Picon: Data Analysis for Lidar Measurements

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Introduction

Picon is the data analysis software written and used by the Purple Crow Lidar research group at the University of Western Ontario. Picon is a large, dynamic program, processing not only data from PCL but also data from the CANDAC-Environment Canada Eureka DIAL and CRL lidar. The original version of Picon was written by Paul Doucet as part of his Msc thesis (2009). The latest updates saw a rewrite of the standard analysis algorithm and a number of general fixes. The Standard analysis algorithm is executed after every data run to produce a report containing set of plots and other relevant images. These reports are then uploaded to a to a web server to allow easy visualization.

Using Standard Analysis

The standard analysis was designed to be as user friendly as possible. To start, the user is required to quickly review the data marking any scans of questionable integrity, bad. Once done, the user calls the function StandardAutomatedPlots(date) from the command window in MATLAB. This generates the plots and uploads to the web server. If any errors occur during the execution of algorithm, the user is notified with the problem and a suggested fix.

Displaying the Reports

User friendly reports are generated on the server by a PHP script when a user requests a given date. The PHP script checks to see if a report has been uploaded for the requested date. If a report is found, the PHP generates the HTML necessary to display the reports. Figure 1 is the report generated for July 1st 2012. When the user has clicked a thumbnail, a Javascript will update the large plot area with the plot the user clicked on. A page can also be generated to show all the plots in reverse chronological order.

Future Work

The next major project for Picon is to implement it into a Content Versioning System. This will allow for easier sharing of all future updates, and give the ability to easily roll back updates to a certain date. The choices that were researched were: Subversion, Git and Mercurial. After the research was finished, the decision was made to use Mercurial. Currently the system is being implemented on the group’s server.

Purple Crow on the Web

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