Observing Practicalities: At AO and Remotely

ALFALFA Workshop

June 23, 2005

ALFALFA

Maximizing Observing Efficiency

- "Minimum intrusion" philosophy
- Fixed azimuth drift: take data continuously as series of 600 sec drifts
- Every 600 sec, calibration noise diode fired for 1 sec (lose 4-5 sec)
- Final calibration tied to cosmic sources
  - Antenna temperature (K) scaling via galactic HI
  - Flux density (Jy) scaling via continuum sources
- No doppler tracking: RFI remains fixed; cosmic sources shift
- Develop observing "corporate memory" for rapid response
  - WAPP errors
  - Power/gain instabilities
  - Local RFI generation
  - CIMA developments
  - AO network problems
- Immediate verification of data quality as part of observing procedure

Observing Team (to date)

Riccardo Giovanelli *
Martha Haynes *
Brian Kent *
Sabrina Stierwalt *
Barbara Catinella *
Noah Brosch
Lyle Hoffman
Emmanuel Momjian *
Jessica Rosenberg
Karen Masters
Amélie Saintonge
Kristine Spekkens
Chris Springob
Adrienne Stilp
Neil Patel
* designated observers

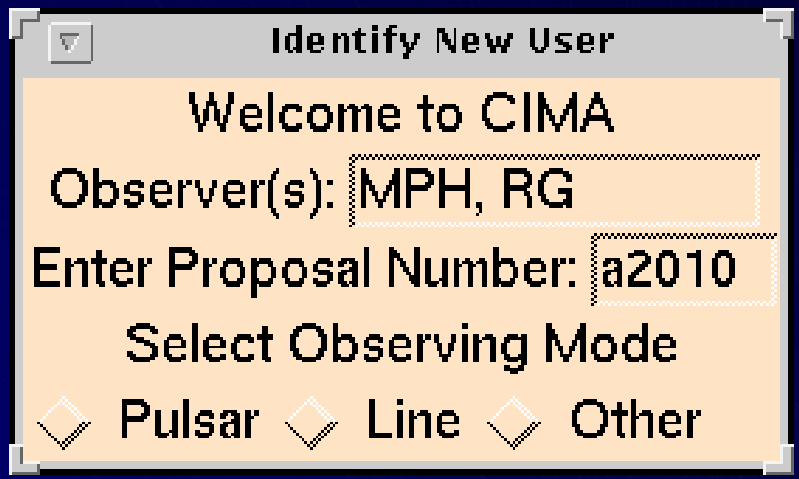
Others are WELCOME to join the ALFALFA observing team!

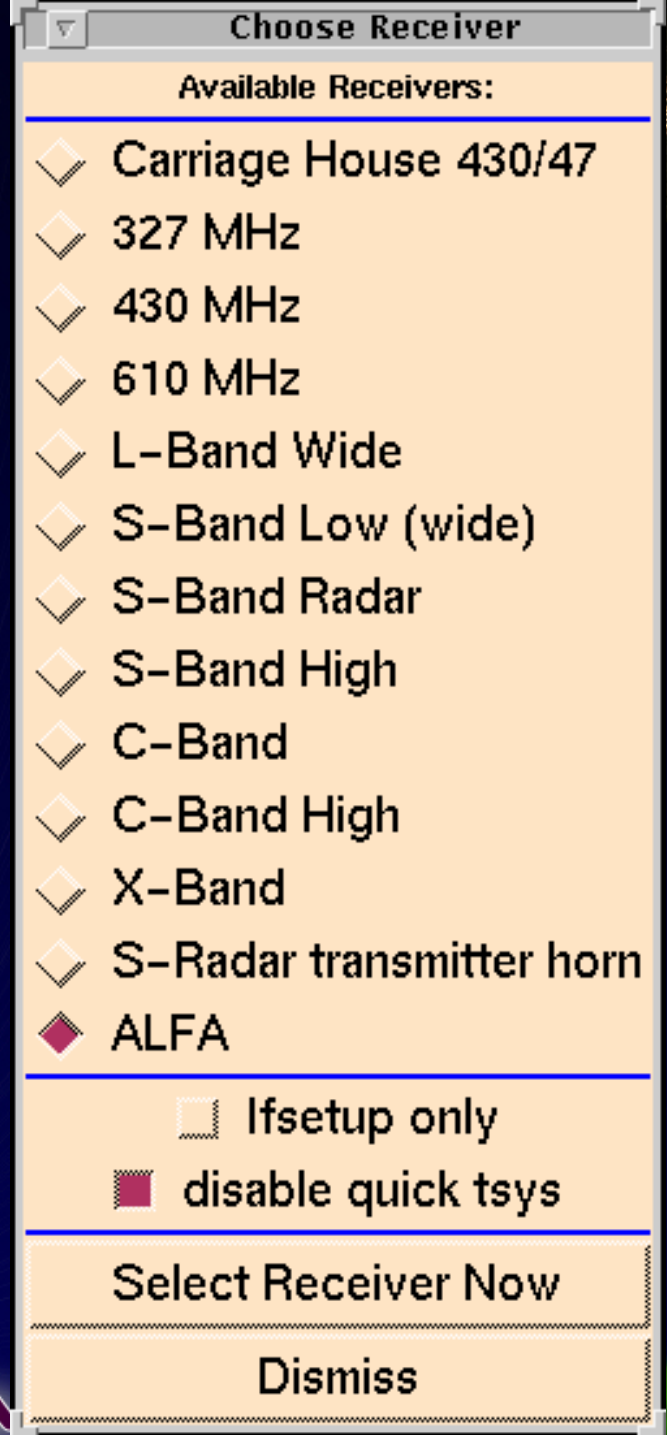
You only need to join an experienced team member at Arecibo so you can be trained in what to do, what can go wrong and what to do about it.

ALFALFA

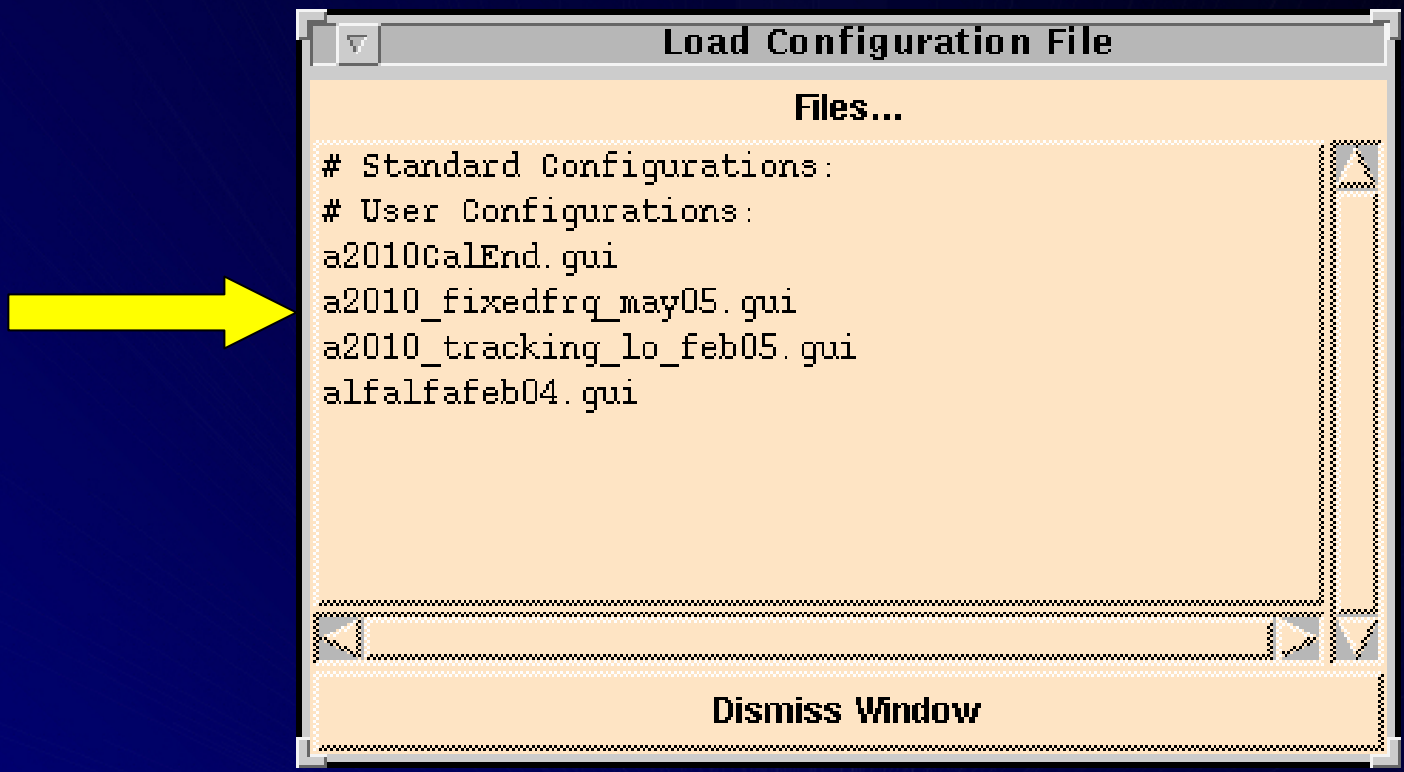
Uncovering ALFA

Observing in 6 Easy Steps

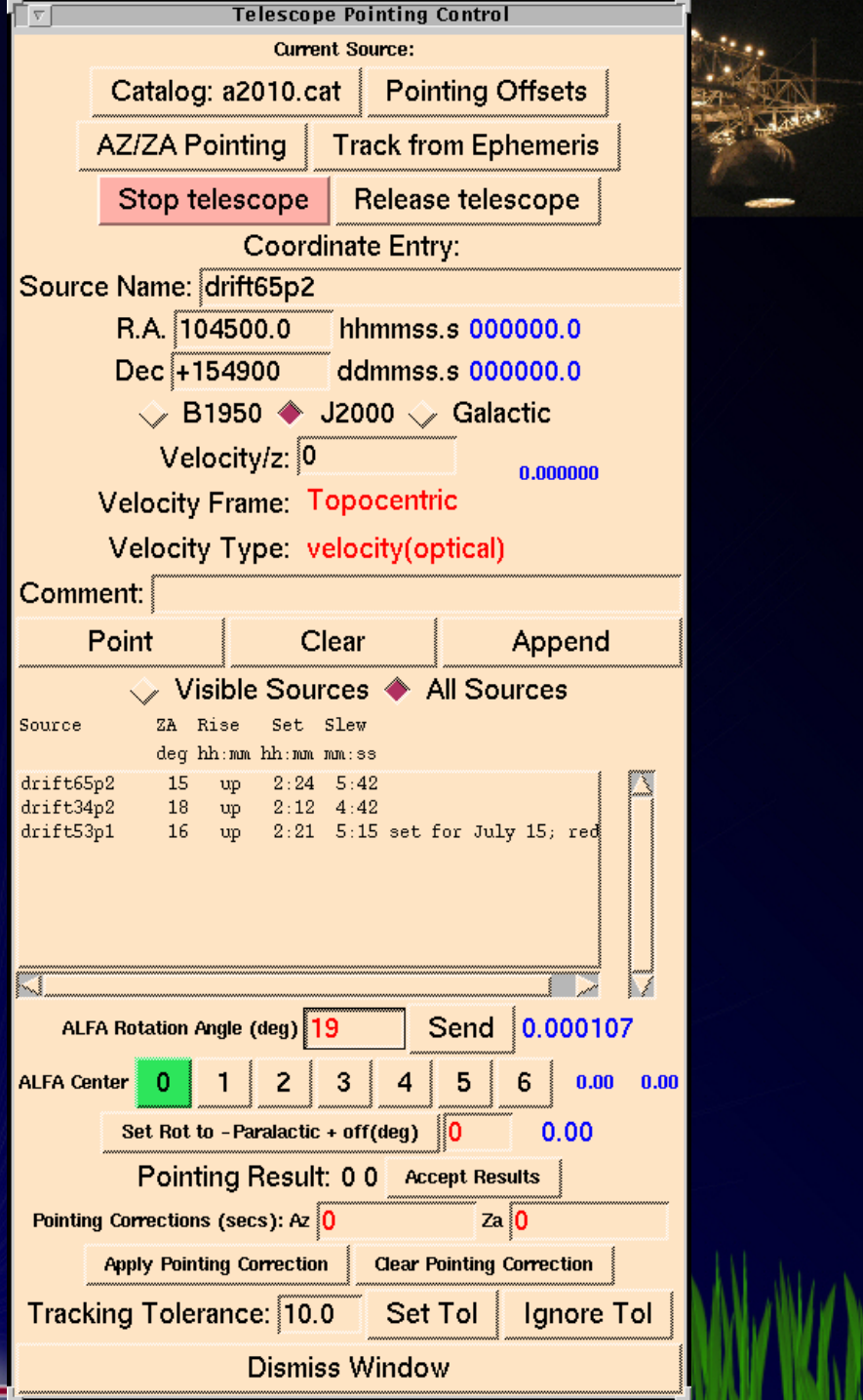




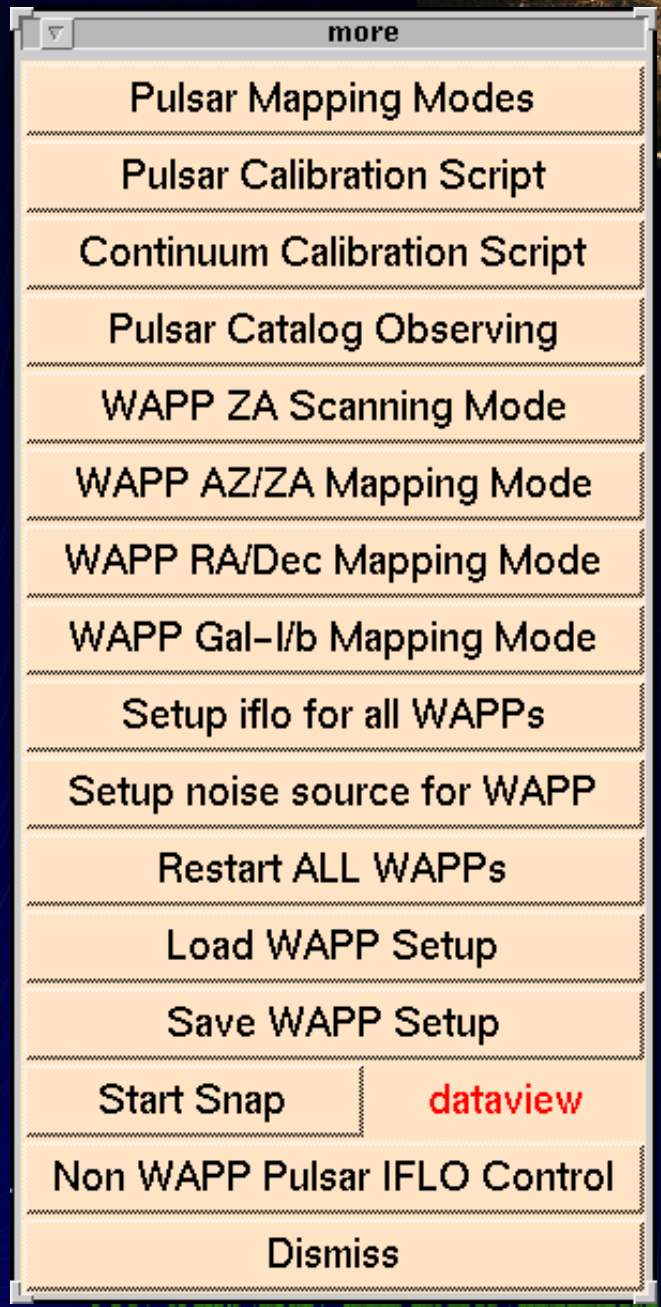
Step 1: Load a Saved State



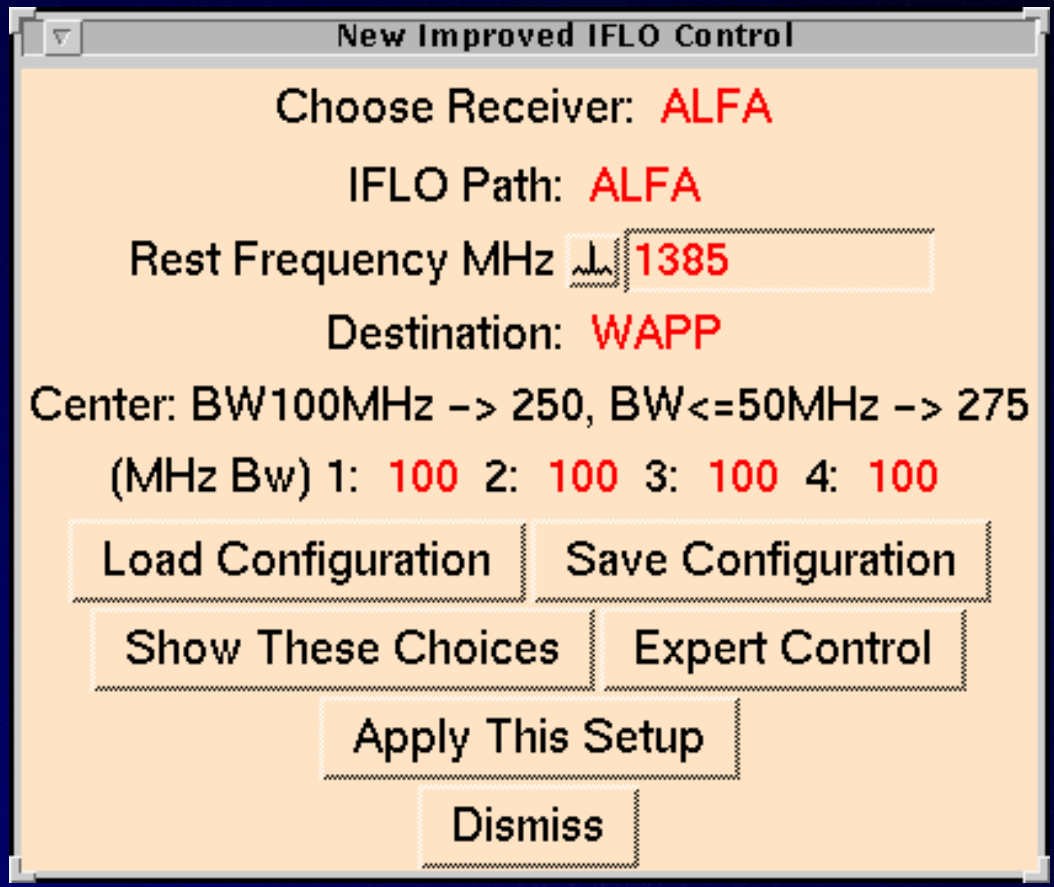
Step 2: Pointing Control



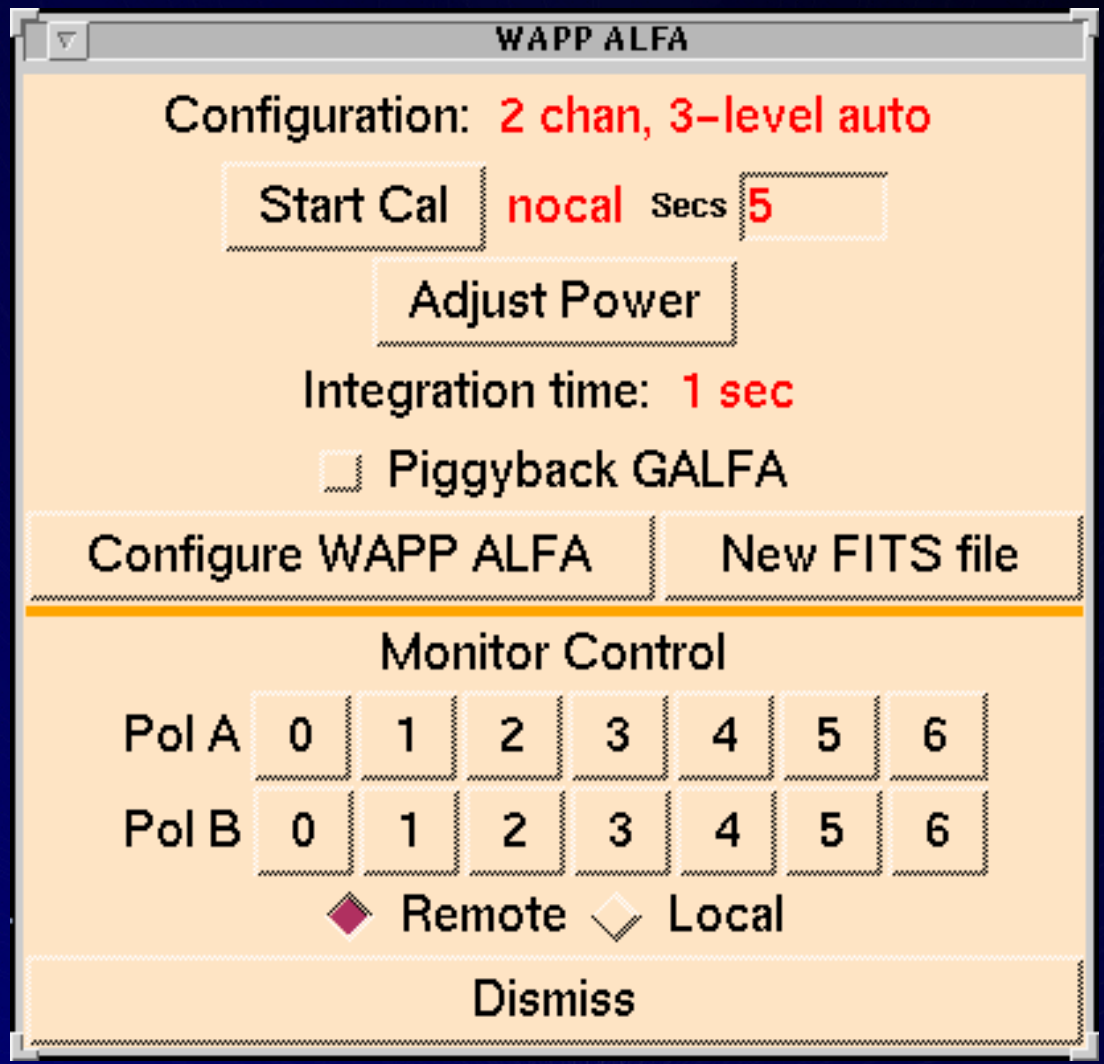
Step 3: Restarting the WAPPs



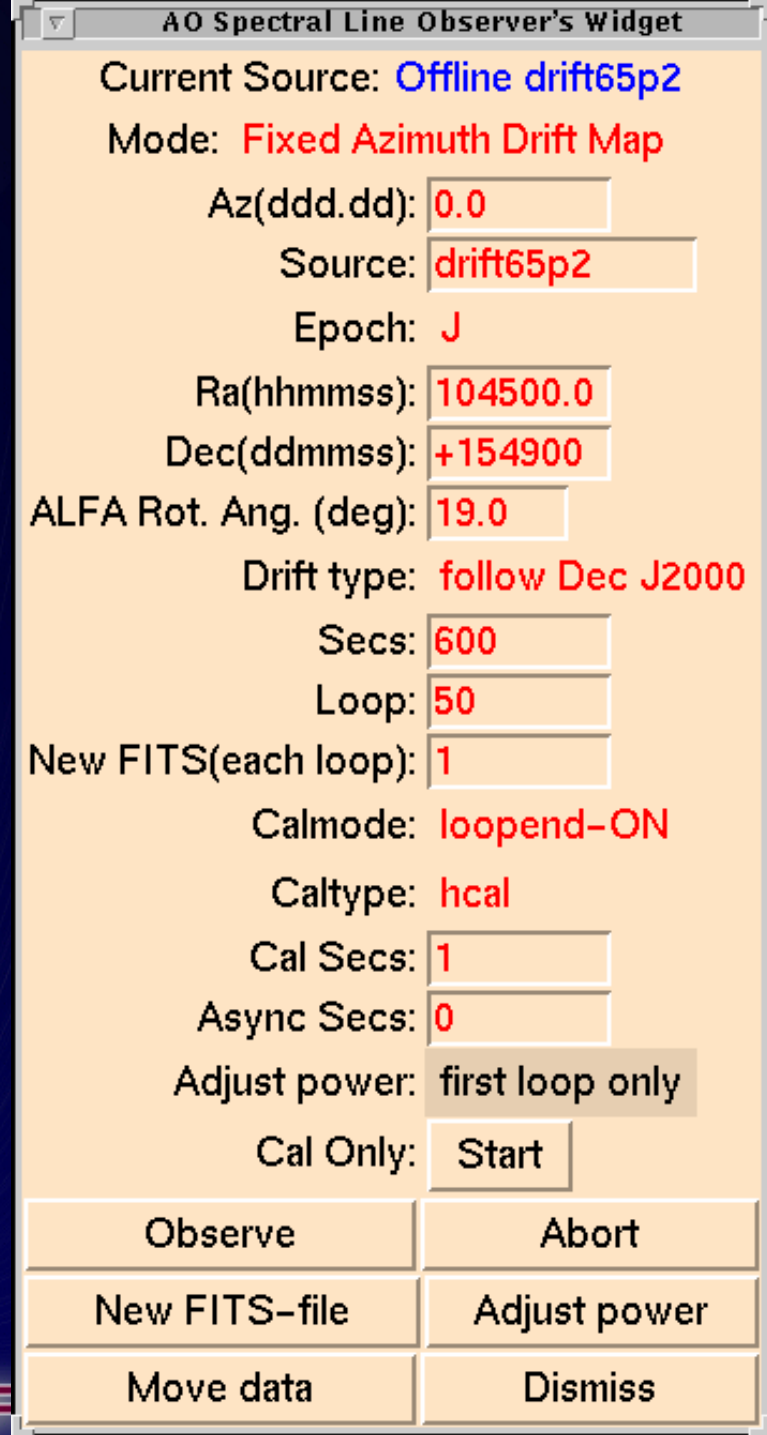
Step 4: IFLO Control



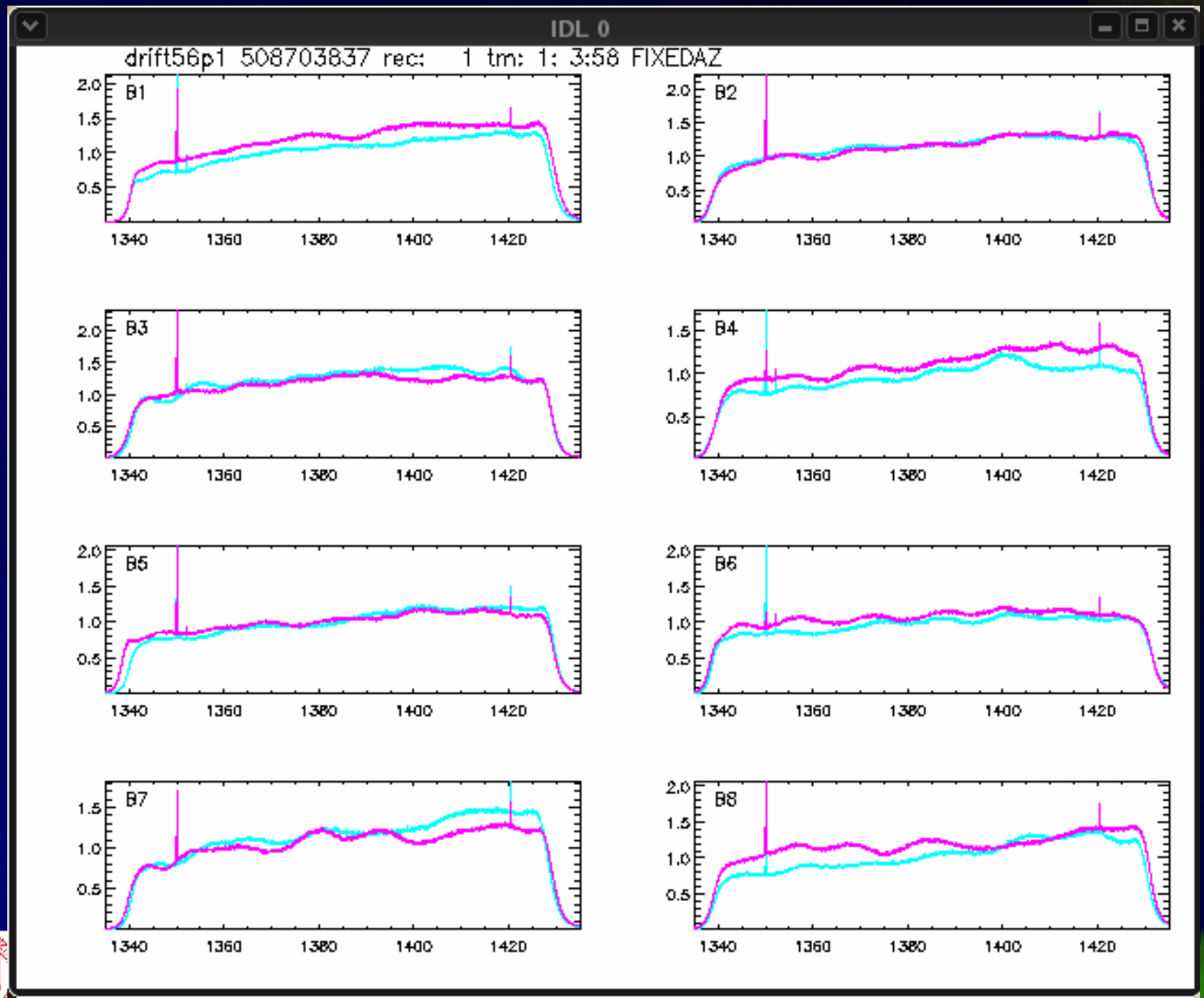
Step 5: Backend Control



Step 6: Start Observing



Quicklook


IDL 0
drift56p1 508703837 rec: 1 tm: 1: 3:58 FIXEDAZ
B1
B2
B3
B4
B5
B6
B7
B8
2.0
1.5
1.0
0.5
1340
1360
1380
1400
1420

CIMA Log with a WAPP Error

Tue May 31 19:16:25 AST 2005 Starting loop 4 of 50 ...
Tue May 31 19:16:25 AST 2005 sent obs_status 1
Tue May 31 19:16:25 AST 2005 starting wapp_spectra 600 1
Tue May 31 19:16:25 AST 2005 Starting WAPP scan: 515169385
Tue May 31 19:16:26 AST 2005 New FITS file: wapp.20050531.a2010.0003.fits
Tue May 31 19:16:26 AST 2005 WAPP(1) start sec 83787.00
Tue May 31 19:16:26 AST 2005 WAPP(2) start sec 83787.00
Tue May 31 19:16:26 AST 2005 WAPP(3) start sec 83787.00
Tue May 31 19:16:26 AST 2005 WAPP(4) start sec 83787.00
Tue May 31 19:24:20 AST 2005 WAPP(1) ERROR counts dont match for chip 2
Tue May 31 19:24:20 AST 2005 WAPP(4) ERROR counts dont match for chip 1
Tue May 31 19:24:20 AST 2005 WAPP(1) ERROR counts dont match for chip 3
Tue May 31 19:24:20 AST 2005 WAPP(2) ERROR counts dont match for chip 1

Log for 3/28/05 am
Observers: SS, MH, RG, BK

System Configuration:

FixedAZ Drift Map Cima pattern; with "new Fits file each loop" = 1
calibration mode: "loopend", 1sec CalON at the end of each drift segment

Files: /share/pserverf.sda3/wappdata/wapp.20050328.a2010.****.fits

LST	fits	Scan	calscan	Source	Pattern	Start coords.	ang	time	loop	DecJ off	Notes
1240	0001	508702627	508703229	drift56p1	FixedAz	123920+133018	19	600	28		
1250	0002	508703232	508703834								
1300	0003	508703837	508704439								
1310	0004	508704442	508705044								
1320	0005	508705047									Wapp chip error near end of scan
1330	0006										file aborted
1335	0007										Wapp chip error again (file aborted)
1341	0008	508706288									Wapp chip error again (file aborted)
1348	0009	508706755	508707357								
1359	0010	508707360	508707962								
1409	0011	508707965	508708567								
1419	0012	508708570	508709171								
1429	0013	508709175	508709778								
1439	0014	508709781	508710383								
1449	0015	508710386	508710988								
1459	0016	508710991	508711593								
1509	0017	508711596									Wapp chip error again (file aborted)
	0018										Wapp chip error again (file aborted)
	0019										Wapp chip error again (file aborted)
	0020										Wapp chip error again (file aborted)
1540	0021	508713436	508714037								
1550	0022										Wapp chip error again (file aborted)
	0023										Wapp chip error again (file aborted)
1605	0024	508714935									Wapp chip error again (file aborted)
	0025										Wapp chip error again (file aborted)
	0026										Wapp chip error again (file aborted)
	0027										Wapp chip error again (file aborted)
1620	0028	508715814	508717124								

Log for 05/05/20 pm
Observers: SS

System Configuration

FixedAZ Drift Map CIMA new version 1.2.02 (normal default)
Using: a2010_fixedfrq_may05.gui as save state

Files: /share/pserverf.sda3/wappdata/wapp.20050520.a2010.****.fits
/share/pserverf.sda3/wappdata/wapp.20050521.a2010.****.fits

LST	fits Scan	calscan	Source	Pattern	Start coords.	ang	time	loop	DecJ off	Notes

1019 0008 514067911 514068513 drift45p2 FixedAz 101920+105700 19 600 50
power levels (dB): 0.948 1.051 0.941 0.905 1.043 0.920 0.860 1.028 0.897 1.099 1.018 1.082 1.017 0.891

1029 0009 514068516 514069118
1039 0010 514069121 514069723
1049 0011 514069726 514070328
1100 0012 514070331 514070933
1110 0013 514070936 514071538
1120 0014 514071541 514072143
1130 0015 514072146 514072748
1140 0016 514072751 514073353
1150 0017 514073356 514073958
1200 0018 514073961 514074563
1210 0019 514074566 514075168
1220 0020 514075171 514075773
1231 0021 514075776 514076378
1241 0022 514076381 514076983
1251 0023 514076986 514077588
1301 0024 514077591 514078193
1311 0025 514078196 514078798
1321 0026 514078801 514079403
1331 0027 514079406 514080008

power levels (dB):0.995 1.143 0.988 0.936 1.080 0.972 0.922 1.067 0.960 1.181
1.071 1.148 1.066 0.913

1341 0028 514080011 514080613
1352 0029 514080616 514081218
1402 0030 514081221 514081823
file 0031 514081826 aborted - see note below
1413 0032 514082498 514083100
1423 0033 514083103 514083705

power levels (dB): 1.039 0.552(red) 1.011 0.996 1.106 0.672(red) 0.794(orange)
0.932 0.801(orange) 0.815 0.876 0.946 1.078 0.952

1443 0034 514083708 514084310
1453 0035 514084313 514084915
1503 0036 514084918 514085520

Log for 05/06/02
Observers: SS

System Configuration

FixedAz Drift Map CIMA new version 1.2.03 (normal default)
Using: a2010_fixedfrq_may05.gui as save state

Files: /share/pserverf.sdb1/wappdata/wapp.20050602.a2010.****.fits
/share/pserverf.sdb1/wappdata/wapp.20050603.a2010.****.fits

LST	fits	Scan	calscan	Source	Pattern	Start coords.	ang	time	loop	DecJ off	Notes
1038	0003	515365961	515366563	drift55p2	FixedAz	103817+132300	19	600	50		

power levels (dB): 0.931 1.040 0.917 1.096 1.014 0.896 1.081 0.992 1.110 1.078 1.011 1.078 0.997 0.903

1048 0004 515366566 515367168
1058 0005 515367171 515367773
1108 0006 515367776 515368378
1118 0007 515368381 515368983
1128 0008 515368986 515369588
1138 0009 515369591 515370193
1149 0010 515370196 515370798
1159 0011 515370801 515371403
1209 0012 515371406 515372008
1219 0013 515372011 515372613
1229 0014 515372616 515373218
1239 0015 515373221 515373823
1249 0016 515373826 515374428
1259 0017 515374431 515375033
1309 0018 515375036 515375638
1320 0019 515375641 515376243
1330 0020 515376246 515376848
1340 0021 515376851 515377453
1350 0022 515377456 515378058

power levels (dB): 0.982 1.089 0.966 1.131 1.055 0.933 1.135 1.022 1.171 1.115
1.056 1.115 1.050 0.924

1400 0023 515378061 515378663
1410 0024 515378666 515379268
1420 0025 515379271 515379873
1430 0026 515379876 515380478
1440 0027 515380481 515381083
1451 0028 515381086 515381688
1501 0029 515381691 515382293
1511 0030 515382296 515382898
1521 0031 515382901 515383503
1531 0032 515383506 515384108
1541 0033 515384111 515384713
1551 0034 515384716 515385318
1601 0035 515385321 515385923
1612 0036 515385926 515400128

What you need for observing

- 3 computers
  - To run CIMA and take the data
  - To monitor the data quality
  - To monitor telescope position
- 1 set of watchful eyes
  - To watch for WAPP confusion, power outages, etc
  - To keep a log file of the night's events
  - To confirm data quality immediately
- The checklist!

The Arecibo Legacy Fast ALFA (ALFALFA) Survey - Mozilla

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop http://www.naic.edu/~a2010/galaxy_a2010.html Search Print

Home Bookmarks WebMail Calendar Radio People Yellow Pages Download Channels Sun Netscape Netcenter Search»

On-site ALFALFA links for project A2010

- The ALFALFA web page at Cornell
- The master list of ALFALFA declination drift assignments
- The Block allocation summary this year to date
- The Block allocation summary for near future

- A2010 Observing cookbook
- A2010 Observing checklist
- A2010 Remote Observing checklist
- Task assignment checklist

- Observing logs, cimalogs, FITSfilelogs

- AO telescope schedules
- CIMA users log file (Check for changes to CIMA made recently)

- Graphical schedule Drifts 61-75
- Graphical schedule Drifts 46-60
- Graphical schedule Drifts 31-45
- Quick summary of drift status

- Useful notes on getting IDL running at AO for ALFALFA
- Notes on viewing the raw data in IDL "d structure" format
- Basic instructions on running BPD

- Useful ALFA observing links and info
- Random facts, rumors and folklore
- Useful software links

- ALFA FITS file contents (in progress) (See New CIMA site for CIMAFITS as of Feb 03, 2005)
- Mikael's CIMAFITS updates log file

- Useful aliases for a2010
- Where in the world is...

ALFALFA Survey - Setup and Observing Cookbook Current as of June 21, 2005

Disclaimer: CIMA changes, conditions change, and we have to adapt to situations as they develop; this cookbook works today but may not tomorrow! In particular, as of May 27, 2005, we are using CIMA version 1.2.03. Please read the documentation on the CIMA website.

Before Observing

- The ALFA cover must have been removed. ALFA is covered during radar runs, so take a look at the telescope schedule beforehand. For instance, if it looks like ALFA had to be covered the day before your observations, make sure that time is allocated to remove the cover before your run starts (this can be done during maintenance or system check time). In any case, it is a good idea to double check with the telescope operator. Know the schedule a few days ahead of time.
- The motor must be switched on (this is also done on the platform!). If the power has failed on the platform, the "reset button" on the motor may have to be pushed; if someone switches the motor on, he/she probably should hit the reset button too, before coming down, just in case. If you have any doubts, look for ALFA rotation using the dome video monitors (you should be able to see it move). Also, the operator may need to turn on ALFA in software from the control room. (Someday, all this will be automated.) **NOTE:** There is now a remote "reset" switch for ALFA - it is no longer necessary to go up to the dome and push the reset button.

Datataking

- Log into OBSERVER2 as "dtusr" (password taped to the monitor).
- Start CIMA by clicking with the right button of the mouse on the background, and choosing "cima online GUI" from the menu. Select the version we are currently using which in June 2005 is 1.2.03. Several windows will pop up: Identify New User (orange), AO Observer Display (black), CIMA Observer's Interface (orange), and a couple of others (white background, with red or blue writing) that you will not use. CIMA Observer's Interface is the main window and should always be open. The buttons therein open new windows, which allow you to control the telescope. These windows will be indicated with orange fonts in this document; all the other ones will be red.
- Identify New User
  - Observer(s). This entry is placed in the FITS header for each record. It is also used in the return address in case, during your observations, you decide to email the RFI or CIMA groups with a comment (using the E-mail Comment button).
  - Proposal Number: a2010. This is important. Your settings and log files will be saved (if you decide to do so) in the corresponding project directory, which for us is /share/obs4/usr/a2010/. *Note the small "a".*
  - Select "Line" observing mode. CIMA will start up.
- Choose Receiver
  Select "ALFA", click on "Select Receiver Now", and make sure that ALFA shows up in the AOSTATUS monitor (on your top-left side). Choose to disable quickTsys. "Send" the Receiver choice and then Dismiss the Choose Receiver window.
- Choose "Load/Save State" from the CIMA Observer's Interface. The setup file currently (May'05) in use for A2010 is **a2010_fixedfrq_may05.gui**. It fires the cal at the end of each scan ("loopend-OFF"), and adopts the topocentric reference frame. This will set most of the parameters, but you must still apply the configuration in each of the widgets described below.

A2010 Observing Checklist: Current as of June 21, 2005

This is a short checklist of the things to do when observing... for more details see the observing cookbook.

Startup:

- Ask the telescope operator to move to the azimuth (normally either 360 for Dec < 18 or 180 for Dec > 18) and approximate zenith angle of the drift you're doing. Note that this azimuth should be 360 (not 0) to avoid wrap issues, even though you'll use 0 in the fixed az drift widget. But... **be sure the operator gives you back telescope control!** Alternatively, go to the "Pointing Control" window and point the telescope to the first position; just be sure the telescope goes to Az=360, not 0 if observing the southern part of the sky (to avoid wrap problems).

- Log in: dtusr
- Start CIMA on-line GUI by right-clicking on screen background. Select the desired version of CIMA; this is currently **Version 1.2.03**.
- User: *yourname*, **a2010** (note the small "a"), select Spectral Line
- Select Receiver: **ALFA** ; disable quickTsys
- Load/Save State: load **a2010_fixedfrq_may05.gui**

- **Pointing control**
  - Load the catalog **a2010.cat** and click on the entry for this block. Update the RA (taking into account slew time) and point the telescope if you have not already done so.
  - Set velocity to**0**, reference frame to **topocentric** and type to **optical**.
  - Set alfa rotation angle: **19.0** deg (for AZ=0 or 180). Click Send.
  - Choose **beam 0** as center
  - Note:**WAIT** until ALFA revolves into place. Otherwise the IFLO control and wapp configuration will not respond, and some ALFA beams may not "turn on".

- **Restart the WAPPs**
  - Click Pulsar Observing
  - Click More (in the lower left corner)
  - Click Restart ALL WAPPs

- **Receiver IF/LO Control --> New Improved IFLO Control**
  - Check rest frequency: 1385.0 MHz (when topocentric observing)
  - Check bandwidths: 100 MHz
  - Apply setup. Check that the correct ALFA center frequency (1385 MHz), range (1335-1435 MHZ) and 4 IF band setups (100 MHz) are ok on the upper display screen to right of observer2 computer.