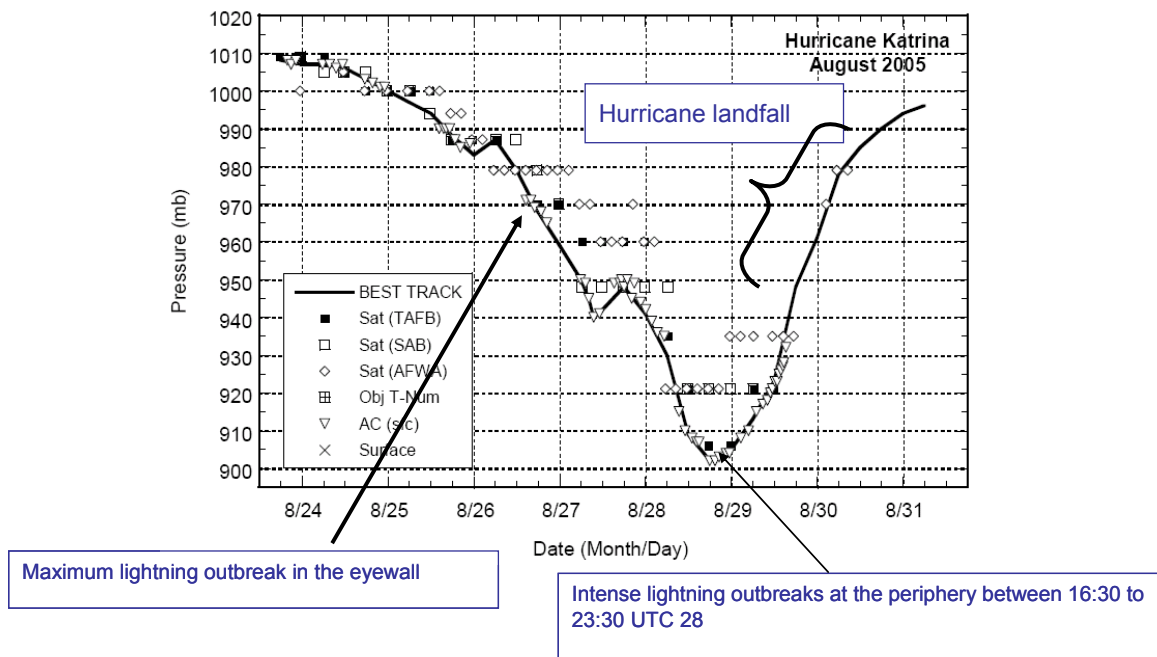


Figure 1. Minimum pressure in hurricane Katrina. Maximum lightning intensity in the eye wall takes place before rapid intensification of the hurricane, while maximum lightning at the TC periphery is precursor of TC weakening



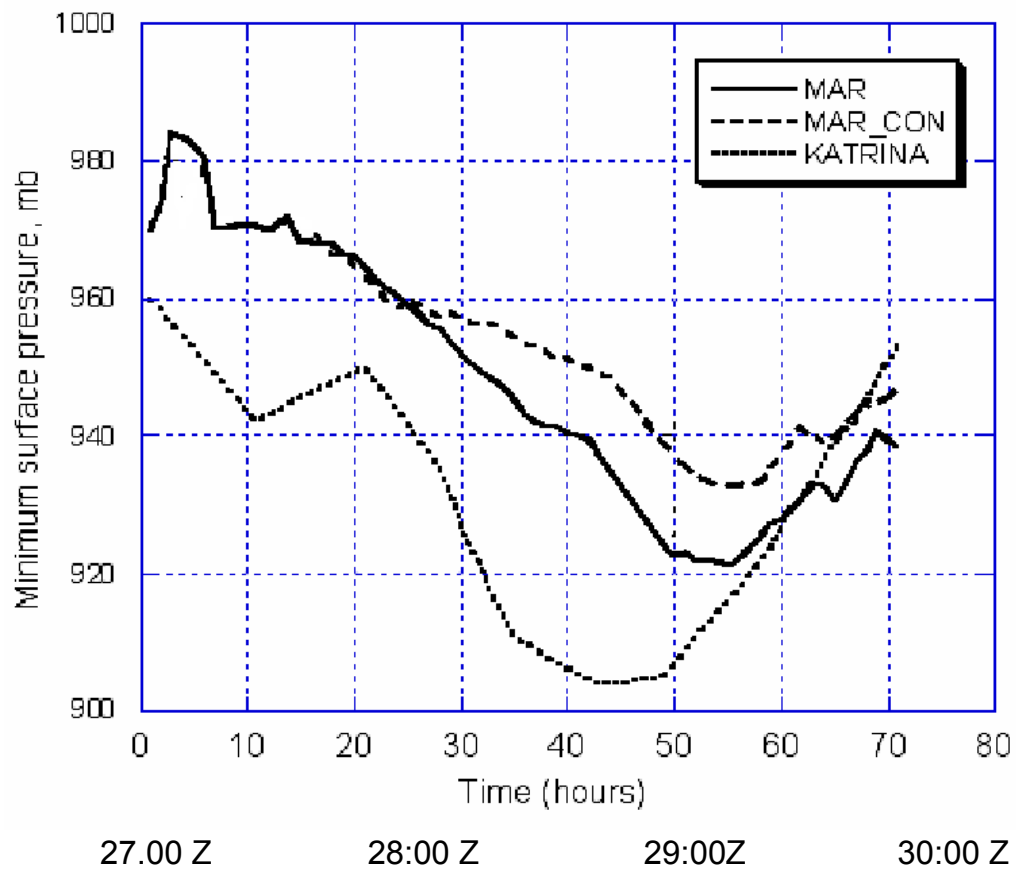


Figure 2. Time dependence of minimum pressure in numerical experiments and hurricane Katrina (August 2005)

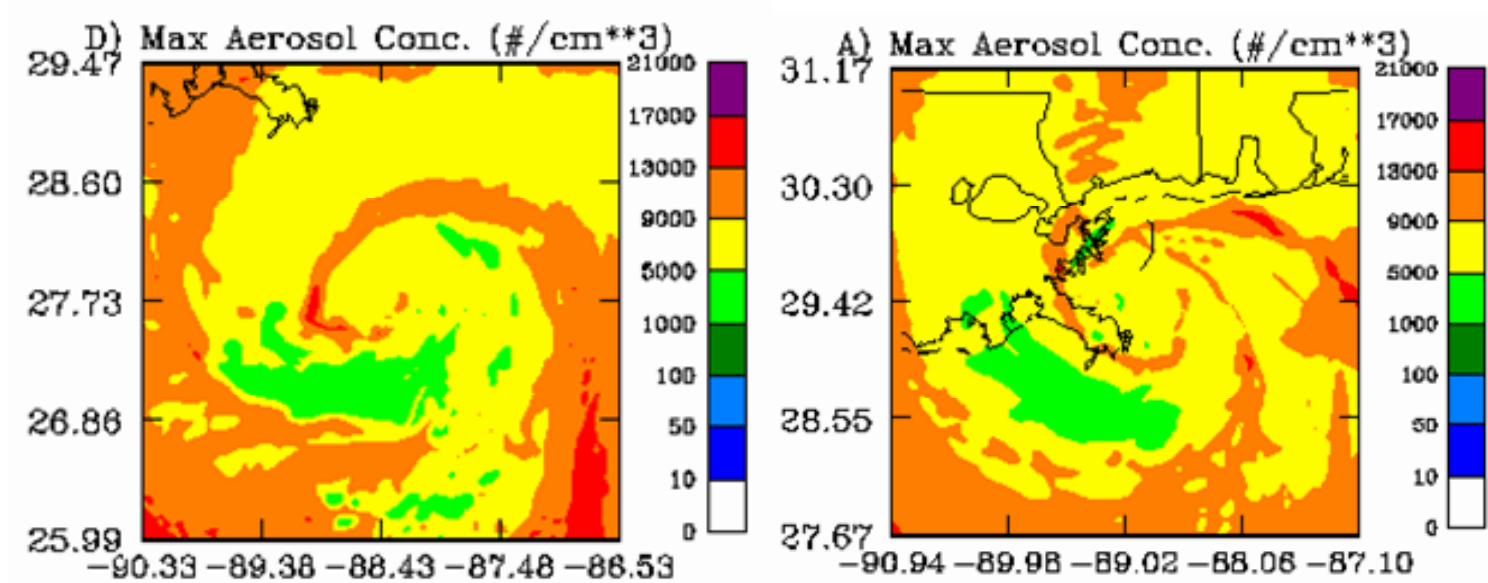


Figure 3. Fields of maximum AP concentration in MAR_CON simulation at August 28th, at 23z (left) and at August 29th, at 9 z (right) on the fine grid.

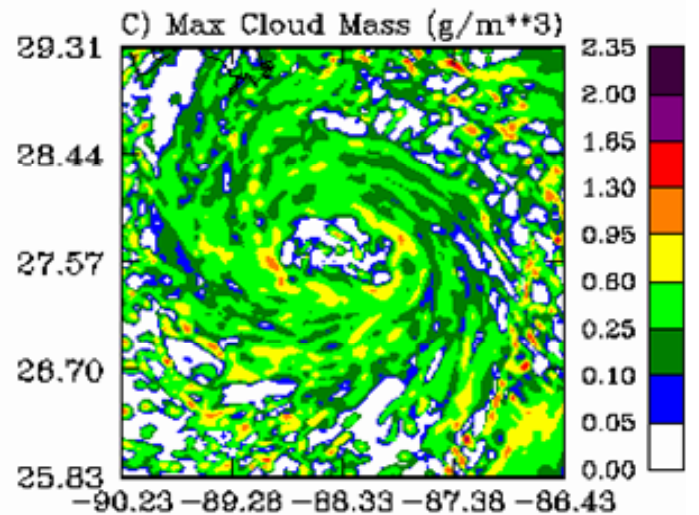
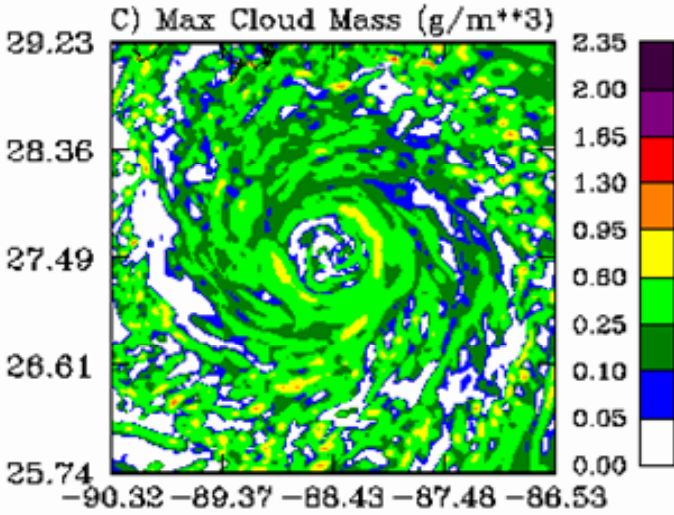
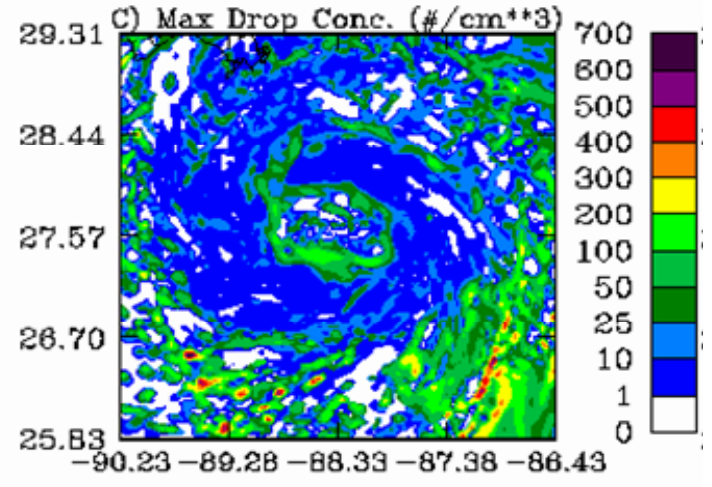
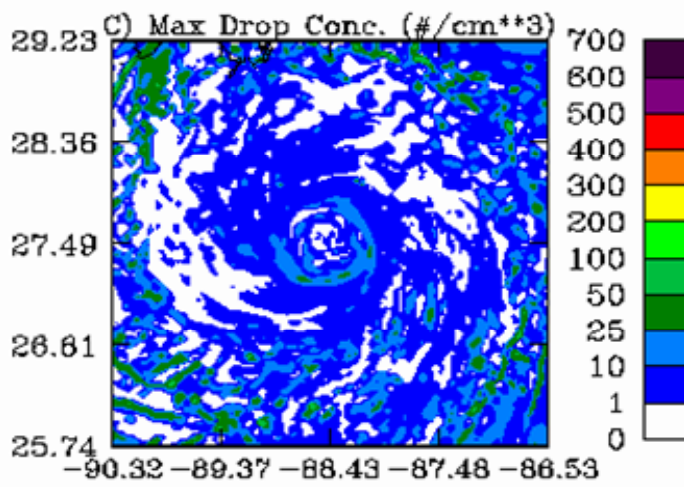


Figure 4. Fields of the maximum droplet concentrations (upper low) and cloud droplet content (CWC) in simulations MAR (left) and MAR-CON (right) at August 28th 22z at the fine grid.

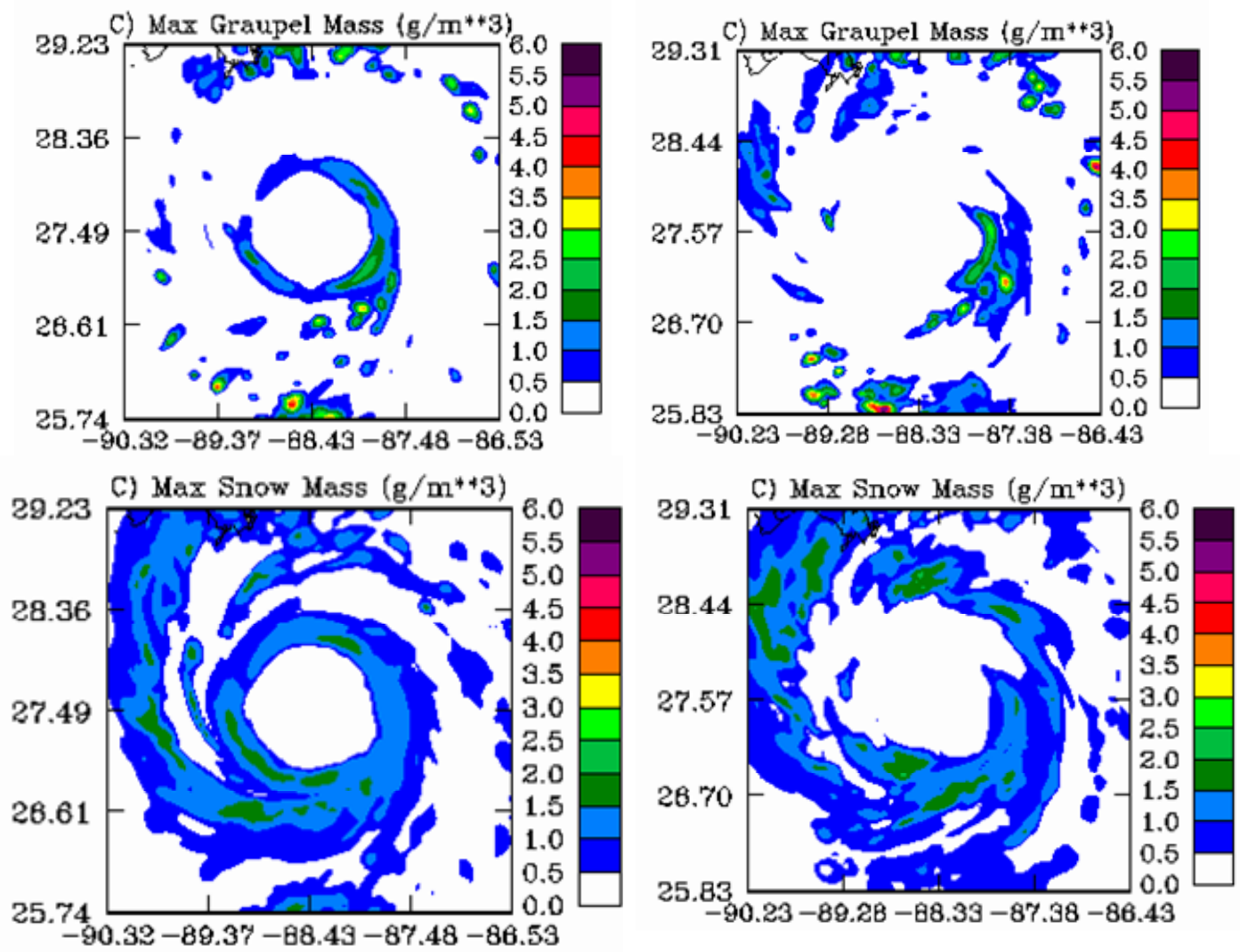


Figure 5. The same as in Figure 4, but for fields of graupel (upper row) and snow (lower row) contents.

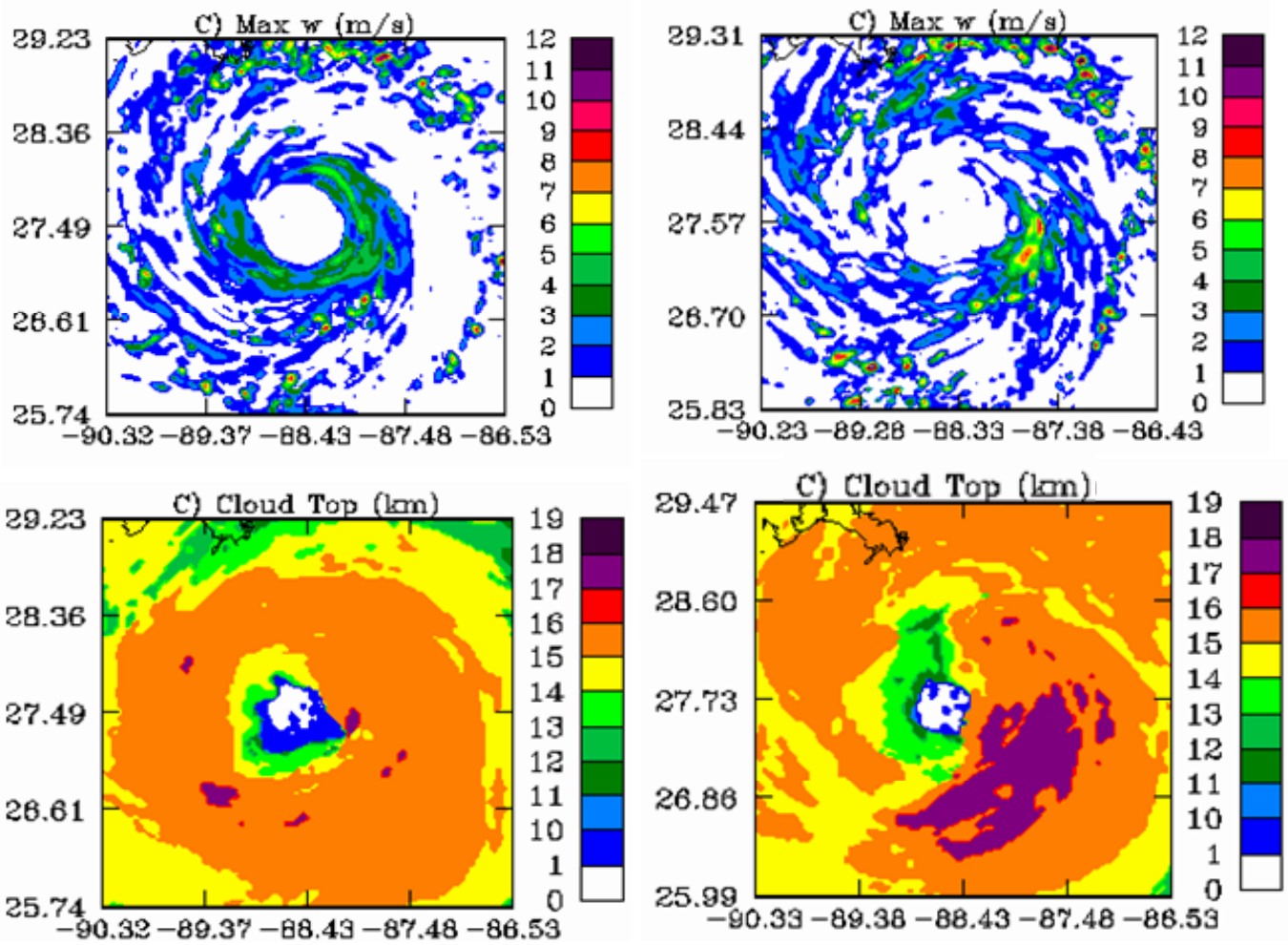
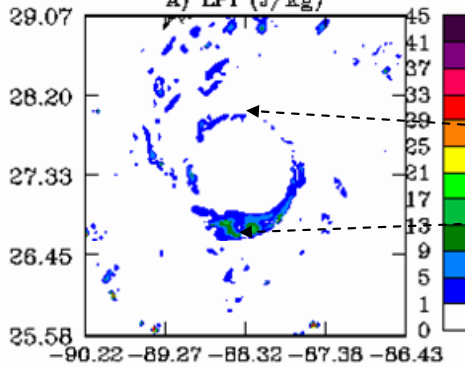


Figure 6. The same as in Figure 4, but for fields of vertical velocity (upper row) and cloud top height (lower row).

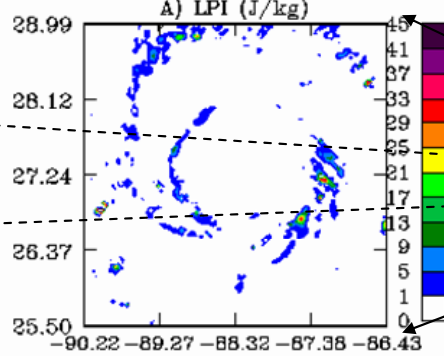
MAR

A) LPI (J/kg)

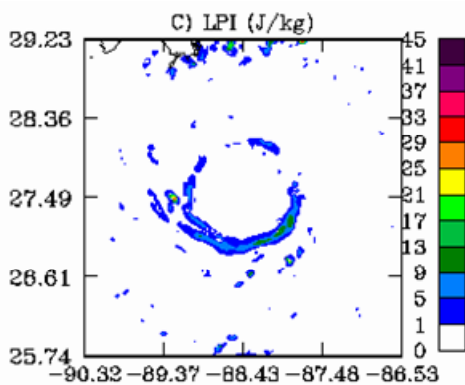
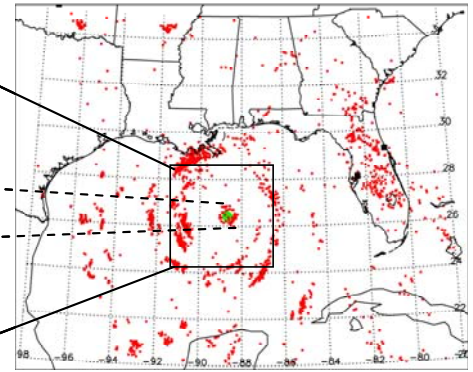


MAR_CON

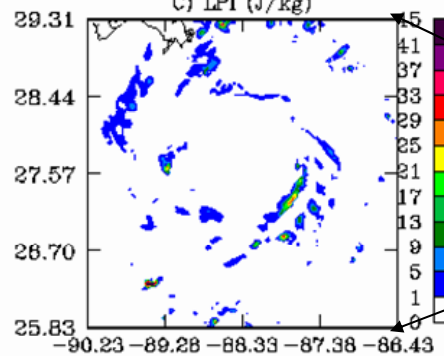
A) LPI (J/kg)



28 Aug 05 17:30-18:30 UTC



C) LPI (J/kg)



28 Aug 05 20:30-21:30 UTC

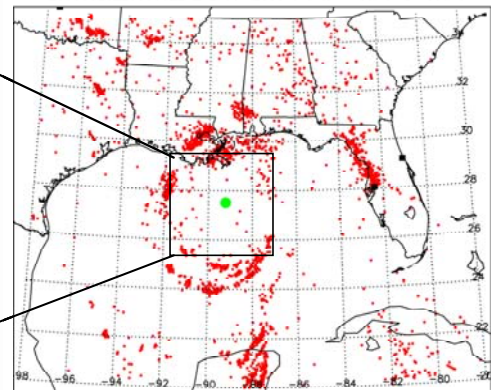


Figure 7 The fields of Lightning Potential Index (LPI) calculated in MAR and MAR-CON runs at 28 Aug. 20 z, and 22 z. The lightning in Katrina (2005) is also presented (after Shao et al, 2005). Zones of lightning are marked by red dots; the TC eye is marked green. The square shows the location of the fine grid approximately corresponding to these time instances.

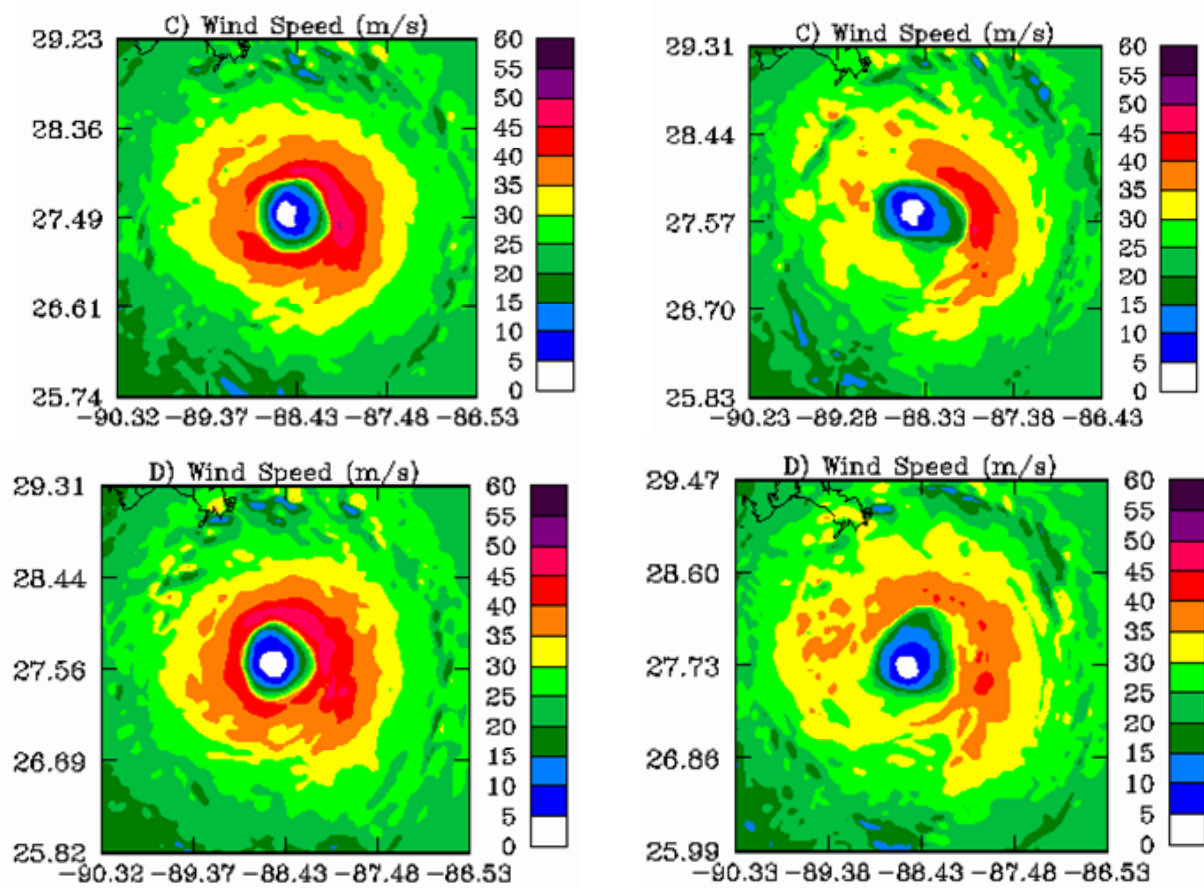


Figure 8 The fields of maximum wind speed 28 Aug. 21 z (upper panels), and 22 z. in runs MAR (left) and MAR_CON (right).

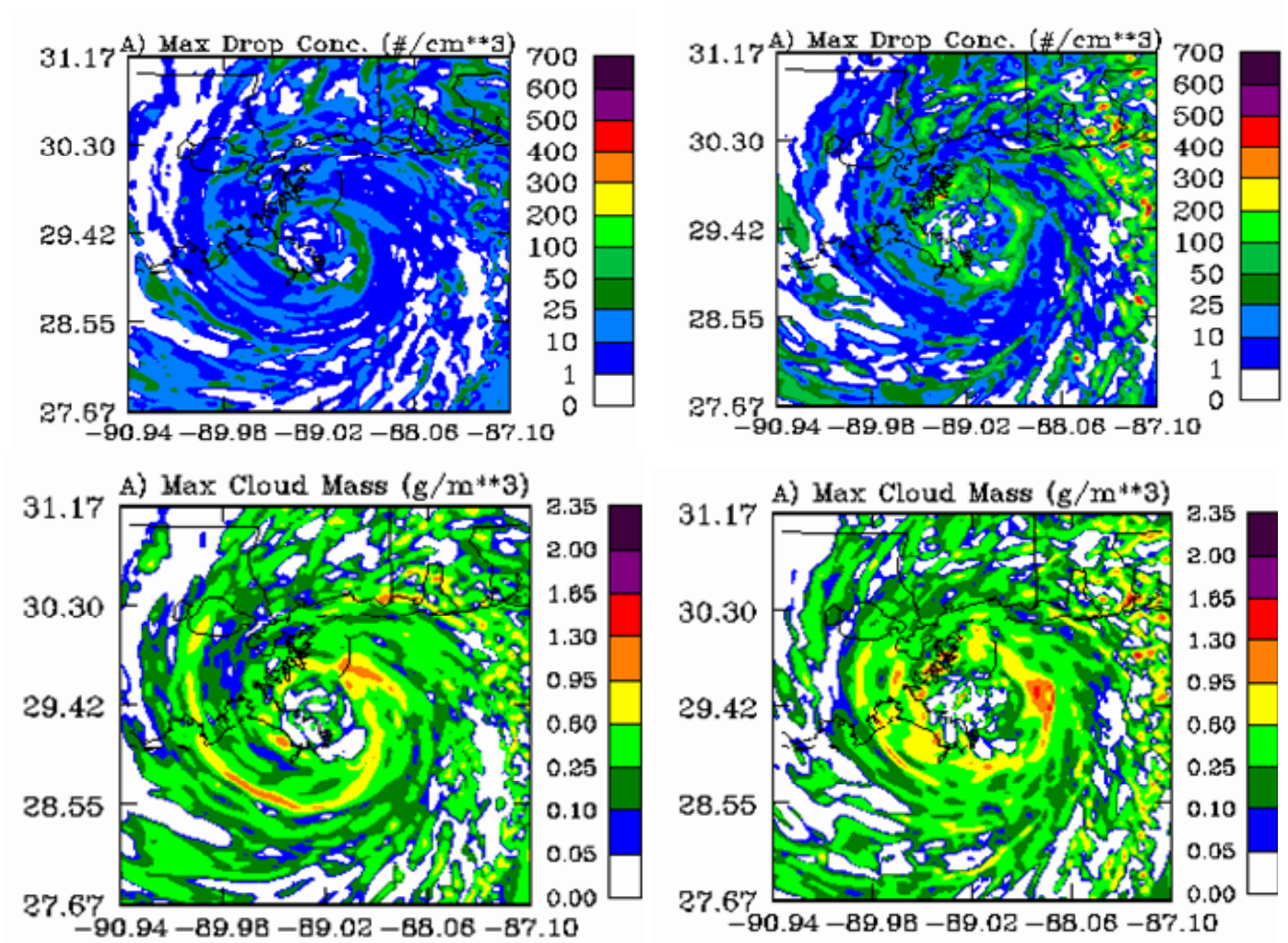


Figure 9. The same as in Figure 4, but for time instance August 29, 9z.

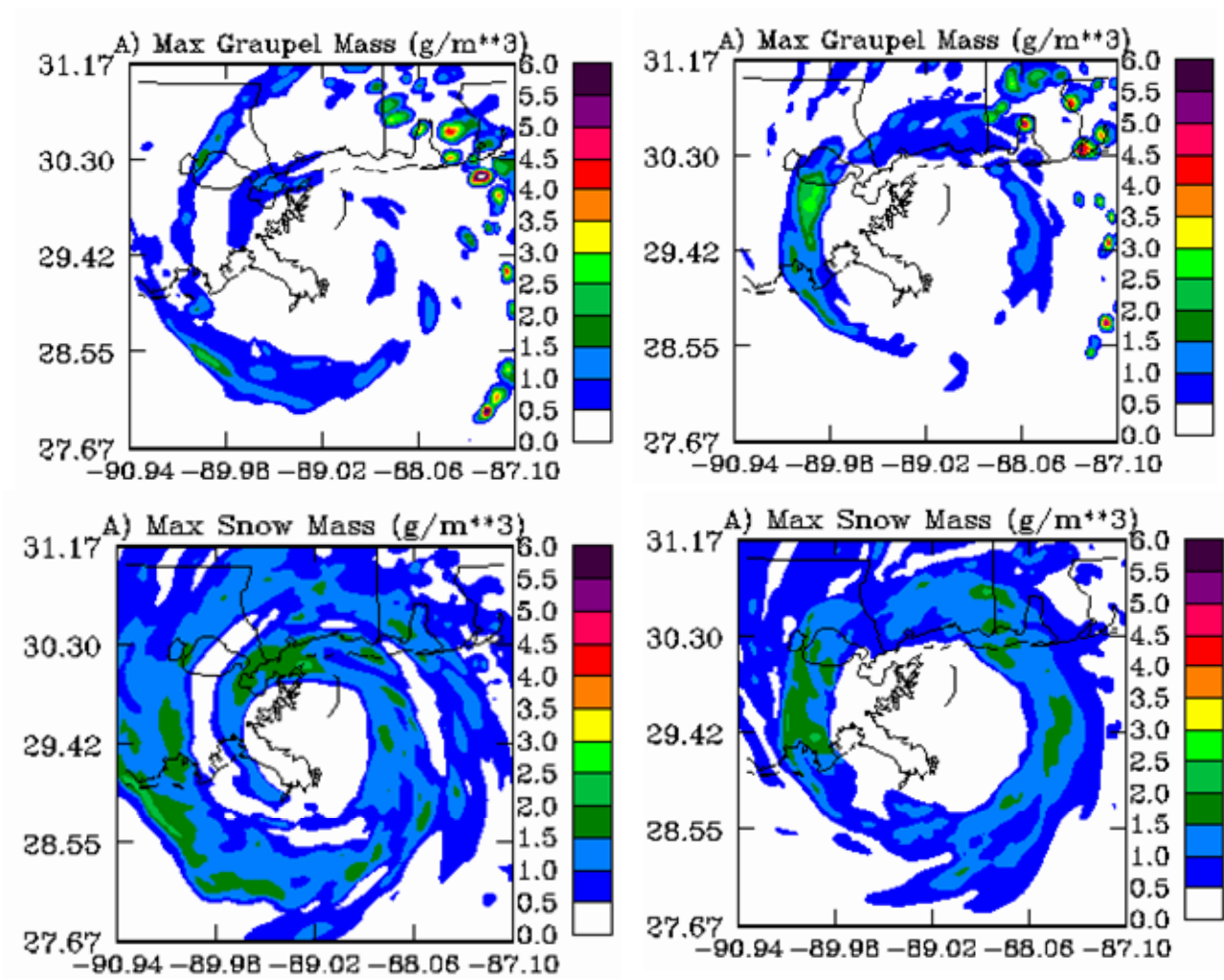


Figure 10. The same as in Figure 5, but for time instance August 29, 9z.

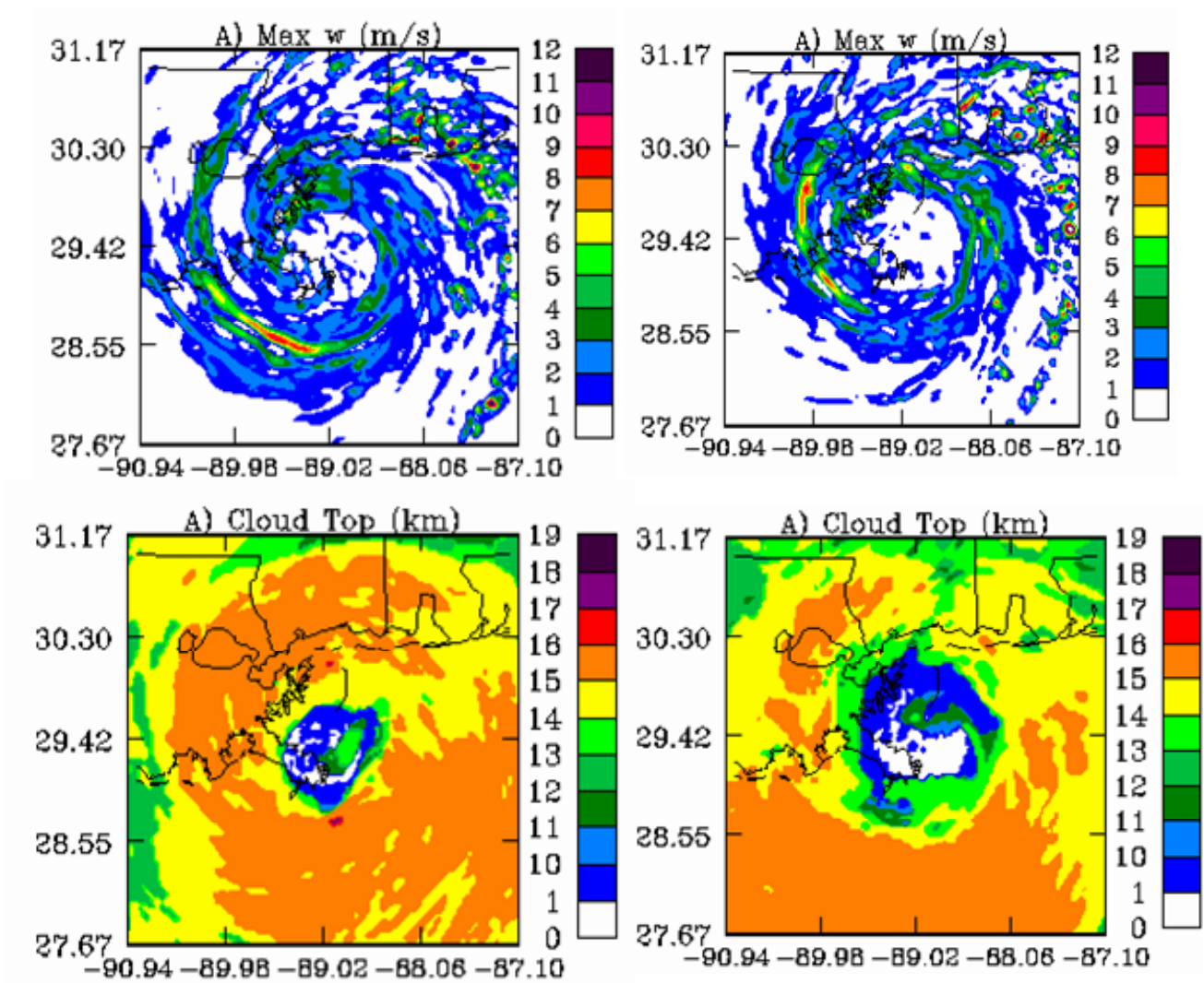


Figure 11. The same as in Figure 6, but for time instance August 29, 9z.

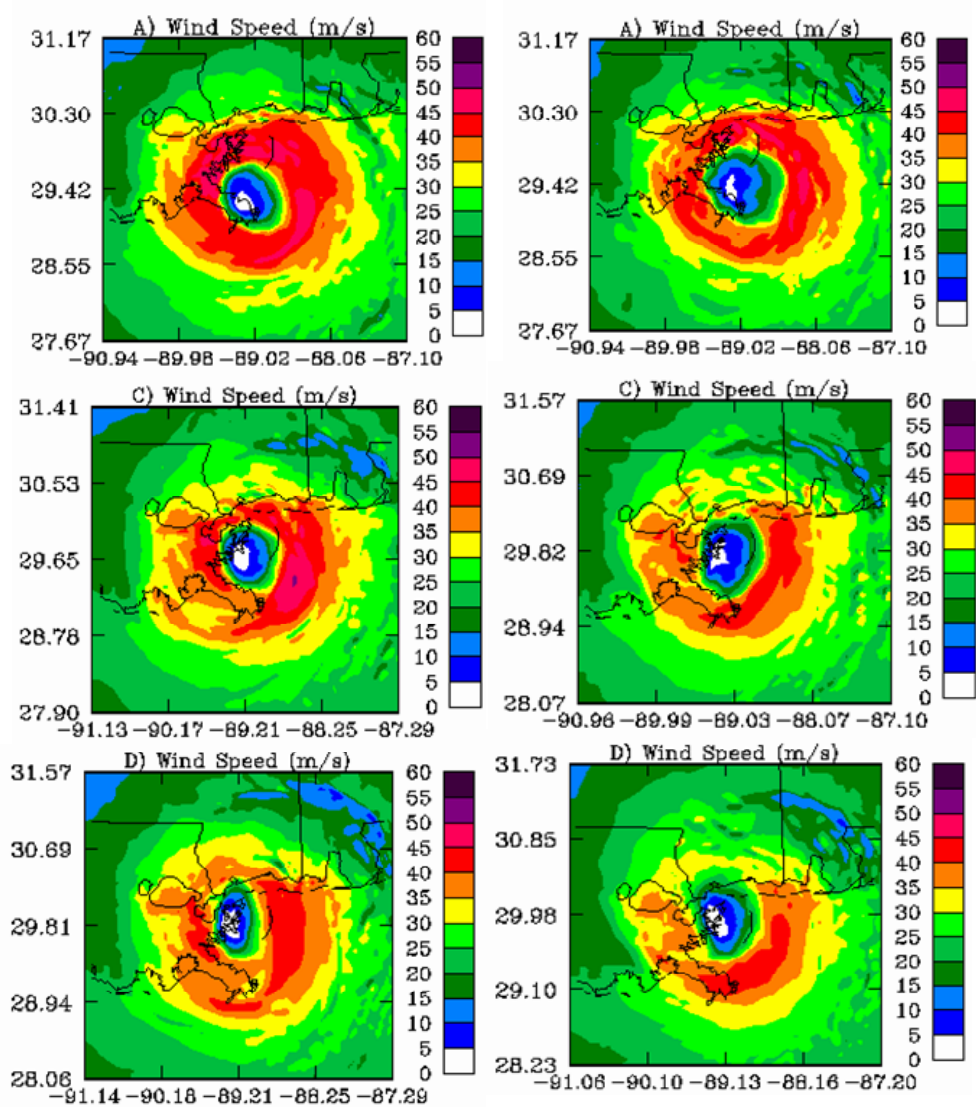


Figure 12

The fields of the maximum wind speeds in the MAR (left) and MAR_CON (right) runs at time instances of August 29th at 9z, 11z, and 12z

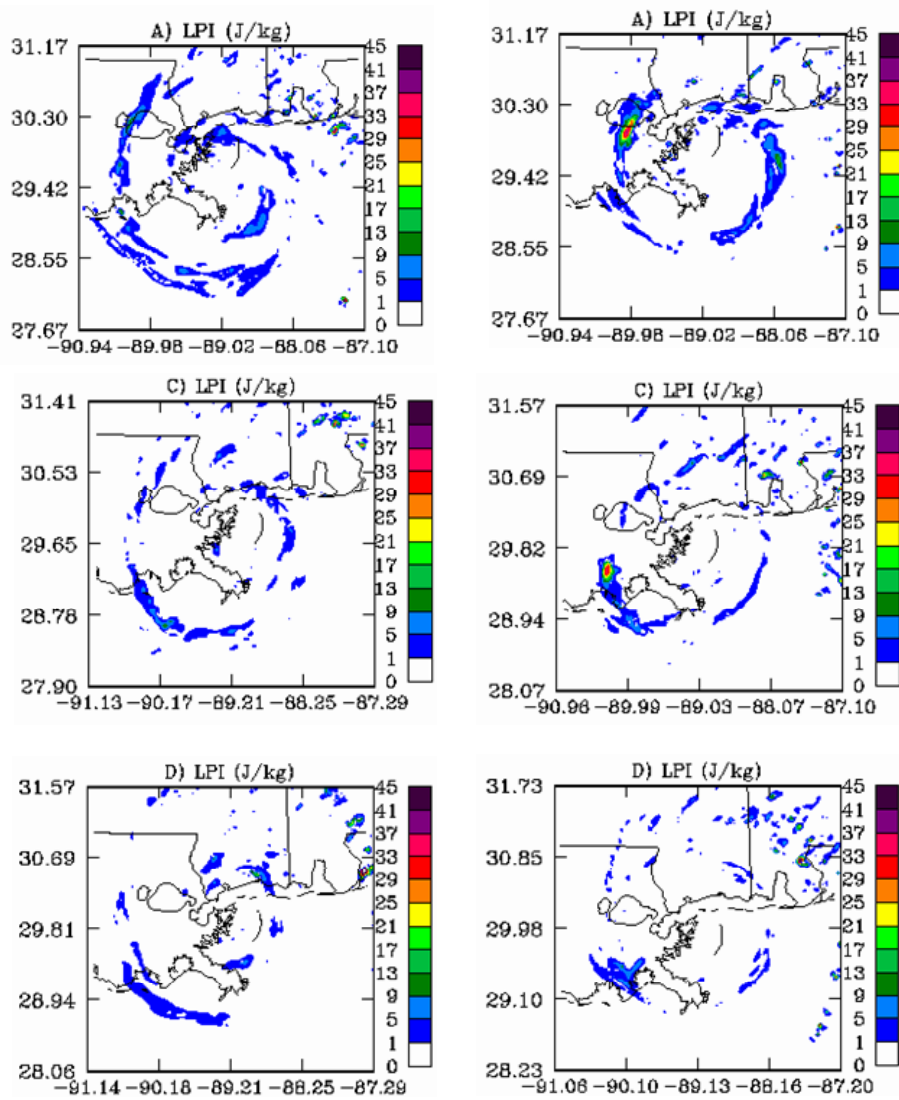


Figure 13

The same as in Figure 12, but for Lightning Potential Index

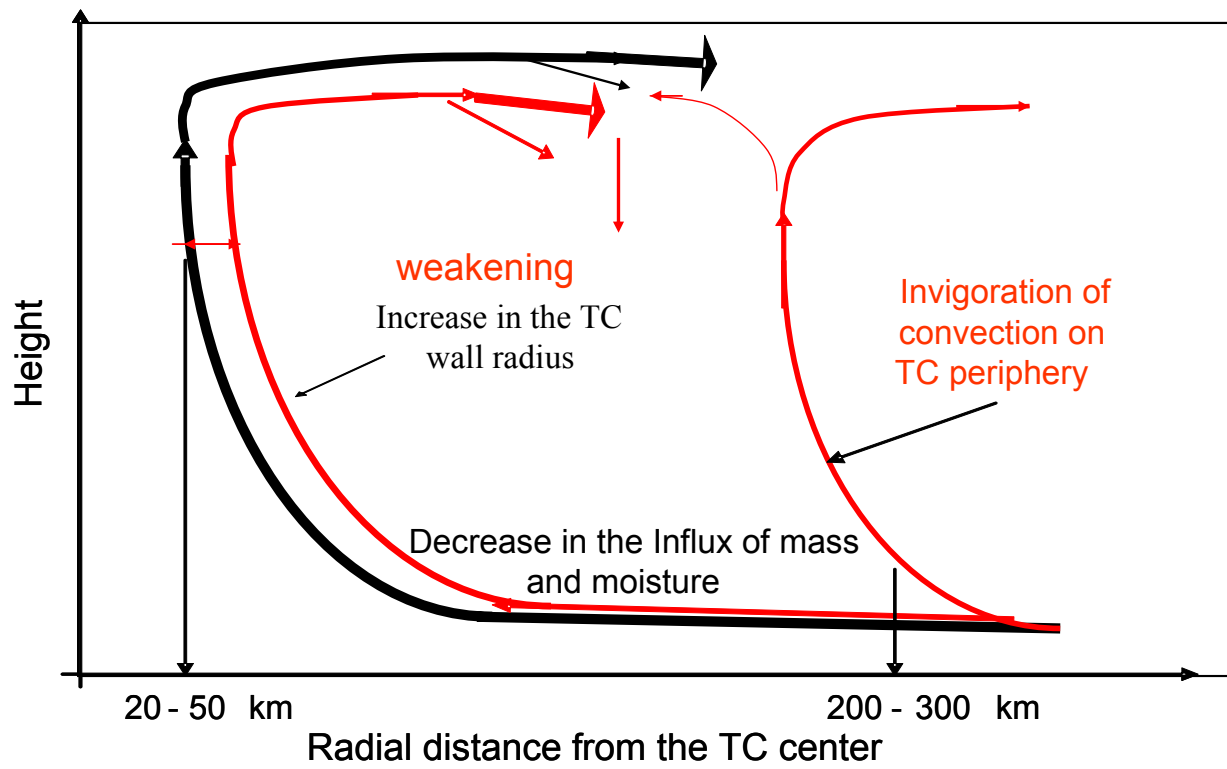


Figure 14. A scheme of aerosol effects on the TC structure leading to TC weakening (see text for detail)