

Team Members



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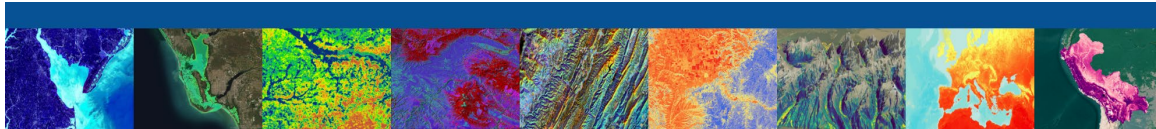


Carlo M. Gomez

Partners

Little Manila Rising

Contact: Gloria Alonso



DEVELOP
NATIONAL PROGRAM

Operating under NASA Earth Action, DEVELOP conducts feasibility studies that bridge the gap between Earth science information and society. DEVELOP works with communities and organizations to address environmental and policy concerns through 10-week projects that help both participants and partners learn about using NASA Earth observations.

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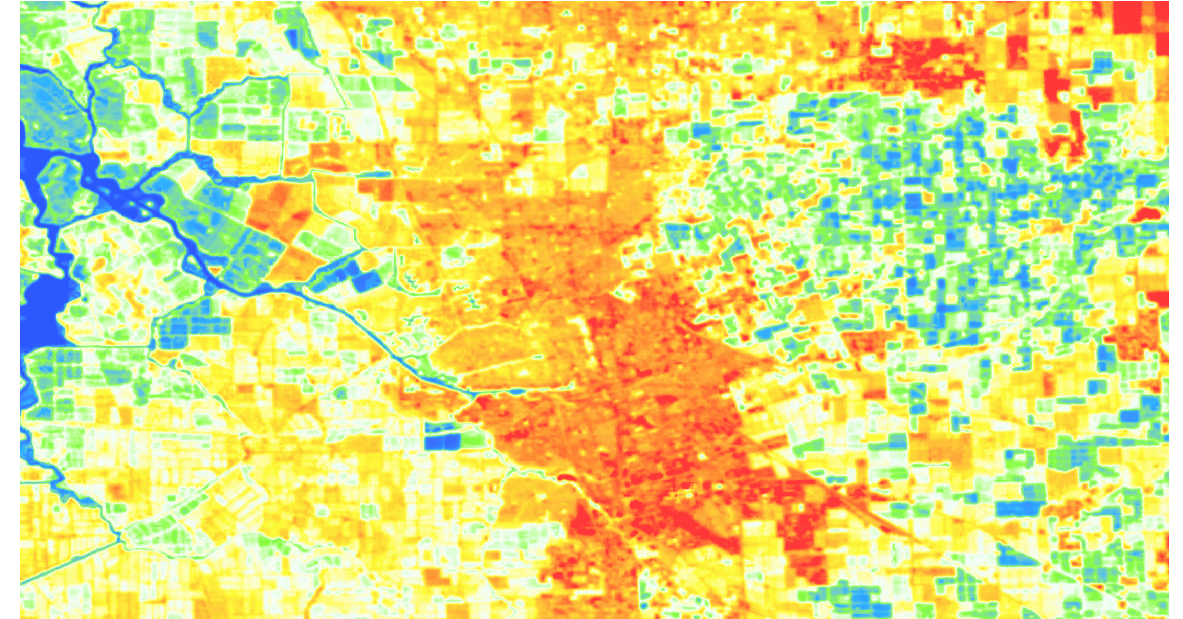
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National Aeronautics and Space Administration



Assessing Urban Heat Island Distribution and its Intersections
with Air Quality to Understand Converging Vulnerabilities



San Joaquin Valley Health and Air Quality II

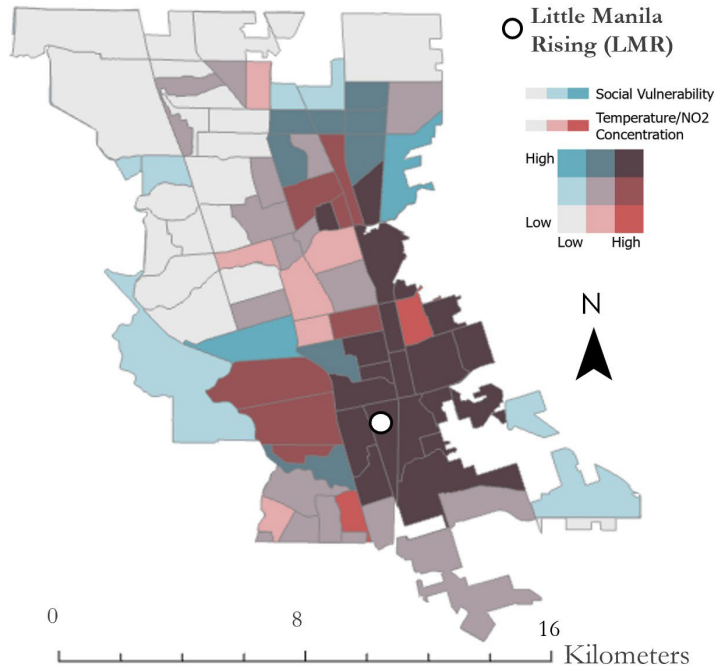




San Joaquin Valley Health & Air Quality II

As climate change increases daily temperatures, extreme heat events become a frequent occurrence. These events disproportionately impact communities with high urbanization and a lack of heat mitigating vegetation, creating Urban Heat Islands (UHIs) across a city. Stockton has a long history of redlining communities of color into areas that experience these UHIs, as well as poor air quality.

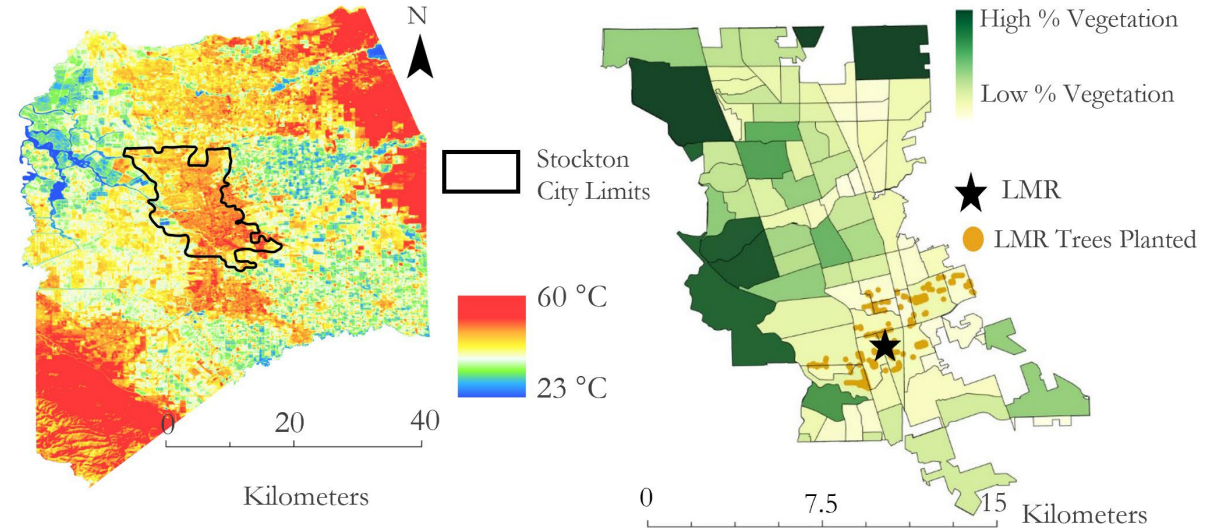
Stockton Temperature and NO₂ vs. Social Vulnerability



The **DEVELOP** team created this map using satellite imagery and population demographic data to visualize the communities that are at higher risk from heat exposure and increased vehicle emissions (NO₂). Extreme heat and unhealthy air quality can pose life threatening issues such as:

1. Heat stroke
2. Cardiovascular disorder
3. Respiratory disorder
4. Dehydration

Neighborhoods in South Stockton are subjected to **Higher Temperatures and NO₂ pollutants.**



South Stockton experiences average land surface temperatures of 115° F. A 15° F increase compared to *rural locations* and a 5.5° F increase compared to *areas north* of the city.



Neighborhoods with low vegetation are **65% more** likely to experience **hotter** temperatures.

Project Purpose

We looked to highlight the overlap of high average temperatures and NO₂ to identify regions that are most at risk to health effects caused by these factors. We found that in San Joaquin County, population demographic data such as **level of education, race, and income** are linked to increased urban heat temperatures and poor air quality. Additionally, we observed that NO₂ concentrations are typically higher along major roadways and urban areas. Little Manila Rising, a local non-profit and DEVELOP's partner in southern Stockton, has focused on its urban forestry program, planting tree to help mitigate UHIs.

Miembros



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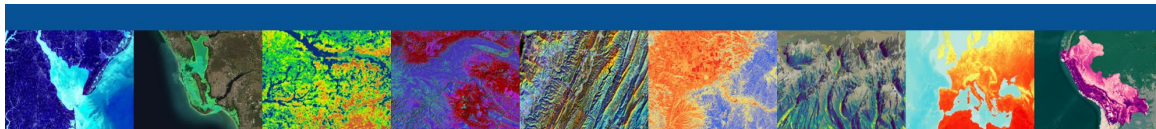


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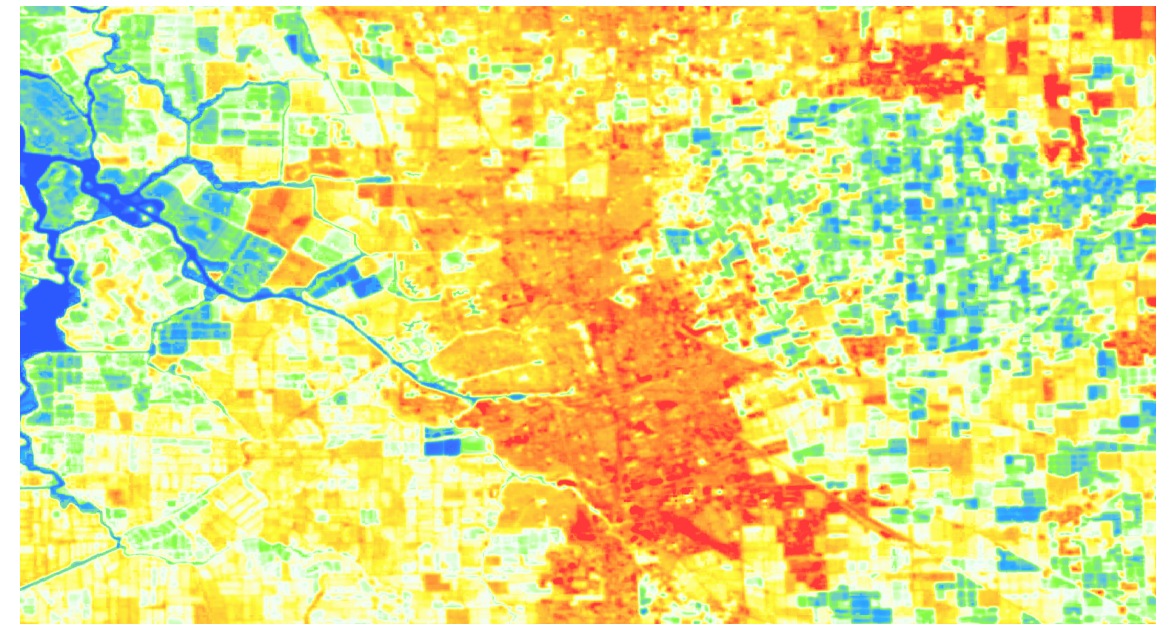
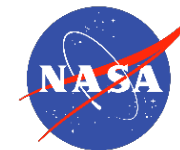
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Evaluación de la Distribución de las Islas de Calor Urbano y sus Intersecciones con la Calidad del Aire para Comprender las Vulnerabilidades Convergentes



San Joaquin Valley Health and Air Quality II

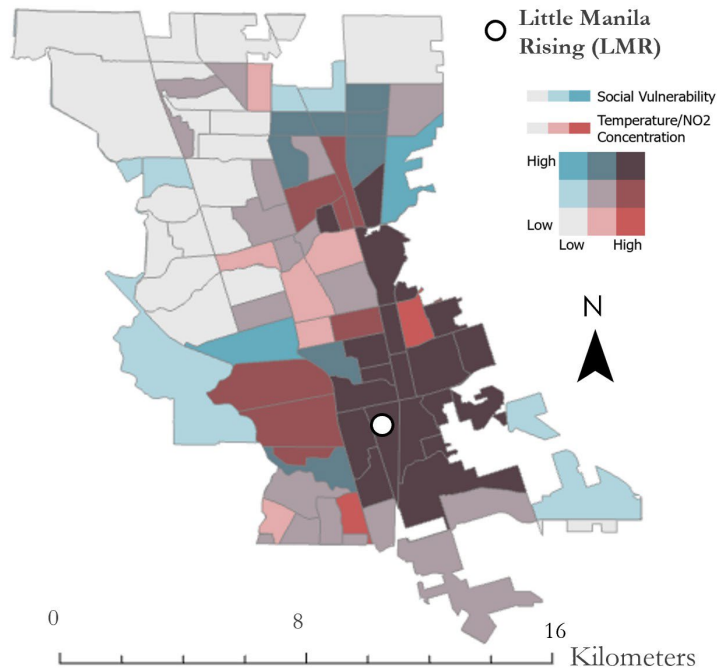




San Joaquin Valley Health & Air Quality II

Debido a los cambios climáticos, la temperatura se ve en aumento a diario, los eventos de calor extremo se vuelven más frecuentes. Estos eventos afectan desproporcionadamente en áreas con alta urbanización y falta de vegetación que ayude a mitigar el calor, creando Islas de Calor Urbanas (ICUs) en toda la ciudad. Stockton tiene una larga historia de segregación racial que ha ubicado a comunidades de color en áreas que experimentan estas ICUs, así como una mala calidad de aire.

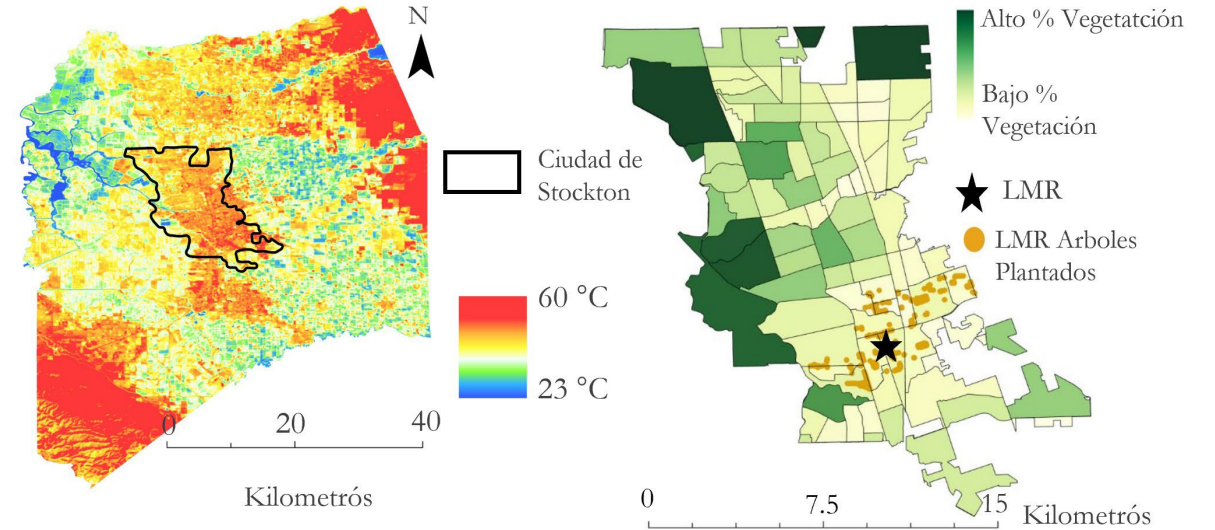
Temperatura y NO₂ de Stockton vs. Vulnerabilidad Social



El equipo de **DEVELOP** creó este mapa utilizando imágenes de satélite y datos demográficos de población para visualizar las comunidades que están en mayor riesgo de exposición al calor y de emisiones vehiculares aumentadas (NO₂). El calor extremo y la mala calidad del aire pueden plantear problemas que ponen en peligro la vida, tales como:

1. Insolación
2. Transtorno cardíaco
3. Transtorno respiratorio
4. Deshidratación

Las colonias del sur de Stockton están sujetas a temperaturas y contaminantes de NO₂ **más altas.**



El sur de Stockton esta sujeto a temperaturas promedio de 115°F. Esto representa un aumento de 15°F en comparación con las **ubicaciones rurales.**

Las colonias con poca vegetación son **65% más** probables de experimentar temperaturas más altas.

Propósito del Proyecto

Buscamos resaltar la superposición de las altas temperaturas promedio y el NO₂ para identificar las regiones que están más en riesgo de sufrir efectos en la salud causados por estos factores. Encontramos que en el condado de San Joaquín, los datos demográficos de la población, como el **nivel educativo, la raza** y los **ingresos**, están vinculados con el aumento de las temperaturas urbanas y la mala calidad del aire. Además, observamos que las concentraciones de NO₂ son más altas a lo largo de las principales vías de tránsito y las áreas urbanas. Little Manila Rising, una organización local sin fines de lucro y socio de DEVELOP en Stockton, se ha enfocado en su programa de arboricultura urbana, plantando árboles para ayudar a mitigar las ICUs.