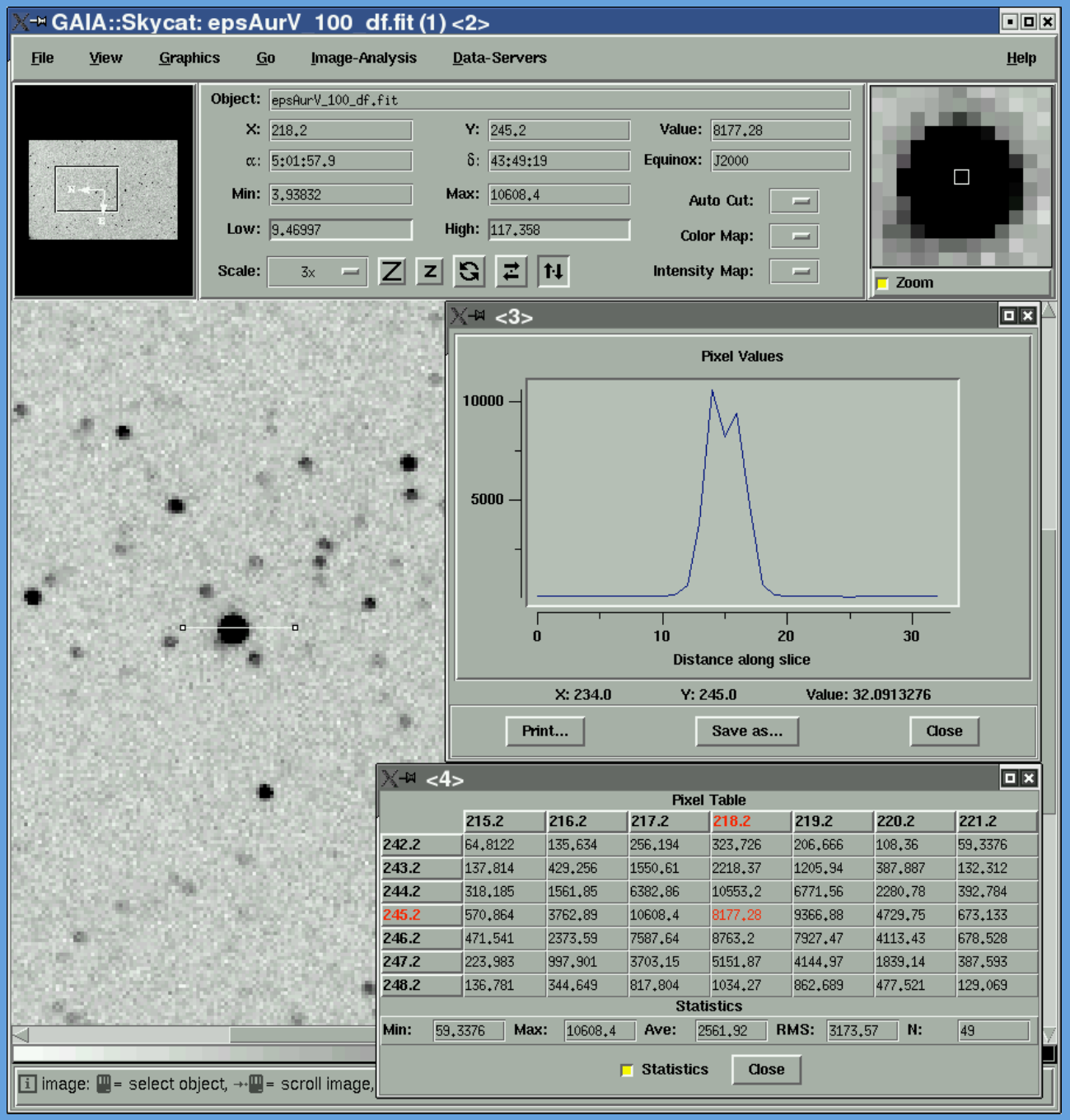
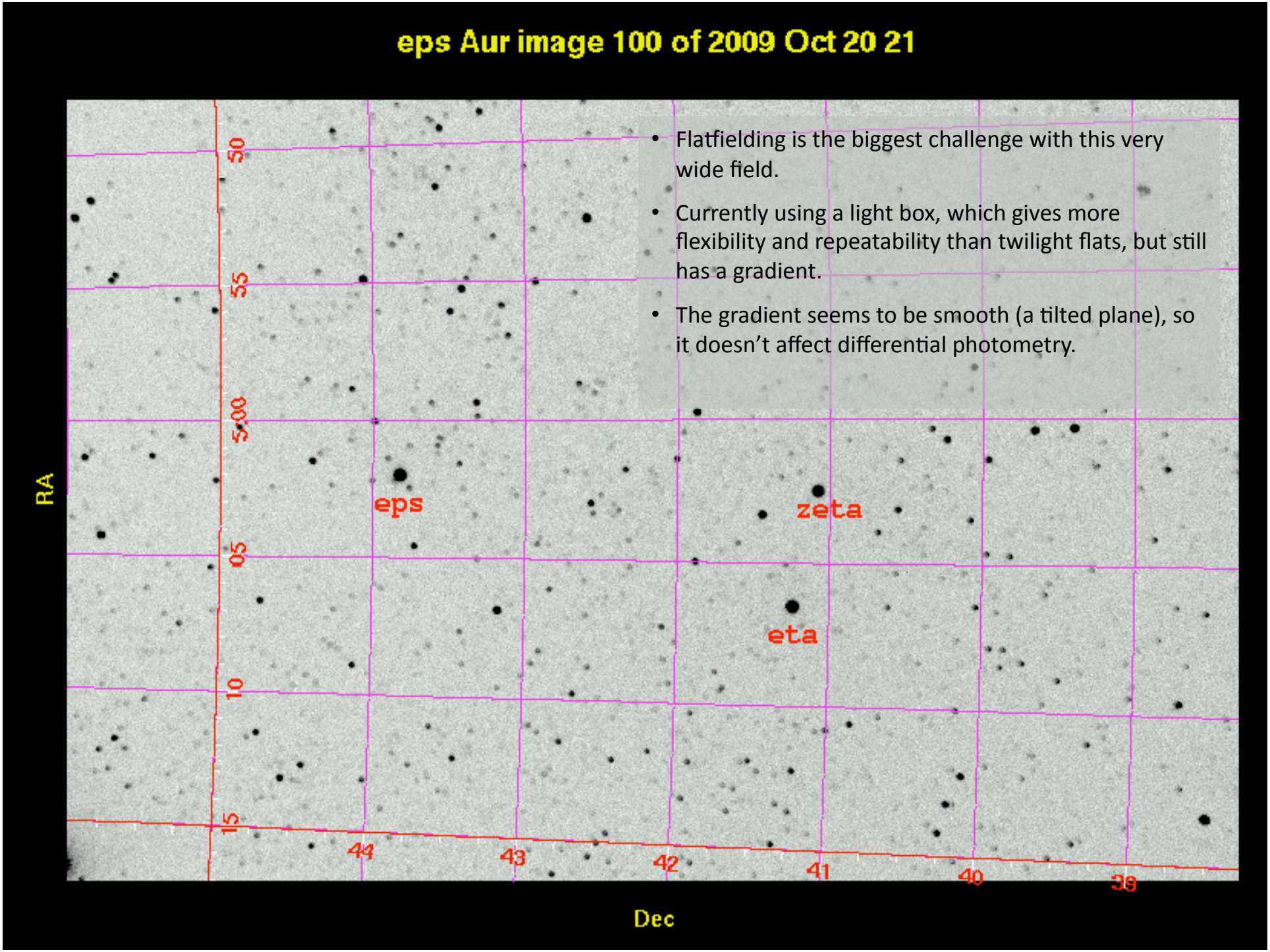
Rapid cadence monitoring of ε Aurigae

Gary Billings, Nov 2009

- ST-7E + V filter + Canon 50mm FD (new style)
- ST-7EI + B filter + Canon 50 mm FD (old style)
- LX-200 fork
- 200’ of Belden 8138 ($$$!)
- 1990ish Celeron laptop + CCDSOFT
- Pentium 100 with homebrew linux camera pgm

- Platescale is 36.1”/pixel, so defocusing is desirable
- 5 mm thick filter in the fast light cone between lens and CCD chip prevents sharp focus
- PSF somewhat flat-topped: ideal!
- Using 8 pxl diameter measurement aperture

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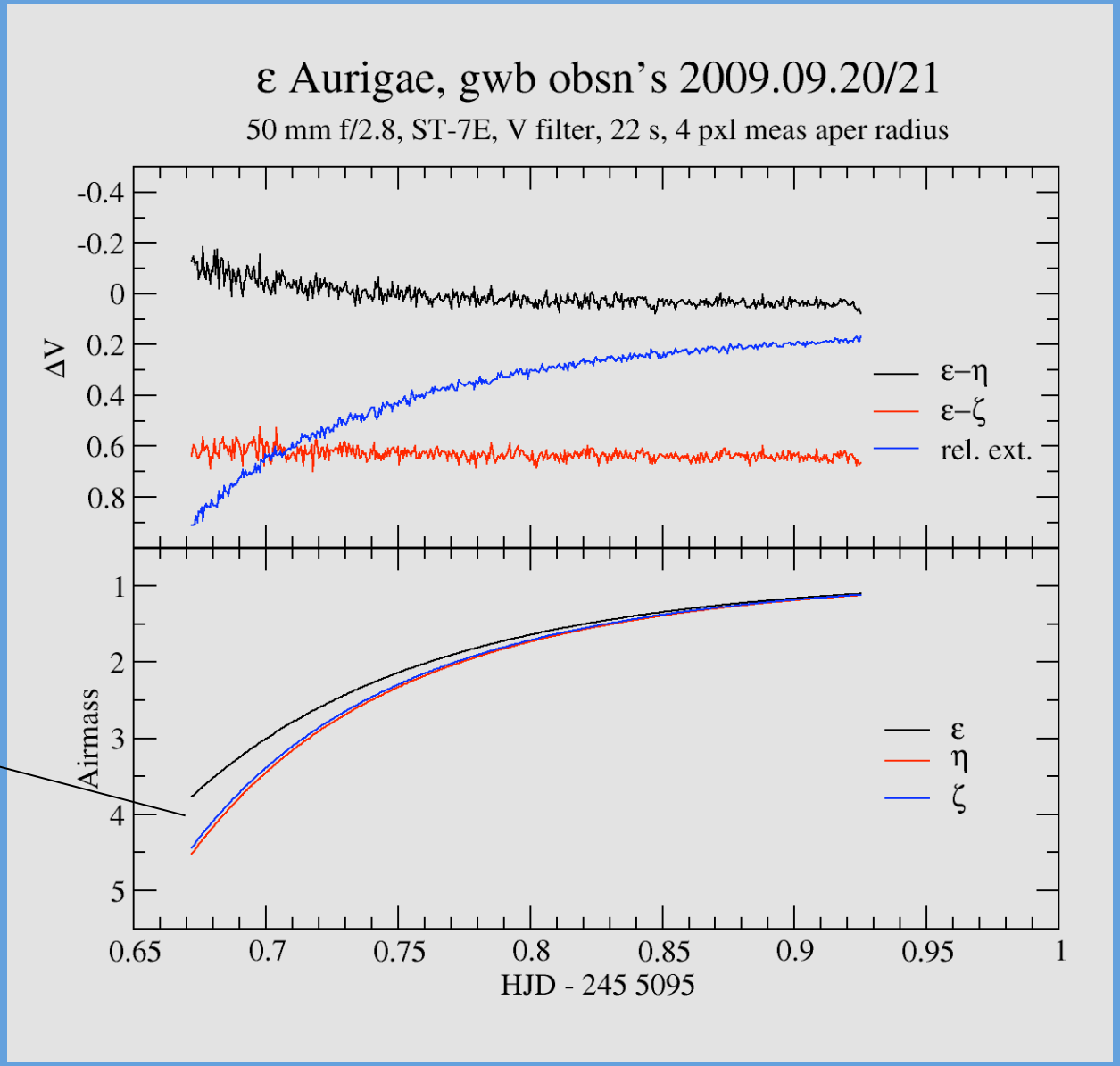
• Flatfielding is the biggest challenge with this very wide field.
• Currently using a light box, which gives more flexibility and repeatability than twilight flats, but still has a gradient.
• The gradient seems to be smooth (a tilted plane), so it doesn't affect differential photometry.

- differential photometry of the instrumental magnitudes shows a large differential extinction effect through the night
- at the start of the run, the target and the comp see a difference of 0.7 airmasses



- airmass effect removed using extinction coeff and zeropoint derived from comp star
- variable (upper) and comp (lower) show similar light “curves”
- Conclusion: no “signal” other than the slow fade (so far!)