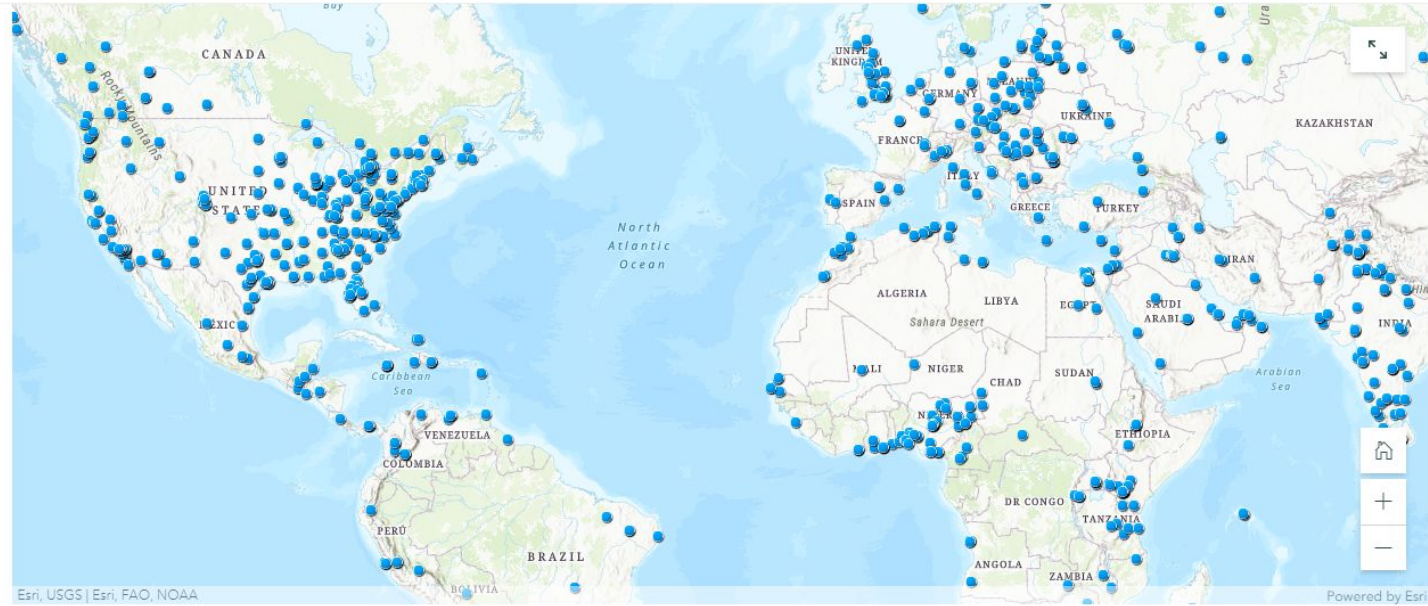


NO₂ Emissions & Planetary Boundaries

in the State of California



***GIS DAY,* esri event**



2020 GIS Day Registration

GIS DAY, 18/11/2020

Home ▾ COVID 19, virtual Air [NO₂] Pollution Station ✎

New Map Create Presentation Linda ▾

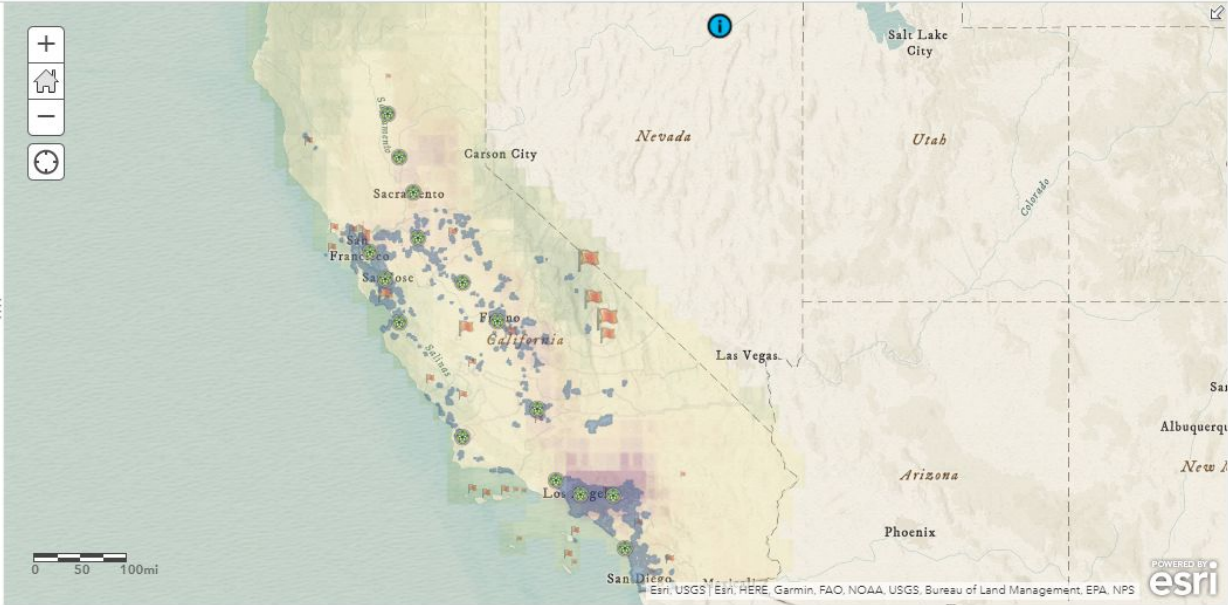
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- ☒ California OMI NO₂ COVID19
- ☒ Polluted Areas with People at Risk
- ☒ Pollution Incidents
- ▶ ☒ Raster Virtual Air Pollution Station NO₂ May2019 over CA
- ▶ ☐ All Points Virtual Air Pollution Station NO₂May2019
- ▶ ☒ Modern Antique
- StateofCalifornia OMI NO₂
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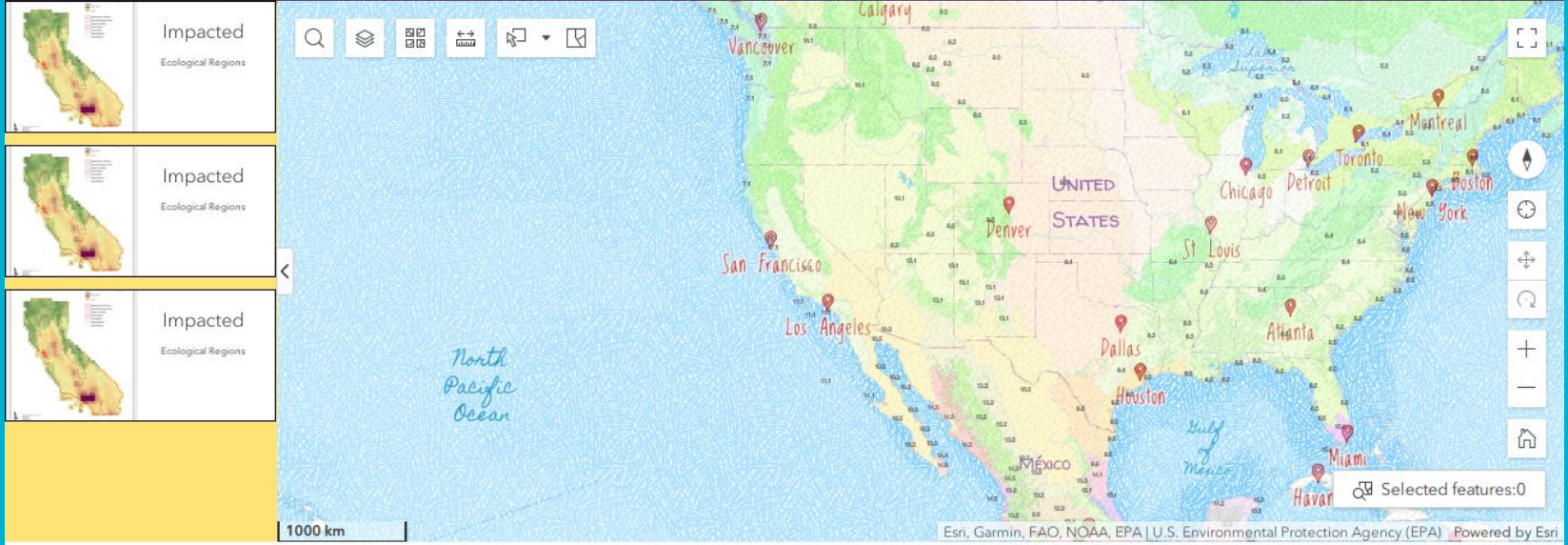


The map displays the state of California with various geographical features and data overlays. Major cities labeled include Sacramento, San Francisco, San Jose, Fresno, Los Angeles, San Diego, Carson City, Las Vegas, Salt Lake City, and Phoenix. The map shows a color-coded overlay representing NO₂ emissions, with higher concentrations in urban areas. Numerous small red and green icons are scattered across the map, likely representing pollution stations or incidents. The map includes a scale bar (0 to 100 miles) and a north arrow. The Esri logo is visible in the bottom right corner.

Web Experience, Linda Angulo Lopez



Virtual Air Pollution Station over the State of California, US



OMI/Aura Satellite Image Analysis

NO₂

post COVID19

contact

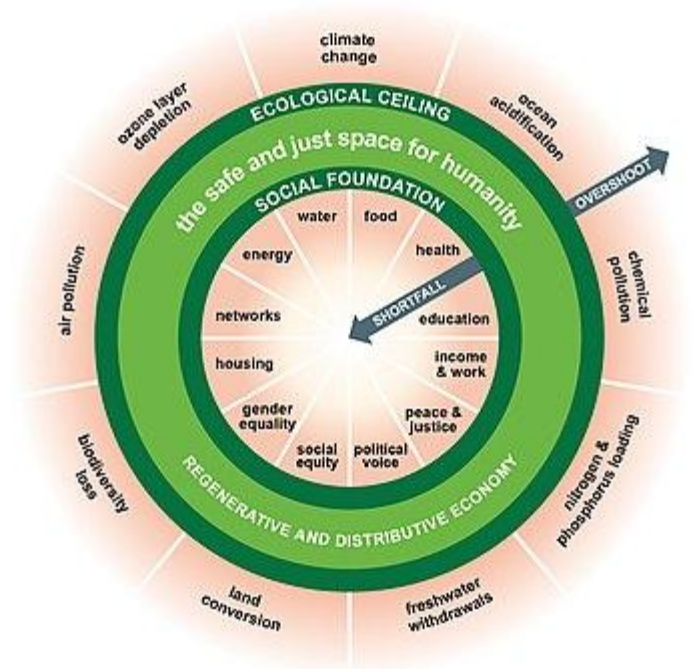


Geo App, Linda Angulo Lopez

Planetary Boundaries

[Kate Raworth](#)

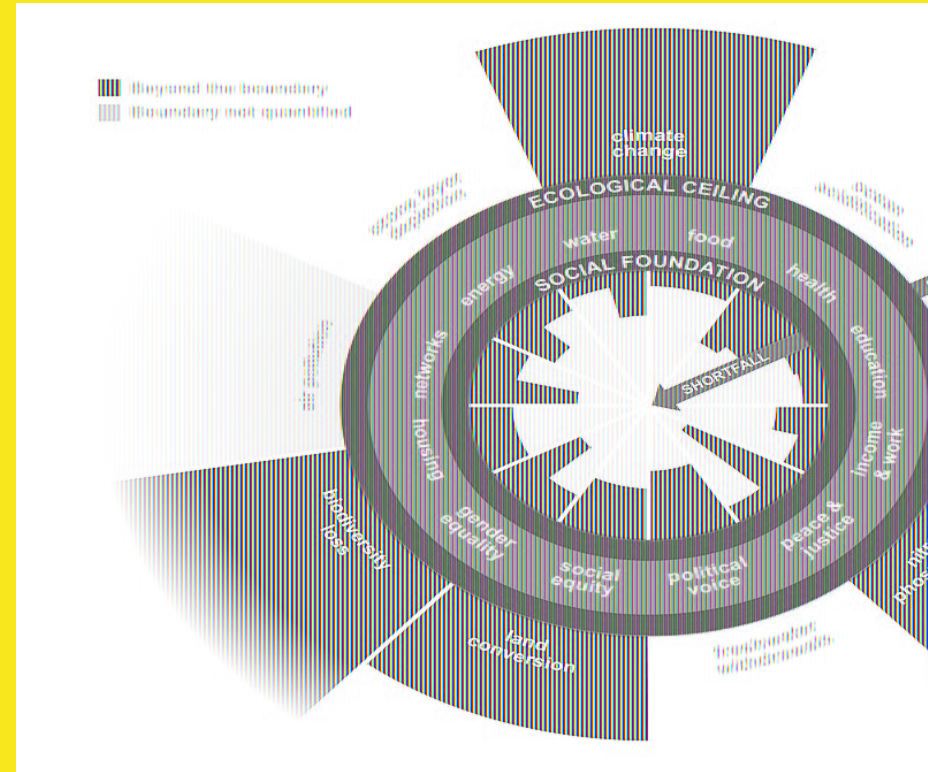
A Safe and Just Space for Humanity



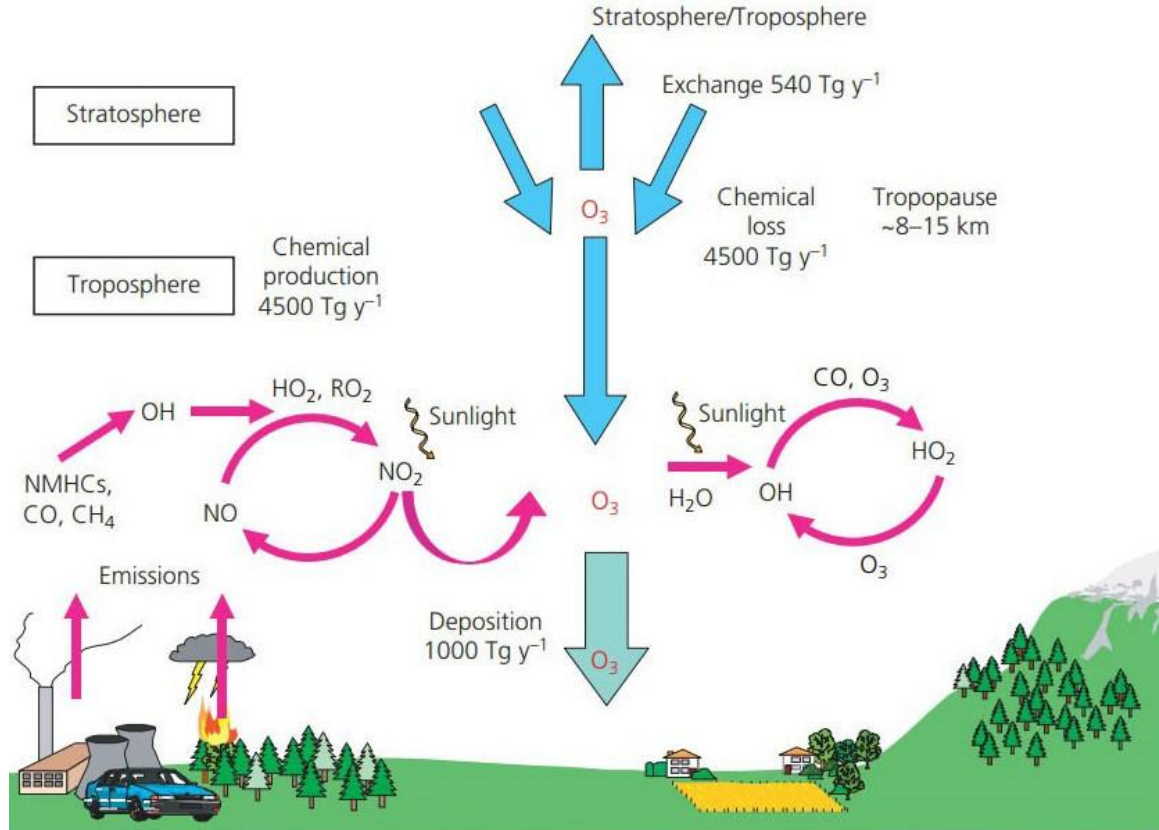
Shortfalls & Overshoots

[Kate Raworth](#)

Humanity's 21st century challenge



Disruption of the Nitrogen Cycle, ...



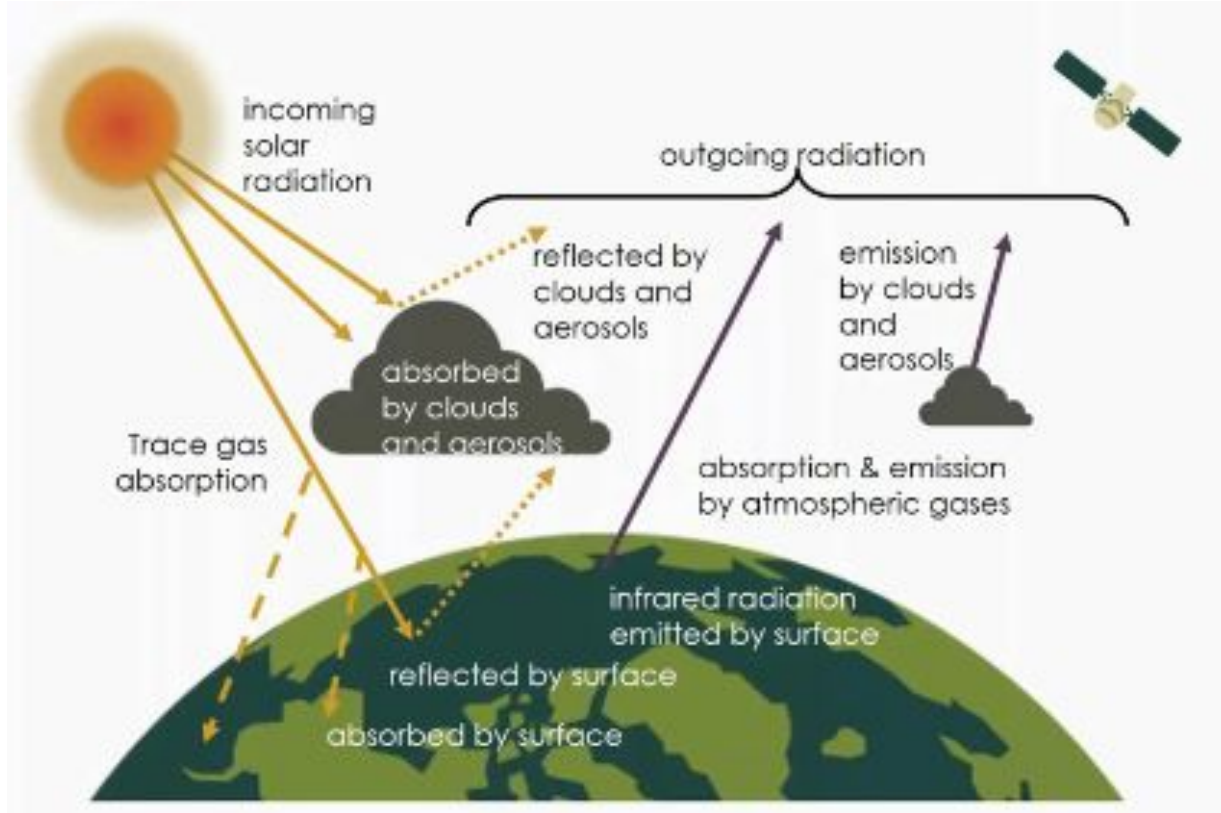
Short-lived

Troposphere

Doubled

***Global
Biodiversity***

GIS Satellite Image Analysis, ...

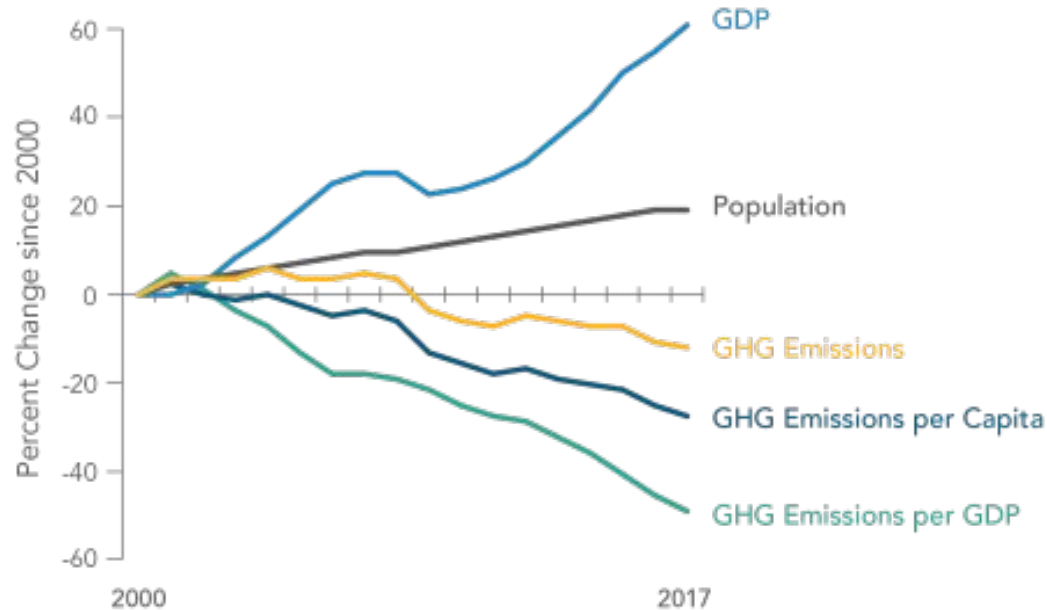


OMI/Aura

short-lived

Troposphere

Sustainable Growth 2000 -2017....

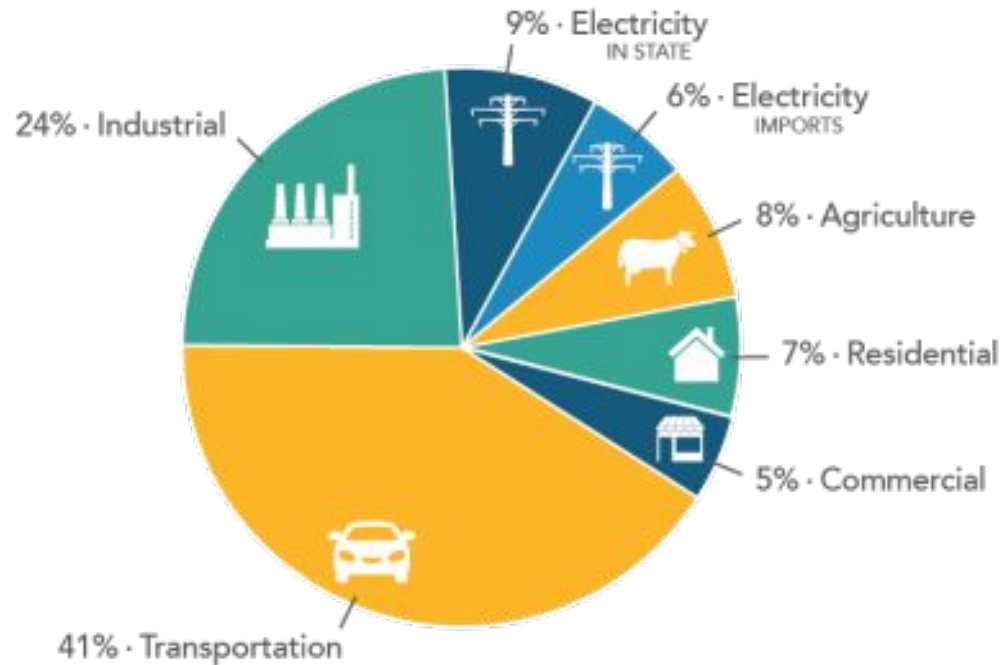


AB 32:

**California Global
Warming
Solutions Act of
2006**

**40 % below 1990
levels by 2030**

Global Warming Emissions Sources, ...

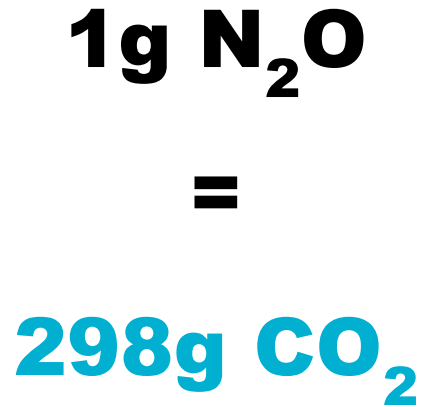


424.1 MMTCO₂e
2017 TOTAL CA EMISSIONS

anthropogenic
climate change

**cap-and-trade
program**

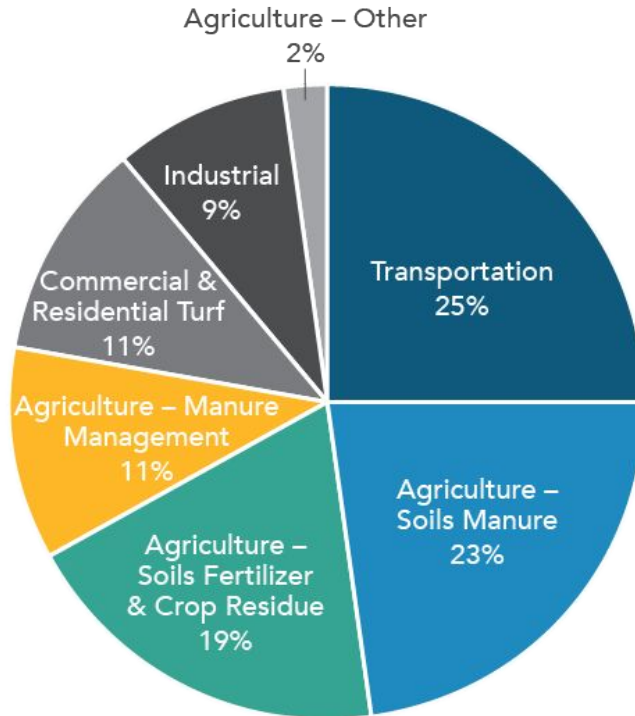
100 year Global Warming Potential...



**Intensity of
infrared
absorption by
each GHG and
how long
emissions
remain in the
atmosphere of**
CO₂, CH₄, N₂O,
SF₆, HFCs, PFCs, NF₃

Impacts of NO₂ as a GHG, ...

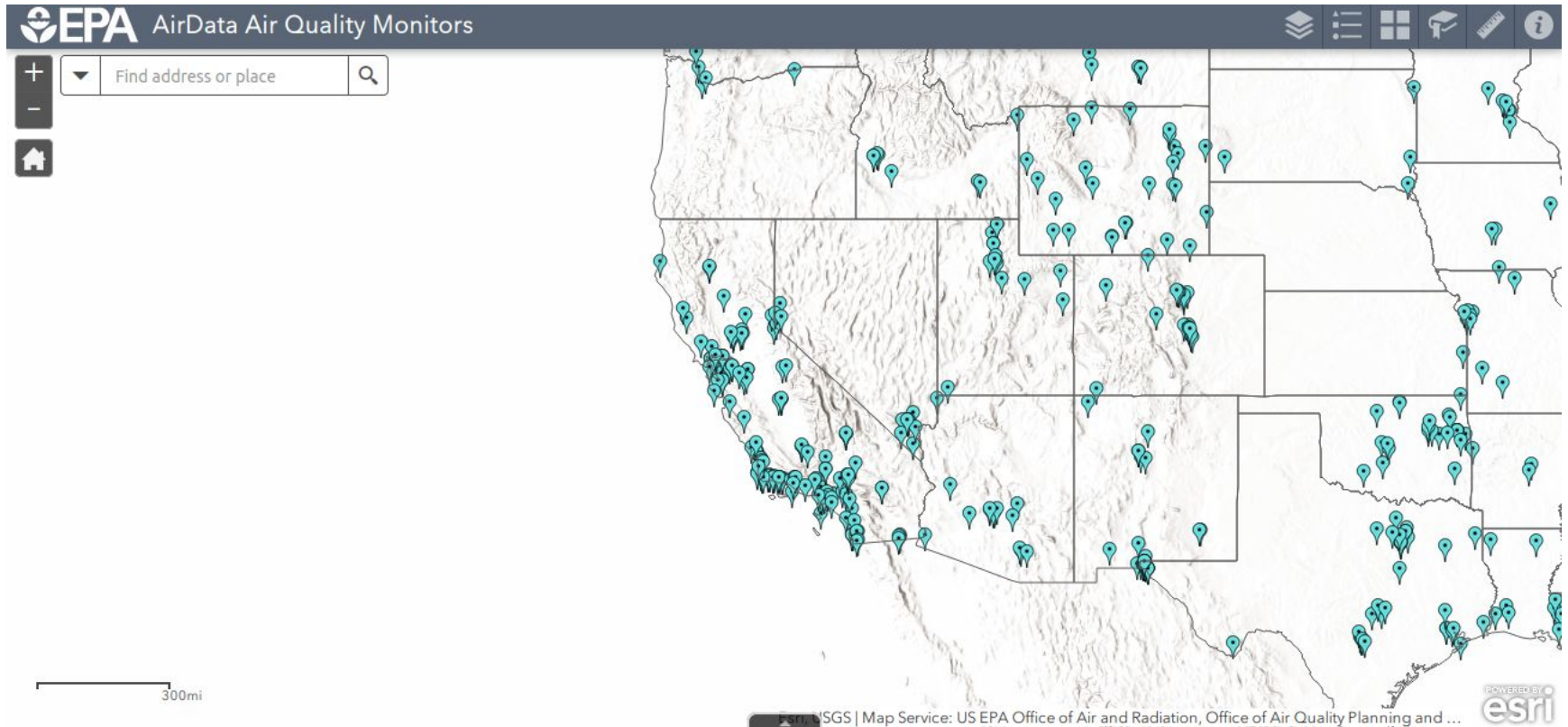
2017 Total N₂O Emissions: 13 MMTCO₂e



3.1%

of total emissions in
CO₂ equivalent units, in
California, in 2017

EPA, Ground Level NO₂ Stations, ...



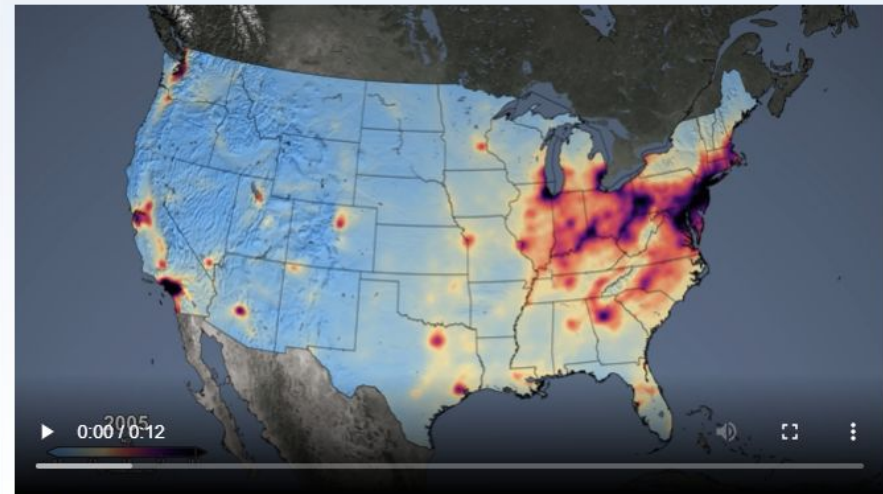
2005

[NASA](#)

OMI-Aura_NO2, ...

Nitrogen Dioxide

NO2: An Indicator of Pollution Sources and Trends

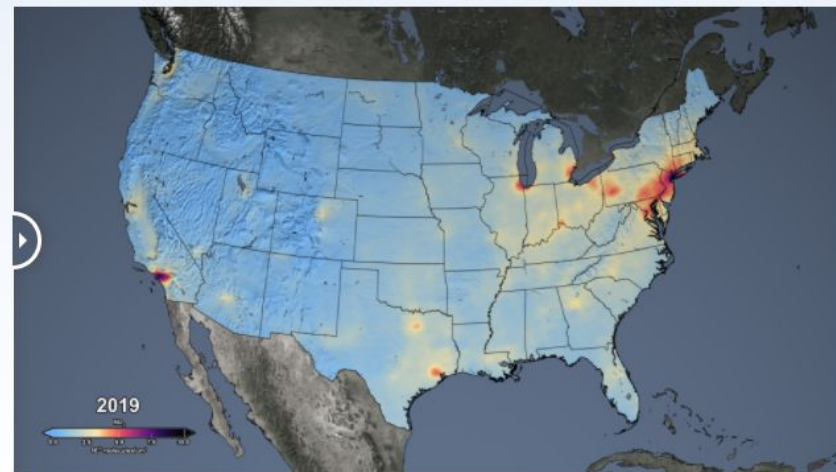


[Read more](#)

2019


[NASA](#)

OMI-Aura_NO2, ...




[Read more](#)

Giovanni Service,...

 EARTHDATA

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GIOVANNI


 The Bridge Between Data and Science v 4.34

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MERRA-2 reprocessed September 2020 data ... [1 of 1 messages] [Read More](#)

Select Plot

Time Averaged Map






Select Date Range (UTC)

2020 - 05 - 25  00 : 00 to 2020 - 05 - 28  23 : 59

Valid Range: 2004-10-01 to 2020-11-16

Select Region (Bounding Box or Shape)

-133.5937,1.5234,-90.7031,45.1172   

Select Variables

▼ Observations

☒ Observation (2)

▼ Disciplines

☒ Atmospheric Chemistry (2)

▼ Measurements

☐ Aerosol Index (2)

☐ Aerosol Optical Depth (7)

☐ Air Temperature (2)

☐ Angstrom Exponent (2)

☐ CH4 (16)

☐ CO (25)

☐ CO2 (2)


☐ HCHO (1)

☒ NO2 (2)

Number of matching Variables: 2 of 1878 Total Variable(s) included in Plot: 2

Keyword :

	Variable	Units	Source	Temp.Res.	Spat.Res.	Begin Date	End Date
<input checked="" type="checkbox"/>	NO2 Tropospheric Column (30% Cloud Screened) (OMNO2d v003)	1/cm2	OMI	Daily	0.25 °	2004-10-01	2020-11-16
<input checked="" type="checkbox"/>	NO2 Total Column (30% Cloud Screened) (OMNO2d v003)	1/cm2	OMI	Daily	0.25 °	2004-10-01	2020-11-16

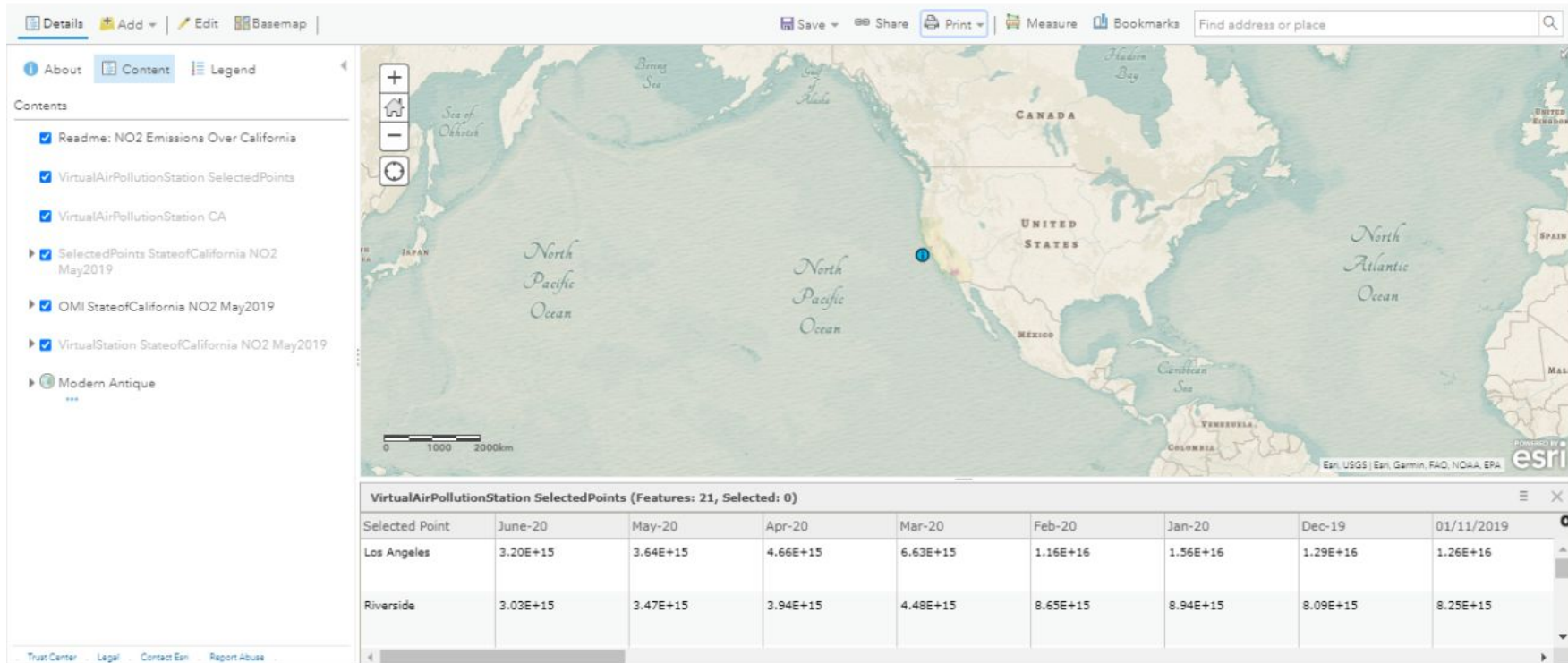
 Responsible NASA Official: [Angela Li](#)
Web Curator: [M. Hegde](#)

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800 Virtual NO2 Stations, ...

ArcGIS Virtual Air [NO2] Pollution Station, May 2019vs2020

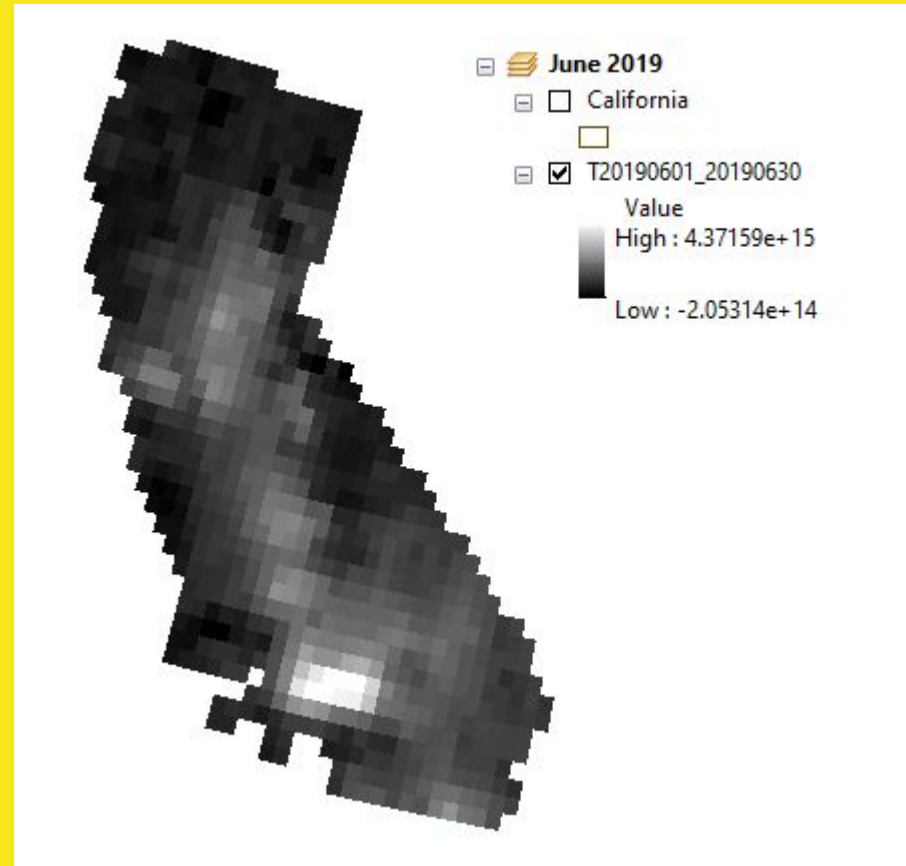
New Map Create Presentation Linda



Data Sourcing

[Linda Angulo Lopez](#)

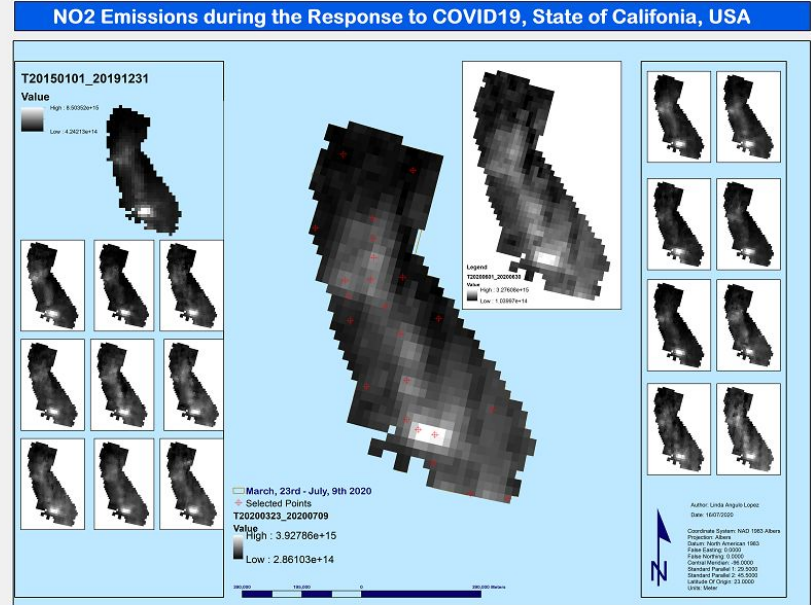
Add Data Geo-tiff, ...



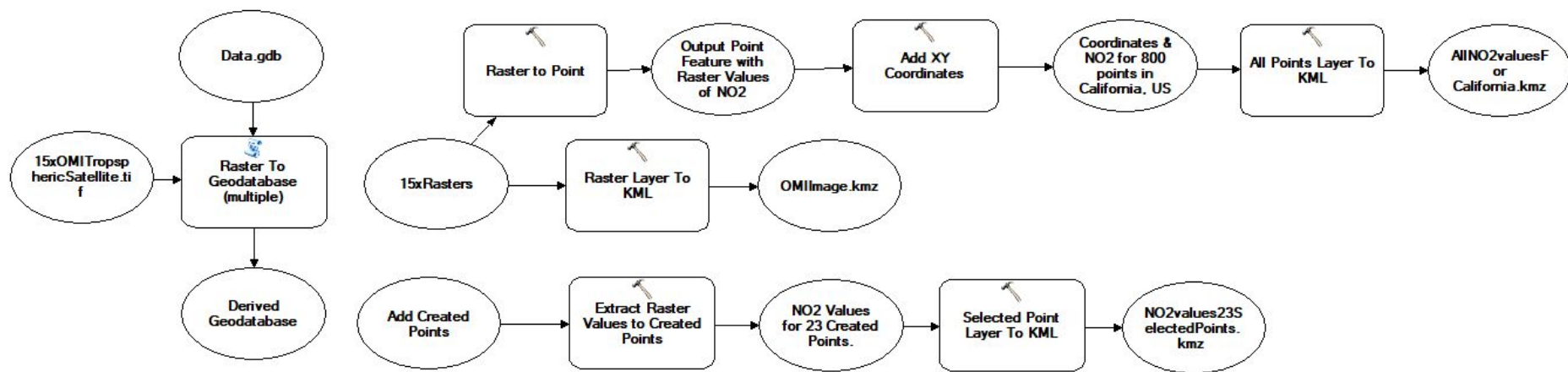
Raw Data

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Shared: <http://arcg.is/1jr4j4>



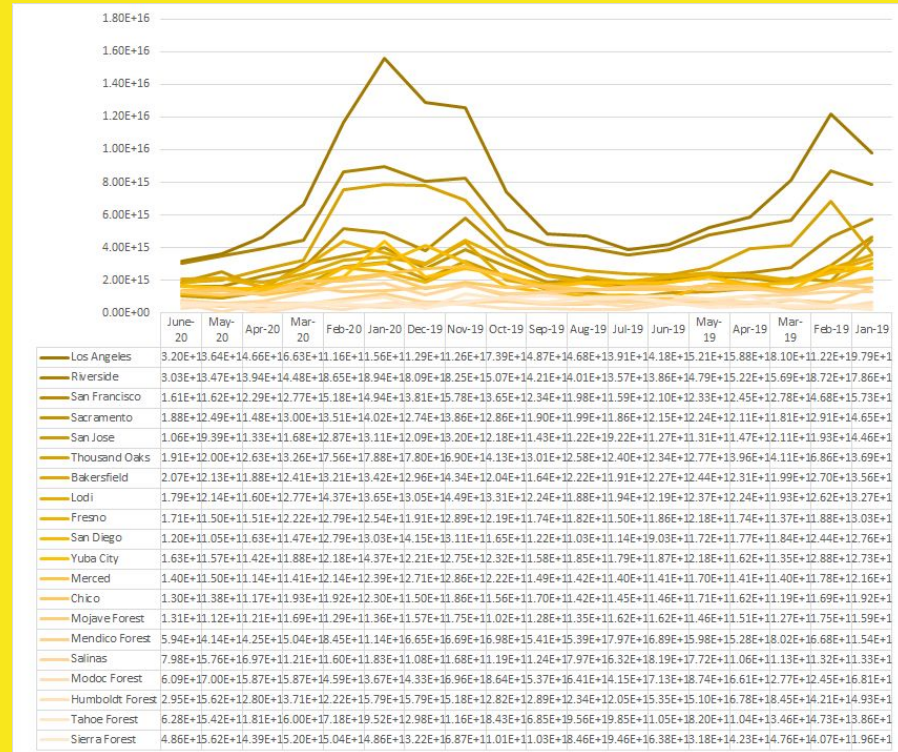
Spatial Analysis on ArcGIS 10.6,...



Data Analysis

[Linda Angulo Lopez](#)

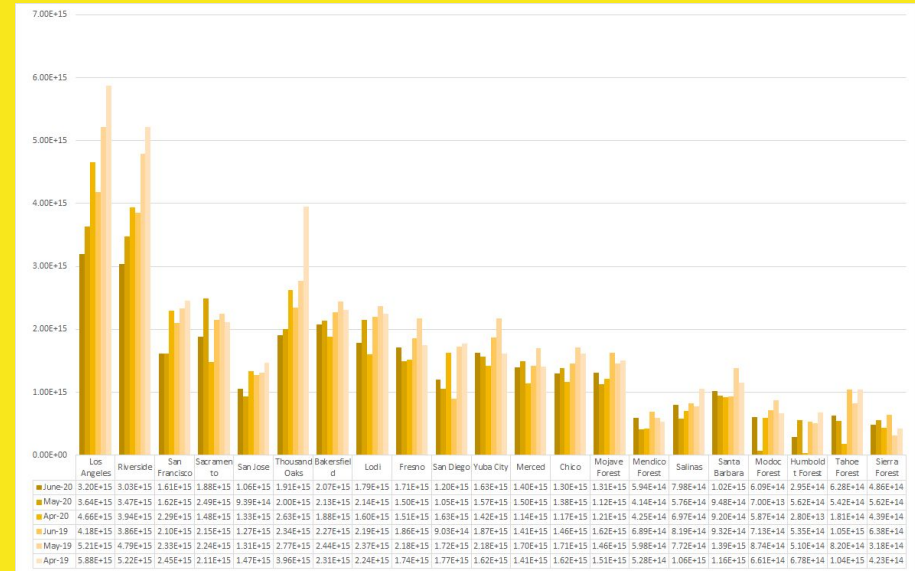
Seasonal Cycle



Data Analysis

[Linda Angulo Lopez](#)

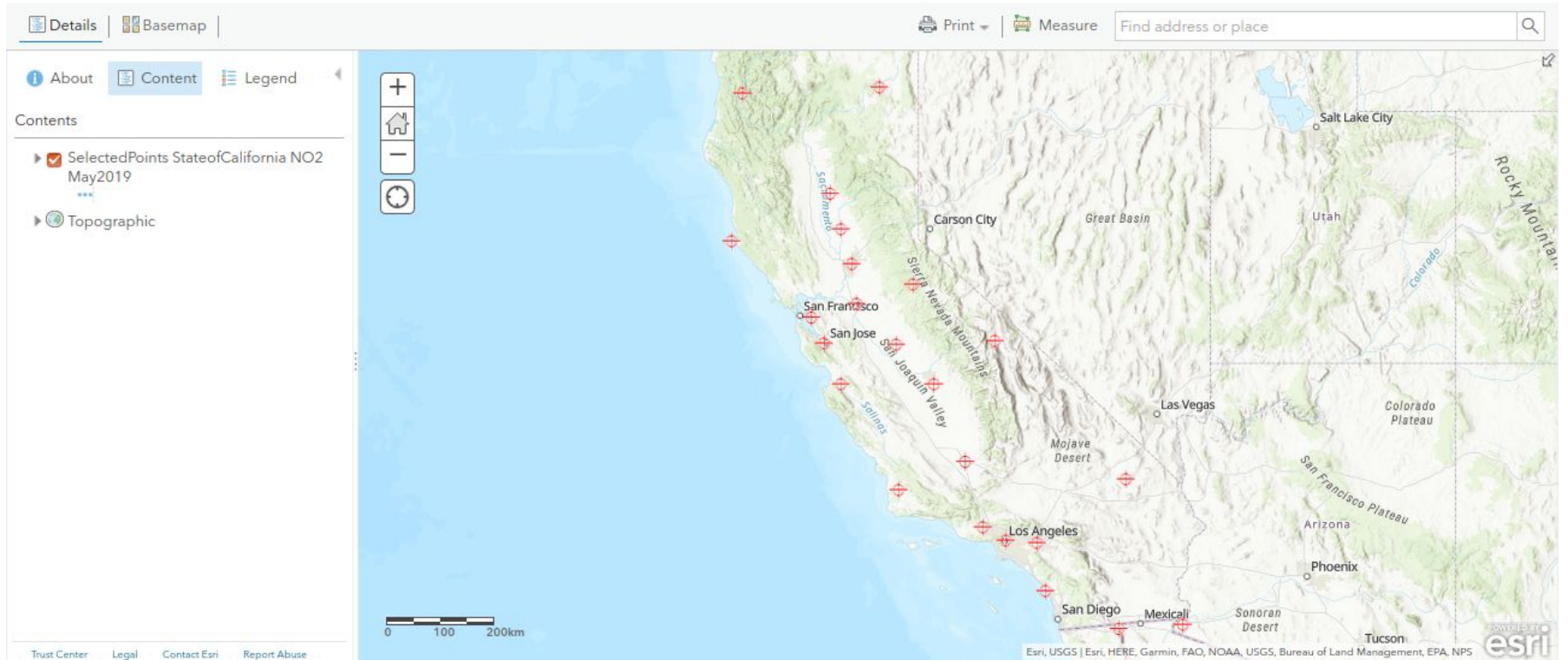
Emission Reductions



Created Points Layer,..

ArcGIS ▾ SelectedPoints_StateofCalifornia_NO2_May2019

Modify Map ⓘ Sign In



Raster Image Layer, ...

ArcGIS Virtual Air [NO2] Pollution Station

New Map Create Presentation Linda

Details Add Basemap

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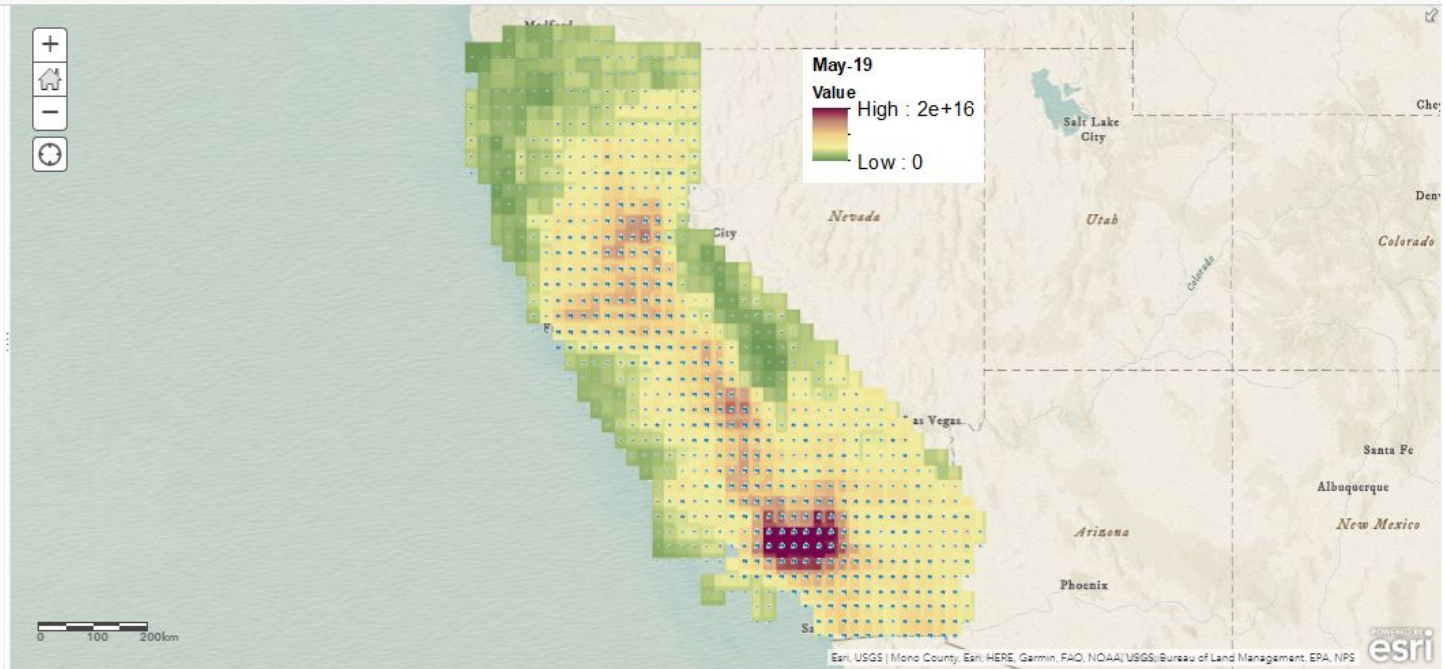
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- ☒ OMI StateofCalifornia NO2 May2019
- ☒ VirtualStation StateofCalifornia NO2 May2019
- ☒ SelectedGroundPoints StateofCalifornia NO2 ***
- ☐ Modern Antique



0 100 200km

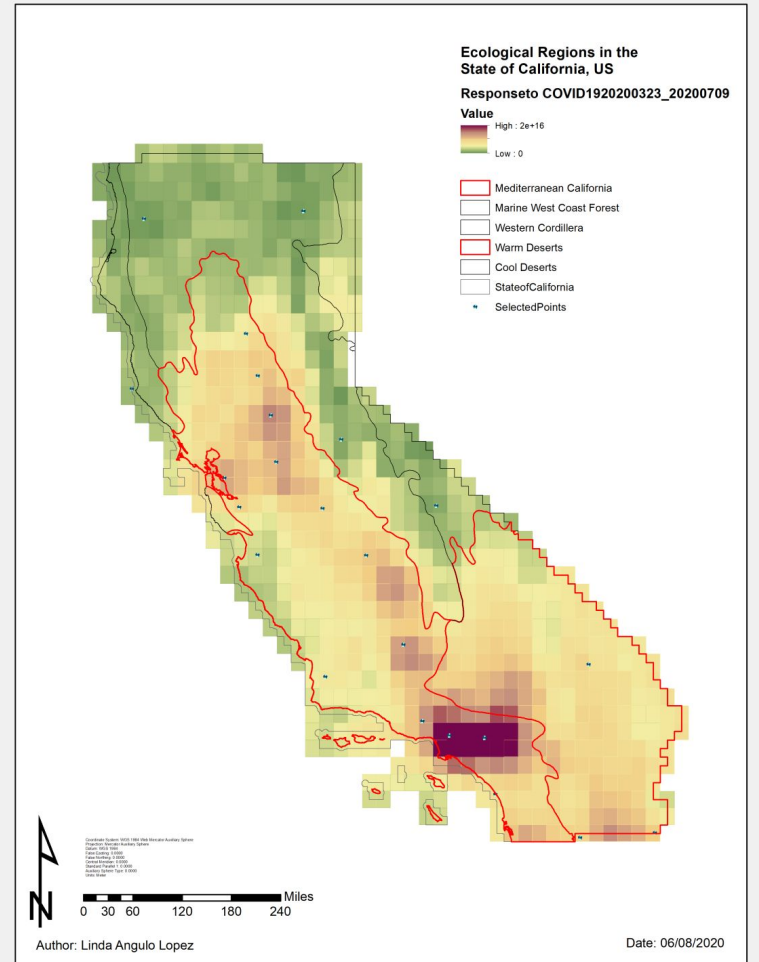
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Ecological Areas Impacted



Results

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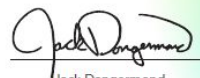
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