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Professor Ondřej Čadek
Chair of the Habilitation Commission
Charles University
Prague, Czech Republic

Re: Review of the Habilitation Dissertation by Dr. Peter Huszar

Dear Professor Čadek,

Thank you for asking me to serve as an external examiner of the Habilitation Dissertation by Dr. Peter Huszar of the Department of Atmospheric Physics, Faculty of Mathematics and Physics, Charles University. This dissertation is an impressive scientific work, the culmination of 7 years of research and a synthesis of 7 peer-reviewed publications led by Dr. Huszar. Below I will highlight some of the novel results from this research and my thoughts on its relevance for public health and urban planning.

Over the past decade, Dr. Huszar's research has focused on the urban environment and its impact on atmospheric chemistry. Within this theme, the Habilitation Dissertation covers a range of topics, focusing on: 1) the direct impact of urban surfaces on meteorological conditions and climate; 2) the direct impact of urban emissions on tropospheric chemistry; 3) the indirect impact of urban emissions on atmospheric radiation and climate; and 4) the impact of urban canopy induced meteorological forcing on tropospheric chemistry. The Dissertation research relies on current advanced modelling methods (WRF-Chem and CAMx), high-resolution and up-to-date emissions inventories (CAMS, MEGANv2.1), and in situ air pollution observations from the European monitoring network. I find the analyses to be thorough, and the conclusions are supported by the model output and the in situ observations. This detailed model analysis demonstrates that meteorological changes resulting from urbanization must be included in regional model studies in order to quantify the regional footprint of urban emissions, and to prevent overestimation of the urban emission impact.

The Dissertation is relevant to society and public health through several applications. For example, the finding that NMVOC reductions are key to reducing ozone in European urban centers, while either NO_x or NMVOC reductions are effective for rural areas, is an important result for air quality management across Europe, where emissions ratios differ greatly from North America, South Asia or East Asia. Furthermore, urban planners are considering a range of options and visions for redesigning cities in the 21st century to make them more resilient to climate change. The research of Dr

Huszar is directly relevant to urban planning, and can inform decision making for designing urban areas that can lead to improvements in air quality as well as temperature extremes.

I have reviewed the originality check conducted by the Turnitin service and I have no concerns regarding the possibility of plagiarism. The vast majority of the similarities between the Dissertation and other publications is simply the result of Dr. Huszar describing his own original work that was previously published in the peer-reviewed literature. Other small similarities between the thesis and other published works are accompanied be references to the original works, and therefore there is no intent by Dr. Huszar to claim these findings as his own.

Beyond the Habilitation Dissertation, one can also gauge the impact of a scientist by considering their complete body of work. According to Web of science, Dr. Huszar has published 33 peer-reviewed papers since 2008, with over 400 citations and an H-index of 13. Dr. Huszar served as first author on 12 of these publications, with 10 appearing in the highly respected atmospheric sciences journals, Atmospheric Chemistry and Physics, and Atmospheric Environment. This impressive publication record is fully consistent with the experience and impact expected of scientists reaching the Habilitation stage of their careers.

I would like to conclude by stating that the Dissertation fulfills the requirements expected of a habilitation, and my unreserved recommendation to the Habilitation Commission is that the Dissertation be accepted by the University.

Sincerely,

Dr. Owen cooper