The xbistat Display Program

Chris Burghart
Binet, Inc.

1 April 2002

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Chapter 1

xbistat

1.1 Overview

The "hub" computer in the bistatic radar system merges data from each of the system's receivers, forwards phase information, performs dual-Doppler wind calculations, writes the calculated data, and provides graphical display. In addition, means are provided for sending some basic commands to any or all of the receivers. Software on the hub can also be used to look at archived data during or after normal operations. Typically the hub machine is located with the radar, but it can be placed anywhere there is sufficient reliable network bandwidth to carry the incoming data. The functions of the bistatic hub machine are implemented by two programs: BistaticHub and xbistat. BistaticHub does most of the work, accepting the incoming data, performing wind calculation, and writing the resulting data stream. The xbistat program displays the bistatic radar data, either in real time with BistaticHub as the data source, or in a post-processing mode using an existing data file as its source. This document describes only the xbistat program.

1.2 The xbistat Program

The xbistat program provides graphical display of the data generated by the BistaticHub program. It is generally run in real-time whenever BistaticHub is running. It can also be run separate from BistaticHub to display data files generated by BistaticHub. The program is usually run in the background via one of the commands:

```
xbistat [options] &                              (for real-time)
xbistat [options] <data_file> &        (for looking at existing files)
```

In the second mode, `<data_file>` is simply the name of the BistaticHub data file to be viewed. For other command line options, see Section 1.2.1 below. When it is run, xbistat pops up a single window as shown in Figure 1.1.

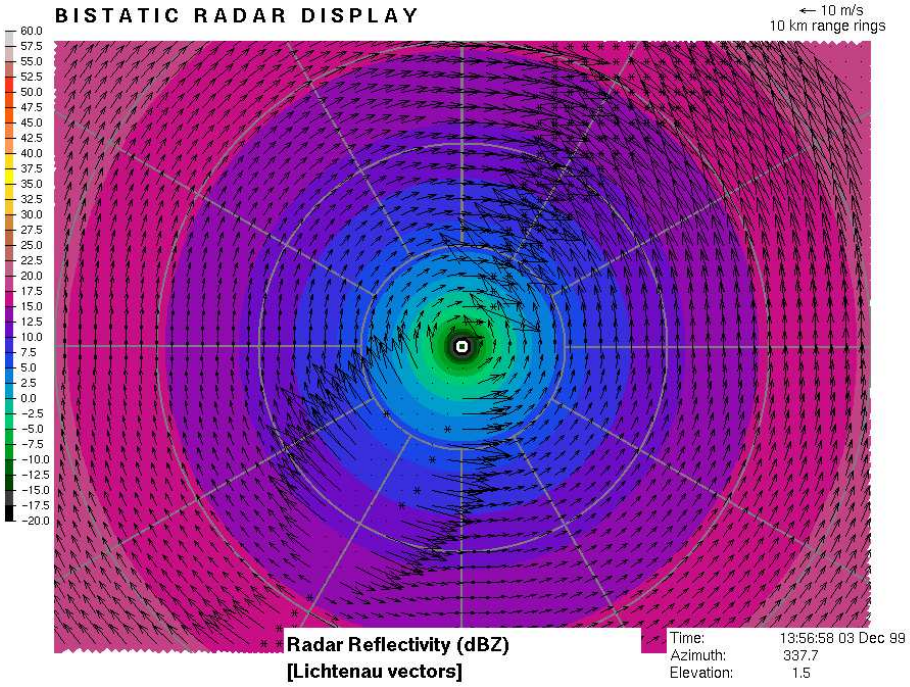

Figure 1.1: the xbistat window

1.2.1 xbistat command line options

There are a few command line options for controlling the initial display state of xbistat:

`-x`, `--xcenter <xval>`	x center w.r.t. the radar, in km (default 0)
`-y`, `--ycenter <yval>`	y center w.r.t. the radar, in km (default 0)
`-p`, `--pixels_per_km <pval>`	magnification, in pixels/km (default 2.5)
`-i`, `--init_file <file>`	initialization file (none by default)

Section 1.2.2 below describes the format of the optional initialization file.

1.2.2 Optional initialization file

Using the `--init_file` command line option, xbistat can be given a text file to read for setting initial conditions. This initialization file can contain the following commands, which parallel the command line options described above:

```
xcenter <xval>
ycenter <yval>
pixels_per_km <pval>
```

The commands must be one per line and must begin at the first character of the line.

1.2.3 Controlling xbistat

When xbistat starts up, it will be displaying a raster data field overlaid with wind vectors. The display is centered on the radar and will show a fairly wide area of view. Means are provided, via mouse button clicks and single key commands, for changing the fields and area displayed as xbistat runs. Table 1.1 shows the available xbistat commands. Letter case is important here; some letters are used in both upper and lower case for different commands.

key	Action
(left mouse button)	move center of display to the point under the cursor
(space)	stop or resume display update
(up arrow)	change to the next available raster field
(down arrow)	change to the previous available raster field
(right arrow)	change to the next available wind field
(left arrow)	change to the previous available wind field
c	clear the raster portion of the display
C	clear the vector portion of the display
q	quit the xbistat program
r	toggle display of the raster field
u	decrease magnification (unzoom) by a factor of 1.2
U	decrease magnification (unzoom) by a factor of 2.0
w	toggle display of the vectors (winds)
z	increase magnification (zoom) by a factor of 1.2
Z	increase magnification (zoom) by a factor of 2.0

Table 1.1: xbistat commands