

Cannabis Emissions and Predicted Ozone in Santa Barbara County

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- All articles, reports, and presentations represent the opinions and views of the author and sponsors had no influence on results or conclusions
- NSF participation did not involve the manufacture, import, possession, use or distribution of cannabis
- All results presented here are publicly available and can be provided upon request - Vizuete@unc.edu

Can the cultivation of cannabis result in regional ozone increases?

S.B. County air quality model predictions say No.

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Leaf enclosure measurements for determining volatile organic compound emission capacity from *Cannabis spp.*

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Potential Regional Air Quality Impacts of Cannabis Cultivation Facilities in Denver, Colorado

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Atmospheric Chemistry and Physics

Cannabis has no impact on ozone

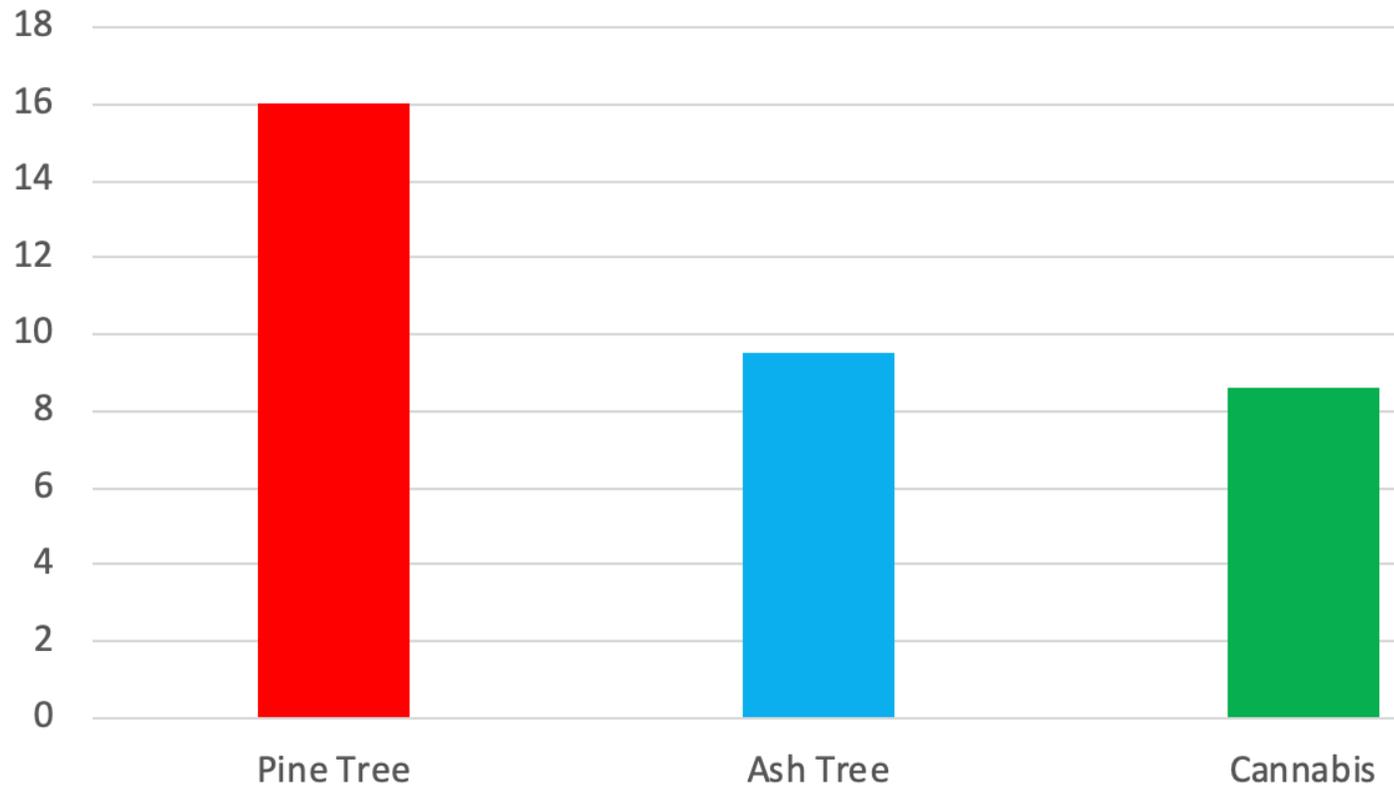
Model Scenario	Santa Barbara County BVOC emissions (tons/year)
Current baseline of BVOC from all plants in Santa Barbara County	39,042
Model: Add 5 tons BVOC to simulate addition of Cannabis Industry	39,047
Maximum Change in PPB on Worst Day Due to Addition of Cannabis Industry in SBC	No predicted Impact

More Conservative Emissions Still no impact on ozone

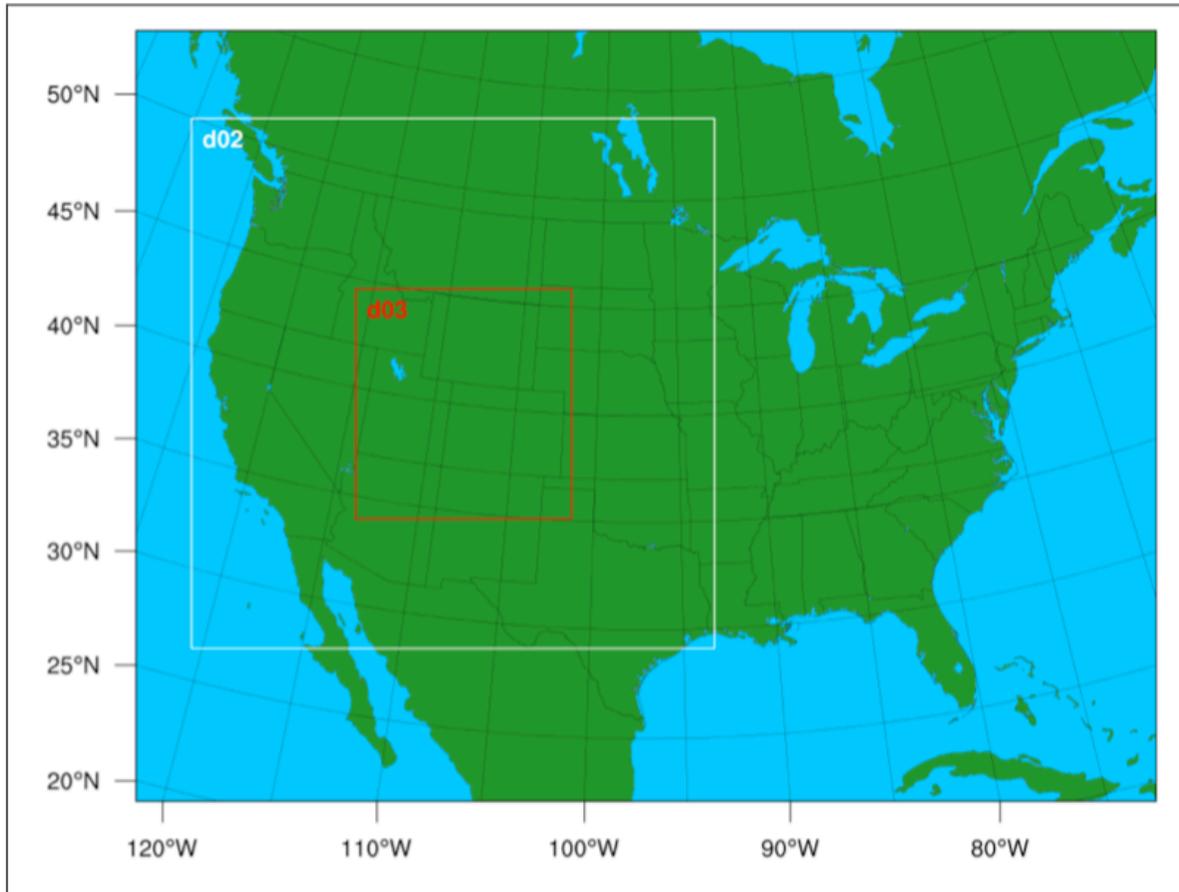
Model Scenario	Santa Barbara County BVOC Emissions (tons/year)
Current baseline of BVOC from all plants in SBC	39,042
Conservative Model: Add 50 tons BVOC (very high estimate) to simulate addition of cannabis industry	39,092
Maximum Change in PPT on Worst Day Due to Addition of Cannabis Industry in SBC	0.6% (.297 ppb)

Cannabis emit less terpenes than Pine Trees

Emission Rate (ug/C/hr)

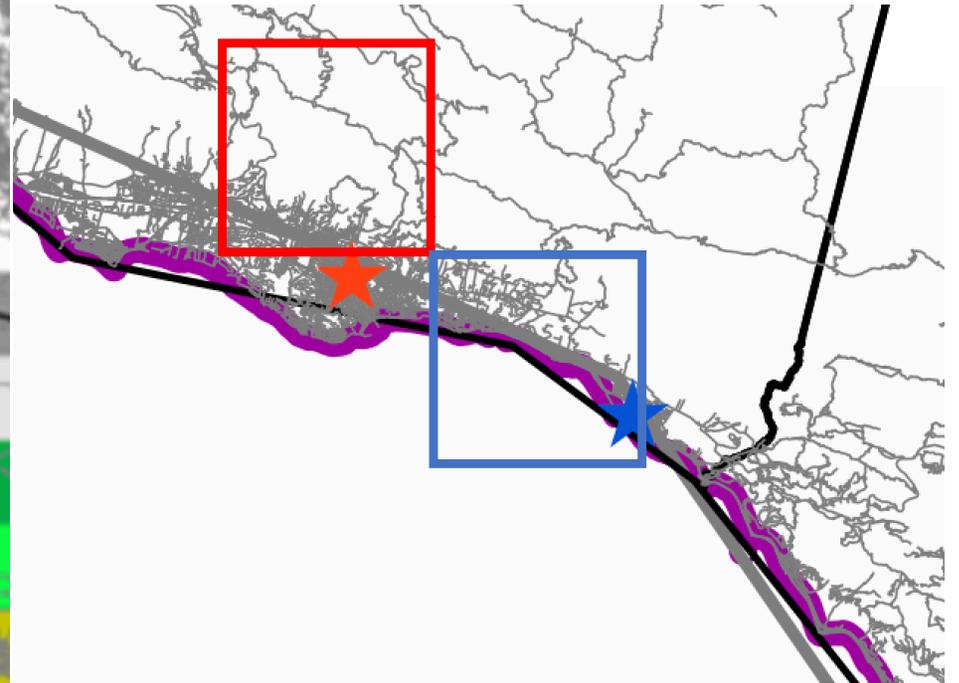
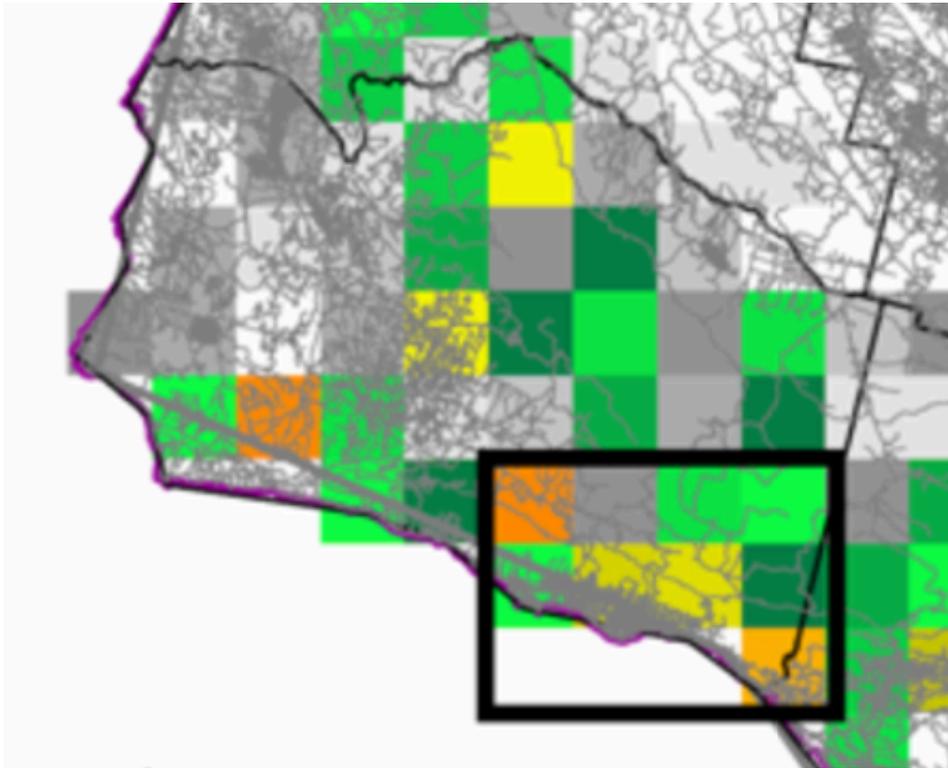


Air quality model



- Developed by Ramboll and UNC
- CAMx version 6.1
- June 15- Sep 15, 2011
- 12x12 km horizontal resolution
- Emissions developed by EPA
- Obtained from Intermountain West Data Warehouse.

Model Resolution

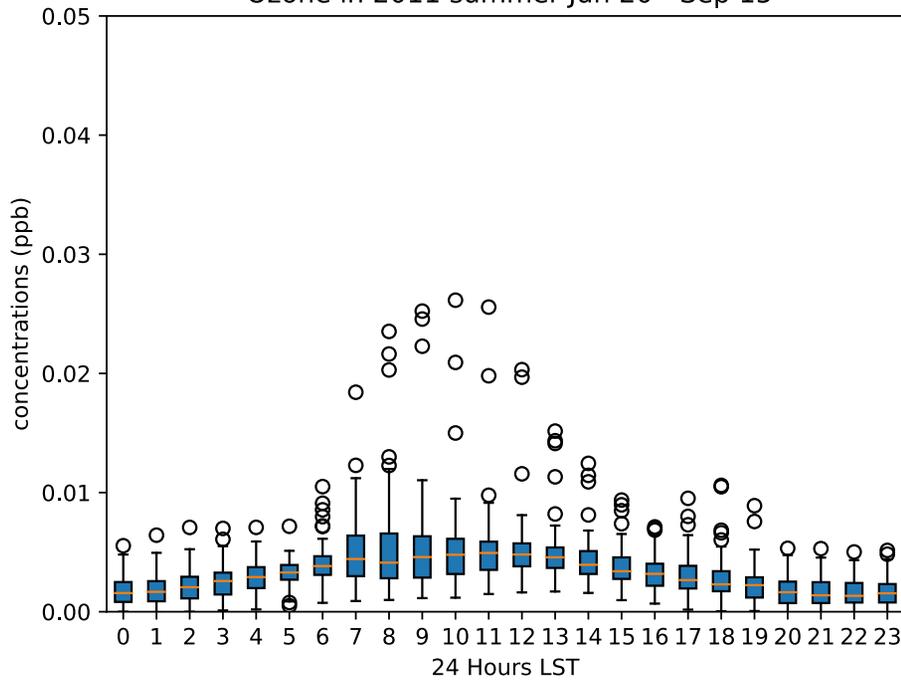


Hourly Ozone Increase

5 tons/year

Carpinteria

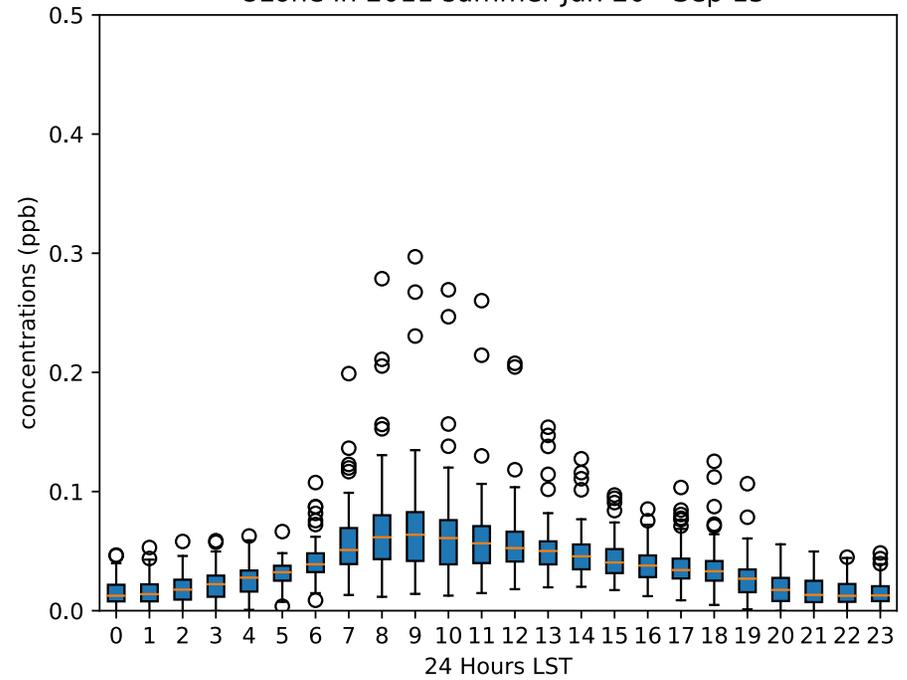
Ozone in 2011 summer Jun 20 - Sep 15



50 tons/year

Carpinteria

Ozone in 2011 summer Jun 20 - Sep 15



2088 Simulated Hours

Monoterpene Non-toxic

- Acute short term inhalation (limonene, α -terpineol, and α - and β -pinene) is ~ 106 ppm (106,000 ppb)
 - Santa Barbara County .25-.8 ppb (model)
 - Denver CO - 0.4 – 0.8 ppb (measured)
 - Amazon Rain forest – 2-4 ppb isoprene
 - Peeling an orange - ~ 100 ppb Limonene
 - Saw Mills – ~ 50 -100 ppm of α -pinene

Ozone 2008 NAAQS Nonattainment areas in California (USEPA, 2019)

