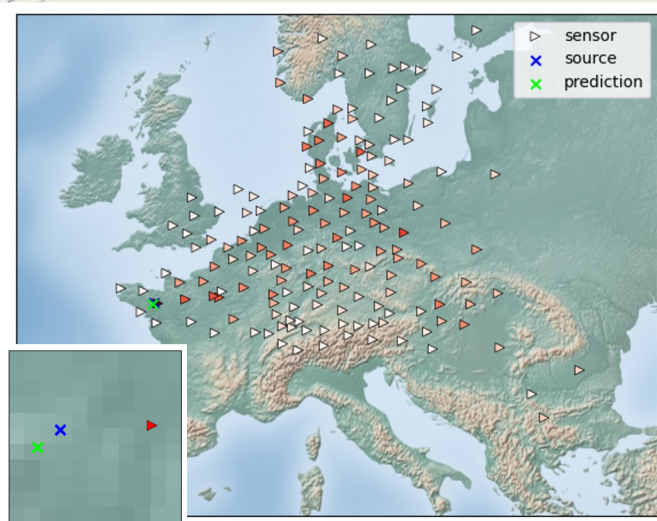
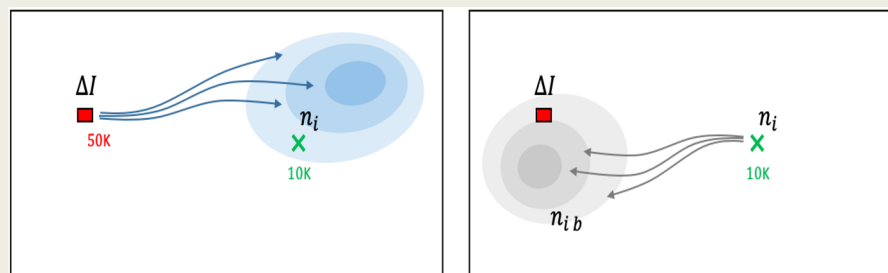


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- New algorithm\*) for a single air pollution source localization.
- The algorithm localizes the source and estimates intensity over time.
- We make use of the weather regional forecast model WRF for airflow simulation and of Lagrangian particle dispersion simulation software FLEXPART-WRF for pollution advection simulation both forward and backward in time.
- Our algorithm produces the semi-empirical heatmap of possible pollution source locations with marked point of the biggest probability and estimative emission intensity at this point as a function of time.
- The algorithm is tested on several semi-synthetic and practical real cases and compared with other solutions in this field.



One of use cases: ETEX field experiment



| Algo       | Distance, km | Time, IOU   |
|------------|--------------|-------------|
| <b>Our</b> | <b>6.4</b>   | <b>0.57</b> |
| [1]        | 4.7          | -           |
| [2]        | 66.7         | -           |
| [3]        | 108          | 0.57        |
| [4]        | 156          | -           |

\*)Mariia Filippova, Oleg Bakhteev, Fedor Meshchaninov, Evgeny Burnaev, Vladimir Vanovski. Regional-Scale Air Pollution Source Identification Using Backward particle dynamics. Atmospheric Environment, 2025.