Detection of real time influence regions on the eddy flux and concentration measurements as a support for aircraft measurements during FIRE

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This work describes a methodology which determines the most significant regions to have measures token with instrumented aircrafts. This methodology is based on the influence functions theory, and will be used during the FIRE campaign, which will take place in the end of 2004 dry season in Mato Grosso area. At the first stage, high-resolution numeric weather forecasts will be run with BRAMS model. Before the campaign, the mean squared error (MSE) between the forecasts and the radiosonde measurements of wind velocity will be estimated. From these forecasts, considering the error, the STILT lagrangean model, which allows the time-inverted integration, will be applied. STILT will be run from the 72-hour forecast at fixed points chosen from the concentration and flux measurement sites. This model outputs a trajectory plume as well as influence functions. Preliminary sensitivity tests have been developed in order to verify how adequate this framework is to the FIRE region. A simulation over Mato Grosso in October 15th to 17th, 2002 will be presented. During this period, widespread convection was observed over the focused area. Results show that the air particles behaviour within the mixing layer and the vertical displacement due to the convective activity are well reproduced. When the MSE is considered, the influence function field becomes suggests a larger area, which is desirable when the flight over significant regions is planned.

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