

Osborn – Flow Visualization
Cloud Assignment 1
10/11/2007

1. Cloud Assignment. Photograph an interesting cloud or cloud phenomena and discuss what you think might be involved in the physics.
2. The photo was taken with the camera pointing nearly straight up. I was in the Fleming parking lot near sunset (you can see the sun is below the cloud picture as its shadow is on the cloud above it).
4. Photo Info
 - a. Field of View: Wide Angle. Subject is a couple of Hectares in size
 - b. Distance: In the sounding data the LCL is around 3500m (from ground) – but there are some funny shifts in the chart around 5000m. Based on the shadow angle on the cloud above – I'd guess this is a fairly high cloud formation – around 20,000 ft (above sea level)
 - c. Canon G7 – 10MP digital camera
 - d. Aperture: f4.0, Shutter: 1/250, ISO: 80, Focal Length: 7.4mm
 - e. No Photoshop Treatment
5. It isn't clear to me what the physics are in this formation. The cloud appears to be twisting, but whether this is a lenticular cloud that is on a wind shear (sounding data has some very strange low level wind shifts) or a contrail that has fallen from one wind zone into another is hard to discern. If it is a contrail it is surprisingly durable (I'd figure the cloud would've dispersed before long). The sounding plot seems to suggest that the atmosphere is reasonably stable, with the adiabatic line only slightly steeper than the actual measured temp line up to 3000m above ground (not sea level). Presumably this very slightly unstable condition is enough to maintain a cloud. Above 3000m the lines are nearly parallel or exactly the same.