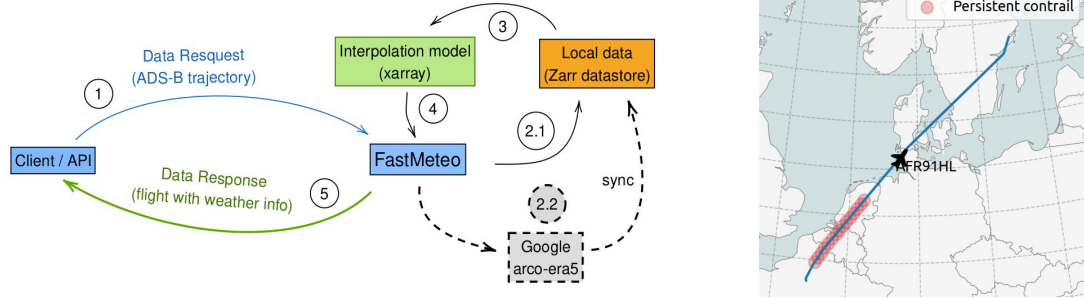# Open Contrail Research Leveraging Flight and Satellite Data

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📄 **5 papers**   **2 open-source tools**   **3 conferences**   🏢 **1 research visit**
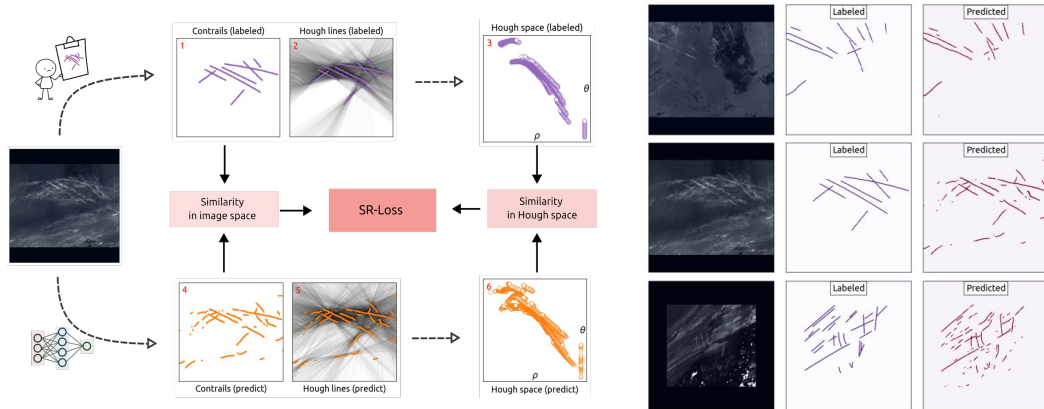

1: Fast Meteo (https://github.com/junzis/fastmeteo) [1]

An open-source tool is developed to rapidly estimate contrail formation of flights at scale, based on meteorological conditions.
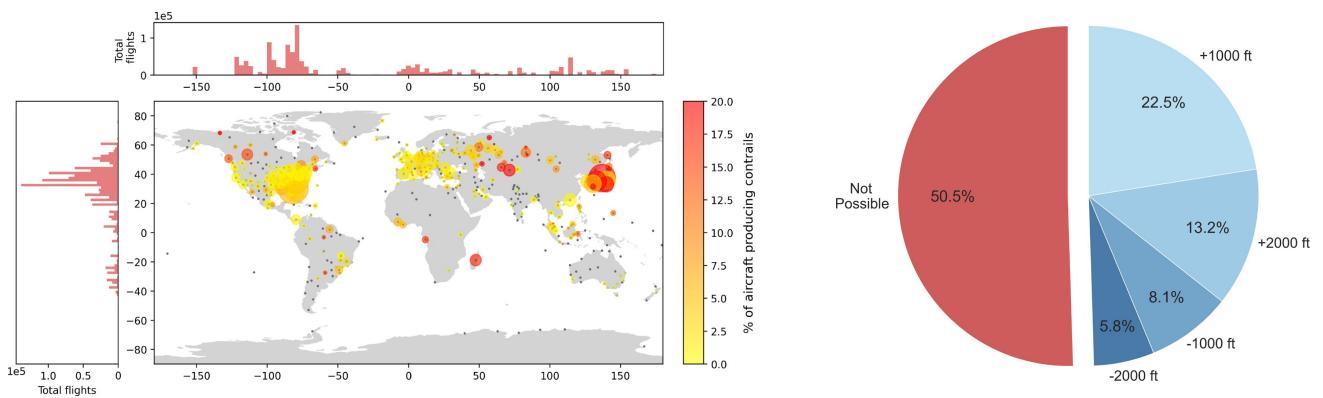

2: Contrail-Net (https://github.com/junzis/contrail-net) [2][5]

An open-source machine learning model and related datasets are created for identifying contrails in satellite images.

3: Contrail minimization through altitude diversions: A feasibility study leveraging global data [3][4]

Global contrail formation is assessed using flight data and weather balloon data. It was found that half of flights can successfully avoid persistent contrails by diverting the cruise altitude within current airspace safety structures.

Publications

1. Sun, J., & Roosenbrand, E. (2023, November). Fast contrail estimation with OpenSky data. Proceedings of 10th OpenSky Symposium. https://doi.org/10.59490/joas.2023.7264
2. Sun, J., & Roosenbrand, E. (2023). Flight Contrail Segmentation via Augmented Transfer Learning with Novel SR Loss Function in Hough Space. https://arxiv.org/abs/2307.12032
3. Roosenbrand, E., Sun, J., & Hoekstra, J. (2023). Contrail minimization through altitude diversions: A feasibility study leveraging global data. Transportation Research Interdisciplinary Perspectives, 22, 100953. https://doi.org/10.1016/j.trip.2023.100953
4. Roosenbrand, E., Sun, J., & Hoekstra, J. (2023, June). Optimizing Global Flight Altitudes for Contrail Reduction: Insights from Open Flight and Weather Balloon Data. 15th USA/Europe ATM Seminar.
5. Roosenbrand, E., Sun, J., & Hoesktra, J. (2023, December). Contrail Altitude Estimation Based on Shadows Detected in Landsat Imagery. Proceedings of the 13th SESAR Innovation Days, Sevilla, Spain.