

Commercial Aviation Environmental Impacts Research

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Commercial aviation emits its exhaust and associated pollutants at an altitude where no other anthropogenic emissions occur other than space craft. Thus, they have a unique potential to influence the atmosphere and affect climate in ways that are different from most other human activities. With increasing awareness of the changing climate, there is a major focus on CO₂ emissions which are very long lived and thus not sensitive to where they are emitted. But non-CO₂ emissions from airplanes are predicted to have influence as great or greater than CO₂, especially through the contrails that form behind some airplane flights. These trails of condensing water vapor are highly localized and short-lived and are connected to

particulate matter (PM) emissions from airplane engines in important ways. Issues related to contrail impacts are being studied intensively and their mitigation is being discussed actively. But non-CO₂ emissions are also very important for pollution in and around airports, so NO_x and PM emissions continue to be studied for both climate and local air quality impacts.



Dr. Richard C. Miake-Lye is a Vice President, Principal Scientist and Director at Aerodyne Research, Inc. He leads both theoretical numerical modeling and experimental measurement projects to understand the environmental impact of airplanes. He was recognized for contributions to IPCC's 2007 Nobel Peace Prize and to the USEPA 2007 Climate Protection Award. He has been Chair of SAE's E-31 committee on aviation emissions and has served in many roles in support of ICAO CAEP and continues to serve with both groups.