

Impacto de la Contaminación Atmosférica en los Casos de Asma en California

Grupo Morado

Enero 2026

Contenido

- 1 Descripción del Proyecto
- 2 Gestión del proyecto
- 3 Plan de Preservación de Datos
- 4 Fuentes de datos
- 5 Análisis de datos

Motivación

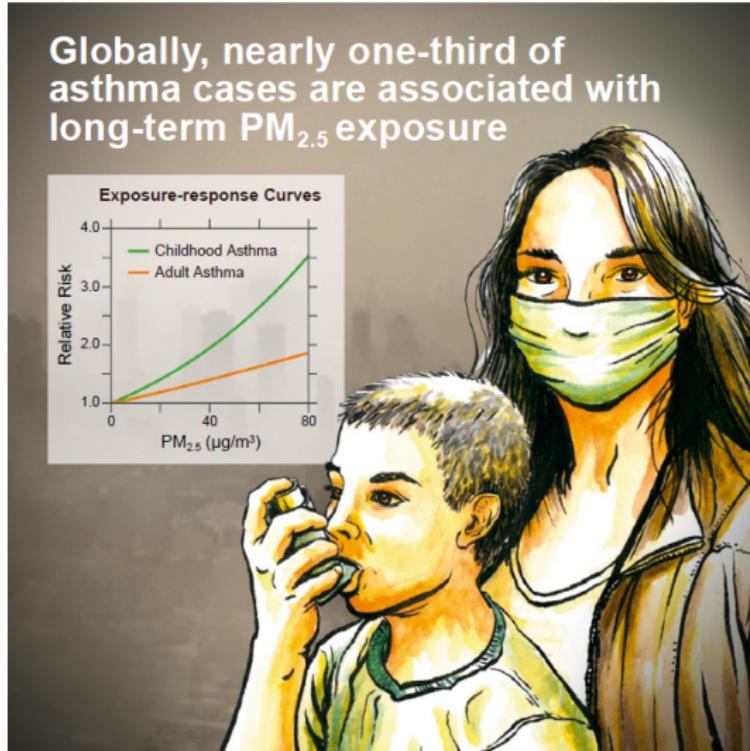


Figure: Portada del artículo de One Earth [4]

Motivación

- Negligencia de repercusiones ambientales
- Impacto sobre enfermedades respiratorias
- Aumento de la prevalencia del asma
- Intensificación de ataques de asma
- Caso de estudio: California

Objetivos

- Recopilar datos históricos
- Evaluar estado actual (*WHO guidelines* [7])
- Evaluar cobertura de estaciones de monitoreo
- Análisis en relación con la incidencia de asma
- Proponer medidas
- Modelo predictivo de ingresos hospitalarios

Requisitos

- Datos
- Herramientas y Software
- Recursos humanos
- Recursos materiales
- Organización temporal

Paquetes de trabajo

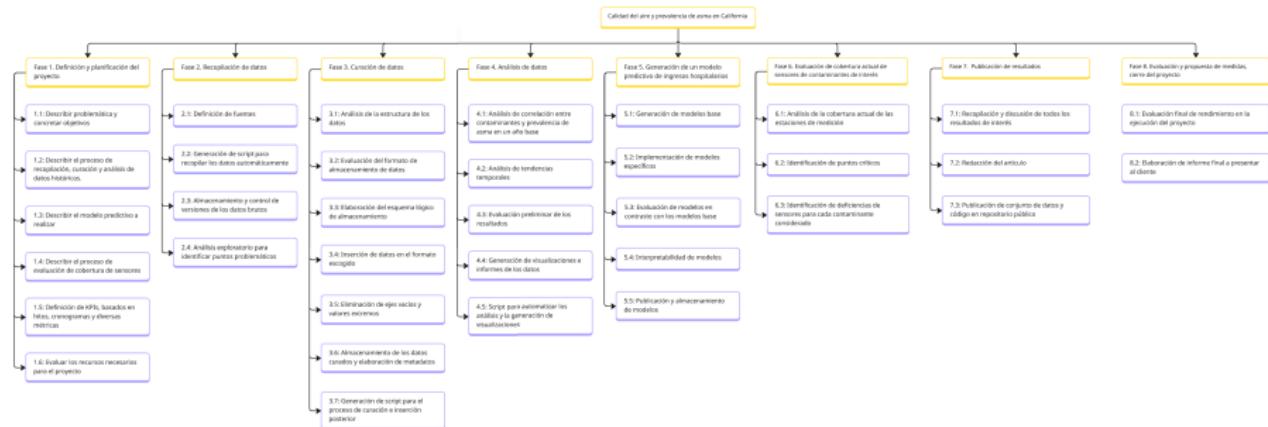
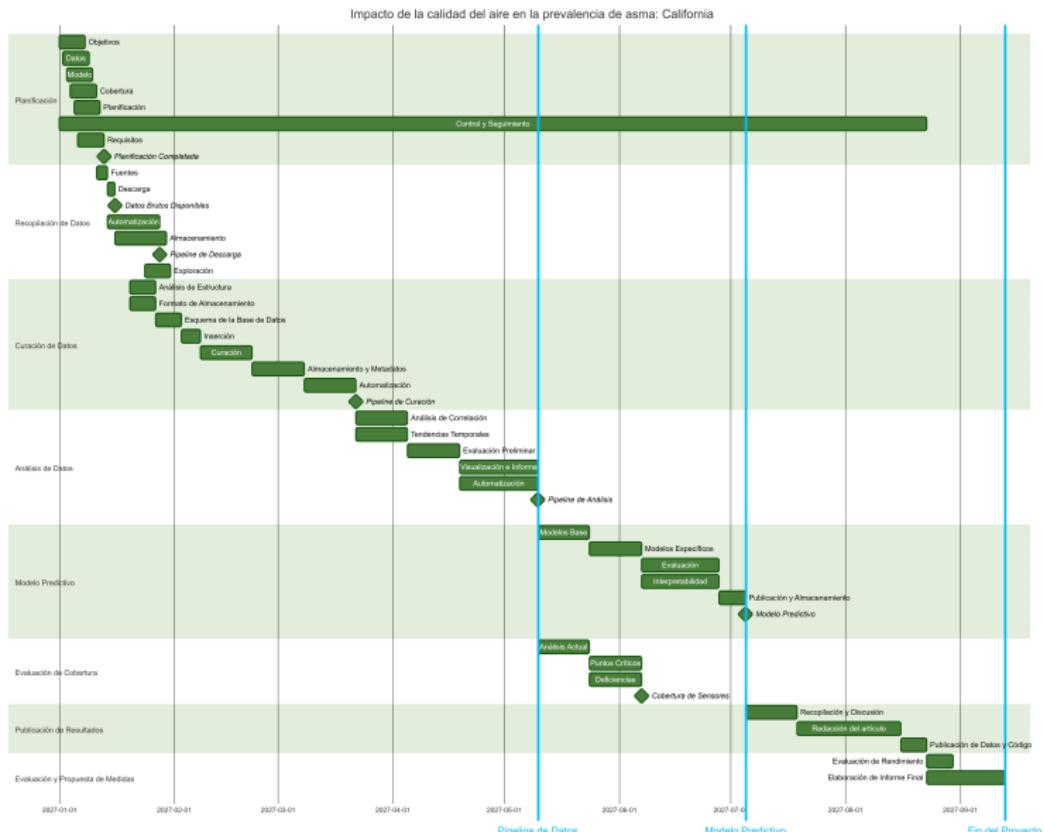
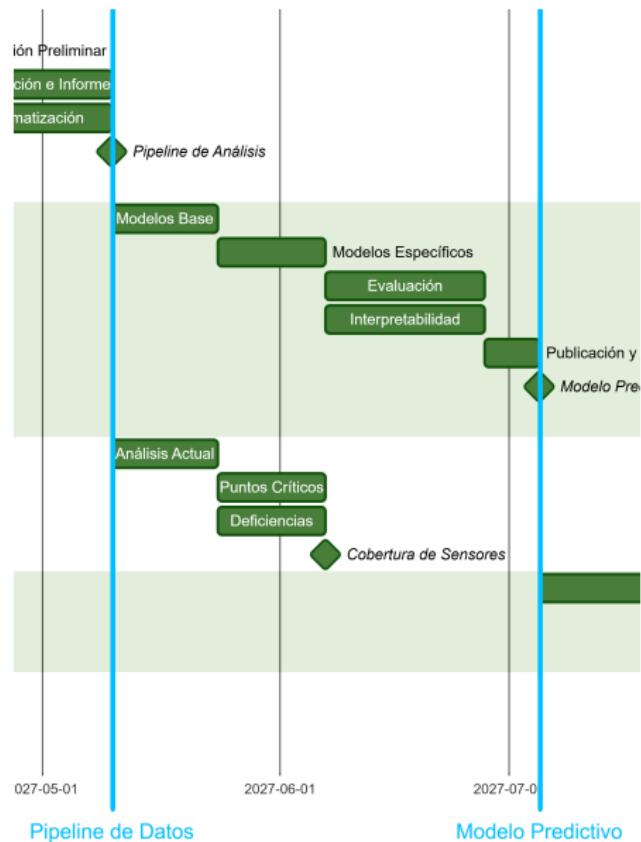


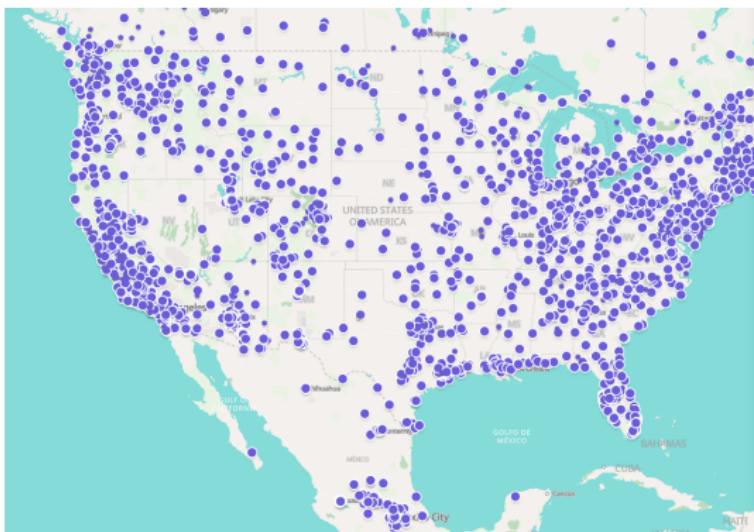
Figure: Esquema de Paquetes de Trabajo (WBS)

Cronograma



Cronograma





Contaminantes

- PM_{2.5} [2]

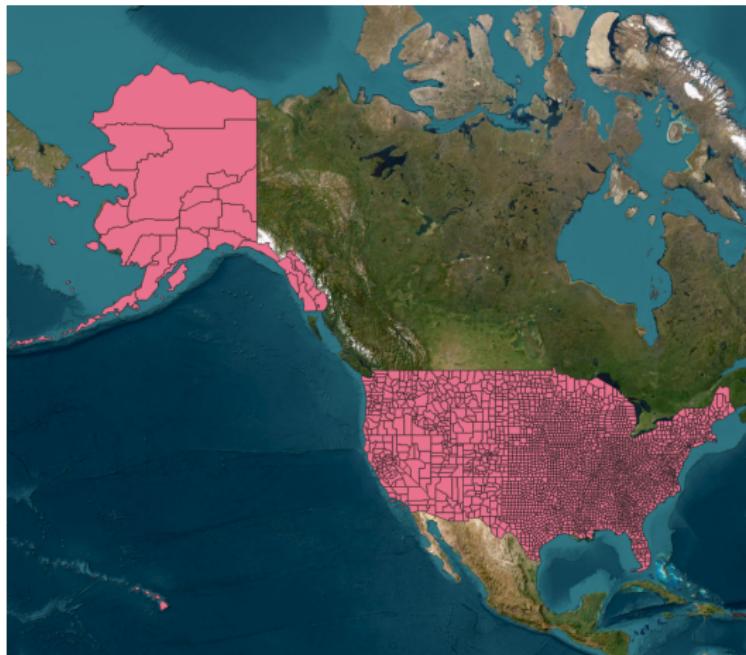
- PM₁₀ [2]

- NO₂ [2, 3]

- O₃ [6]

Geometría de los condados

Shapefiles de los condados de California [5]



Geometría de los condados



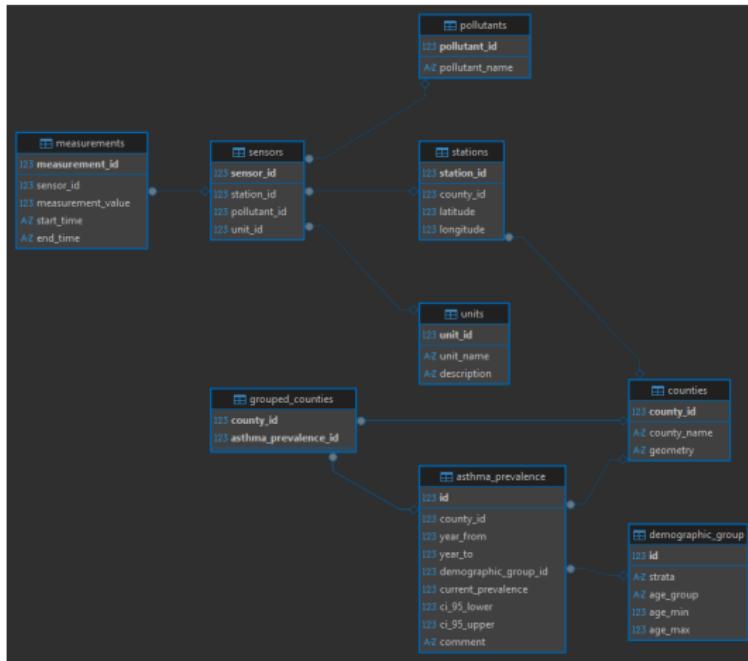
API de OpenAQ

- *Bounding Box* de California
- Límite de peticiones por minuto: 60
- Límite de peticiones por hora: 2000
- Número de peticiones a realizar: 5333

¡2 a 3 horas de ejecución!

- Prevalencia de asma (CHIS, *California Health Interview Survey* [1])
- Agregaciones
 - Grupo demográfico
 - Condado
 - Anual

Base de datos integrada



 California Department of Public Health.

Asthma prevalence.

<https://catalog.data.gov/dataset/asthma-prevalence-6908c>, 2025.

Data last modified: 2025-12-05. Metadata updated: 2025-12-23. Accessed: 2026-01-01.

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Exposure to traffic-related air pollution and risk of development of childhood asthma: A systematic review and meta-analysis.

Environment International, 100:1–31, March 2017.

URL: <https://www.sciencedirect.com/science/article/pii/S0160412016307838>,

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 Rajen N. Naidoo.

NO₂ increases the risk for childhood asthma: a global concern.

The Lancet Planetary Health, 3(4):e155–e156, April 2019.

URL: [https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(19\)30059-2/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(19)30059-2/fulltext),
doi:10.1016/S2542-5196(19)30059-2.

 Ruijing Ni, Hang Su, Richard T. Burnett, Yuming Guo, and Yafang Cheng.

Long-term exposure to PM2.5 has significant adverse effects on childhood and adult asthma: A global meta-analysis and health impact assessment.

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 U.S. Census Bureau.

TIGER/Line shapefiles: Counties (tl_2025_us_county.zip), 2025.

Accessed: 2026-01-01.

URL: https://www2.census.gov/geo/tiger/TIGER2025/COUNTY/tl_2025_us_county.zip.

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Health effects of ozone in patients with asthma and other chronic respiratory disease, June 2025.

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URL:

<https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-patients-asthma-and-other-chronic>.

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Guideline. Published 22 September 2021. ISBN 978-92-4-003422-8. Accessed 2026-01-01.

URL: <https://www.who.int/publications/i/item/9789240034228>.