

Monitoring air pollutants

nustem



**Northumbria
University
NEWCASTLE**



What is air made of?



AIR

is a mixture of gases.

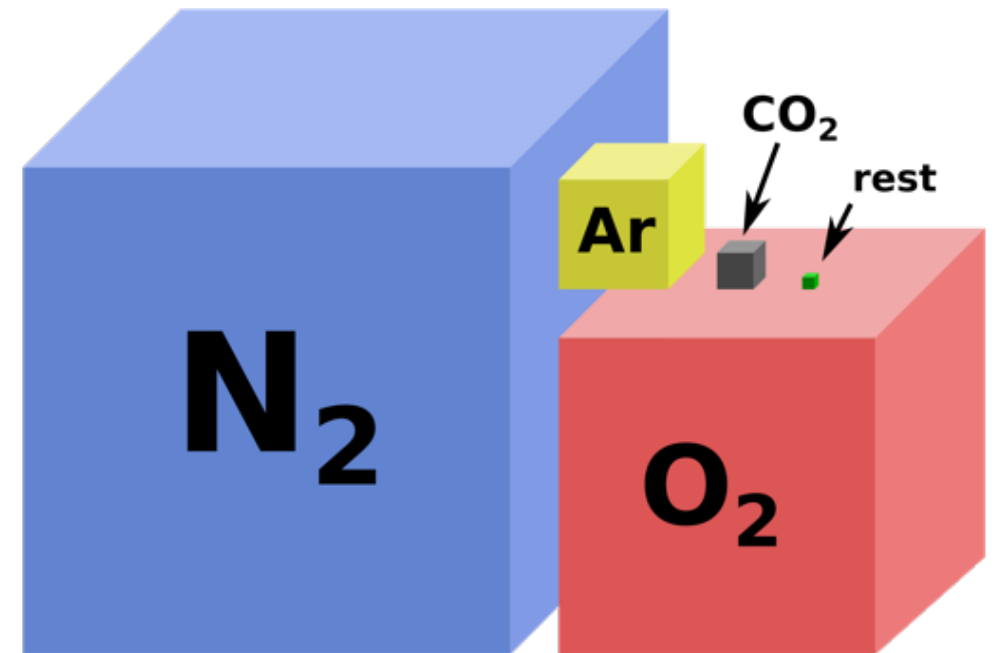
Nitrogen (N_2) – 78%

Oxygen (O_2) – 21%

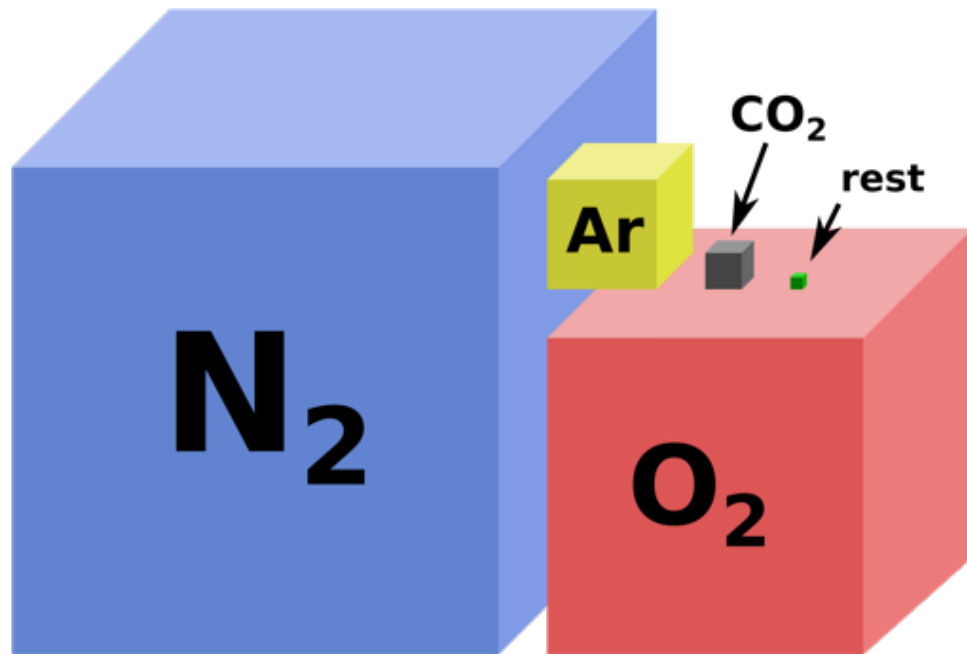
Argon (Ar) – 0.93%

Carbon dioxide (CO_2) – 0.04%

Rest – 0.03%



The atmosphere



+

Water vapour
Air pollutants

What are air pollutants ?



Air pollutants

Any solid, liquid (and some gas) particles which are suspended in air.



Some SOURCES of air pollution



Volcanic
eruptions
Pollen
season

Natural



Incinerating
waste



Industry
by-
products



Burning
fossil
fuels



Agricultural
practices

Human activity

Some **SECTORS** adding to air pollution



**Industry &
energy supply**



**Waste
management**



**Household
energy**

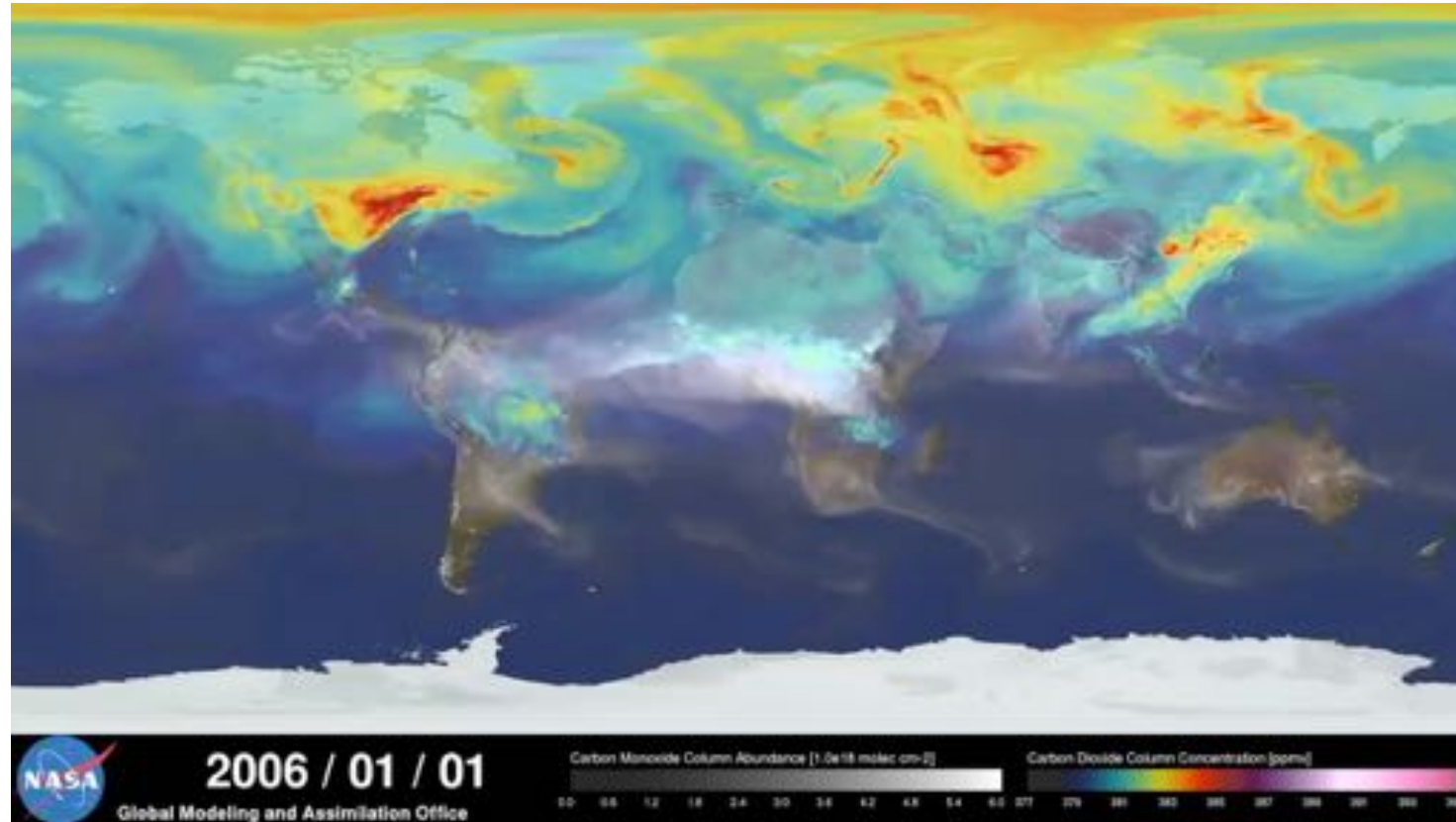


Transport



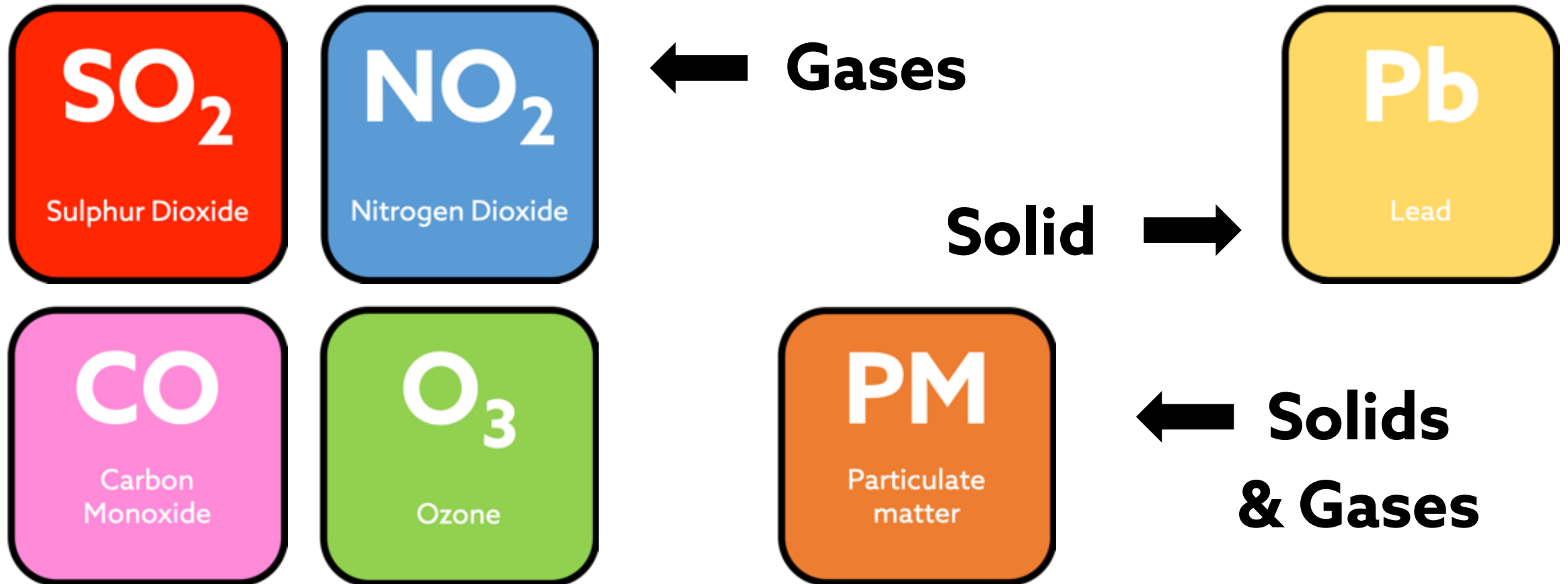
Agriculture

Air pollution **TRAVELS** everywhere



Weather patterns and ocean currents

Pollutants increased by HUMAN ACTIVITY



Particulate Matter PM

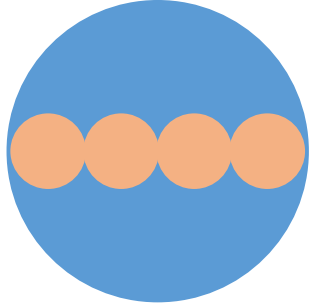
Particulate Matter or **PM** affects more people than any other air pollutant.

PM is named after its size



Particulate Matter PM

- **PM₁** – 1 microns or less
- **PM_{2.5}** – 2.5 microns or less



PM₁₀ – 10 microns or less

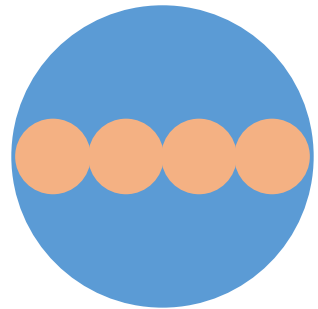
1 micron
=

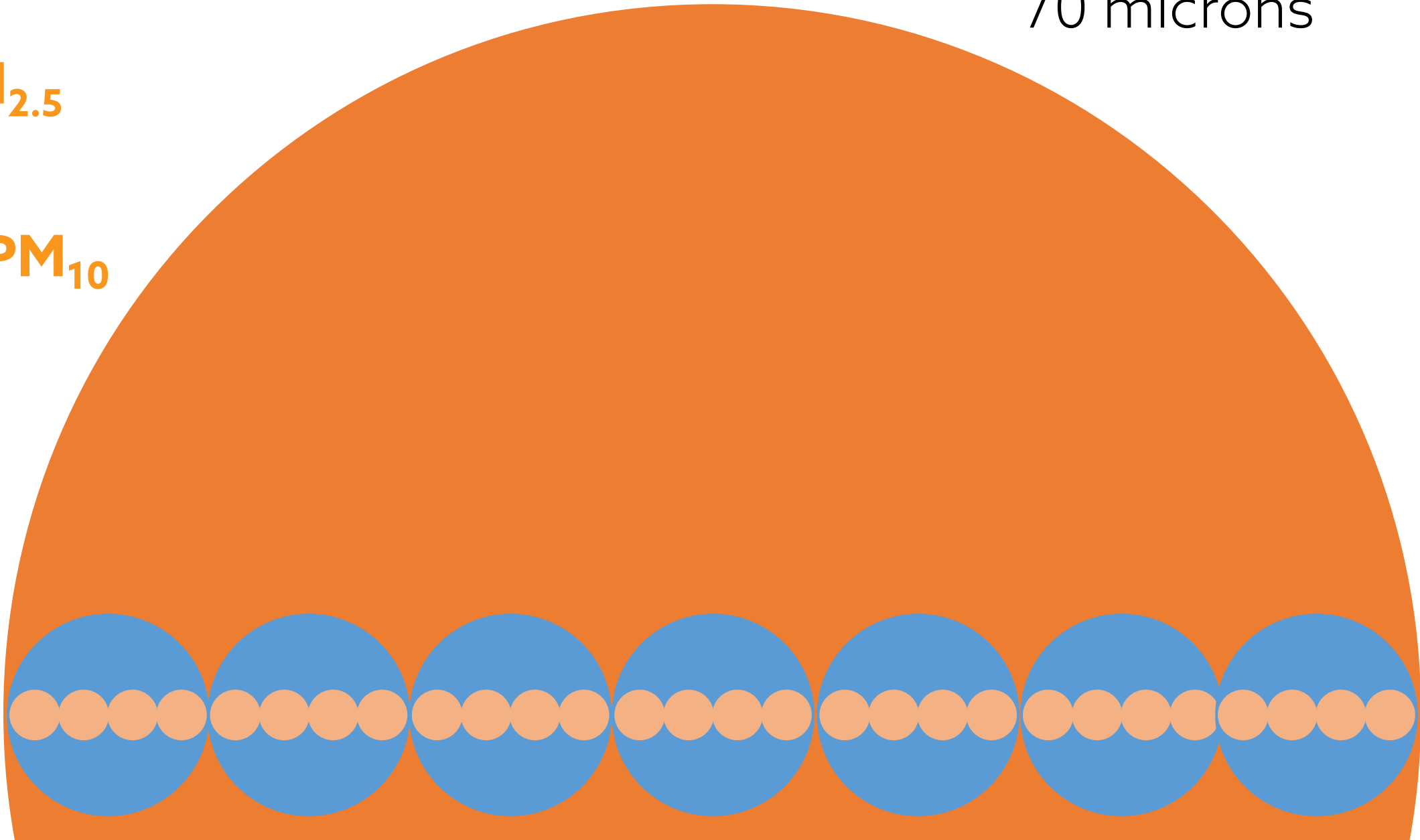
0.000001 metre

Human hair
70 microns

• **PM₁**

● **PM_{2.5}**

 **PM₁₀**



STEM PERSON
OF THE
WEEK

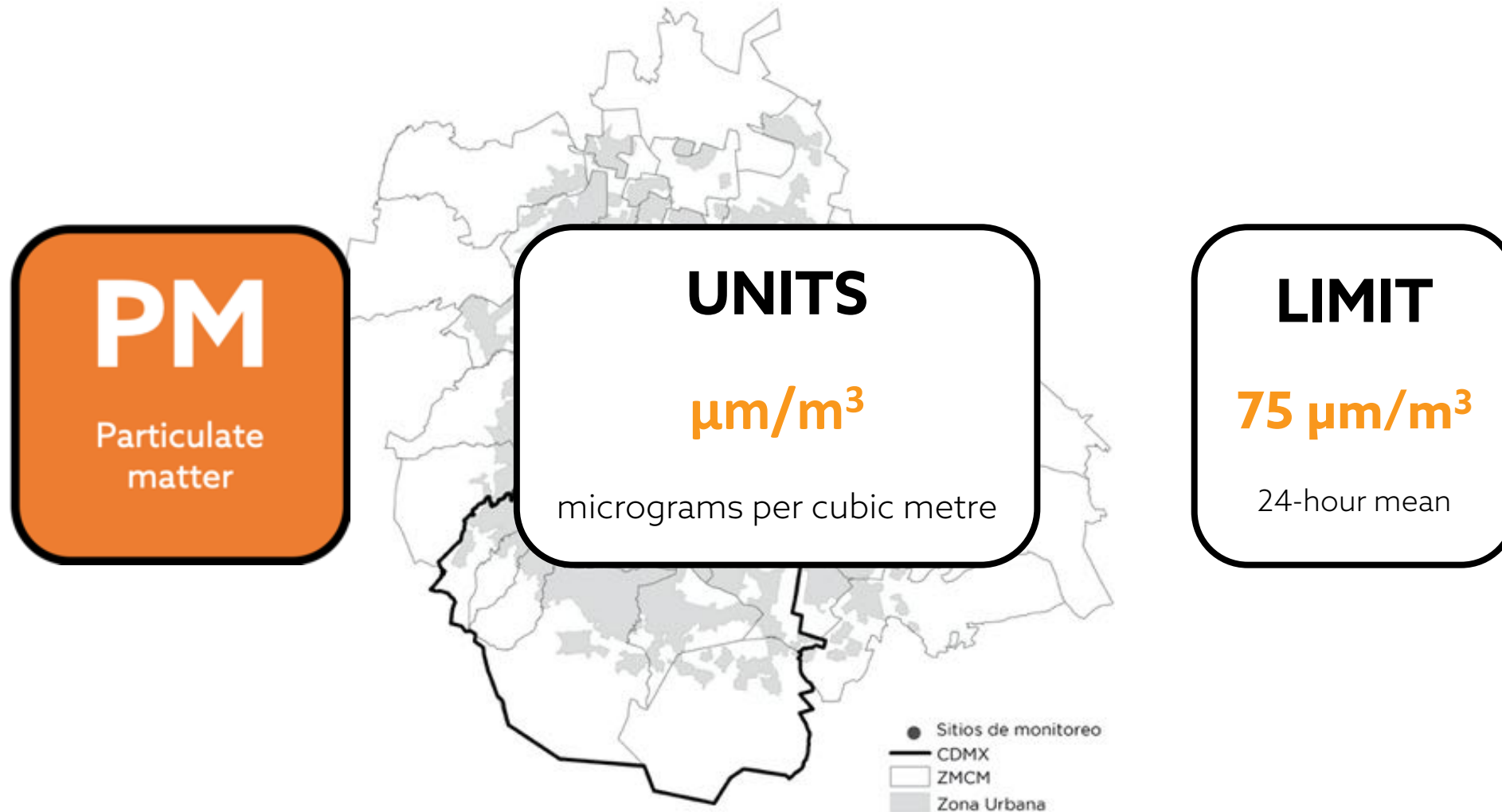
Elizabeth Vega

Environmental Scientist

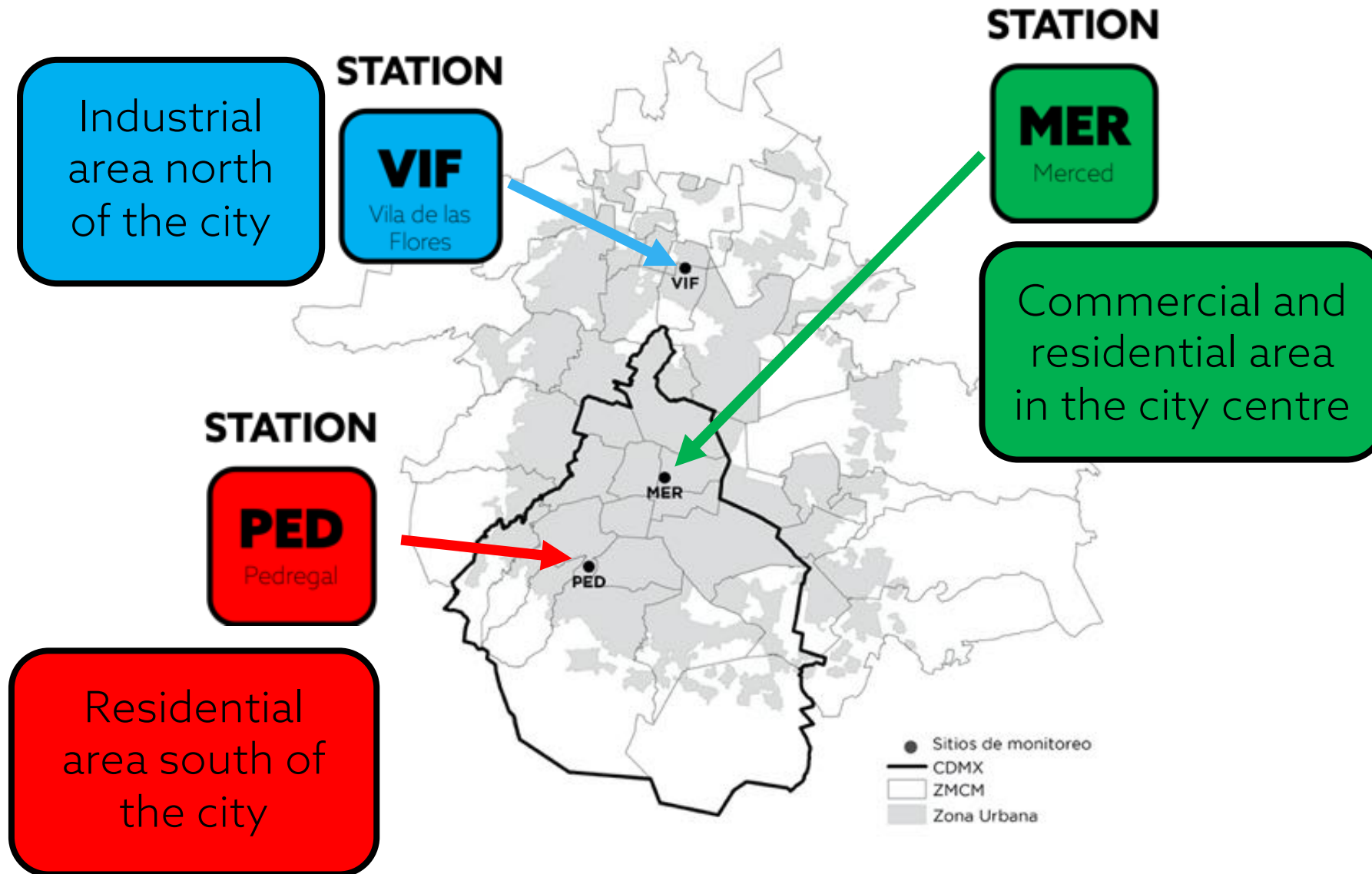
Elizabeth investigates air pollution sources. She communicates her findings to authorities, helping them to create strategies to improve air quality.



Measuring PM₁₀ levels in CDMX



Monitoring PM₁₀ levels in CDMX



**01 - 07
APRIL**

2000

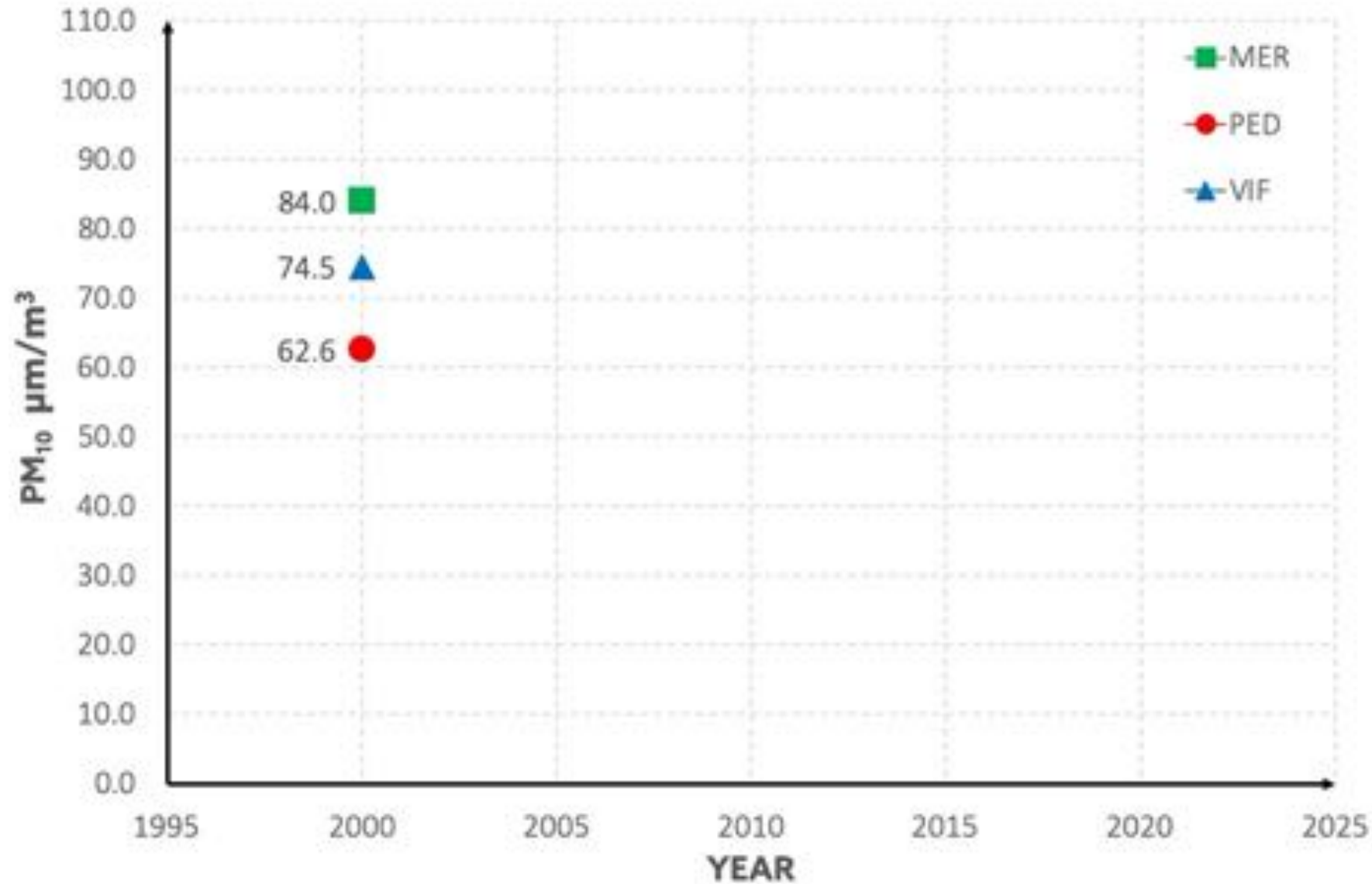
2005

2010

2015

2020

PM₁₀ levels in 2000



MER

Commercial and residential area in the city centre

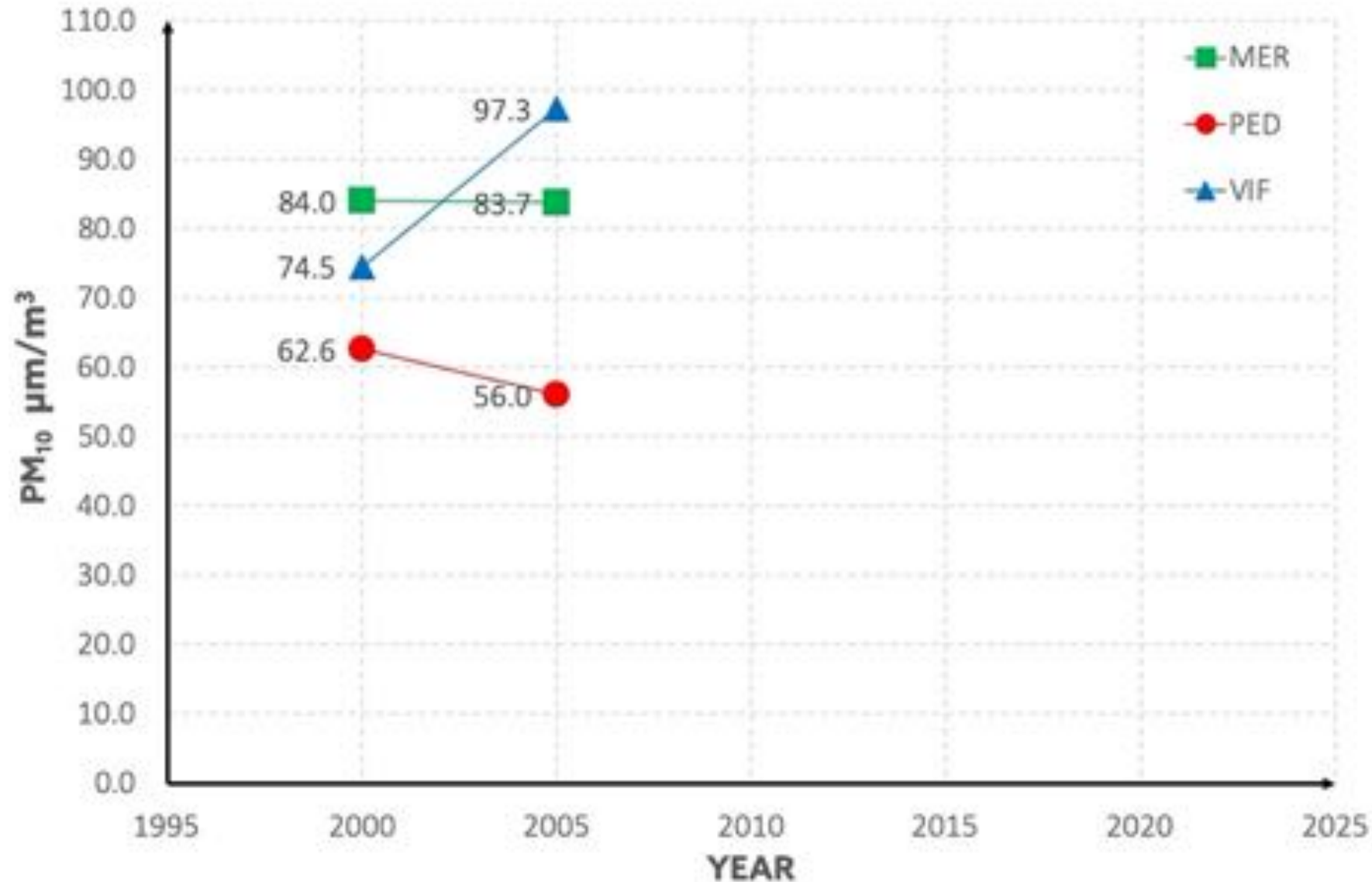
PED

Residential area south of the city

VIF

Industrial area north of the city

PM₁₀ levels in 2005



MER

Commercial and residential area in the city centre

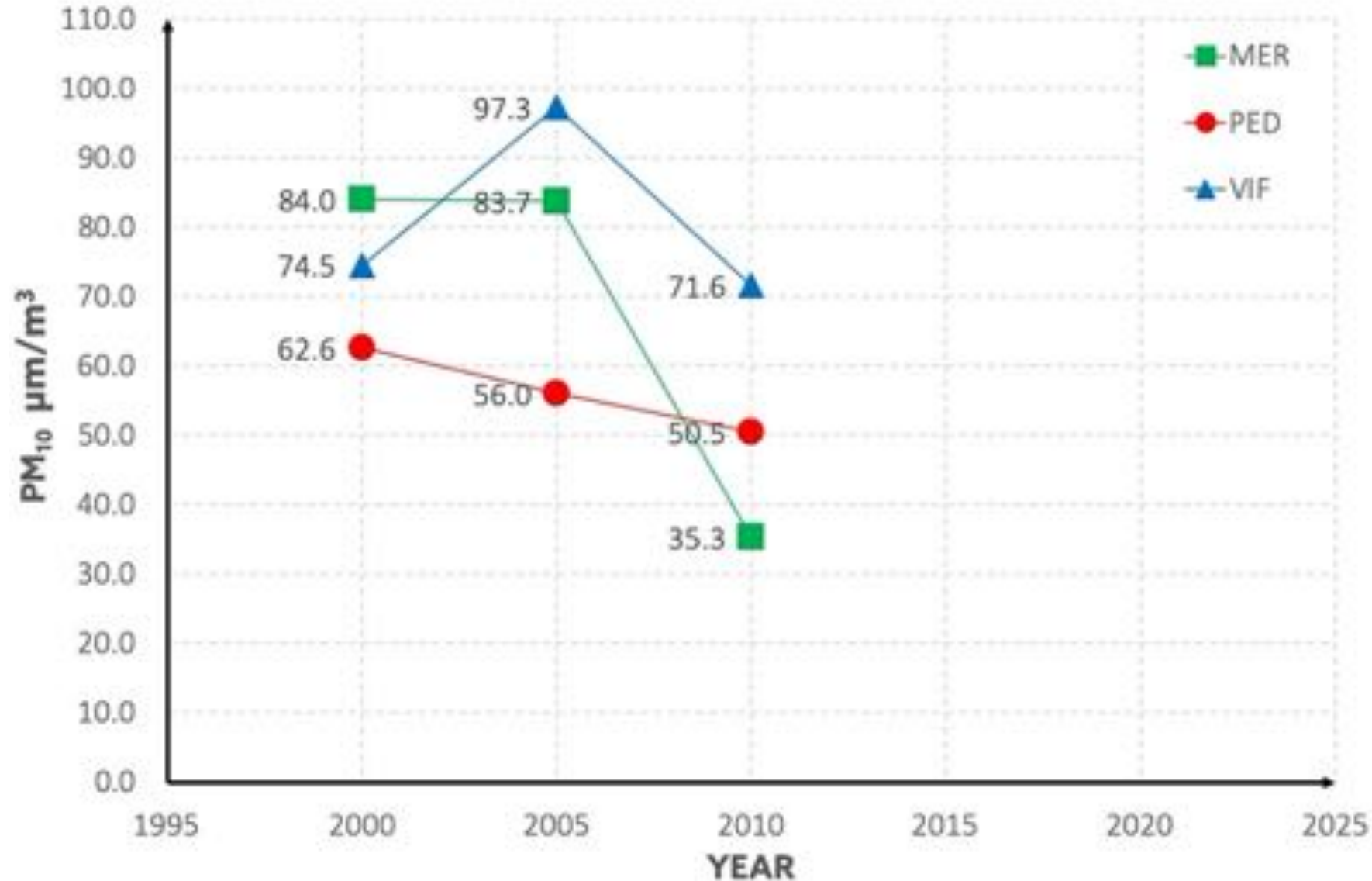
PED

Residential area south of the city

VIF

Industrial area north of the city

PM₁₀ levels in 2010



MER

Commercial and residential area in the city centre

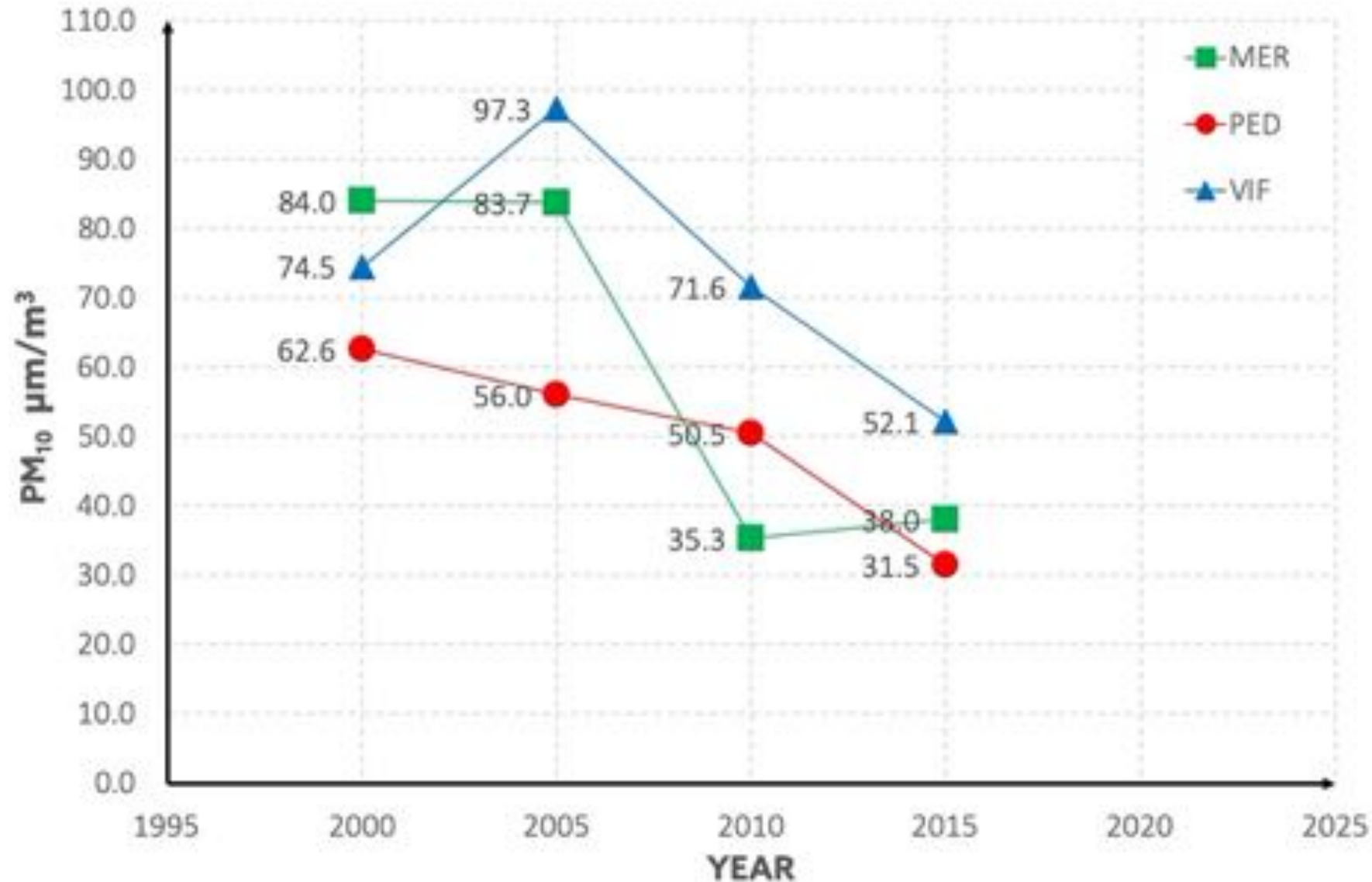
PED

Residential area south of the city

VIF

Industrial area north of the city

PM₁₀ levels in 2015



MER

Commercial and residential area in the city centre

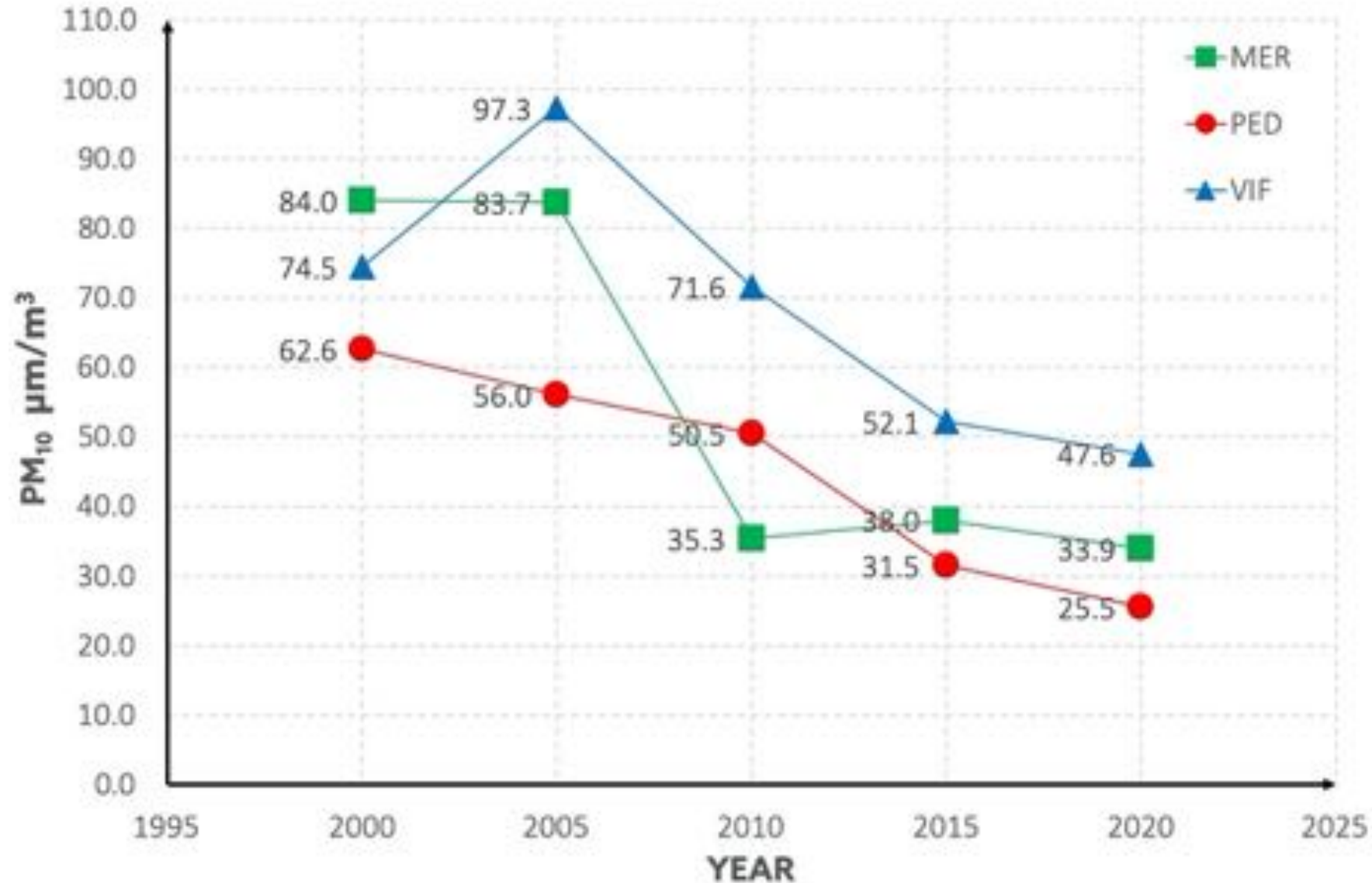
PED

Residential area south of the city

VIF

Industrial area north of the city

PM₁₀ levels in 2020



MER

Commercial and residential area in the city centre

PED

Residential area south of the city

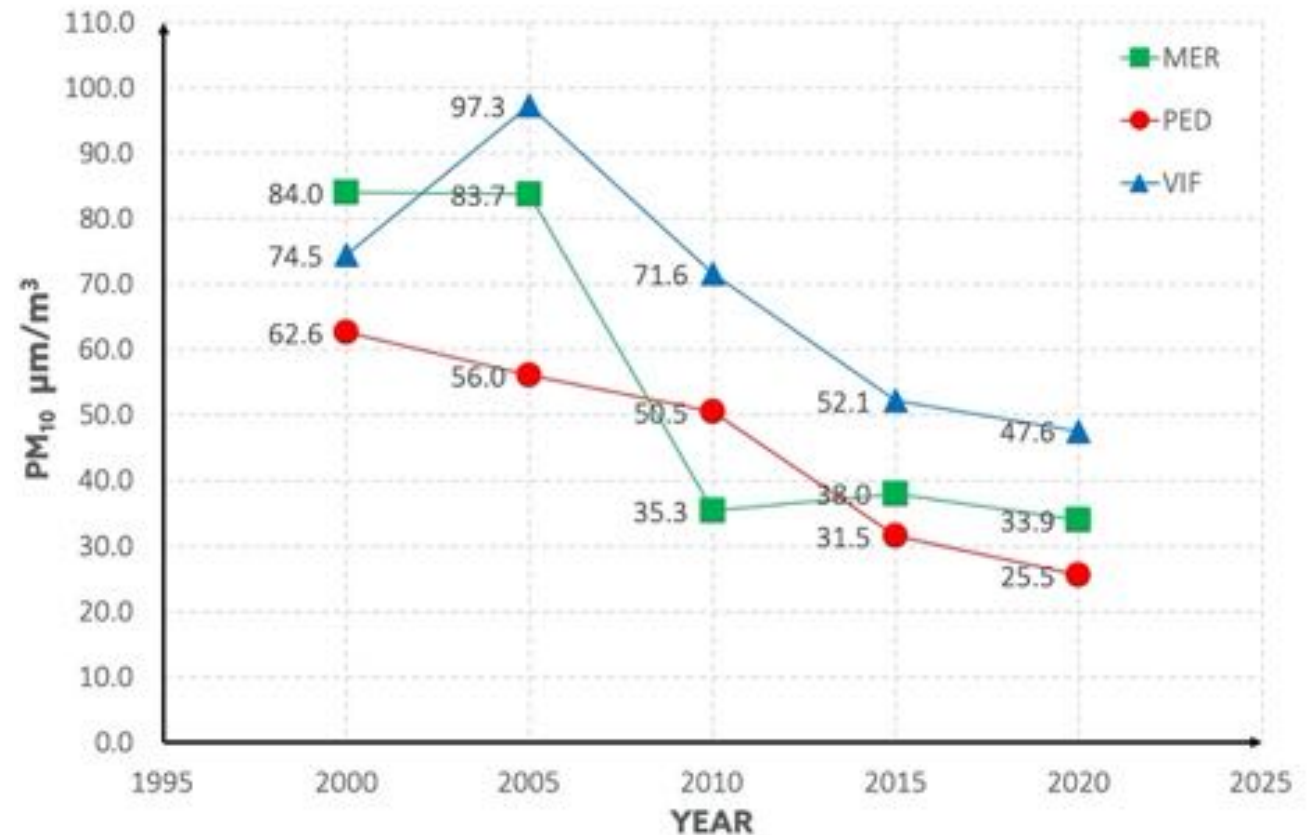
VIF

Industrial area north of the city

PM₁₀ levels in CDMX

How did the PM₁₀ levels **changed** over 20 years?

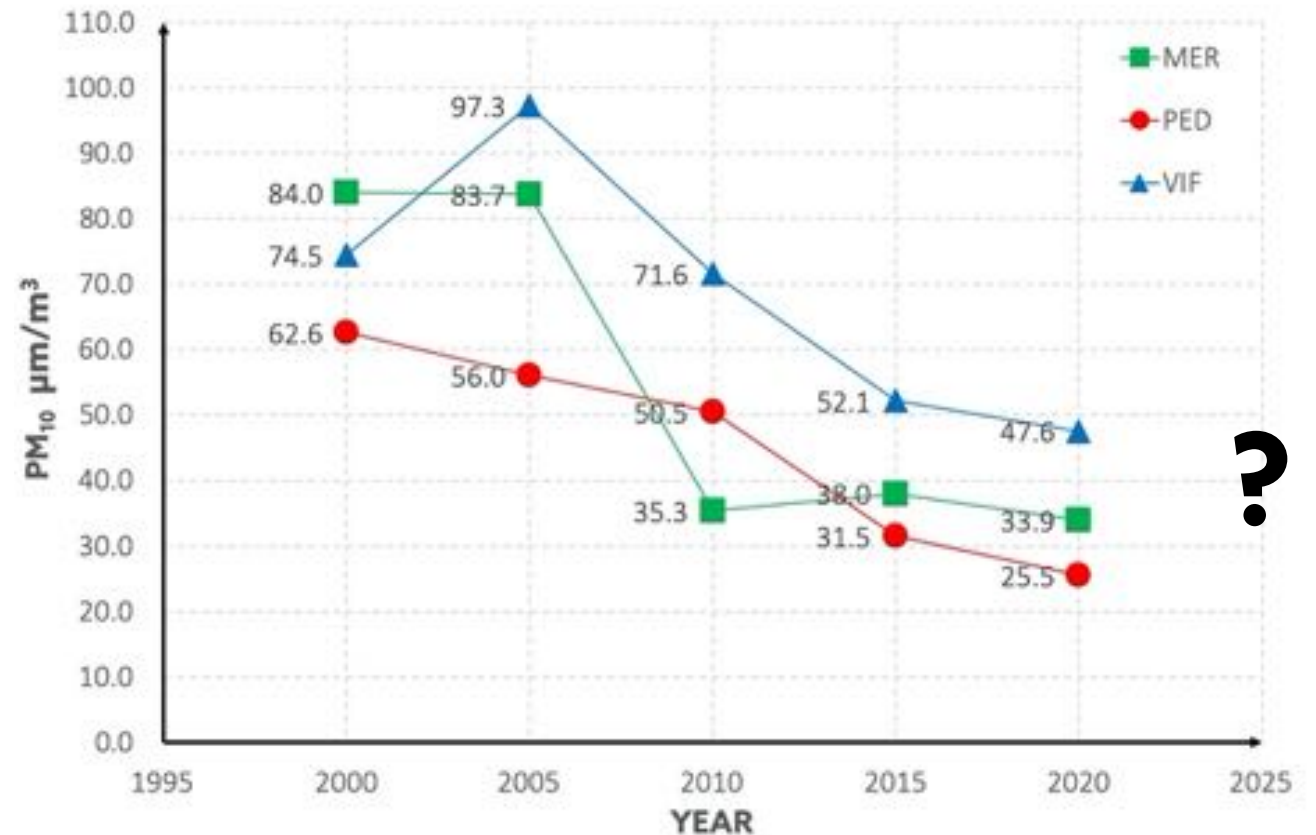
Why did the PM₁₀ levels **changed** over 20 years?

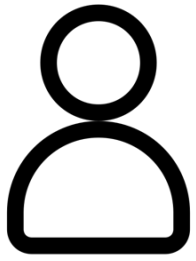


PM₁₀ levels in CDMX

Can you **predict** what the levels of PM₁₀ will be in 2025?

How can we ensure this happens?

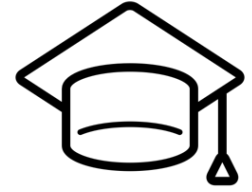




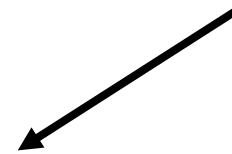
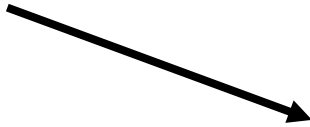
You



Family & friends



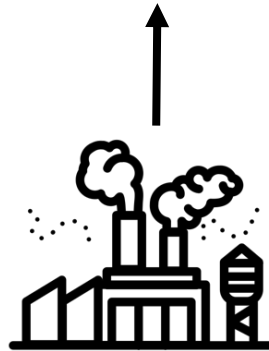
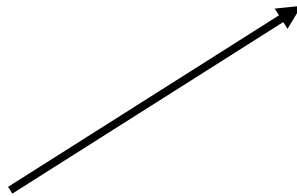
School



EVERYONE IS RESPONSIBLE



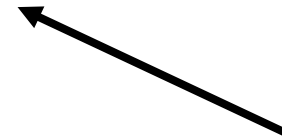
Government

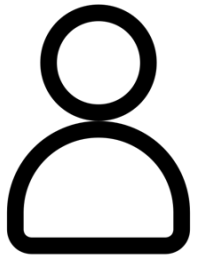


Business
& industry



Local
community

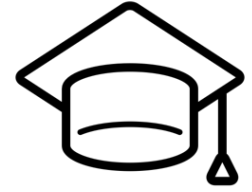




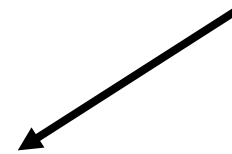
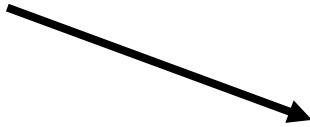
You



Family & friends



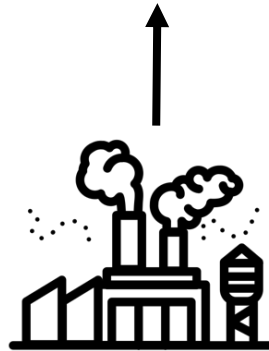
School



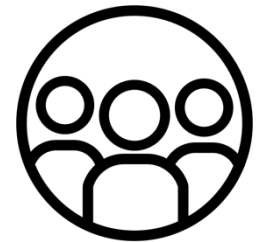
EVERYONE CAN HELP



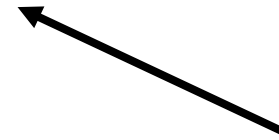
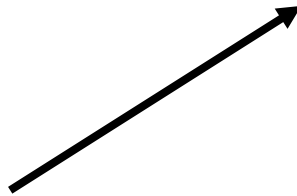
Government



Business
& industry



Local
community



CLEAN AIR FOR ALL

SUSTAINABLE DEVELOPMENT GOALS



Extension:
**Monitoring air pollutants in and around
school**



Get involved: in and around school

You can request a portable monitoring station to measure PM levels in around your school

Visit the MANAPRE website for more information

