

Convective Initiation in New Jersey 2006: An SpF Program Investigation at Kean University



Study Region & Physiography



New Jersey Digital Elevation Grid (100 meter)

Paul J. Croft in a cooperative & collaborative effort with undergraduate meteorology students:
Steven Koenigstein, Justin Lewis, Ryan Matthews, Melissa Rod, & Mike Szczepanski

Purpose

- o Determine Convective Initiation
- o Identify Patterns & Coverage
- o Movement, Intensity, Duration

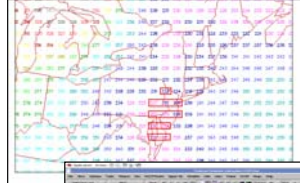
Methods:

Data Collection Guide developed to categorize websites and data folders for online archival process and analysis.

Bookmarks to simplify the data collection process, this was to ensure continuity throughout the data that was collected.

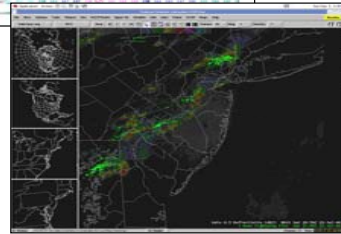
Data Inventory for classification and analysis of null, contaminated, & events.

Diagnostic Analysis

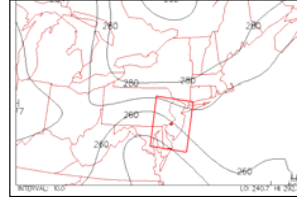


Frequency Distribution			
	June	July	August
Event	4	7	2
Contaminated	4	3	2
Total	8	10	4

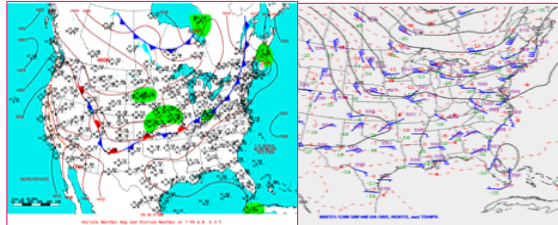
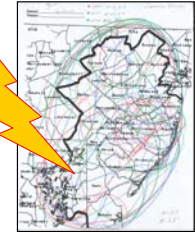
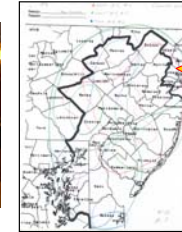
Thanks ORSP!



Diagnostic Analysis



Base State Flow at 500mb								
Event/Contaminated	N	NE	E	SE	S	SW	W	NW
June	0,0	0,0	0,0	0,0	0,1	4,1	0,1	0,1
July	0,0	0,0	0,0	0,0	0,0	1,1	6,2	0,0
August	0,0	0,0	0,0	0,0	0,0	0,0	2,2	0,0
Total					0,1	5,2	8,5	0,1



GIS, WRF for...
Physiography
& Local Meso

Contaminated – Event – Null

Contaminates

- o Contaminate Initiates do not preclude further activity (n=9) with only one exception
- o Initiates more 'focused' areas with W-500mb flow and S/SW mostly southern NJ and coastal regions
- o Most often associated with frontal boundary in immediate vicinity; two with high pressure dominant
- o Total activity highly variable, preference northern half NJ but inconsistent; less extensive high pressure cases

Events:

- o Initiates (W) similar origin to contaminates but mostly outside NJ; most total activity isolated clusters or cells
- o Most W cases rather sparse activity; little preferred orientation; wide variation with most in warm sector cases
- o Initiates (SW) not constrained to southern NJ (as contaminates); events less 'focused' in space/time than W
- o Activity highly variable, but limited, in time-placement-coverage versus contaminates that tended to cluster

Conclusions & Plans...

- ❖ Greater organization implies greater predictability for Contaminates
- ❖ Less organization & structure suggests role of local thermodynamic setting & local mesoscale influences for Events

Next Steps:

Null Cases to be developed and analyzed with regard to Contaminates & Events

Severity to be examined for Contaminates & Events, with regard to lightning data, & mode

Regime Composites to be generated surface, 700mb, 500mb, thermodynamic & dynamic fields, spreadsheet of parameter statistics

Outcomes & Findings...

