

**COUPLED MODELLING AND COMPUTATIONAL
CHALLENGES IN TRANSPORT, ENERGY AND
BUILDINGS TARGETING CARBON NEUTRALITY FOCUSING
ON DECARBONISATION, ENERGY EFFICIENCY AND
SOCIETAL IMPLICATIONS**

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ABSTRACT

With rising environmental alarm, the reduction of critical emissions including carbon dioxides (CO₂) and nitrogen oxides (NO_x) is one of the most important aeronautical problems. This Invited Session (IS) aims at developing technologies modelling and numerical simulation pathways that aim to ensure climate neutrality via deep reductions and pathways to net zero incorporating mitigation of both CO₂ and other greenhouse gases. Lectures will focus on the following areas:

- *Decarbonisation to ensure the transformation of the energy and transport sectors from fossil fuel based to net -zero carbon emitters;*
- *Improvement of the efficacy of CO₂ capture in industry, and help to ensure sustainable, secure and affordable energy;*
- *Improvement of the energy efficiency, including through electrification in industrial processes , transport and buildings ;*
- *Outcomes of the green transition for human welfare, including on health.*

Numerical results will present advanced computational research methodologies focused on air and surface transport capabilities that have potential to accelerate the digital transition reducing environmental effects of civil aviation and increasing its significant meanings on the societal impact of the research.