Evaluating the Near Storm Environmental Awareness (NSEA) Applications at the Operations Proving Ground (OPG)



2018 AMS Presentation

"Integration of NSEA and Other High-Resolution Data Sets into Convective Warning Operations"

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## **Presentation Objectives**

- Overview of the Near-Storm Environmental Awareness (NSEA) Project
- NSEA Applications
- Operational Readiness Evaluation (ORE) at the OPG
- Future Goals

## **Project Goal**

Two AWIPS applications

- 1. NSEA Application
- 2. NSEA Digital Cursor Readouts

Best Practice: Situational Awareness of the Near Storm Environment

**Purpose:** Increase situational awareness of environment to improve warning performance and IDSS support to our customers.

Intended Users: Warning Team, Mesoanalyst, (Enhanced) Short Term Forecaster

The VLab page for the NSEA Project: <a href="https://vlab.ncep.noaa.gov/group/near-storm-environment-awareness-project/home">https://vlab.ncep.noaa.gov/group/near-storm-environment-awareness-project/home</a>

The VLab Redmine page for the NSEA Project: https://vlab.ncep.noaa.gov/redmine/projects/nsea-project

## Project Accomplishments (NSEA Application)

Utilizes SHARPpy code for Skew-T Soundings Hodographs



## Project Accomplishments (NSEA Application)

Developed by Aaron Anderson



#### **NSEA Time Series – Closer Look**



The time series graphs go back 3 hours and ahead 2 hours based off the RAP13 model for each parameter. The lines are color-coded based off user-definable thresholds set for each parameter.

#### **NSEA Skew-T/Hodograph utilizes SHARPpy**



Credits of the developers of SHARPpy: http://sharppy.github.io/SHARPpy/contributors.html

## Project Accomplishments (NSEA Digital Cursor Readouts)

Developed by Jason Schaumann and Mike Sutton



## Project Accomplishments

#### **Supercell Tornado Environment Bundle**



#### "Supercell Tornadic Environment" NSEA Bundle Utilized During the New Orleans Tornado Outbreak

"I did manage to get a sneak peak at a tornadic supercell with the 'NSEA Cursor Readout'. It was an eye opener to see 'Supercell Tornadic Environment' indices in real time next to the threatening storm! It is an awesome application." (SOO LIX)

#### **WFO Scenario – Using NSEA Applications**



#### Radar Operator (NSEA Cursor Readout Bundles)

- Radar operator will be able to display thermodynamic, wind shear, composite parameters, etc. fields on top of radar data.
- Promotes radar operator having better situational awareness of the severity potential and hazard types.

#### Short-Term Forecaster/ mesoanalyst (multiple duties) (NSEA Application)

- NSEA Tool will highlight areas in/near the CWA that are most prone to severe weather.
- Able to monitor numerous parameters.
- Tool will help forecasters quickly diagnose the environment's potential severity and hazard types.

Best Practice: Increased Situational Awareness

## **Operational Readiness Evaluation (ORE)**

Evaluated at the OPG May-June of 2017 (4 weeks)

**Purpose:** "Integration of NSEA and Other High-Resolution Data Sets into Convective Warning Operations"

Objectives:

Usefulness Usability Reliability

Workload Performance Enhancements



## **ORE Forecaster Participants**



## **Evaluation Strategy**

Historical & Live Weather Deliberate Progression Increasing Complexity Incrementally Add Data Vary Locations, Roles, Tasks

- Position Breakdown: 3 SOOs, 5 Senior Forecasters, 4 General Forecasters
- One NSEA Team member also participated as a Subject Matter Expert (SME).

## NSEA Digital Cursor Readout OPG Results

The Cursor Readout is intuitive and easy to use. It was deemed an extremely valuable aid to S/A during convective warning operations.

Eleven of twelve participating forecasters indicated it:

- Improved their ability to make effective warning and short-term forecasting decisions
- Improved their confidence in those decisions

## **NSEA Cursor Readout Recommendation**

The Cursor Readout is endorsed without reservation for immediate deployment to NWS field offices.

"This tool just works and the field needs it. I know we've made some suggestions for improving it, but there's no need to wait for it be perfect before releasing it. Plus the NSEA team is very quick to implement changes. I would use this tomorrow, as is." \*

> \* - Forecaster Quote from Anonymous On-Line End-of-Evaluation Survey

## **NSEA** Application OPG Results

NSEA Application

opg

# NSEA GUI is less intuitive than Cursor Readouts but has great potential.

Nine of twelve were very high on its value toward enhancing big picture awareness, especially in pre-convective environment.

Ten of twelve suggested expanding user configuration options to customize parameters displayed to improve diagnosis of other phenomena (wildfires, flash flooding, winter weather, etc.).

All twelve had high praise for SharpPy within AWIPS platform.

## NSEA Application OPG Recommendation

Endorse for future build but delay release until one major issue is resolved: derived parameter discrepancies.

"I really like these tools, and I can envision using them to augment my situational awareness for many situations: monitoring the overall synoptic pattern, depicting the location and evolution of gradients, identifying areas where convective initiation might be favored, etc. I also LOVE the availability of SharpPy within AWIPS!" \*

\* - Forecaster Quote from Informal Debrief Session

## Future Goals of NSEA Team

- From NSEA/OPG report, make modifications/additions to the NSEA software
- Release new Beta version of NSEA Application for testing, then eventual NWS release during FY18.
- Validation of AWIPS 2 sounding calculations between (NSHARP) SHARPpy and AWIPS-2 browser. Determine AWIPS-2 browser parameter calculation pitfalls, and then explore ways to improve. Document differences within the NSEA VLab page.
- Finish testing of Digital Cursor Readouts version 2.0. Make bundles available for NWS-wide by late Winter. Work through SREC to baseline bundles within AWIPS 2.
- Update NSEA Project VLab Page to prepare for NWS-wide use.

# **NSEA Project VLab Pages**

Thanks for your interest in the NSEA Project

The VLab page for the NSEA Project: https://vlab.ncep.noaa.gov/group/near-storm-environment-awarenessproject/home

The VLab Redmine page for the NSEA Project: <u>https://vlab.ncep.noaa.gov/redmine/projects/nsea-project</u>