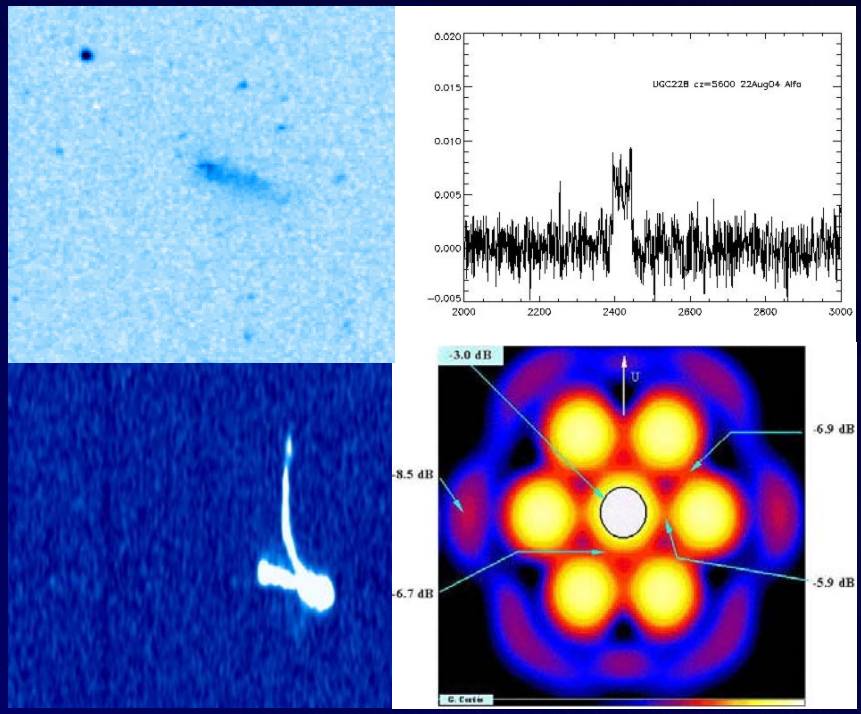

ALFALFA:
Survey status, plans and documents

Martha Haynes

ALFALFA at Ithaca
June 23-24, 2006

ALFALFA

A2010 Observing Strategy

- ALFA + WAPPS
- 100 MHz, centered at 1385 MHz, 24.4 kHz/chan
- No Doppler tracking
- "almost" fixed azimuth drift mode:
  - Track Decl. J2000 at fixed azimuth
- 2-pass strategy, 3-9 months apart
- Highly efficient: 99% "open shutter" time
  - Main overhead is telescope slew to position (at beginning of run: 5-15 minutes)

- TOGS runs commensally
  - A2010 observer runs TOGS calibration scripts

A2010 observing practice

- The "designated observer" is responsible for monitoring the data taking AT ALL TIMES
  - Things do go wrong! (WAPPs confused; power failures, etc)
  - Quick recovery means fewer holes in our maps!
- High efficiency, high quality observing is easy to achieve.
  - Observing is simple as long as all goes well.
  - On-site training by an expert (one of us!)
  - Cookbooks for observing and data analysis
  - Observer performs data quality and diagnostic checks.
  - Observer also performs logging and data handling tasks.
- About 50% of observing done remotely from Ithaca
  - Advantages: less disruption (we have observed on >220 days); better computing environment at CU
  - Disadvantages: cannot monitor all data; no interaction with staff; network issues
  - Compromise: someone spends 7-10 days in Arecibo every ~2 mos.
  - OTHER REMOTE OBSERVERS WELCOME TO HELP!

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ALFALFA observing team

- Tom Balonek + Brian Walsh, Colgate '06
- Noah Brosch, Wise Obs
- Shea Brown, U. Minnesota grad student
- Barbara Catinella, NAIC
- Riccardo Giovanelli, Cornell
- Martha Haynes, Cornell
- Lyle Hoffman + Adeel Altaf, Lafayette '06, Josh Goldstein '07
- Brian Kent, Cornell grad student
- Becky Koopmann + Bilal Mahmood, Union '08
- Dave Kornreich + Amy Furniss, Arik Mitschang, Humbolt '06
- Ann Martin, Cornell grad student
- Emmanuel Momjian, NAIC
- Prasanth Nair, Indiana grad student
- Jessica Rosenberg, Harvard-SAO/CfA
- Amélie Saintonge, Cornell grad student
- Sabrina Stierwalt, Cornell grad student

- Undergrads
- Grads

Individuals wanting to participate can contact me (Martha) to arrange a training session at Arecibo.

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ALFALFA Scheduling Strategy

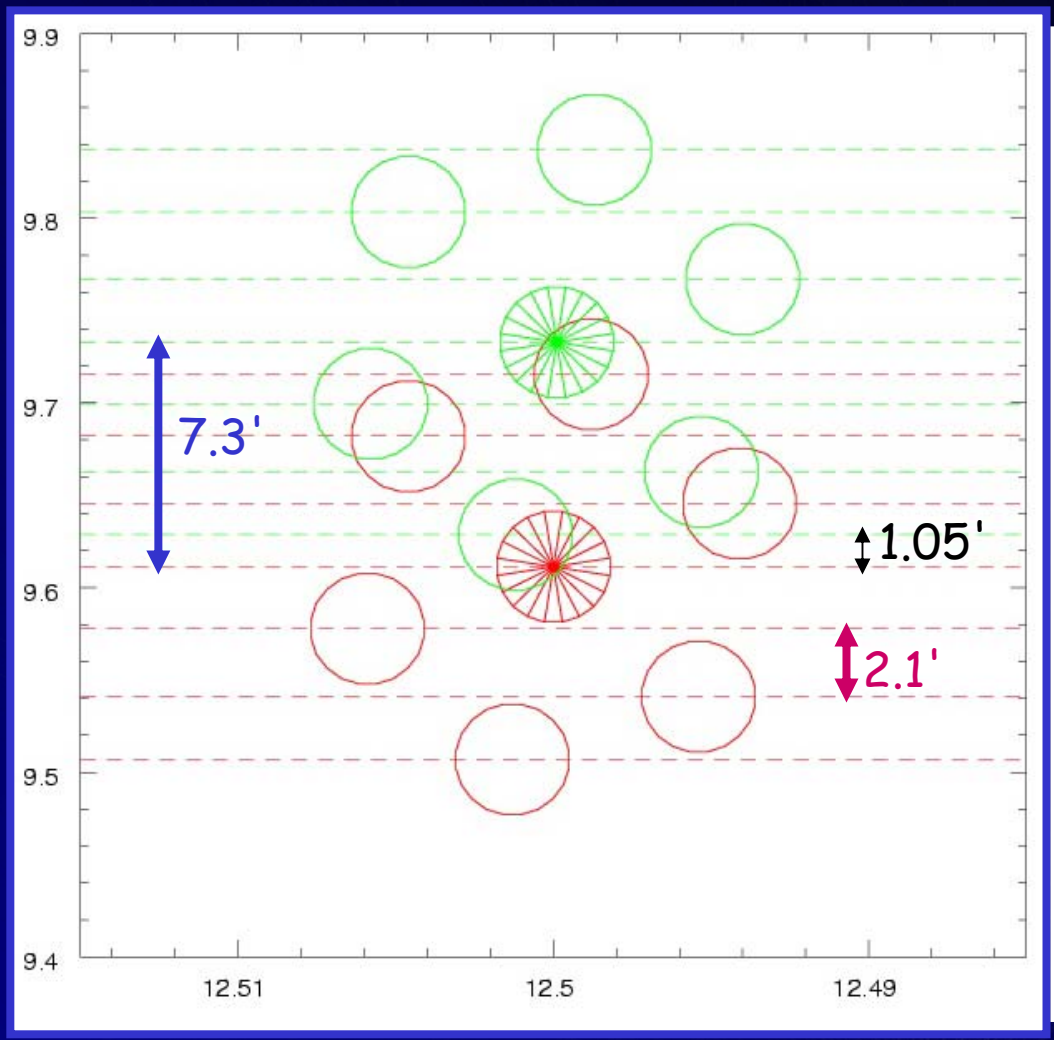
- ALFALFA aims to survey 7000 square degrees of high galactic latitude sky.
- "Fixed azimuth drift" mode: the telescope moves only slightly, to maintain constant Dec (J2000); Drifts offset by 14.6 arcmin.
- A "tile" of data will contain all beam positions within a box of 20 min in RA by 4 degrees in Dec. A "grid" is 2.4 degrees square.
- Within a single observing block, the data taking sequence consists of a series of 600 second (10 min) drifts at constant Dec J.
- Over a season, we try to "complete" sets of drifts within a tile: 16 drifts/tile/pass.
- The second pass occurs 3-9 months after the 1st pass (to aid RFI identification and signal confirmation).

Practicalities of Scheduling

- Arecibo telescope time is in high demand.
- Arecibo serves a diverse set of scientists.
- We elect to observe only at night.
  - Reduced RFI levels
  - Minimal thermal effects
  - No solar interference
- Pass 2 needs to take place 3-9 months after Pass 1
- The telescope schedule changes on short timescales
  - Targets of opportunity
  - Hardware failures (theirs or ours)

A2010 blocks often cover only part of the RA range

2-pass beam layout



Final coverage for 2 pass strategy

- For the 2nd pass, Beam 0, which has higher gain than the others, is offset by 7.3 arcmin from its 1st pass position.
- Some smoothing of gain scalloping.
- 2-pass sampling thus at 1.05 arcmin
- 2nd pass occurs 3-9 months after the 1st pass (vs. RFI)

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ALFALFA schedule notation

- "Master list" of drift declinations preassigned, starting at 0° and moving northward to +36° => DriftN, N = 1, 148
- Two passes: p1 and p2

41p1	+095118
42p1	+100554
42p2	+101312

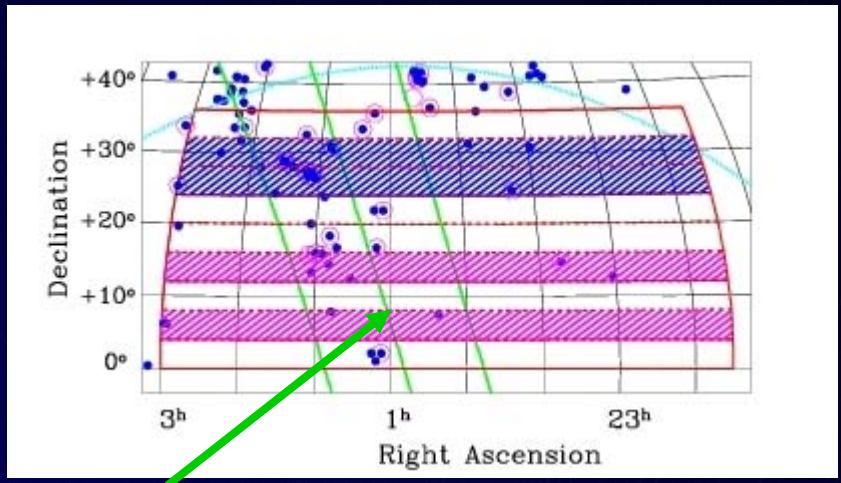
14.6 arcmin

7.3 arcmin

- Observing blocks designated by yy.mm.dd (06.06.02)

ALFALFA Survey 2005-7

High galactic latitude sky visible from AO

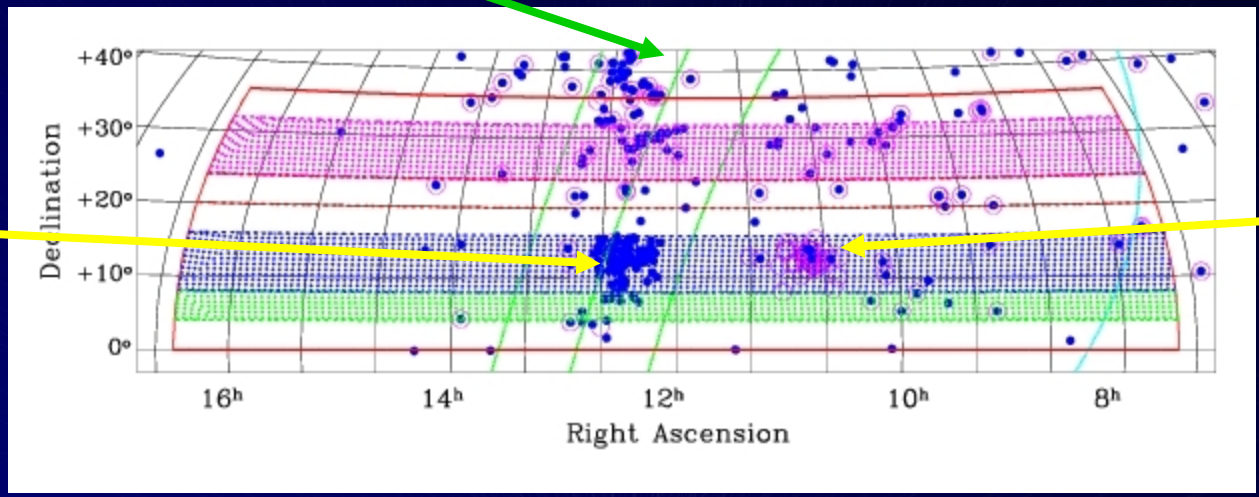


- Commensal with TOGS HI
- Does not compete with galactic plane surveys

Supergalactic plane

Virgo cluster

Leo Group



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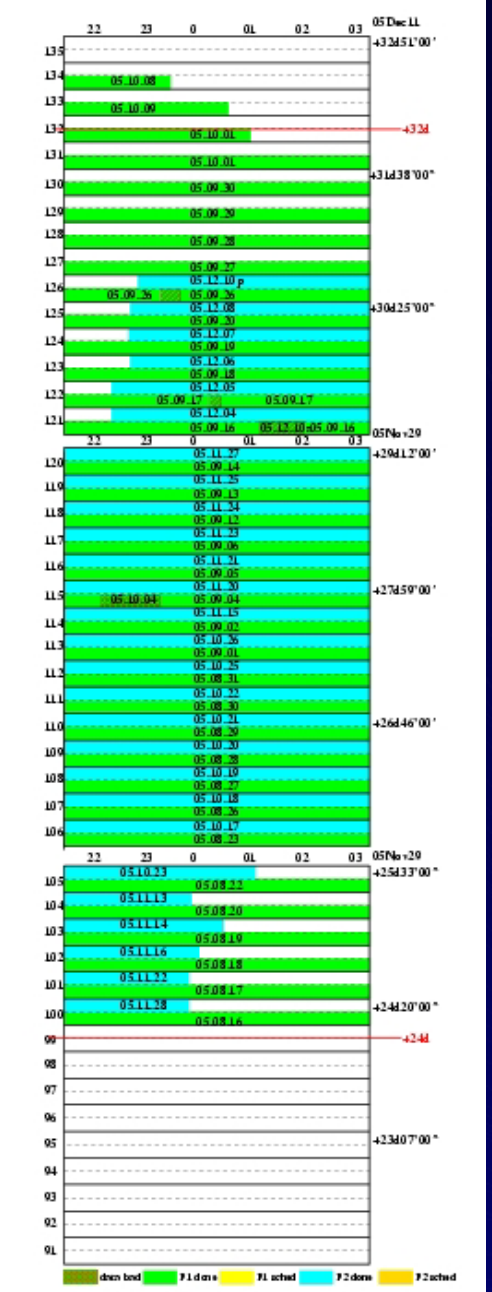
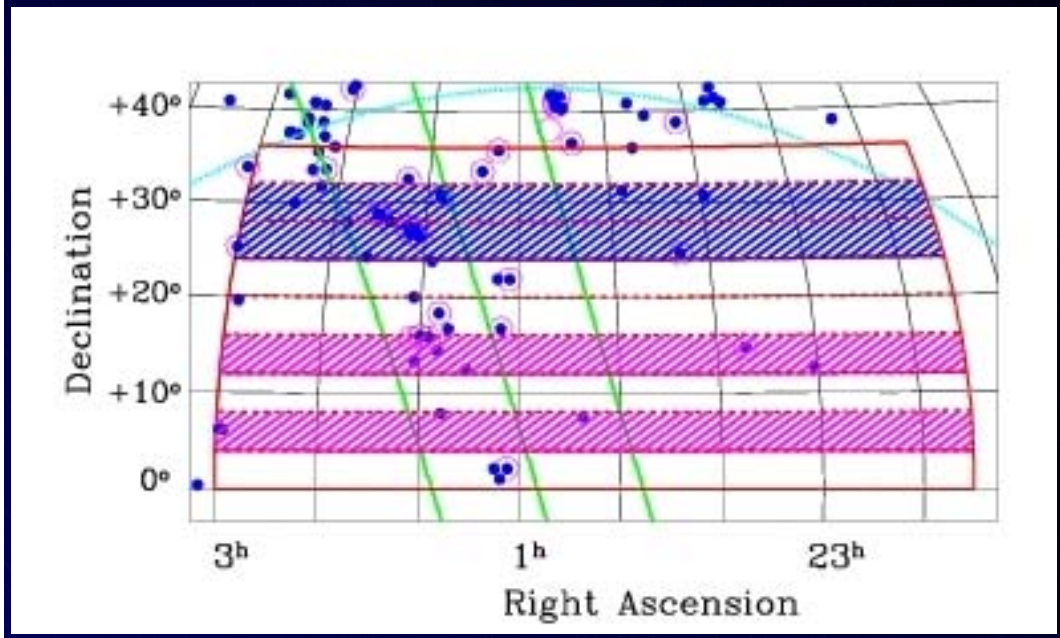
ALFALFA: $22^h < RA < 3^h$





Status of Fall 2005:

- Complete only +26° to +29°

Plan for Fall 2006:

- Complete +24° to +32°
- Complete +12° to +16°
- Complete +04° to +08°

- M33 and HVC's
- Several D<10 Mpc groups
- anti-Virgo Local volume
- Pisces-Perseus

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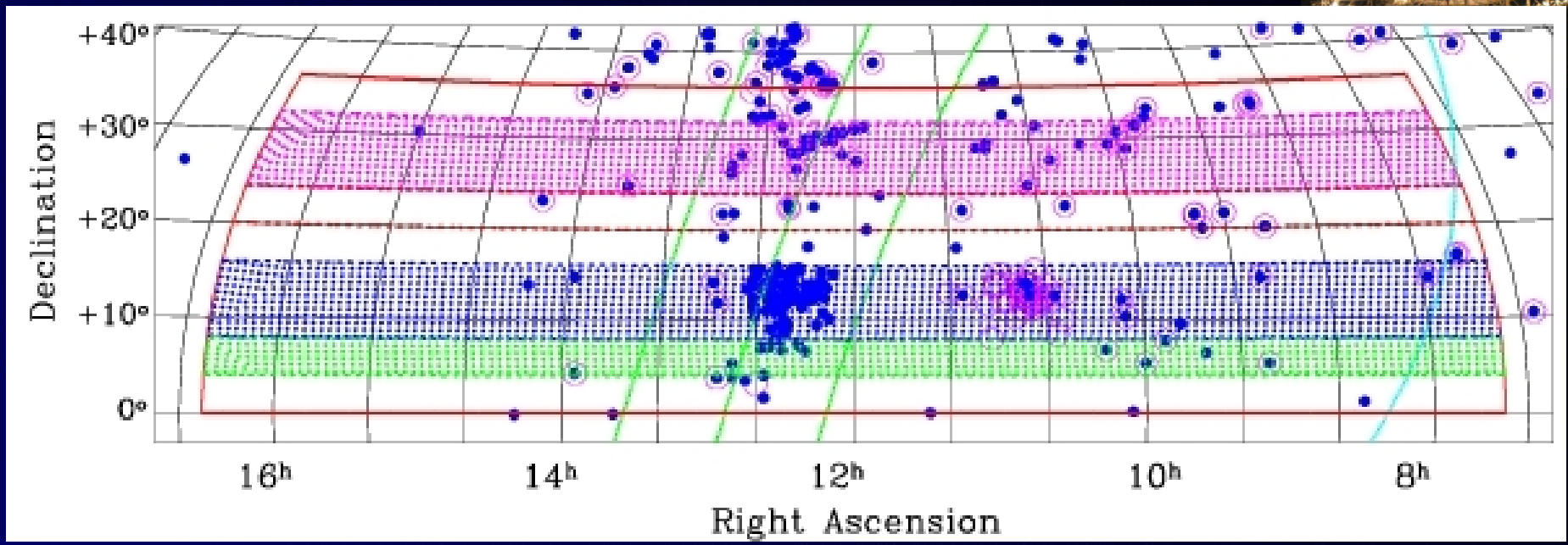
ALFALFA: $07^h30^m < RA < 16^h30^m$



- Virgo cluster
- Leo region
- Coma cluster
- + lots more!

Status as of June 22, 2006:

- Complete only +05° to +16°
- Some coverage +04° to +05°
- First pass +26-30°, RA>11^h

Plan for Spring 2007:

- Complete +04° to +05°
- Complete +24° to +32°

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ALFALFA websites

- Cornell website (public)
  - http://egg.astro.cornell.edu/alfalfa
- Cornell website (team only; password required)
  - http://caborojo.astro.cornell.edu/alfalfalog
- Arecibo A2010 website (not obvious)
  - http://www.naic.edu/~a2010/galaxy_a2010.html
- Milano Followup Team wiki (password required)
  - http://cosmos.iasf-milano.inaf.it/alfalfa_wiki/