# Article information:

On optical and microphysical characteristics of contrails and cirrus - Febvre - 2009 - Journal of Geophysical Research: Atmospheres - Wiley Online Library  
<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2008JD010184>

# Article summary:

1. Contrails are artificial clouds formed by aircraft and can persist and grow like natural cirrus clouds, contributing to anthropogenic warming of the atmosphere.

2. The optical properties of contrails as they age are still poorly understood, particularly in terms of ice particle number, sizes, shapes, and changes over time.

3. In situ observations have shown that ice particles in young contrails remain small within the core but can grow larger along the periphery under favorable conditions, leading to large and sedimenting ice particles.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article titled "On optical and microphysical characteristics of contrails and cirrus" provides an overview of the optical and microphysical properties of contrails and cirrus clouds. While the article presents valuable information on the topic, there are several potential biases and limitations that need to be considered.

Firstly, the article acknowledges that the optical properties of contrails as a function of time after formation are poorly characterized. This lack of understanding raises questions about the accuracy and reliability of the findings presented in the article. Without a comprehensive understanding of how contrails evolve over time, it is difficult to draw definitive conclusions about their impact on climate.

Additionally, the article primarily focuses on in situ observations from a limited number of experiments conducted over Germany and the US. This narrow scope may limit the generalizability of the findings to other regions or atmospheric conditions. It would be beneficial to include data from a wider range of locations to provide a more comprehensive understanding of contrail properties.

Furthermore, while the article mentions that contrails may cause anthropogenic warming of the atmosphere, it does not explore potential counterarguments or alternative viewpoints. It would be useful to include a discussion on any potential cooling effects that contrails may have due to their reflective properties.

The article also lacks discussion on potential risks associated with contrails. For example, there is no mention of any health or environmental impacts that may arise from increased air traffic and subsequent contrail formation. Including this information would provide a more balanced perspective on the topic.

Moreover, there is limited discussion on how contrails compare to natural cirrus clouds in terms of their optical and microphysical properties. The article briefly mentions differences in ice particle number, sizes, shapes, and changes with age but does not provide detailed comparisons or analysis. A more thorough examination of these differences would enhance our understanding of how contrails differ from natural clouds.

Finally, it is important to note that this article was published in 2009, and there may have been advancements in research on contrails and cirrus clouds since then. It would be valuable to consider more recent studies and incorporate their findings into the analysis.

Overall, while the article provides some insights into the optical and microphysical characteristics of contrails and cirrus clouds, it has several limitations and biases that need to be taken into account. A more comprehensive and balanced analysis would require considering a wider range of data sources, exploring alternative viewpoints, discussing potential risks, and incorporating more recent research findings.

# Topics for further research:

* Health and environmental impacts of contrails and increased air traffic
* Cooling effects of contrails due to their reflective properties
* Comparison of optical and microphysical properties between contrails and natural cirrus clouds
* Recent advancements in research on contrails and cirrus clouds
* Global distribution of contrail properties and their impact on climate
* Contrail persistence and evolution over time

# Report location:

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