

**ITM**International Technical Meeting
on Air Pollution Modelling
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Abstract title:

Regional modeling and assessment of SO₂ concentrations in a complex environment

Abstract text (max 300 words):

Temporal and spatial variability of SO₂ concentrations were investigated using measurements from available rural and urban stations and satellite data in the Central and Eastern parts of Croatia. Many complex urban and industrial areas are located within this area where SO₂ measurements frequently exceed the daily averaged concentration limit value. This is usually observed in the cities with dominant industry activities, such as Slavonski Brod and Sisak. In this study, we used a high-resolution WRF-Chem model with enhanced emissions and land cover data over areas of interest. Furthermore, within the Methane-TO-GO project, a series of airborne field experiments were performed in the autumn of 2020 in Croatia and neighboring countries with the focus on trace gas emissions (especially SO₂, but also CH₄) and aerosols from power plants. Using airborne measurements the first kind of model validation over this particular domain was performed which provided information of model performance in upper levels of the atmosphere and on processes that contributed to building up of concentrations during the period of analysis. The results from this comprehensive analysis contribute to a better understanding of the regional air quality model's performance in simulating SO₂ concentrations, especially over industrial areas and in the higher altitudes of the atmosphere. The systematic and continuous evaluation of model's abilities is very important, as models are inherently scientific and regulatory tools for air quality assessment and management.