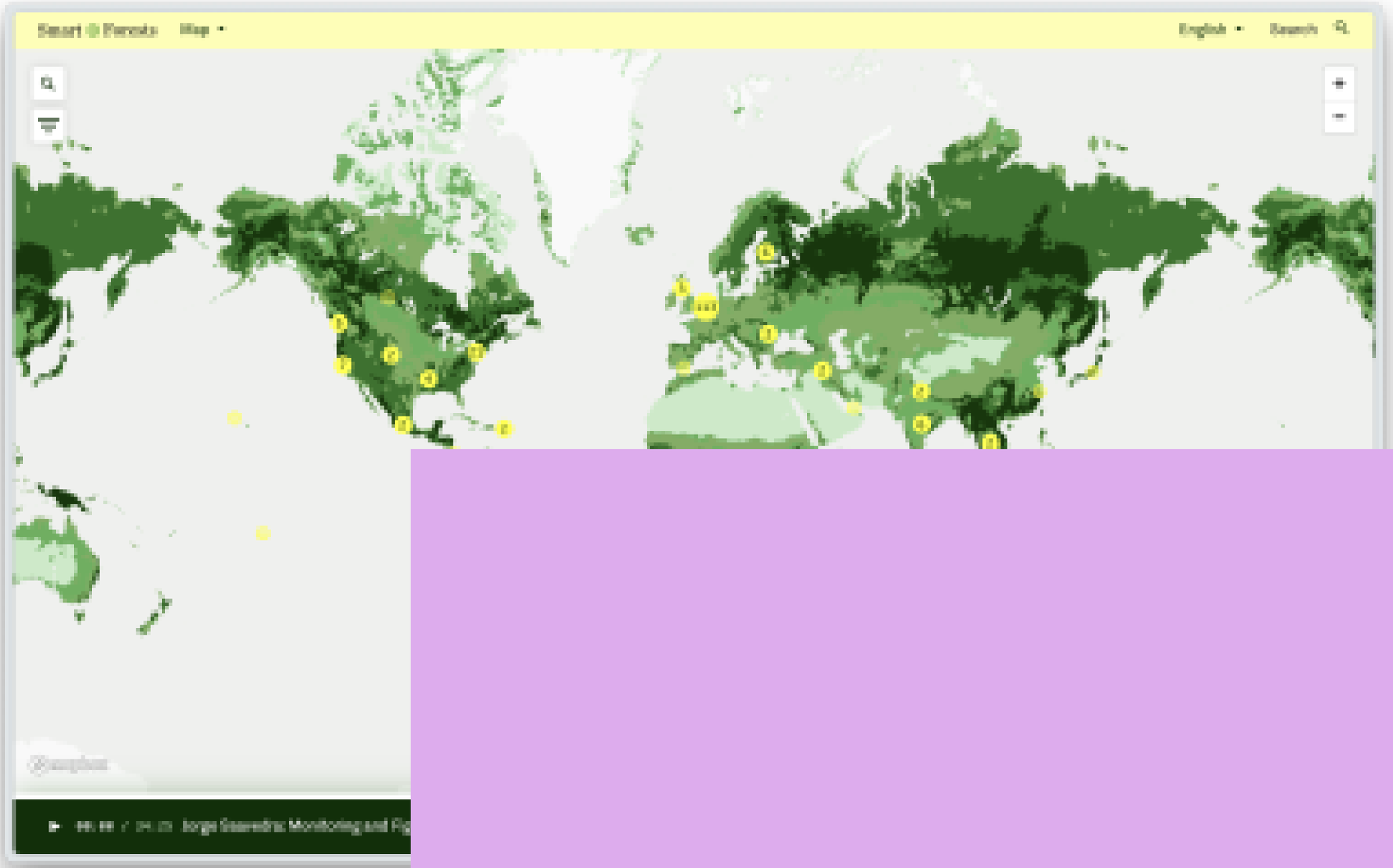
ME-NET
Design and Development Process

COMMON KNOWLEDGE

Common Knowledge is a not-for-profit worker co-op that builds digital tools for social and climate justice.


Smart Forests
Map
English
Search

A prototype web app to explore the impact of methane on respiratory and mental health.

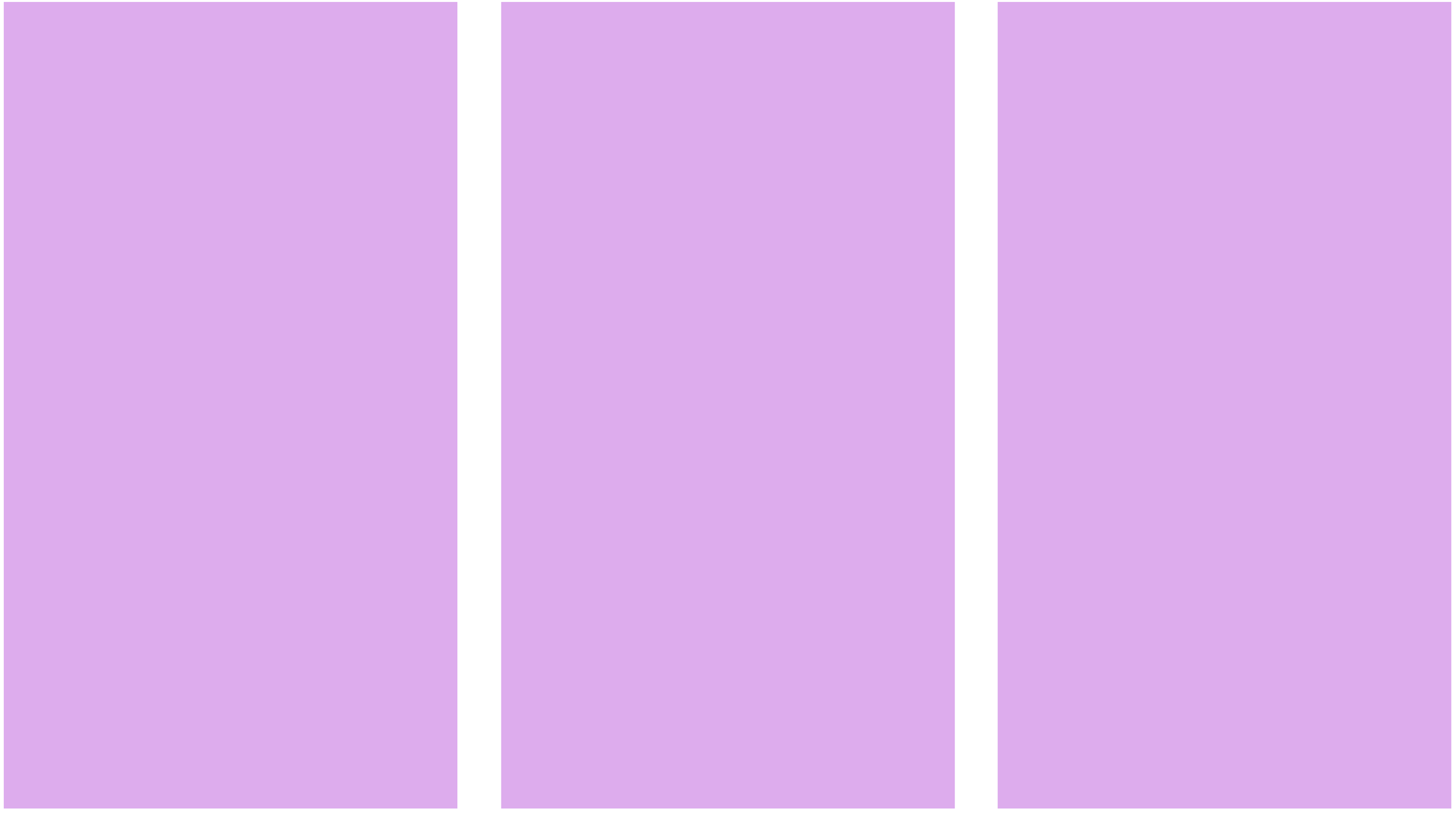
Understanding the impact of methane on health → Educational modules

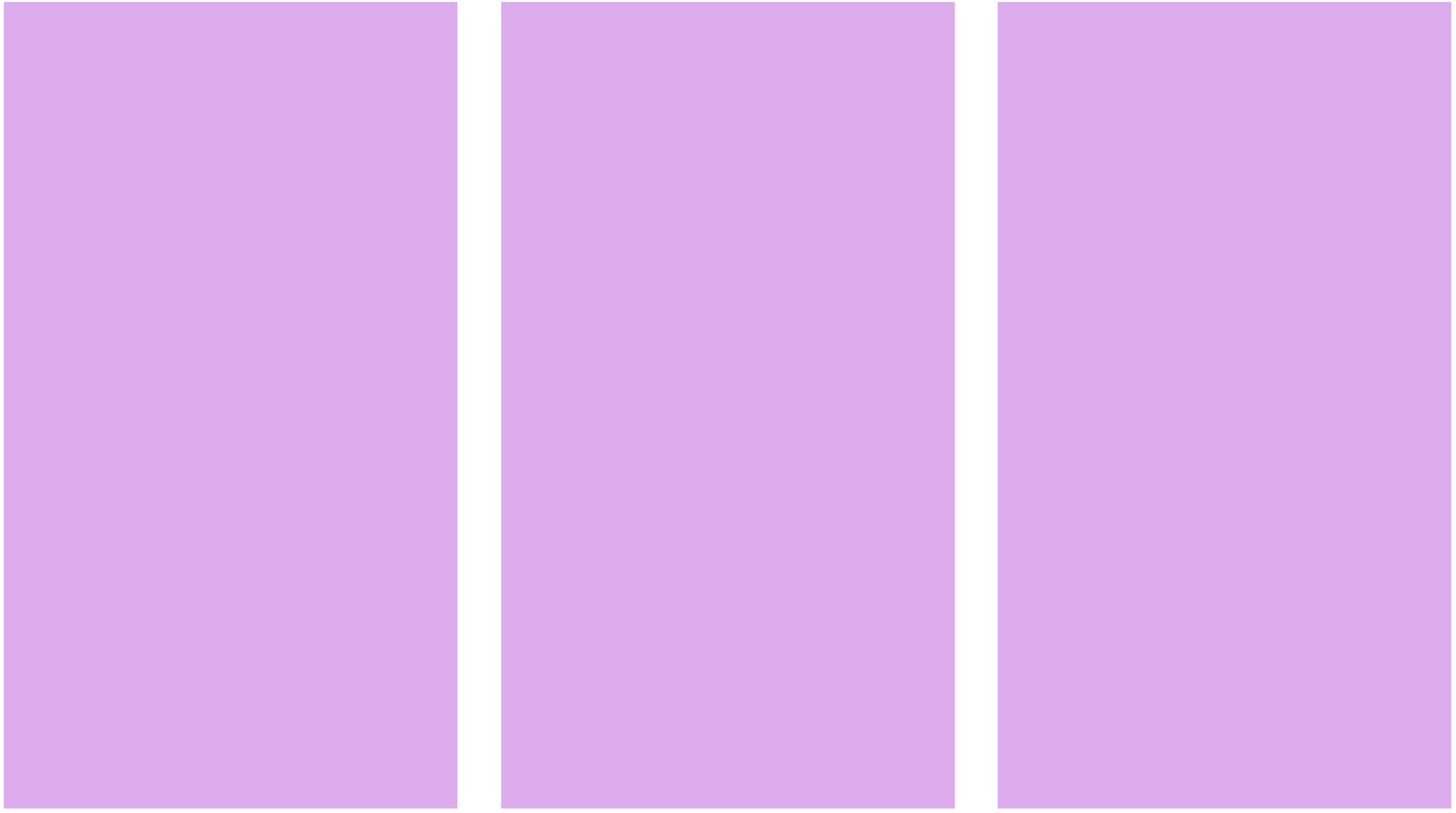
Self-reporting health symptoms → Diarying app

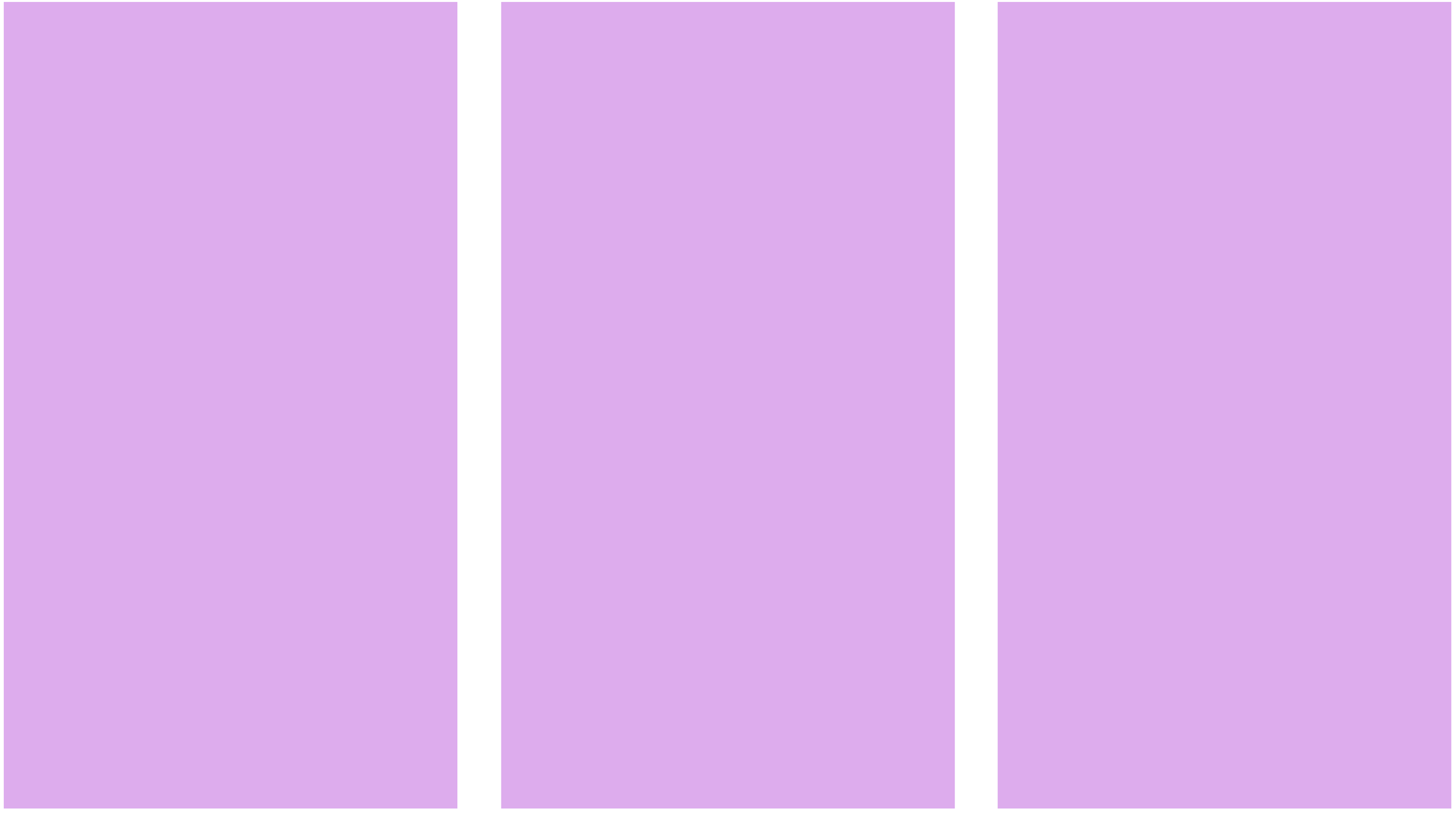
Mapping methane emissions over time → Air pollution impact map

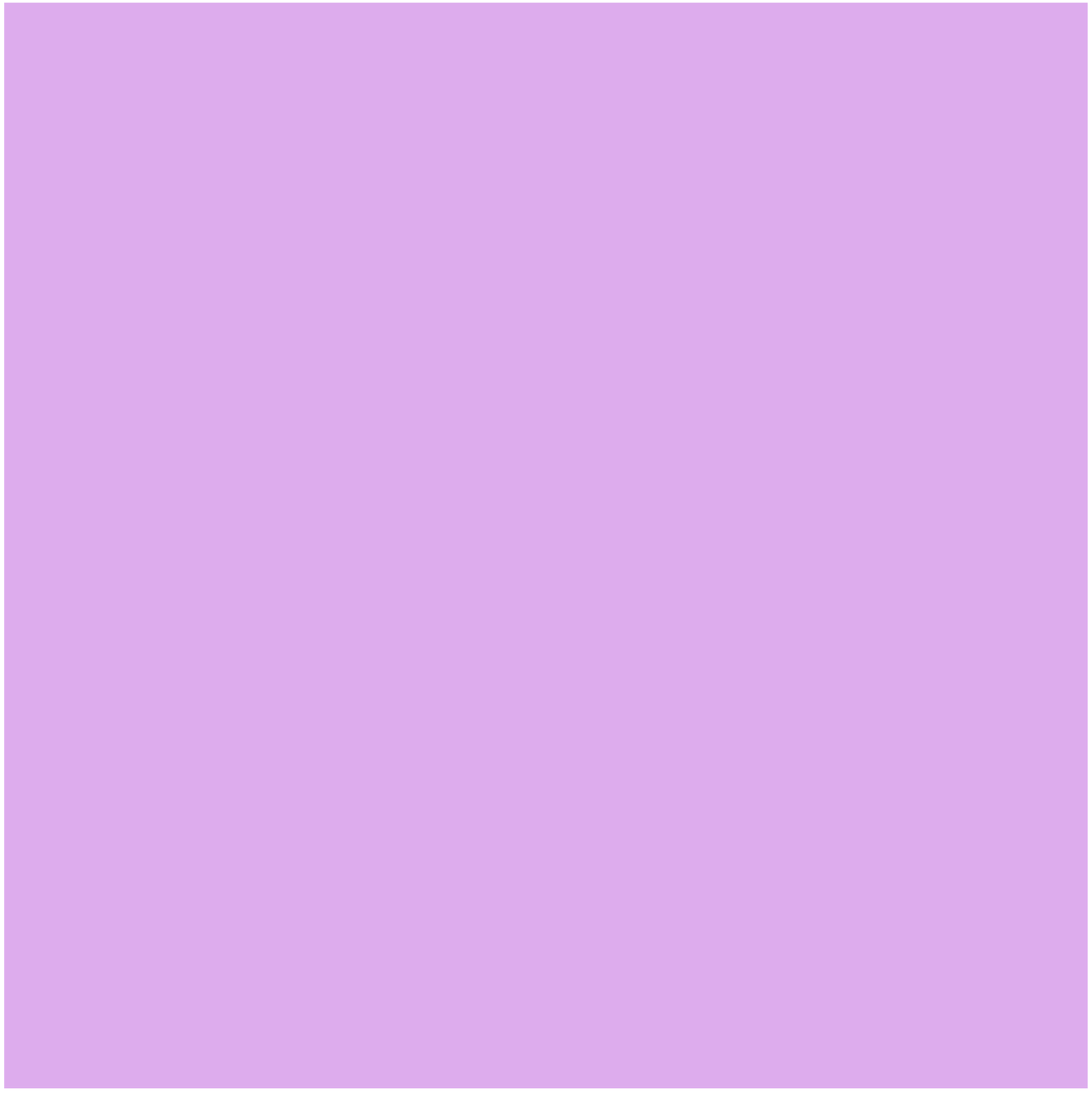
Understanding the impact of methane on health

Self-reporting symptoms

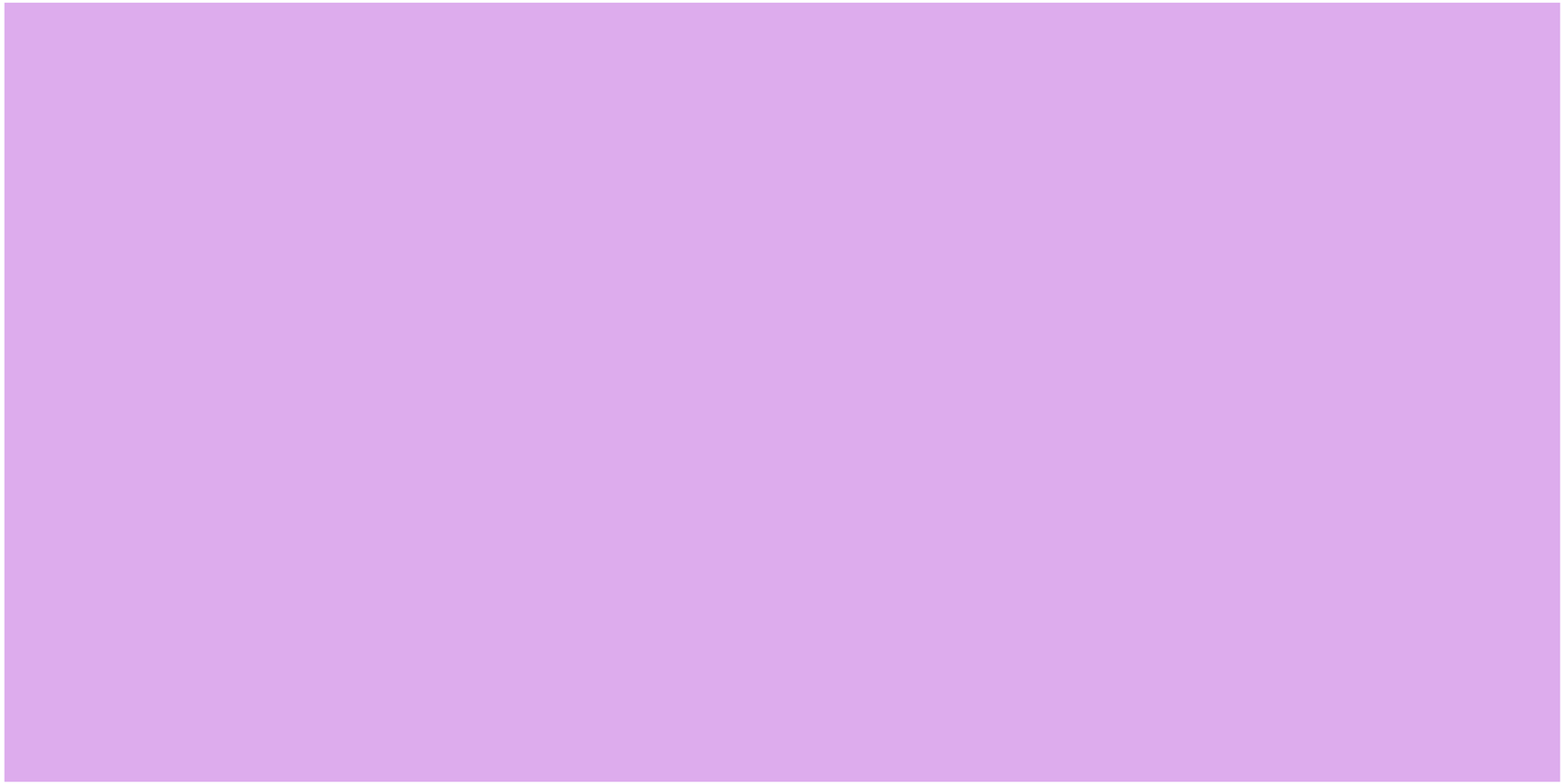








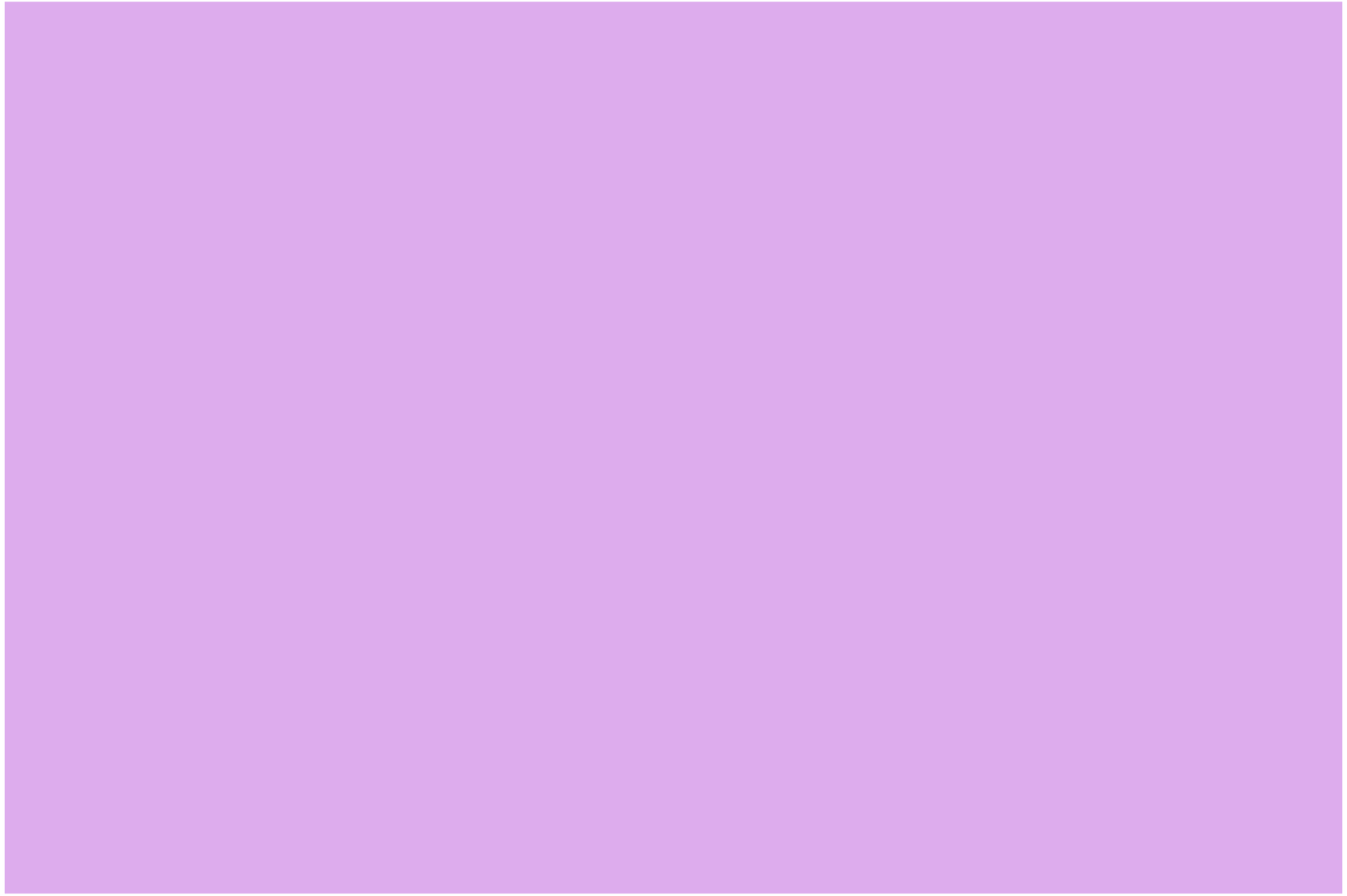
Scoping and prioritising

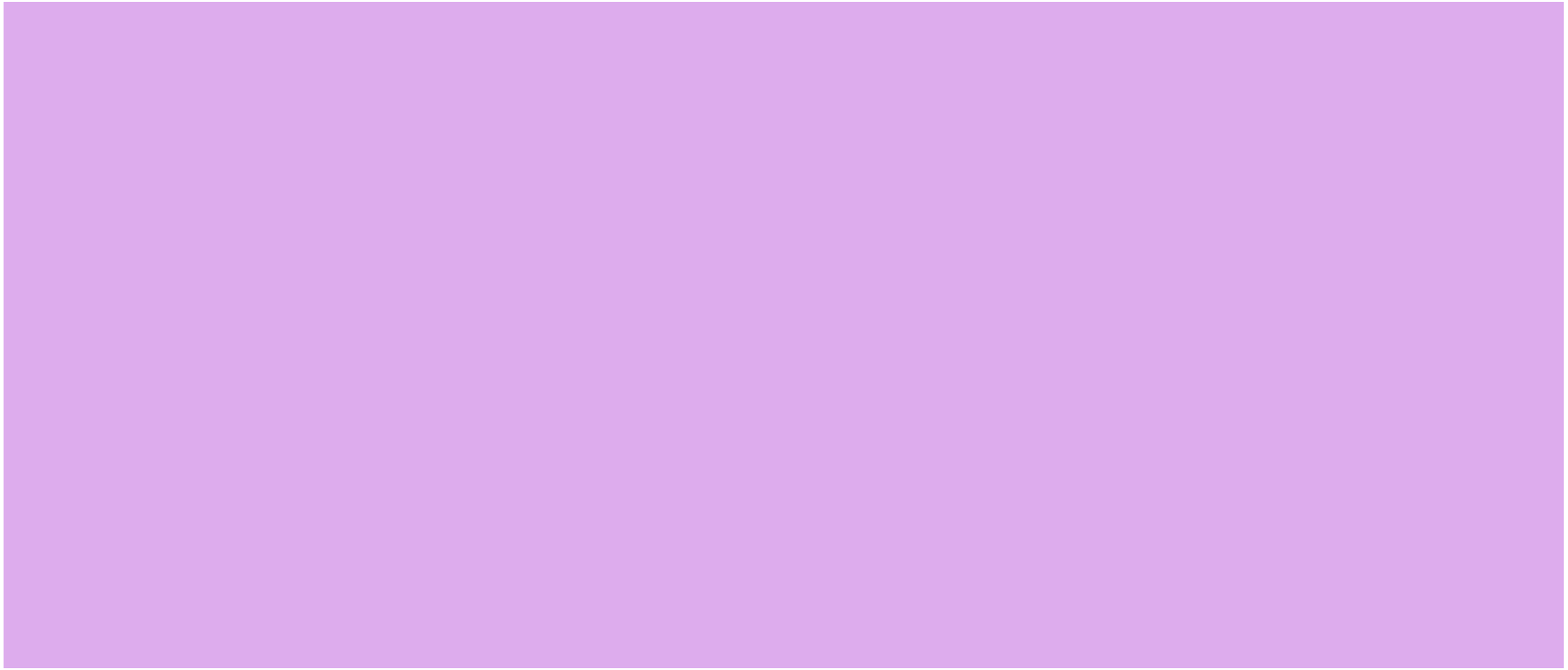


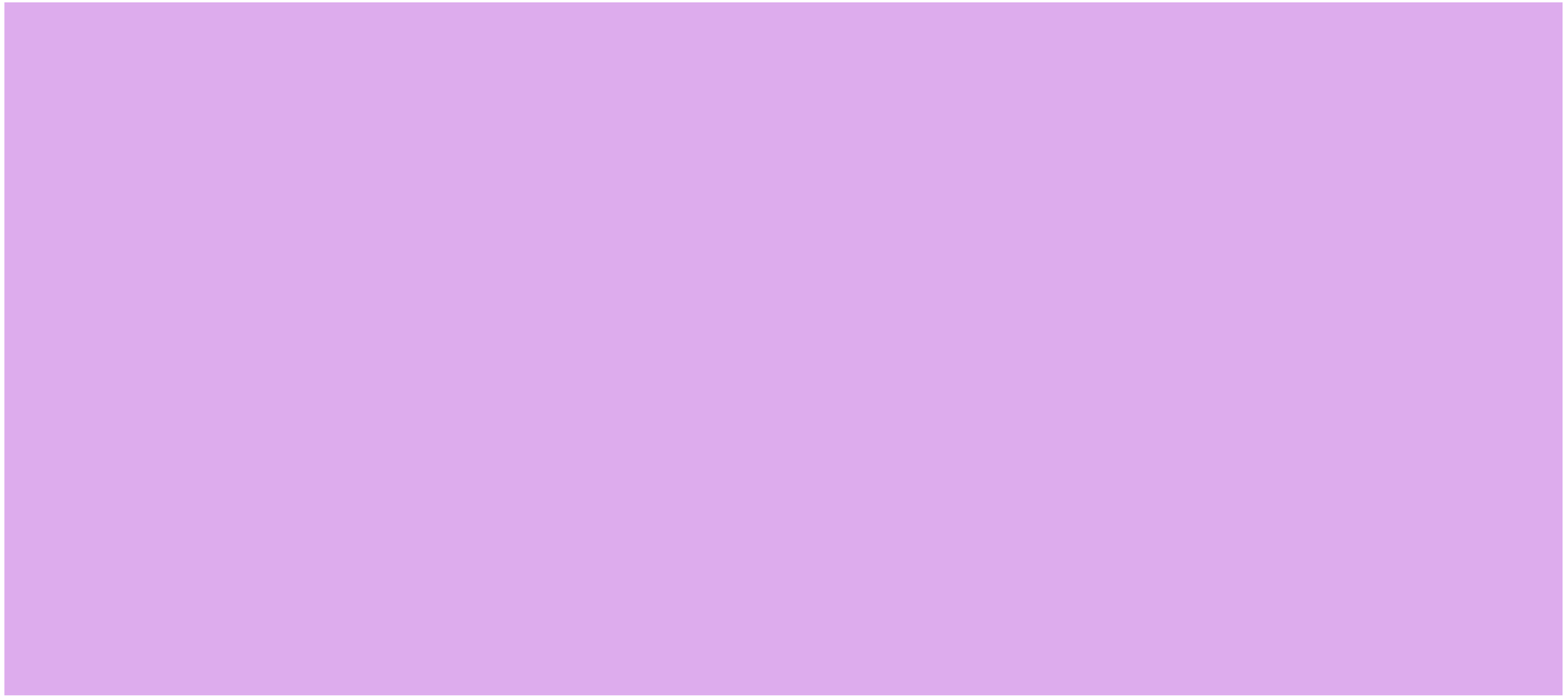
Mapping methane emissions

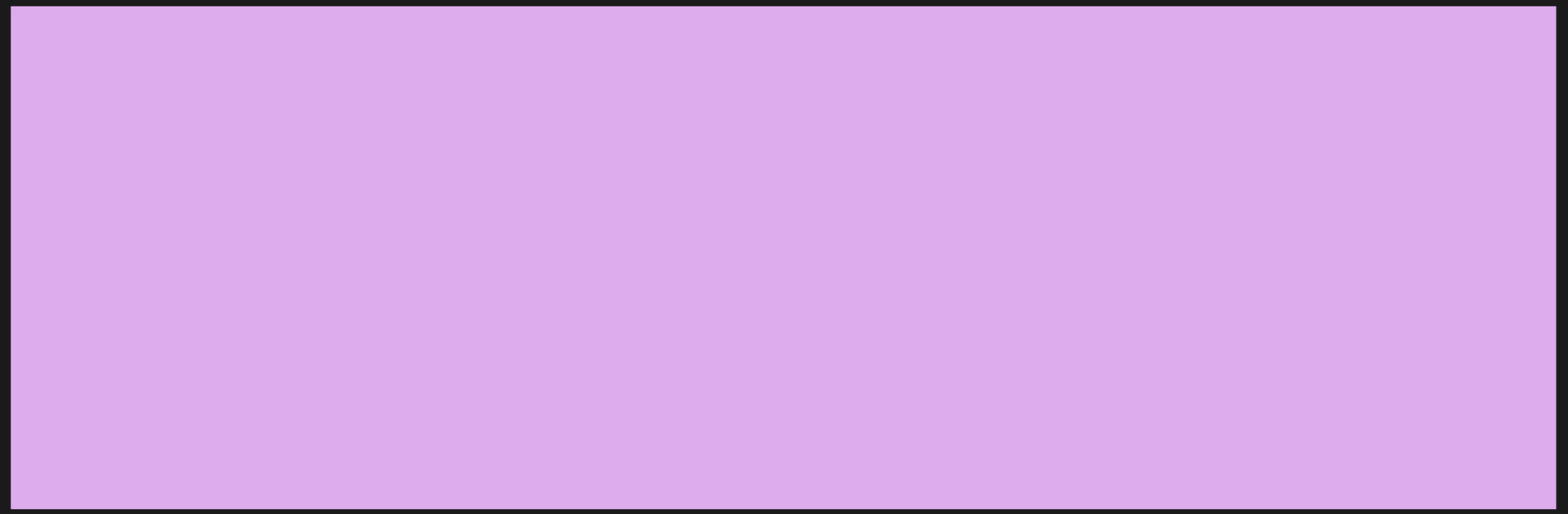
- DuckDB – a zero dependency columnar analytical database
- DuckDB Spatial Extension
- DuckDB WASM – runs the whole thing in the browser
- Apache Parquet files (crucial)
- Next.js / Tailwind
- Python – xarray, pandas, pyarrow

ME-NET DESIGN AND DEVELOPMENT PROCESS MAPPING METHANE EMISSIONS

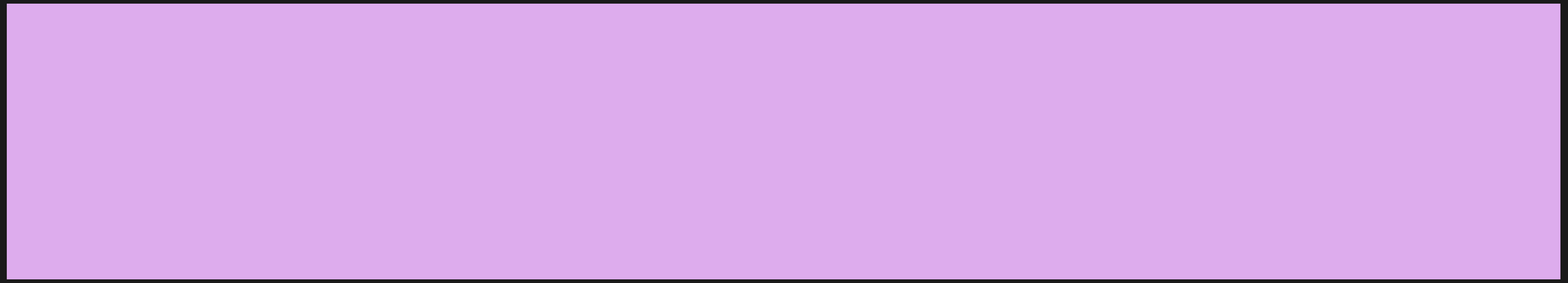


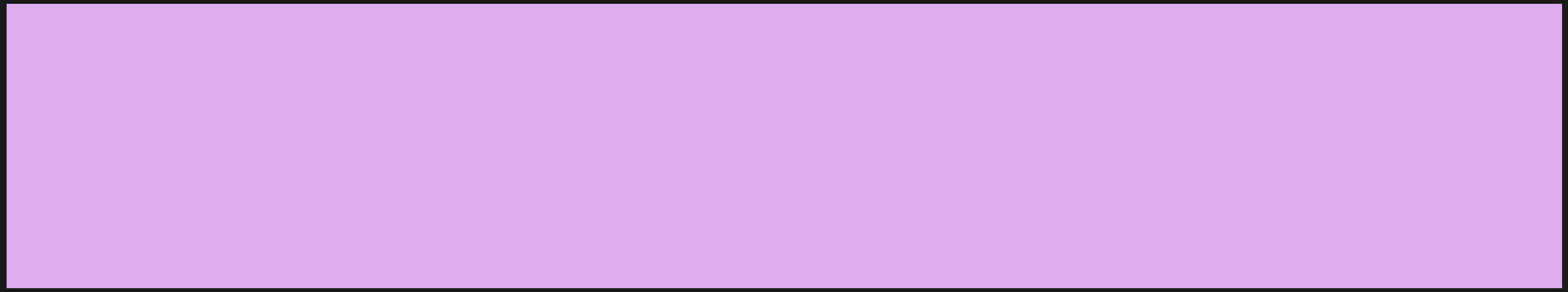




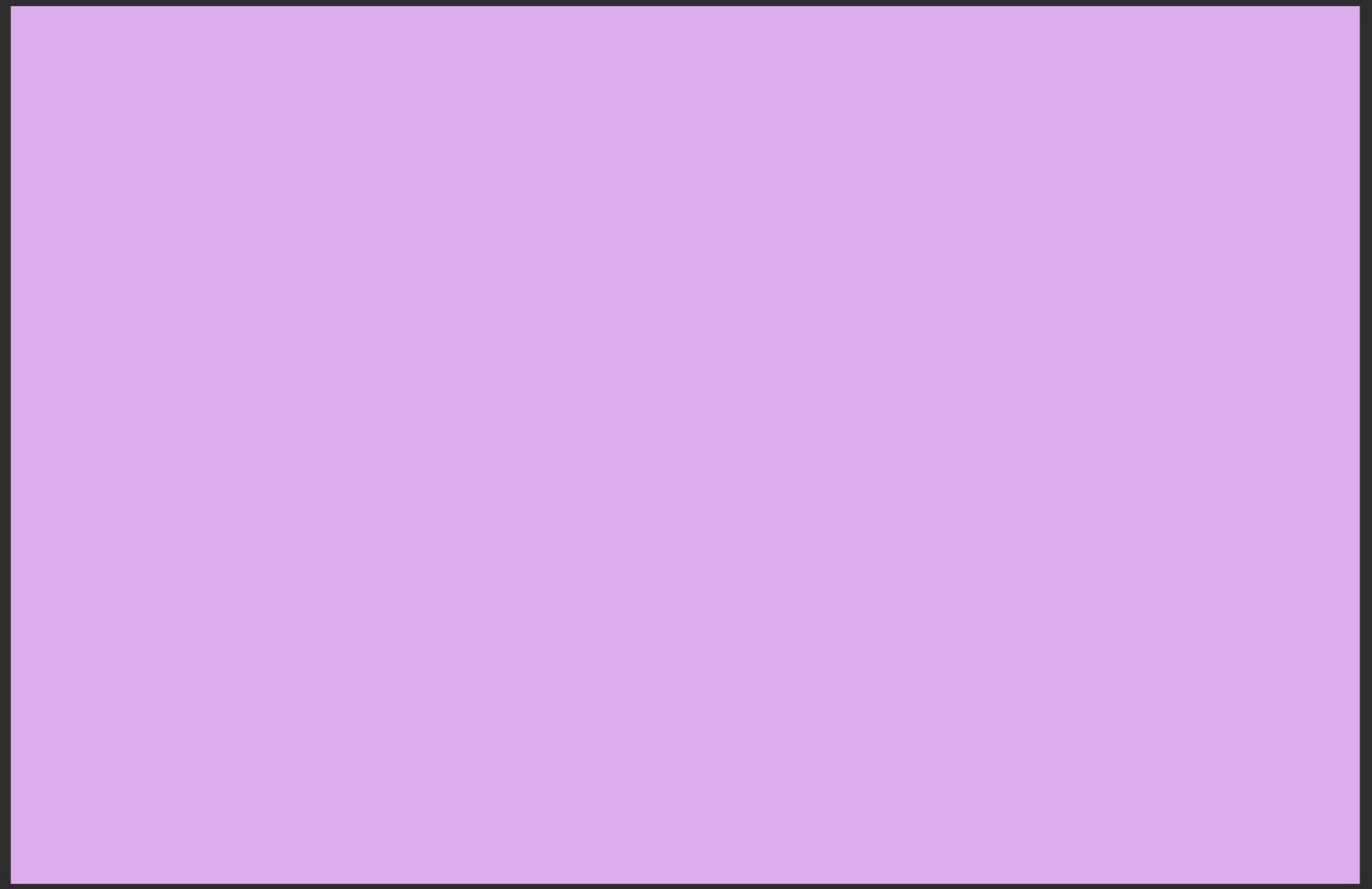


- We get data dumps in NetCDF file formats from John
- Convert to Parquet
- Read into DuckDB
- Offline merge with coordinates and time to single file
- Heavily compressed by Zstandard (zstd) compression library, via Parquet
- Reduced from 15GB to 15MB
- DuckDB reads this in chunks, so it doesn’t need to decompress 15MB to 15GB in memory in the browser





Demo

- There is a lot of data!
- But the data is also patchy, as John said
- Took a lot of scripting to get it into a nice shape

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