

Main thematic area: *Economics/Science/Technology*

Cost: *£/££/£££*

Metrics

Background

Emissions from aviation and their climate-related effects require metrics which properly take into account their impact. Different emissions have particular effects on the physics and chemistry of the atmosphere and need precise characterisation if effective response measures are to be devised.

The need for sound metrics

Long term planning and decision making on policies that affect emissions production crucially depend upon metrics used to reflect emissions production. Adequately reflecting the multi-species, chemistry and lifetime issues is important. Can scientists capture these variables and complexities in ways that allow robust representation of impacts and so help the stakeholder community to have confidence in taking long-term and potentially costly decisions?

Study aims

This study will review and define suitable metrics for understanding aviation's climate impact. It will address:

- quantification of different types of metrics, their uncertainties and usage (eg forward/backward; science; marginal emission related)
- how metrics should be defined in terms of range of effects and validity on different time and spatial scales
- what timescales metrics should be integrated over and in what manner (transient, equilibrium, pulse, combination thereof)

Lead: University of Leeds
Duration: 12 months
Partners: Cambridge, MMU

www.omega.mmu.ac.uk



How are metrics used?

Metrics have different purposes and this is reflected in their design. In general, they are required to:

- provide an integrated headline capability for assessment of aircraft impacts
- be comparable with methods of assessment for other emission sources
- be able to reflect the assessment of tradeoffs in engine design and aircraft operations in terms of emissions produced
- act as an 'exchange-rate' between different greenhouse gases in emissions trading schemes.

Benefits

A clear and defined range of metrics for understanding how aviation impacts on the environment will be invaluable to experts in the field, industry and government stakeholders.

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