Midterm report for a Joint Hurricane Testbed Project:

Development of a unified dropsonde quality assurance and visualization capability

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Current Status

Although the beginning of work on the project was significantly delayed due to the late delivery of project funding to NCAR, in October of 2010, substantial progress has been achieved and the project remains ahead of schedule.

Accomplishments include:

- A formal meeting was held in 2009 among the primary users of dropsonde quality assurance software users to identify the major requirements for the development of the project. These requirements included retaining the basic structure and graphical capabilities of ASPEN while adding additional capabilities that are available in Editsonde. The highest priorities for these capabilities are the use of synoptic maps to more easily analyze and correct observations from individual flights and more control of the data editing features. The requirements of this project will be further refined during upcoming meetings at the IHC and the Dropsonde users meeting this Spring.
- An extensive recruitment process resulted in the hiring of the lead software engineer for the project. This person holds Master's degrees in both Computer Science and Meteorology, and thus is an excellent match for this work.
- Reconciliation of quality control algorithms between the Aspen and Editsonde software packages is a major goal of this project. Significant progress has been made in this area, especially for the critical near-surface region of the sounding. Differences between Aspen and Editsonde were carefully studied and the causes of discrepancies were documented. Aspen was modified so that the near-surface processing produces results very close to the output from Editsonde.
- The final product of the project will be a unified sounding analyses program. It will be derived from Editsonde and the current Aspen version 2 (AspenV2), with Aspen as the primary software source. Modernization of the Aspen user interface system is being accomplished by migrating from the Microsoft MFC framework to the Nokia-Trolltech Qt graphical user interface system. Porting of AspenV2 to Qt is approximately 90% complete. This software branch becomes the prototype for the new unified software, which will be known as Aspen version 3 (AspenV3).
- Another project milestone is the creation of a software package which is multi-platform capable. Qt, along with utilization of the “scons” software build environment, will make this possible. An initial scons configuration has been completed, and the AspenV3 prototype is now operating on the Windows and Linux platforms. This initial prototype has been tested for basic functionality.

Near Term Goals

The following milestones are planned for the next period, to be in place in mid-summer of 2010:

- The AspenV3 prototype is expected to soon be available to all of the collaborators for testing. The full functionality of AspenV2, along with the current Editsonde updates, will operate under Qt on Windows and Linux platforms.
- A synoptic analyses and visualization feature will be added to AspenV3. This functionality is currently found in Editsonde, and is the most often requested new feature for Aspen.
- An "auto-save" feature, which automatically saves the quality control output products, will be added to AspenV3.
- Additional editing capability of ASPEN V3 will be developed based upon recommendations from the collaborators and JHT point of contacts.
- Work will begin on the development of an automated validation system, which will provide an objective method for comparing processing results between Editsonde and AspenV3. It will also provide a method for validating software modifications to unified software package as development continues in future years.