The Severe Hail Verification Experiment

Kiel L. Ortega[1], Travis M. Smith[1,2], Gregory J. Stumpf[1,3] and Angelyn G. Kolodziej[1]

[1]Cooperative Institute for Mesoscale Meteorological Studies/University of Oklahoma, Norman, Oklahoma, USA

[2]NOAA/National Severe Storms Laboratory, Norman, Oklahoma, USA

[3]NOAA/National Weather Service/Meteorological Development Laboratory, Norman, Oklahoma, USA

What is SHAVE?

- First phase of project conducted during summer of 2006 in the Continental United States

- Expanded in 2007 and renamed the Severe Hazards Detection and Analysis Experiment

- Remote collection of *high-density* hail verification reports

  - Collect reports in a swath, along the storm path

- Made use of multi-sensor, multi-radar products as guidance for where to place phone calls

- Used several GIS/phone databases to find targets for calling

  - One example is business listings in Google Earth, which is applicable <u>worldwide</u>
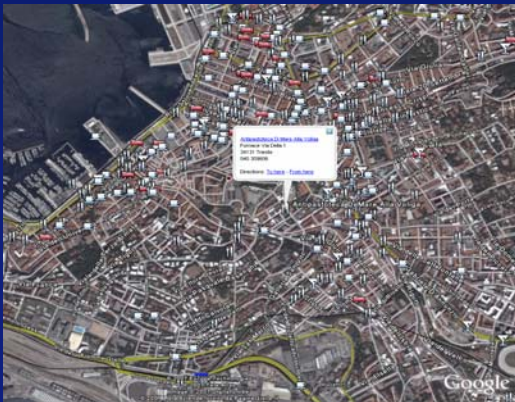
Screen capture from Google Earth showing Trieste, Italy, and some of the dining and lodging businesses.

Why SHAVE?

- Enhance climatological data available

- Utilize the high-resolution database for:

  - Severe weather warning verification and new warning techniques

  - Evaluate hail detection algorithm performance

  - Correlate changes in hail fall to storm evolution
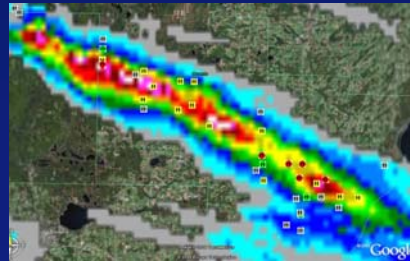
A hail swath (the color shading; temporal maximum of estimated hail size) with verification from SHAVE 2006. Verification from the U. S. National Weather Service for this storm was only 3 reports; SHAVE obtained ~40 reports.

Verification Procedures

1. Overlay radar products in Google Earth or a similar type GIS

2. Call as many locations as possible along storm path likely to have been affected by the storm

   - Purpose for calling numerous locations is

     - Many locations unavailable (i.e., disconnected number)

     - if points are close enough together, report quality can be checked
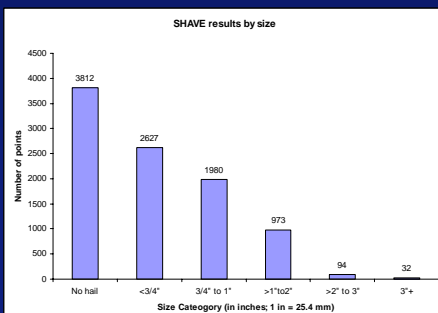
SHAVE Results

Days in operation:	131
Data points:	10802
Total phone calls:	~28000

442 wind-related reports

SHAVE reports sorted by size category. SHAVE also collected 98 measured hail reports, the largest being 4.1" (104 mm).

Potential Worldwide Application

- **ATTENTION ESSL!**

- This process of real-time storm verification could be adapted to other locations of the world.

- Australia is considering this method for verification

- Low-cost, centralized data collection (by students!)

SHAVE data from 2006 and 2007 is available at
http://ewp.nssl.noaa.gov/projects/shave07/data/archive.php

Overlay with all SHAVE data is available at
http://ewp.nssl.noaa.gov/projects/shave07/data/archive/allshavetour.kmz