

New CO2 emissions map for entire United States Gurney et al. JGR, 2020, doi.org/10.1029/2020JD032974)



Science Question

Can fossil fuel CO2 emissions (FFCO2) be quantified by the Vulcan System at scales relevant to United States urban policymakers in addition to the traditional stakeholders at the national and state scales?

Analysis

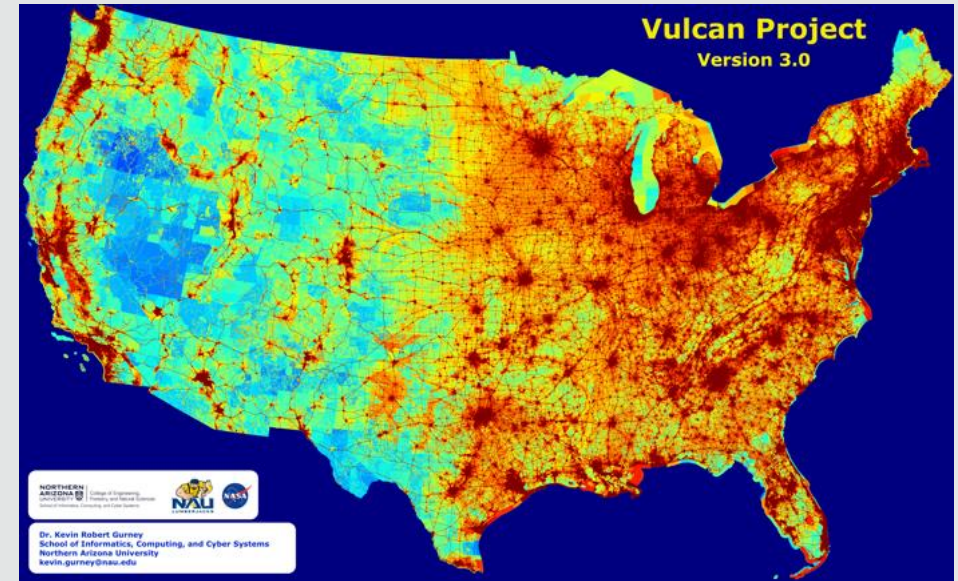
Vulcan uses a large amount of bottom-up data from across Federal and State agencies within a model-data fusion system to quantify and distribute emissions in space and time.

Results

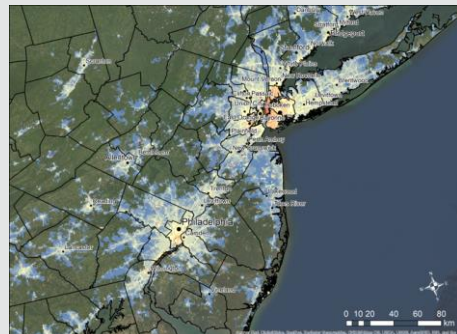
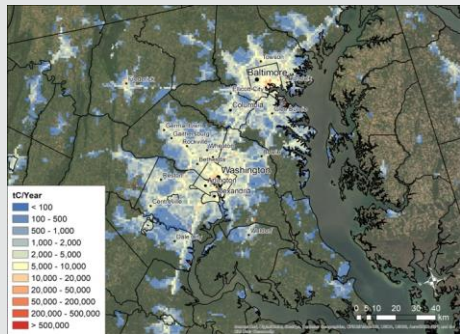
1. Vulcan v3.0 is the first U.S.-wide bottom-up FFCO2 emissions data product at 1 km2/hourly for multiple years.
2. Comparison to satellite-driven global FFCO2 emissions (ODIAC) shows large spatial differences with a mean gridcell absolute relative difference of 104.3%
3. Vulcan can provide an immediate scope 1 FFCO2 inventory for every city in the U.S. saving city time and resources

Significance

Quantifying FFCO2 emissions at 1km2/hourly will revolutionize urban greenhouse gas mitigation by supplying every city in the U.S. with a gridded, sector-specific inventory, supplanting the significant time and effort currently expended by a growing number of U.S. cities.



Vulcan version 3.0: United States fossil fuel carbon dioxide emissions quantified by the Vulcan Project at 1 km2/hourly. ANIMATION: <https://youtu.be/6-H2l1anhYo>



City examples: FFCO2 emissions for Washington DC and New York City

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- 72 downloads from ORNL DAAC in 10 days
- 2674 views of youtube animation
- High Altimetric Attention Score compared to JGR papers of same age and source (98th percentile)