Technologies for Improving Operational Forecasting and Severe Storms Research

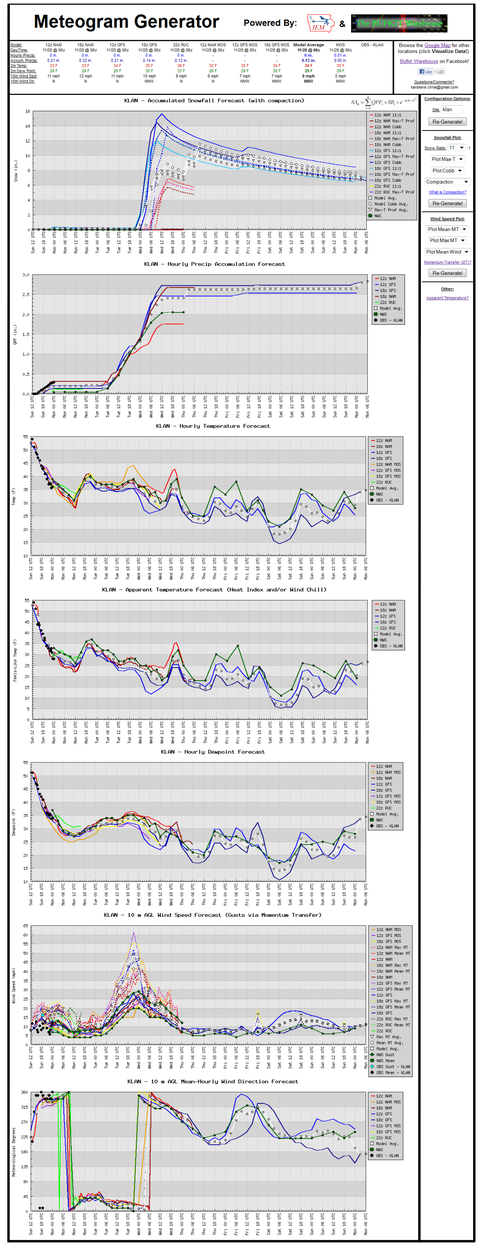
Chris Karstens and Daryl Herzmann

Iowa State University of Science and Technology

TWISTEX — Tactical Weather Instrumented Sampling In/near Tornadoes EXperiment

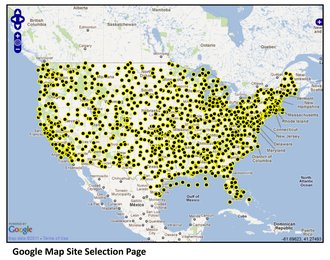
National BUFKIT Data Distribution/Archive Meteogram Visualization Tool

http://www.meteor.iastate.edu/~ckarsten/bufkit/data



BUFKIT Data

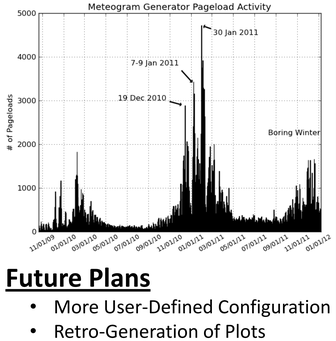
- Began 23 January 2009
- Generation using Modsnd & Cron
- 894 sites in/near Contiguous U.S.
- Archive began 30 December 2010
- Post-processed to produce Cobb data tables



Google Map Site Selection Page

Meteogram Generator

- Written with PHP, Javascript, CSS, & HTML.
- Dynamically generates charts upon user page access
- Observations and MOS data provided by the IEM
- Snow, QPF, Temperature, Apparent Temperature, Dewpoint, Wind Speeds, and Wind Direction Charts
- Incorporates snowfall algorithms, included Max Temp in Profile, Cobb method, and standard snow ratios.
- Momentum Transfer algorithms to forecast wind gusts
- Mouse position-sensitive comparison table at top of page.



Future Plans

- More User-Defined Configuration
- Retro-Generation of Plots

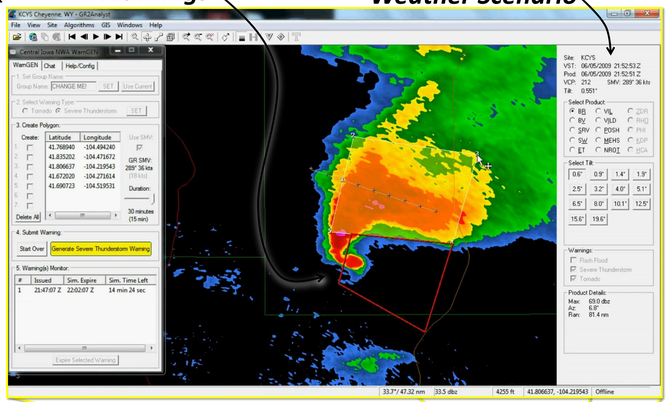
Interactive Radar/Warning Workshop Central IA NWA Conference

User-Issued Warnings

Simulated Real-Time Severe Weather Scenario

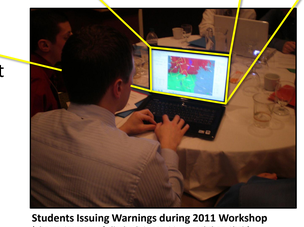
GRLevel2 Analyst

Warning Generation Software



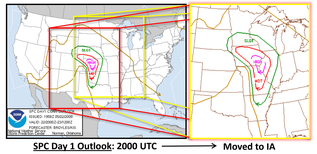
Warning Generation Software

- Written with AutoIT open source GUI development
- Tornado and Severe Thunderstorm Warnings
- Automatic Polygon Creation using GR's Storm Motion Vector
- Custom Polygon Creation, Warning Duration, and Expiration

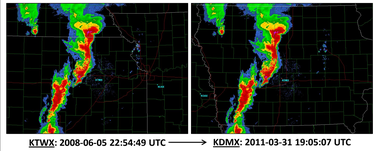


Students Issuing Warnings during 2011 Workshop
(Photos Courtesy of Elizabeth Suess; 2011 Workshop Chair)

Transposing of Data



SPC Day 1 Outlook: 2000 UTC → Moved to IA



KTWX: 2008-06-05 22:54:49 UTC → KDMX: 2011-03-31 19:05:07 UTC

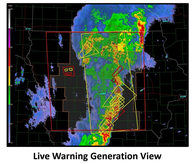
Components & Setup

- Linux Apache server, wireless controller with 2 access points.
- Attendees' laptops: GRLevel2 Analyst and Warning Generation Software installed.

3-Hour Workshop:

- 5-min. Introduction
- 10-min. Synoptic Overview
- 10-min. Mesoscale & Radar Overview
- 15-min. Software Tutorials
- 90-min. Event Simulation (3-hours real-time)
- 20-min. Event Review & Awards

Workshop Photos



Live Warning Generation View

Attendees grouped into small teams

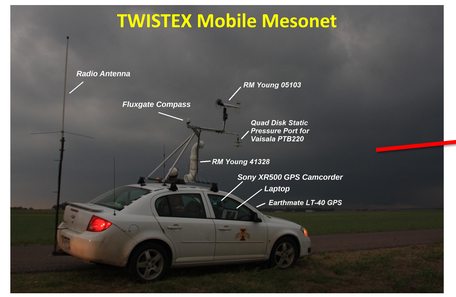
Live Scoring via IEM Cow

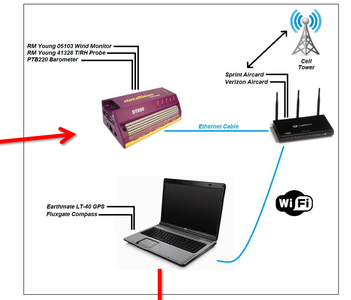
Winning team receiving prize

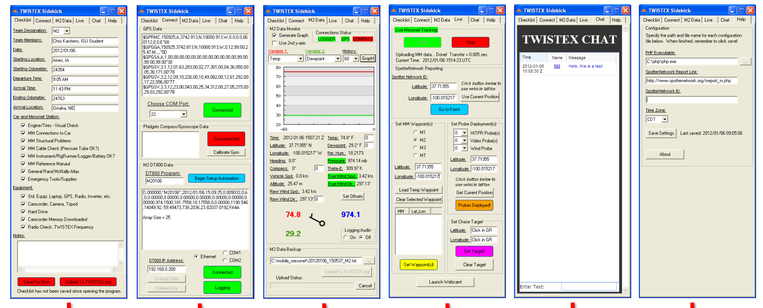
Future Plans

- Optional Tornado Emergency Warning
- Incorporation of Dual-Polarization Radar Data

Data Acquisition and Real-Time Display/Tracking Software for Project TWISTEX



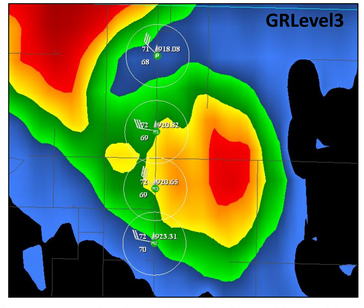


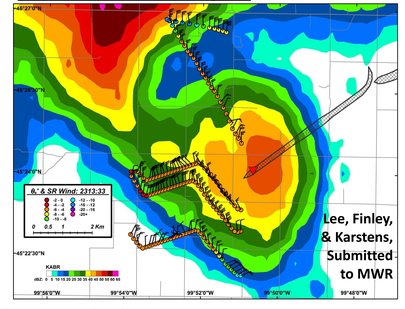


TWISTEX Sidekick

- Written with AutoIT open source GUI development and PHP.
- Data acquisition of raw NMEA & CSV data streams (data logger, GPS, Compass)
- Produces data logs for later QC/analysis and back-ups of raw data streams.
- Real-time display in user-friendly format (graphs, station plot, text).
- Real-time monitoring of data flow with audible alerts
- Real-time coordination by periodically uploading/downloading data to/from remote server, and subsequent production and display of placefile in GRLevel3
- Low-bandwidth chat client
- Mesonet equipment checklist

Real-Time Coordination → Research & Analysis





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