

Alternative Jet Fuel Operation: Emissions of Non-Methane Organic Gases and Atmospheric Chemistry Implications

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The emission of non-methane organic gases (NMOG) from aircraft ground operation adversely affects air quality in the vicinity of major airports. Emitted NMOGs may be toxic by themselves (e.g., formaldehyde, benzene) or lead to the formation of harmful secondary air pollutants (e.g., ozone, particles) in the atmosphere. The use of bio- or synthetic fuels instead of fossil jet fuels will alter NMOG emissions at airports and further research is warranted for assessing the air quality impact of a switch over to such “alternative fuels”. We have used advanced chemical-analytical instrumentation (PTR-ToF-MS, CHARON-PTR-ToF-MS) for characterizing secondary air pollutant formation from conventional and alternative (blended) jet fuels in laboratory experiments. We have also measured NMOG emissions from an Airbus A320-232 burning different types of conventional and alternative fuels. The emission measurements were carried out in the frame of the ECLIF and ECLIF/ND-MAX campaigns jointly carried out by the German Aerospace Center (DLR) and NASA.

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