Hi all,

A NE-SW oriented line of thunderstorms passed through the Albany area around 0600 UTC 26 Oct 2014 (the KALB metar reports from 0542 - 0638 UTC are appended below). The rain was brief (10-15 min), the rain amounts were inconsequential (0.12" at ALB), the thunder was loud, the grapple was small (2-3 mm), and the peak wind gusts were anemic (22 kt at ALB). No severe weather was reported as derived from the SPC storm reports page. That said, the thunderstorms were a "hail" of a surprise to lots of people who were jolted awake in the middle of the night after they went to bed expecting no more than the chance of a few scattered light showers.

So, what the "hail" happened? Regional base reflectivity imagery for 0100, 0300, and 0500 UTC (attached; source: NCAR-RAL) show that a short-line of storms formed over Lake Erie, moved ESE, and strengthened with time. The 0000 UTC ALB sounding was CAPEless, but the 0000 UTC BUF sounding had MUCAPE of 390 J/kg thanks to the presence of an elevated mixed layer (EML) between 750-600 hPa (source: SPC). The surface-to-3 km shear across New York varied between 26 kt (BUF) to 48 kt (ALB) at 0000 UTC. The regional surface maps for 0100, 0300, and 0500 (attached; source: NCAR RAL) are unremarkable, show no evidence of any significant wind boundaries, thermal ridges, or moist tongues, and suggest that the convection was elevated.

A 72 h backward trajectory analysis from BUF at 0000 UTC (source: NOAA HYSPLIT trajectory model) suggests that air parcels ending in the lower part of the 1500-4500 m layer subsided over the previous 12-36 h as they exited the ridge near the West Coast while parcels in the upper part of this layer, moving faster, initially ascended from near the surface over the Pacific and then subsided significantly over the last 24 h as they crested the ridge and moved ESE. This analysis suggests that the observed EML over BUF at 0000 UTC likely formed in response to dynamically driven subsidence in the upstream ridge after which the air parcels comprising the EML region were driven ESE in the strongly sheared WNW flow.

The HRRR CAPE forecasts for 0300 and 0600 UTC (attached; based on the 0000 UTC HRRR run) show an area of modest CAPE values (maximum values 500-1000 J/kg at 0300 UTC and 100-500 J/kg at 0600 UTC) moving eastward across New York. The 0300 and 0600 UTC GFS 500 hPa height/vorticity/wind and 850 hPa height/temperature/wind 3h and 6h forecasts derived from the operational GFS initialized at 0000 UTC suggests New York would see little in the way of significant thermal advection, but would experience a short-lived period of concentrated upward-increasing cyclonic vorticity advection (CVA) associated with the deepening trough moving ESE across the eastern Great Lakes. I speculate

that the concentrated ascent associated with this upward-increasing CVA was probably sufficient to allow air parcels originating above the surface to realize the small values of CAPE present in a moderately sheared environment and to organize the storms into a modest nocturnal convective line.

In the grand scheme of things, this was a nonevent on the meteorological Richter scale. However, the occurrence of short-lived window-rattling thunder in the middle of the night meant that a lot of people would notice this nonevent and ask WTF.

Lance

KALB 260638Z COR 23010KT 10SM FEW035 BKN047 OVC110 09/07 A2951 RMK AO2 RAB0558E38GSB05E07 TSE38 OCNL LTGIC DSNT E-S CB DSNT E-S MOV SE P0012 T00940067 $
KALB 260608Z 28012G22KT 4SM -TSRA BKN035CB BKN042 OVC055 11/07 A2954 RMK AO2 RAB0558GSB05E07 OCNL LTGICCG E-SW TS E-SW MOV SE P0005 T01060067 $
KALB 260605Z 29010G22KT 3SM +TSRAGS BKN035CB BKN042 OVC055 11/07 A2954 RMK AO2 RAB0558GSB05 OCNL LTGICCG ALQDS TS ALQDS MOV SE P0003 T01110067 $
KALB 260551Z 34007KT 10SM TS BKN037CB OVC050 10/08 A2952 RMK AO2 TSB42 SLP998 OCNL LTGICCG SW-W TS SW-W MOV SE 60001 T01000078 10144 20072 55011 $
KALB 260542Z 00000KT 10SM TS BKN037CB OVC055 08/07 A2951 RMK AO2 TSB42 FRQ LTGICCG SW-W TS SW-W MOV SE BINOVC T00830067 $