

# Home

## This is the home of the EOL Radar Data Analysis Tools wiki space.

There are three main goals for this space:

- List and describe radar data analysis software to be included in a single EOL repository.
- Document the current state of the gridding software.
- Propose new Radar Data Analysis Tools software to be distributed by EOL

NOTE: A WORKSHOP IS CURRENTLY IN THE PLANNING PHASE WITHIN EOL/RSF. THE FOCUS OF THIS WORKSHOP WILL BE TO ADDRESS THE FUTURE NEEDS FOR SOFTWARE TO ANALYZE REMOTELY SENSED DATA, INCLUDING RADAR. ONE PART OF THIS WILL LIKELY ADDRESS A SINGLE REPLACEMENT FOR REORDER AND SPRINT THAT INCLUDES THE BEST OF BOTH PACKAGES.

Added (12/7/2010) by L. Jay Miller, retired from NCAR/MMM in 2004, and currently working as a casual in EOL/RSF on the project described below. Some of what is contained in this wiki will likely change (e.g., Proposed software to be distributed) as a result of the workshop. Hopefully details of the workshop including a date will be forthcoming.

## INTRODUCTION

NCAR/EOL/RSF is undertaking a project to resurrect several legacy software packages that are still needed for the analysis of radar datasets. These software packages have not been maintained nor updated in any significant way for at least five years. In the near term, these legacy software packages are being built with modern compilers within current Linux operating systems. As each existing package is built, it is being placed into a single repository resident at NCAR/EOL. These software packages (REORDER, SPRINT, PPI\_MMM, and CEDRIC) were originally developed and maintained in the old NCAR/ATD/FOF and NCAR/MMM groups and used primarily for the scientific analysis of radar datasets.

Reorder was developed and maintained in the old NCAR/ATD/FOF group while Sprint was developed and maintained in the NCAR/MMM group. Both Reorder and Sprint are used to grid radar measurements from their original sampling space of range-azimuth-elevation to a typical analysis domain such as a regular Cartesian grid. CEDRIC was originally developed and maintained in the NCAR/MMM group and is still being used primarily for the reduction and analysis of single and multiple Doppler radar volumes. PPI\_MMM was also developed and maintained in the NCAR/MMM group.

The legacy software packages to be included are:

1. **REORDER** - uses a distance-weighted scheme to populate the output grid. This scheme is fundamentally a filtering operation where the filter is convolved with the input radar dataset. The user specifies the dimensions of a box surrounding the input range gate location. Measurements at a range gate location are then used to populate the output grid locations within the box. This approach can keep the box dimensions constant with radar slant range when Cartesian (XYZ) radii are specified, or adjust the dimensions with range when Spherical (RAE) radii are specified. Click on [Reorder.1995\\_Mar10.pdf](#) to see the users' manual.
2. **SPRINT (Sorted Position Radar INTERpolator)** - uses a three-dimensional linear interpolation scheme to populate the output grid. This scheme uses only those eight radar measurements (two ranges, two azimuths, and two elevations) that surround the output grid point. Such an approach readily adapts itself to the original sampling resolution. Click on [sprint.99feb\\_doc.pdf](#) to see the users' manual.
3. **PPI\_MMM** - used for the display and analysis of two-dimensional (sweeps) whether taken in the ppi (range-azimuth) or rhi (range-elevation) mode. There are a variety of options for understanding the characteristics of the radar data, including displays of fields and their statistical character (scatter plots and histograms) among others.
4. **CEDRIC (Custom Editing and Display of Reduced Information in Cartesian space)** - used mainly for the editing, reduction, and analysis of single and multiple Doppler radar volumes, in particular the dual- and multiple-Doppler three-dimensional wind analysis. It is also used to combine gridded datasets from other sources such as surface mesonetworks into a single working four-dimensional (space and time) dataset for integrated scientific research. Click on [cedric.2009sep\\_doc.pdf](#) to see the users' manual.

Note: Two important appendices that were extracted from the SPRINT and CEDRIC documents listed in Items 2 and 4 are: [appendix-D.pdf](#) which describes the output file format for **SPRINT** and **CEDRIC** and [appendix-F.pdf](#) which describes the mathematics associated with the wind synthesis as coded in **CEDRIC**. Several references associated with the synthesis of winds from two or more Doppler radar radial velocity datasets are also included on the last page of Appendix F.

## Legacy Software Information:

- The [Reorder Gridding Software](#) page includes an Introduction, a description of the Gridding Scheme, Coding Deficiencies discovered, and a discussion of any Modifications made to the code.
- The [Sprint Gridding Software](#) page includes an Introduction, a description of the Gridding Scheme, Coding Deficiencies discovered, and a discussion of any Modifications made to the code.
- The [Radar Analysis Software](#) page currently contains information about getting and building, on EOL machines, the programs PPI, SPRINT, and CEDRIC. More documentation is planned for these programs.

## Power Point Presentations as Part of Legacy Software Assessment and Knowledge Transfer:

- The [Analysis of Doppler Radar Datasets](#) page includes the power point presentation (Gridding and Wind Synthesis) given by L. Jay Miller on September 22, 2009. This initial power point presentation included an overview of the "traditional approach" to gridding Doppler radar datasets and performing the wind synthesis. The COPS 2007 study was used as an example of those procedures. Scripts are included in the presentation; however, most images were presented from a Linux computer set up to display NCAR graphics output and were not included.

- The [Fundamentals of Doppler Velocity Analysis](#) page describes a three-part series of lecture/discussions presented by L. Jay Miller. This series will cover:
  1. Single Doppler Radar Data - Characteristics and Analysis,
  2. Data Preparation and Gridding for Wind Synthesis; Using REORDER, SPRINT, and CEDRIC Programs, and
  3. Using CEDRIC for Wind Synthesis and Other Analyses.

### Proposed Software Development.

- The [Radar Analysis Tools Requirements](#) page proposes new software that will replace suite of legacy software. The requirements include current and new functionality.
- Given the requirements, the [Roadmap](#) sketches out a proposed high level development plan.

## Recently Updated

[Fundamentals of Doppler Velocity Analysis](#)

Aug 10, 2011 • updated by [Jay Miller](#) • [view change](#)

[Lecture3-9b.ppt](#)

Aug 08, 2011 • attached by [Jay Miller](#)

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Jun 14, 2011 • updated by [Jay Miller](#) • [view change](#)

[Lecture2-9.ppt](#)

May 25, 2011 • attached by [Jay Miller](#)

[Lecture1-Intro-New.ppt](#)

Mar 21, 2011 • attached by [Jay Miller](#)

[Sprint Gridding Software](#)

Sep 27, 2010 • updated by [Jay Miller](#) • [view change](#)

[JTech-Sprint.pdf](#)

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