## May 01, 2008



- Little to No SBCIN The presence of SBCIN limits the liklihood of CI occuring at a point of increasing convergence.

- Presence of a Cumulus Field The presence of a cumulus field indicates shallow convection is occuring, and the environment may favor CI.

- Presence of a Surface Boundary The surface boundary serves as a foci for CI and a location where low level convergence is established.

## Relating Surface Divergence Tendency to Convective Initiation Kelton T. Halbert, Lipscomb University, and William G. Blumberg, The University of Oklahoma May 10, 2008 May 18, 2011 June 11, 2012

Forecasting Convective Initiation (CI) continues to be an issue today. This investigative study attempts to relate surface divergence trends to areas of CI. In this study, Oklahoma Mesonet 10 meter wind data were used to calculate divergence through a Delaunay triangulation scheme and the linear vector point function method. Divergence 'observations' were then objectively analyzed to a 12 km grid via a one-pass Barnes analysis with a 40 km radius of influence. 5 cases where CI occurred were analyzed to establish a pattern, and then 4 cases where CI failed were analyzed to test any patterns found. While the sample size is relatively small, the results from these test cases suggest that given the ingredients on the left, CI is preceded by a time-rate change of divergence below the 0 axis of  $-5 \times 10^{-5} \text{ S}^{-1}$ per hour. Special thanks to: Timothy A. Supinie and David John Gagne II.

> Contact: keltonhalbert@tempestchasing.com wblumberg@ou.edu

## MIT5

- Choosing a Gridpoint Choosing a gridpoint from which to make a time series is subjective.
- Tendency Maps are Erratic This may be solved by plotting temporally averaged divergence tendency instead.
- Exploratory Because of the exploratory nature of this research, the definitions of CI used and interpretations of the data are somewhat flexible at this time.
- Lack of Data High spatial and temporal resolution upper air and satellite data for these test cases are limited.