P1.7 AN ADVANCED WEB APPLICATION FOR ISSUING STORM REPORTS

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1. INTRODUCTION

The real time communication of accurate event reports is essential to warning response and decision making (McCarthy, 2002, Morris, et. Al. 2002). The current method used to compile and issue these reports by the National Weather Service relies on city references (which are occasionally spatially inaccurate) and manual text entry. This paper describes the development of a new web application that allows greater accuracy in placing storm reports, while at the same time allowing several different methods of targeting report locations.

2. SOFTWARE ARCHITECTURE

The Web Based Local Storm Report application uses several open source technologies working together to provide an interface and control for searching and spatially referencing event reports. The core data is located in a PostgreSQL (http://www.postgresql.org) relational database using the PostGIS (http://postgis.refractions.net) spatial extensions. This design allows the retrieval of both spatial data (such as geographic boundaries) and non-spatial data (such as event types). The middle level of the application provides the connectors between the web-based front end and the database. Spatial data is retrieved and served via the Mapserver Web Mapping Server (http://mapserver.org/), while non-spatial data is retrieved using custom scripts written in the PHP (http://php.net) language. The graphical web front end is fully written in the Javascript language, and mapping is performed using the Openlayers (http://openlayers.com) javascript extension. Openlayers also provides for the mapping of radar data from a National Weather Service radar server, and static map backgrounds provided by Google, Inc.

3. OPERATIONAL CONSIDERATIONS

Development and prototyping to the Web Based Local Storm Report application occurred at The National Weather Service office in La Crosse, Wisconsin during the 2008 and 2009 convective seasons. Local experience had shown a disconnect between searching for sources of information (such as spotters, local law enforcement, etc.), accurately referencing the reports geographically, and correlating the reports with ongoing weather events. This application seeks to provide enhanced tools to remedy these problems.

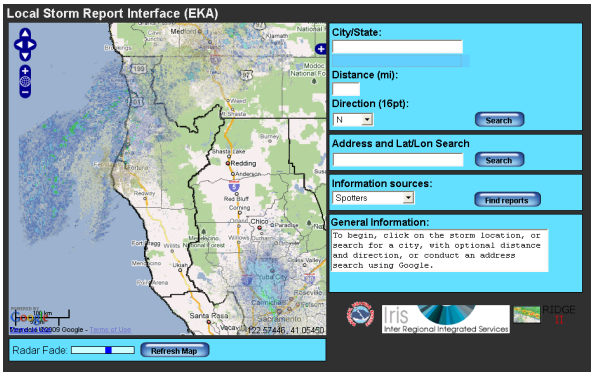

Fig. 1. Web based LSR Application in default view

4. USAGE

Forecasters can start this application by accessing the web application server using a standard web browser capable of executing Javascript (Fig. 1). Once the application has been accessed, a map is displayed of the forecast area, showing counties, a Google Maps® background map, radar data, and current warning polygons. On this map, forecasters have the choice of locating a possible report location using four methods. The first method is the current method employed operationally , which is to reference a city and an arbitrary distance and direction from that city. The second method is to use a Google Local Search™ to locate a report given a street address or type of information source. The third method is to reference a known storm spotter location stored in the database. The last and fastest method is to click on the map interface and optionally zoom and pan to the storm report location. Once one of these methods is use to reference the storm location (Fig. 2), the forecaster enters the report details, such as the type of event reported, it's time, magnitude, and additional remarks. Once entered, the report is quality controlled, then disseminated.

5. OUTPUT FORMAT

Once the event data has reached the dissemination stage, it is sent into the NOAAPORT transmission system as a text product matching current Local Storm Report requirements, and also stored in the event database. From the database, a number of possible addi-

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tional formats can be generated for dissemination, such as extensible markup language (XML), Civil Alerting Protocol (CAP), Comma Separated Values, or binary data. The final formats provided will depend on customer requirements and policy definitions.

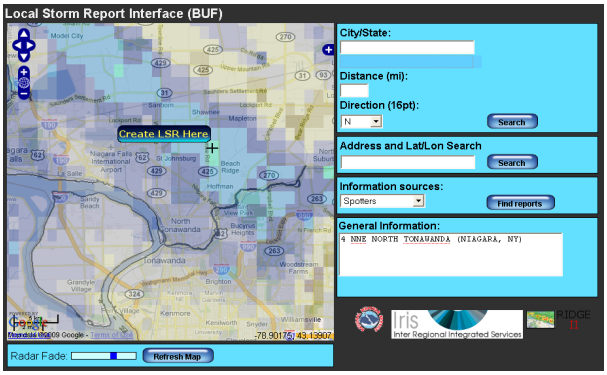

Fig. 2. Web based LSR Application ready to issue report of snow in a lake effect snow band southeast of Buffalo, NY.

6. TESTING AND FUTURE DEVELOPMENT

Alpha level testing of the web based local storm report application began January 4th, 2010 using 10 offices spread across all National Weather Service regions. Comments from test offices concerning the design, functionality, and performance of the application will be collected and analyzed. Once modifications are made, and wider test is expected to occur in the Summer of 2010.

7. ACKNOWLEDGEMENTS

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6. REFERENCES

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