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Rebuilding sources of linear tracers after atmospheric concentration measurements

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Abstract. The identification of widespread sources of passive tracers out of atmospheric concentration measurements has become an important challenge of modern meteorology. The paper proposes some mathematical tracks to address the reconstruction of the complex space-time geometry of the sources of linear tracers. The methods are based upon the use of retroplumes. The inverse problem is addressed in a deterministic non statistical frame. The information obtained by local measurements is spread by introducing the concept of illumination. The constraint that the source is non negative is also addressed. The experimental source ETEX1 is rebuilt in order to evaluate an impulse response of the algorithms.

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