

2nd MIDTERM CONFERENCE Venice, 6th October 2021



The effect of the COVID-19 lockdown on air quality in Slovenia

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COVID-19 lockdown and AQ in Europe

- EEA "Air quality in Europe 2020 report" summarizes the effects of lockdown measures with focus on the situation in spring 2020
- The lockdown measures varied across European countries, from milder (e.g. in Sweden) to strictly enforced (e.g. in Spain and Italy).
- Lockdown measures led to significant reductions in emissions, particularly from transport.
- As a consequence concentrations of some pollutants were significantly lower across Europe and cannot be explained by meteorology.





Average NO₂ 2019/2020 reductions

Tropospheric vertical column, for the **period 15 March to 15 April** (Sentinel-5P/TROPOMI) Reductions in Italy: Milan (54 %), Turin (47 %), Rome and Genoa (39 %), Naples: (36 %)











NO₂ reductions (EEA report, 2020)

April 2020 compared to April 2015 – 2019

In situ measurements and ensemble CAMS simulations

Highest reductions at traffic stations in Spain and Italy – up to **70 %**

Few increases at sites where past NO_2 levels were low.



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PM₁₀ reductions (EEA report, 2020)

April 2020 compared to April 2015 – 2019

In situ measurements and ensemble CAMS simulations

Highest reductions at traffic stations in Spain and Italy – up to **40 %**

Estimated increases mostly at rural background stations



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Estimate of COVID-19 impact for Slovenia

Time periods analyzed:

- Strict lockdown in Spring: March 15th May 15th, 2020
 Significantly drier, only 30% 40 % precipitation relative to previous years
 Somewhat stronger winds than in past
 Slighly higher temperatures close to past years average
- Less restrictive in Winter: November 1st December 31st, 2020 November warmer with more sunny days than usual December warmer with more precipitation than usual
- Comparisons of 2020 with the same time period in 2012 2019 Separately for NO₂, NO_x, PM₁₀, O₃



Monitoring stations





















NO_2



November&December 2020:

9 % less than in 2019, not consistent22 % less than in 2012 -2019, not consistent









November&December 2020:

6 % less than in 2019, not consistent 20 % less than in 2012 -2019, not consistent





PM_{10}



November&December 2020:

23 % **more** than in 2019, not consistent 19 % less than in 2012 -2019, not consistent

Period: 1.11. - 31.12.







Conclusion

- Strict lockdown in spring 2020:
 - significant lower levels of NO₂ and NO_X
 - less pronounced effect on PM₁₀
- Less restrictive lockdown at the end of 2020:
 - effect on NO_2 , NO_x and PM_{10} was insignificant



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Thank you!

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