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Aspen

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ATMOSPHERIC SOUNDING PROCESSING ENVIRONMENT

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Aspen

The **Aspen** (Atmospheric Sounding Processing Environment) is used for analysis and quality control (QC) of sounding data. The application functions identically in the Linux, Apple OSX, and MS Windows environments.

Capabilities

- Automatically apply quality control procedures to the sounding data.
- Present data in tabular and graphical forms.
- Automatically determine levels and code them in WMO message formats.
- Transmit the WMO messages to other systems.
- Save the raw and derived data products in various formats.

- Present observations from multiple soundings, at discrete pressure levels, on a synoptic map.

Aspen can process data provided in many formats, including AVAPS Dropsonde, NCAR EOL, NCAR GLASS, NCAR MCASS, NCAR CLASS, HRD FRD, and WMO TEMP formats. It is able to analyze both dropsonde and upsonde soundings.

Aspen is designed to operate as automatically as possible, while allowing the user to fine tune the quality control algorithms. For instance, as soon as the user selects a sounding file for processing, the data is brought into Aspen and automatically analyzed. In most cases this first pass will be the only one required. If the processing needs to be modified, the user can change the QC parameters and reprocess the data as many times as necessary.

An extensive series of QC algorithms are applied to the data. These algorithms typically have one or two parameters that may be adjusted by the user if the default values are not suitable for a particular sounding. The user can save the modified options, so that when a new sounding is opened, the initial analysis will use the customized QC parameters.

Aspen can have a large number of input files open at the same time. This makes it convenient to compare soundings. Output results can be formatted as printed text and graphics, and saved in graphics, ASCII, Comma Separated Value (CSV), and netCDF files. The CSV format is particularly useful for input to common analysis packages such as MS Excel and Matlab.

The synoptic map capability is particulary useful for detecting anamalous observations during operational sounding activities. It allows a collection soundings to be compared from a geographic perspective. This can very quickly reveal discrepencies in calculated pressure heights and other sensor malfunctions.

History

Aspen is derived from the *Editsonde* software developed at the National Hurricane Center's Hurricane Research Division (HRD). It has progressed through three versions:

- V1 - The Fortran *Editsonde* package was wrapped in Visual Basic, in order to provide a graphical interface and MS Windows compatibility.
- V2 - The entire package was rewritten in C++, with graphics implemented using the Microsoft Foundation Classes.
- V3 - The graphics were ported to the Qt toolkit, in order to support Linux, OSX and MS Windows, using an identical code base.

Aspen version 3 is the current release, and is still under active development. The current release number is version 3.1. Succesive updates have incremental revision numbers appended to the distribution identifier, such as Aspen*V31-7419.exe*.

The Aspen User Manual is available below, as well as from the Help menu within the Aspen application.

Command Line Versions (Aspen-QC)

The Aspen quality control processing can also be performed by a command line program, which does not provide a graphical user interface. This program is named Aspen-QC, to signify that it only performs the quality control processing, without providing a user interface.

The output products are specified with command line switches. This can be useful for scripted processing, but as always with automated processing, care must be taken to validate the results.

The quality control parameters are specified in the aspen.xml file, which is same underlying configuration mechanism used by the graphical version of Aspen. The most convenient way to modify these parameters is to run Aspen and use its configuration editor to change parameters, and then copy that aspen.xml file to the directory containing the Aspen-QC program. The directory containing aspen.xml is shown in the status bar at the bottom of the Aspen display.
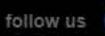
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Aspen can be obtained from the Software Center.

Documents

User Manual

Readme