

Real-time CO₂ emissions estimation in Spain and application to the COVID-19 pandemic

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Abstract-

CO₂ emissions are one of the major contributors to global warming. The variety of emission sources and the nature of CO₂ hinders estimating its concentration in real time and therefore to adopt flexible policies that contribute to its control and, ultimately, to reduce its effects. Spain is not exempted from this challenge and CO₂ emissions are published only at the end of the year and as an aggregated value for the whole country, without recognising the existing differences between the regions (the so-called, Autonomous Communities). The recent COVID-19 pandemic is a clear example of the need of accurate and fast estimation methods so that policies can be tailored to the current status and not to a past one. This paper provides a method to estimate monthly emissions of CO₂ for each AACC in Spain based on data that are published monthly by the relevant administrations. The paper discusses the approximations needed in the development of the method, predicts the drop in emissions due to the reduced industrial activity during the pandemic in Spain and provides the estimation of future emissions under three recovery scenarios after the pandemic.

Index Terms- Forecast; COVID-19; CO₂; Emissions

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