

[Start](#)[At-A-Glance](#)[Browse by Day](#)[Author Index](#)

Tropical Storm Kyle (2002) and Cold-Air Damming: Their Interactions and Impacts on Heavy Rainfall in the Carolinas

Thursday, 21 April 2016


Mo

Plaza Grand Ballroom (The Condado Hilton Plaza)

José M. García-Rivera, I. M. Systems Group, Rockville, MD; and **Y. L. Lin** and Y. Rastigejev

The interactions between an Appalachian cold-air damming event and the near-passage of Tropical Storm Kyle (2002) along the coastal Carolinas are assessed by using a numerical weather prediction model. As the storm moved along the coastline, it began extra-tropical transition, bringing heavy rains to both the coastal region and inland towards the Piedmont of North Carolina. Our goal is to quantify the effects of both interacting weather systems on heavy precipitation in order to improve the dynamical understanding of such effects, as well as precipitation forecasts in the study region. A series of sensitivity tests were performed to isolate and quantify the effects of both systems on the total accumulated precipitation. It was found that (a) for this type of along-coast track, the pre-existing cold-air damming played only a minor role on the total accumulated precipitation, (b) the outer circulation of Kyle weakened the cold-air damming due to redirection of the mean flow away from the east side of the Appalachian Mountains, and (c) the combination of Kyle with a shortwave mini upper-level trough and a surface coastal front were responsible for the heavy precipitation experienced in the study area through the advection of moisture, vorticity, and the forcing of upward motion.

 - Indicates paper has been withdrawn from meeting

 - Submission entered in competition

See more of: [Tropical Cyclones](#)
See more of: [32nd Conference on Hurricanes and Tropical Meteorology](#)

[<< Previous Abstract](#) | [Next Abstract](#)

Follow Us

