The impact of southern African biomass burning aerosols on temperature tendencies and the NASA GEOS-5 Analysis Update (AU)

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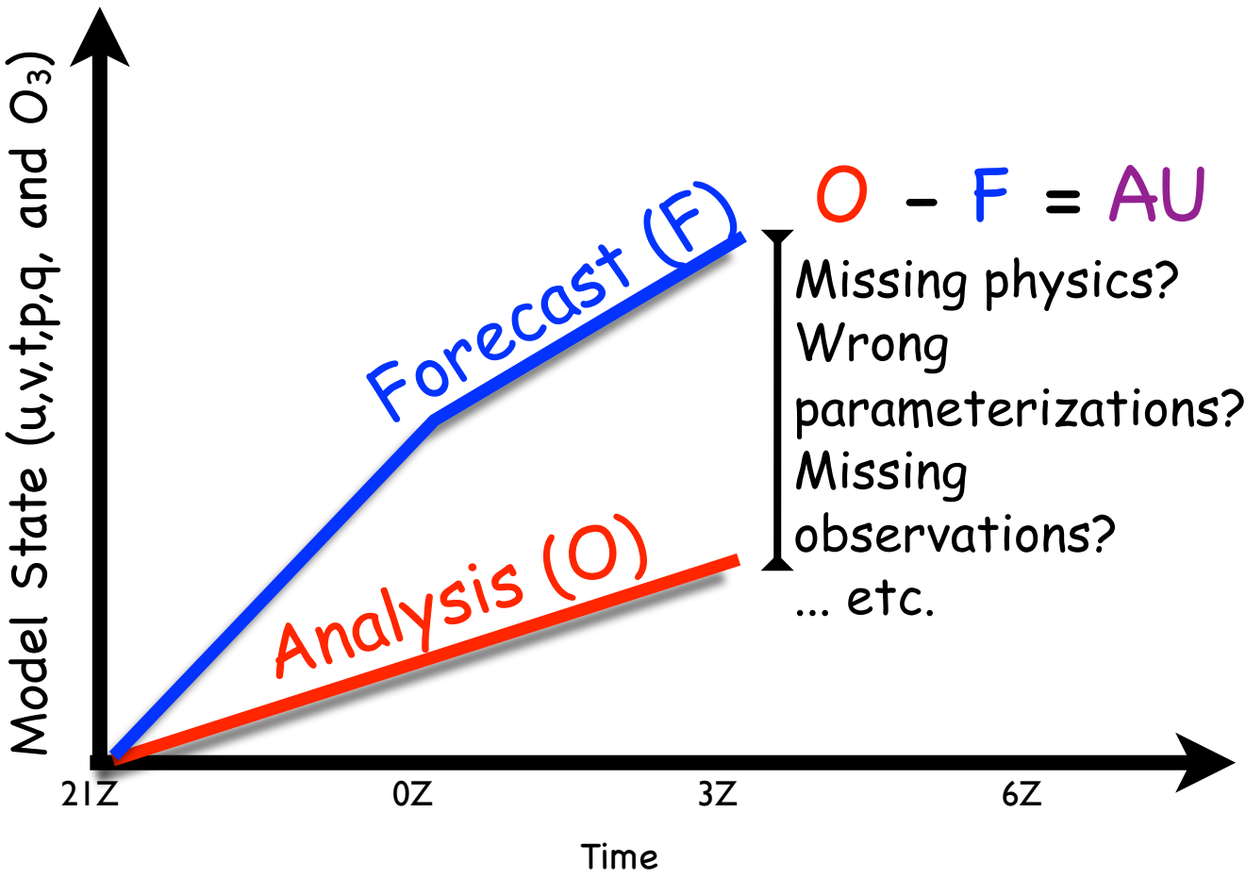
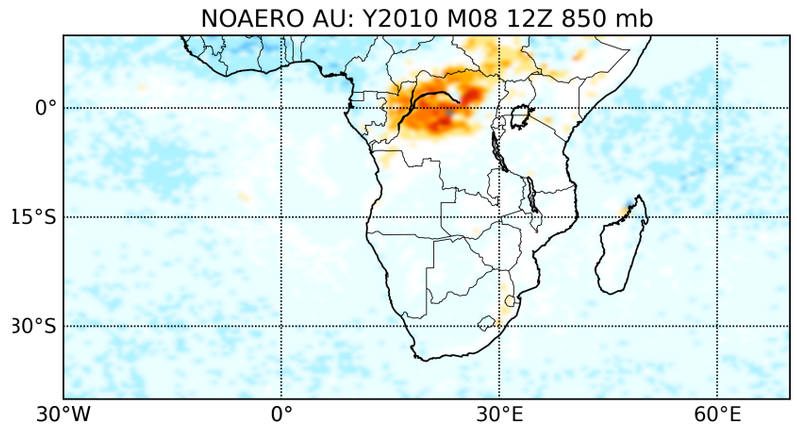


Schematic representation of the Analysis Update (**AU**) from the GEOS-5 Data Assimilation System. **AU** is a complex representation of model "error" due to, for example, missing physics, incorrect parameterizations, etc. However, N.B. that absence of **AU** (agreement between analysis and forecast) may also be due to missing observations.

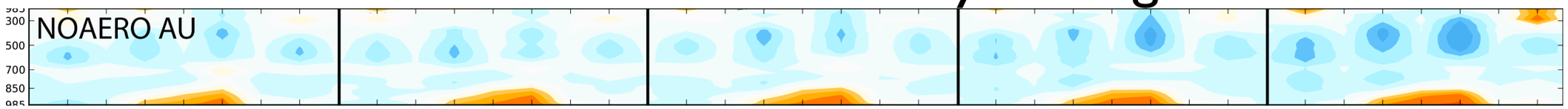
Objective: Investigate the impact of southern African biomass burning aerosols on temperature tendencies in the GEOS-5 model; use the GEOS-5 AU as a qualitative indicator of the efficacy of aerosol forcing in reducing model forecast "error."



No Aerosols (Control): AU indicates model needs warming over land (Congo region). Note: There are fewer observations over the ocean due to persistent cloud deck.

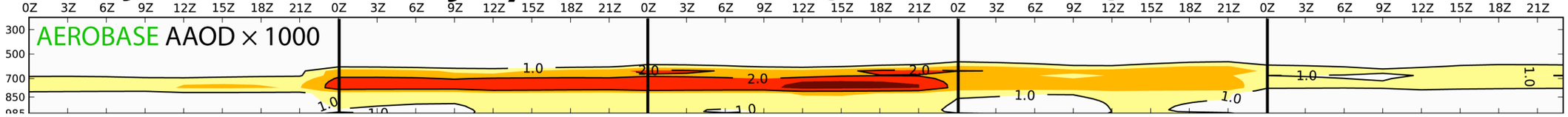
Monthly Average Diurnal **AU**

AU



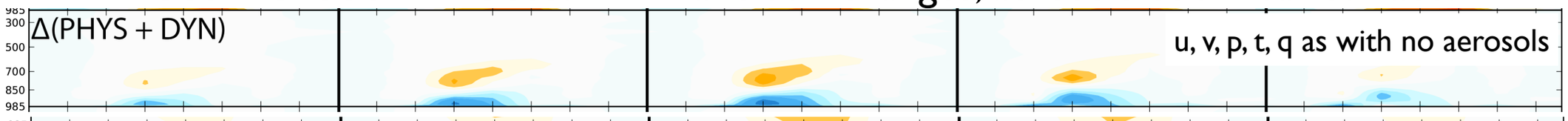
June July Aug Sep Oct

AAOD

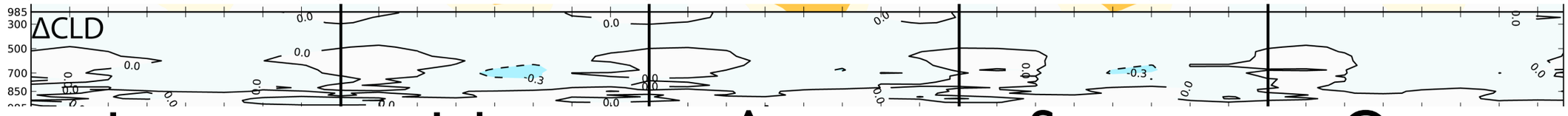


Direct Aerosol Effects: Minimal cloud changes, aerosols cool near surface.

dT/dt



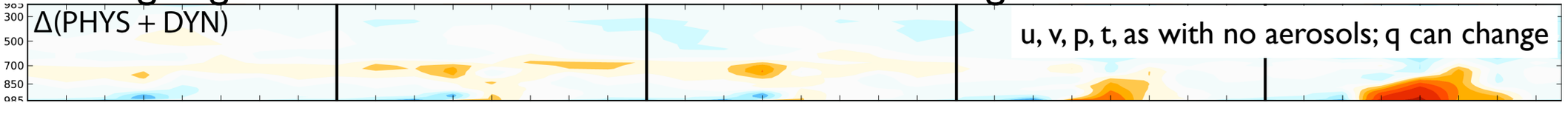
ΔCLD



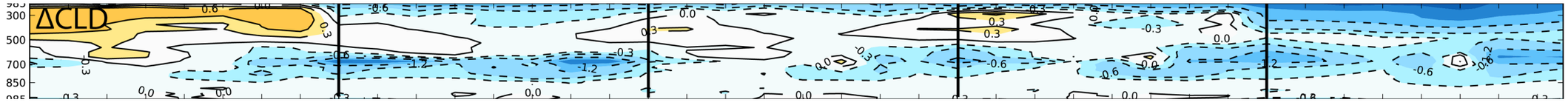
June July Aug Sep Oct

Direct and Semi-Direct Aerosol Effects: Cloud decreases. Near-surface warming begins to occur towards end of biomass burning season.

dT/dt



ΔCLD



Aerosols must interact with clouds to cause warming over Congo; but that's not the whole story! Stop by my poster for more excitement!