

Applying GIS to improve the sustainability of the city

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Something about me

- ▶ Bachelor's degree in Environmental Science (ULE)
- ▶ Master in Meteorology and Geophysics (UCM)
- ▶ Research Assistant in GITECO (UC)



Global change

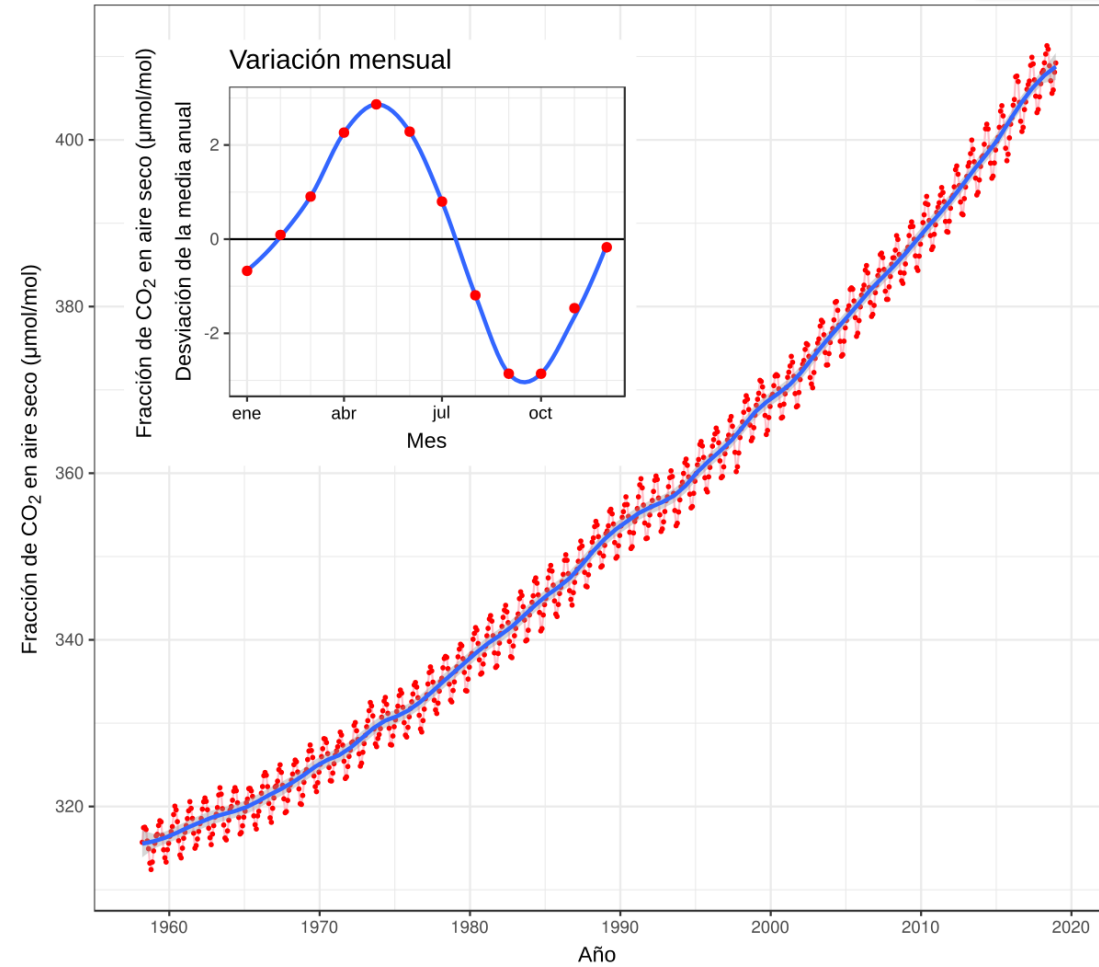
- ▶ Increasing world population
- ▶ Population migration to cities

Urban Population	1950	2018	2050
Millions	751 M	4 220 M	6 680 M
% world population	30%	55%	68%

Global change

- ▶ Increasing world population
- ▶ Population migration to cities
- ▶ Climate change

Media mensual de la concentración de CO₂
Mauna Loa 1958 - 2018



R. F. Keeling, S. J. Walker, S. C. Piper y A. F. Bollenbacher
Scripps CO₂ Program (<http://scrippsco2.ucsd.edu>). Visitada 2019-01-06

Global change

- ▶ Increasing world population
- ▶ Population migration to cities
- ▶ Climate change
- ▶ Economic crisis



Source: <https://www.morningstar.es/>

Context

- ▶ Associated environmental problems are appearing.

Context

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- ▶ Floods



2.8 billions of people affected by floods 1980-2009. (Doccy et al., 2013)

Context

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- ▶ Floods
- ▶ Urban Heat Island (UHI)



Context

- ▶ Associated environmental problems are appearing.
 - ▶ Floods
 - ▶ Urban Heat Island (UHI)
 - ▶ Atmospheric Pollution



8 millions/yr people die. (Lelieveld et al. 2019)

How to improve

- ▶ Sustainable urban drainage systems (SUDS)
- ▶ Green roofs



GIS tool



Modeling of these environmental problem.



Improve the efficiency choosing the best infrastructures location.



Facilitate decision making

Conclusion

- ▶ There are environmental problems related to cities that must be solved.
- ▶ The environmental problems of cities can be solved through different technologies applied to infrastructures that allow cities to be more resilient and sustainable.
- ▶ Our tool will help decision-making and will make more efficient use of the resources available.



THANK YOU