DARK ENERGY SURVEY

Results from the April CTIO-1m DECam 2k x 2k Observing Run: A Recap + New Some Stuff

Douglas Tucker
Darren DePoy
Brenna Flaugher
Sahar Allam
Huan Lin

April Observing Run: Summary

Night	Date (UT)	Directory†	CCD	Conditions
night 1	10 April 2008	n1	DECam 2kx2k	clear
night 2	11 April 2008	----	DECam 2kx2k	no observations
night 3	12 April 2008	----	DECam 2kx2k	no observations
night 4	13 April 2008	*n3*	DECam 2kx2k	started with cirrus, then clear
night 5	14 April 2008	*n4*	DECam 2kx2k	clear
night 6	15 April 2008	*n5*	Y4KCam	clear
night 7	16 April 2008	*n6*	Y4KCam	cirrussy until after midnight, then clear

†Data are on des03.fnal.gov:/data/des03.a/data/dtucker/Data/DES/DECam2kx2k/

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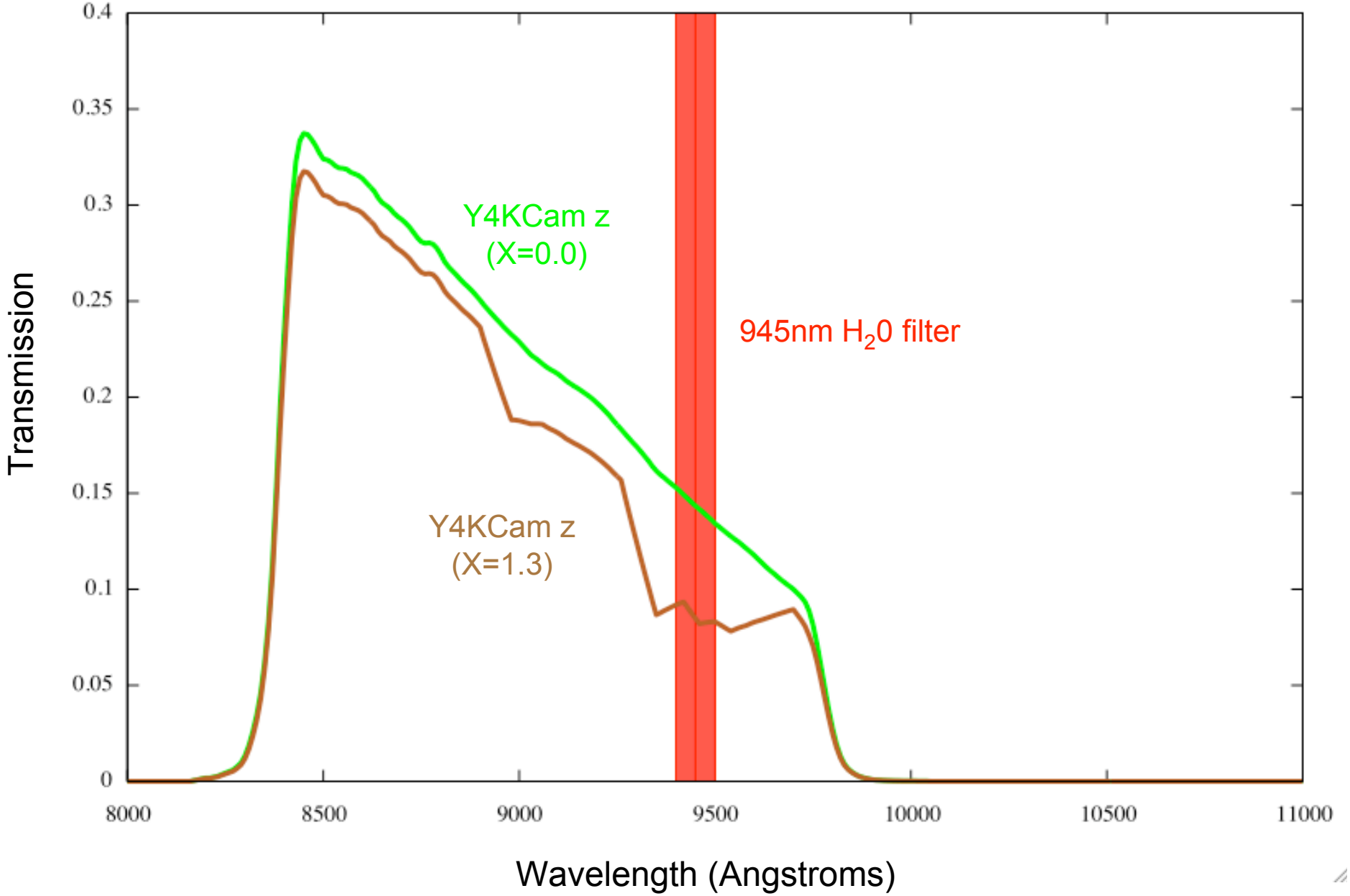
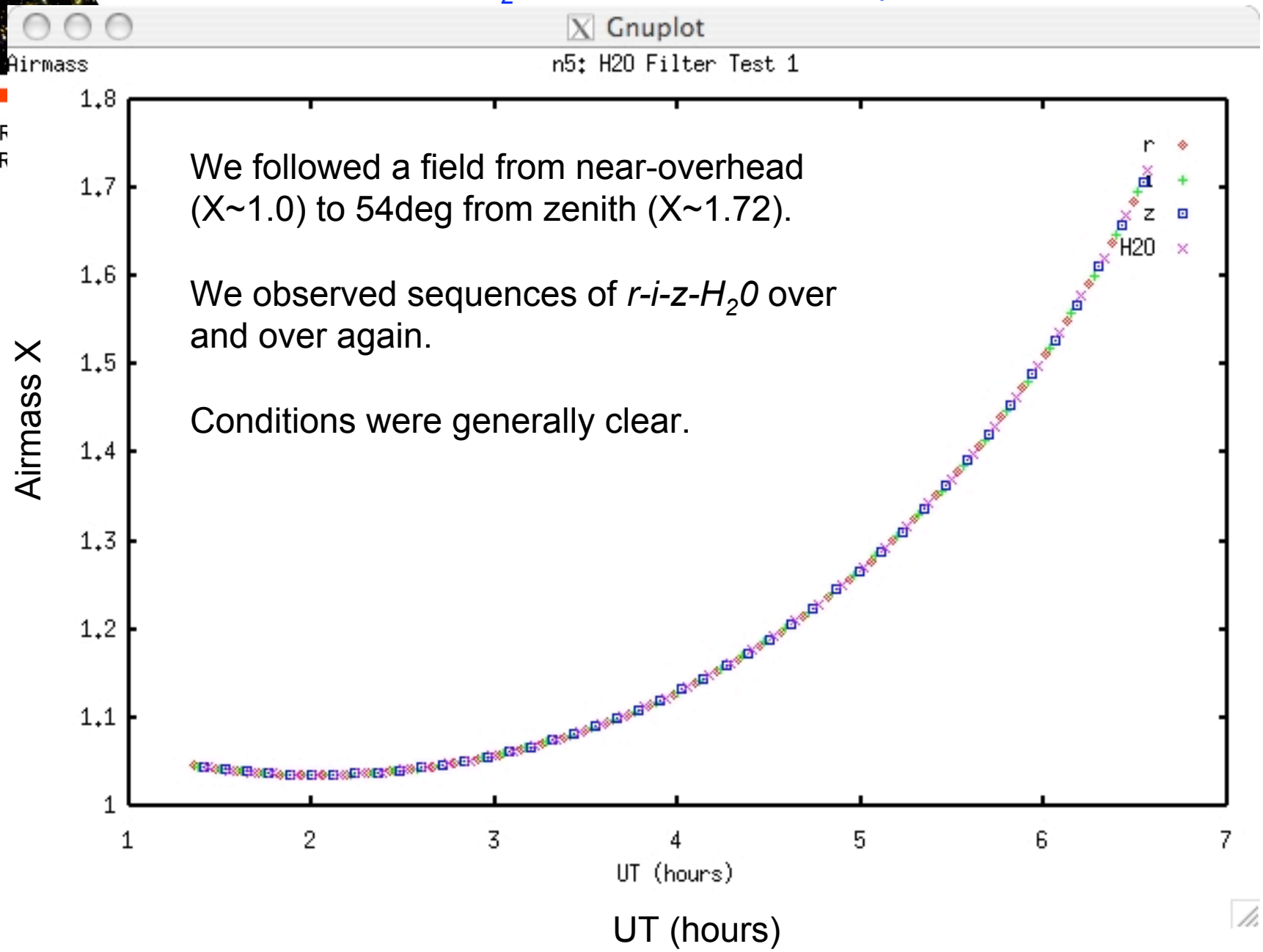
†Data are on des03.fnal.gov:/data/des03.a/data/dtucker/Data/DES/DECam2kx2k/

H_2O Filter Tests (Y4KCam)



H_2O Filter Test 1: 2008 April 15 UT



We followed a field from near-overhead (X~1.0) to 54deg from zenith (X~1.72).

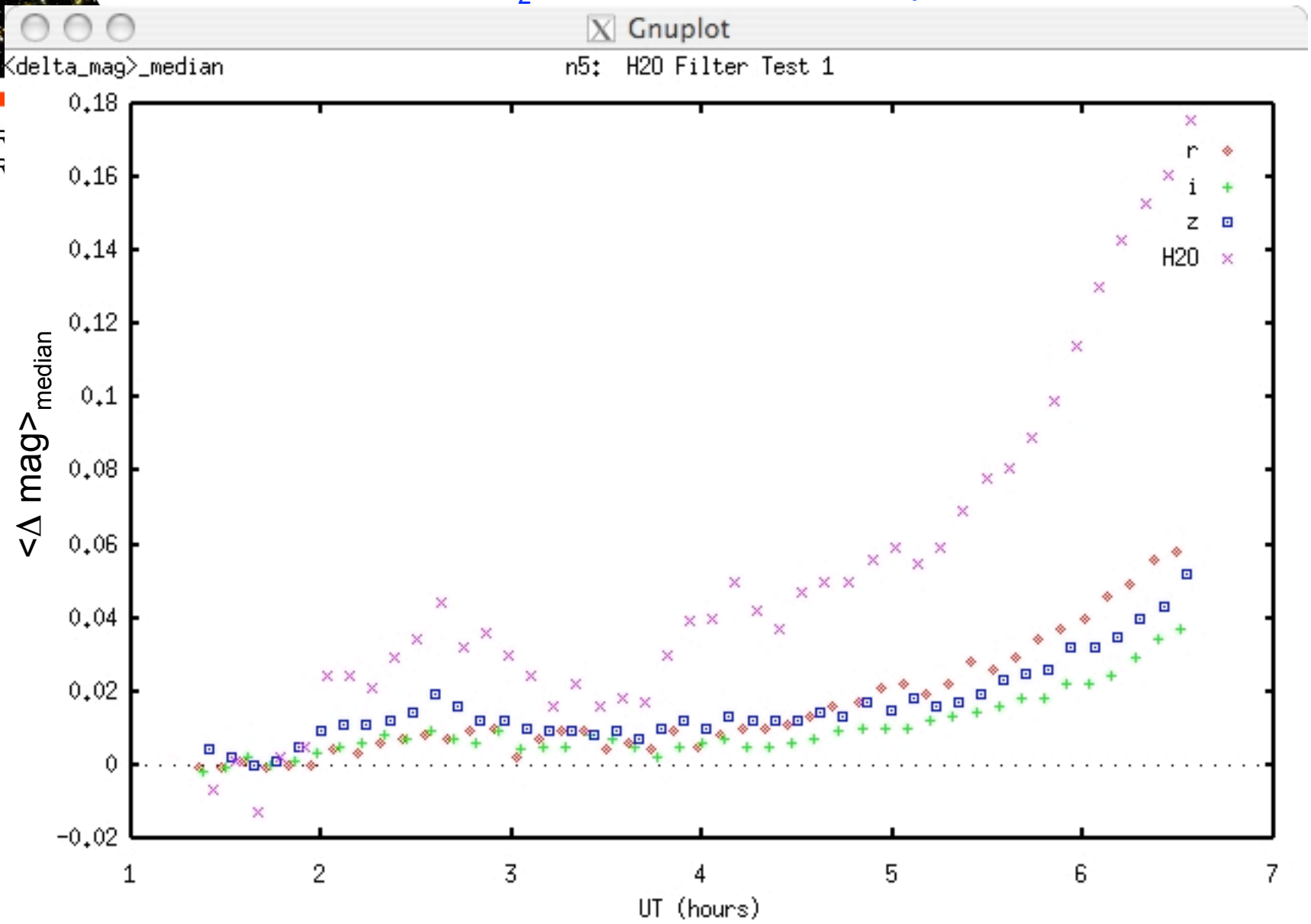
We observed sequences of *r-i-z-H$_2$0* over and over again.

Conditions were generally clear.

Airmass X

UT (hours)

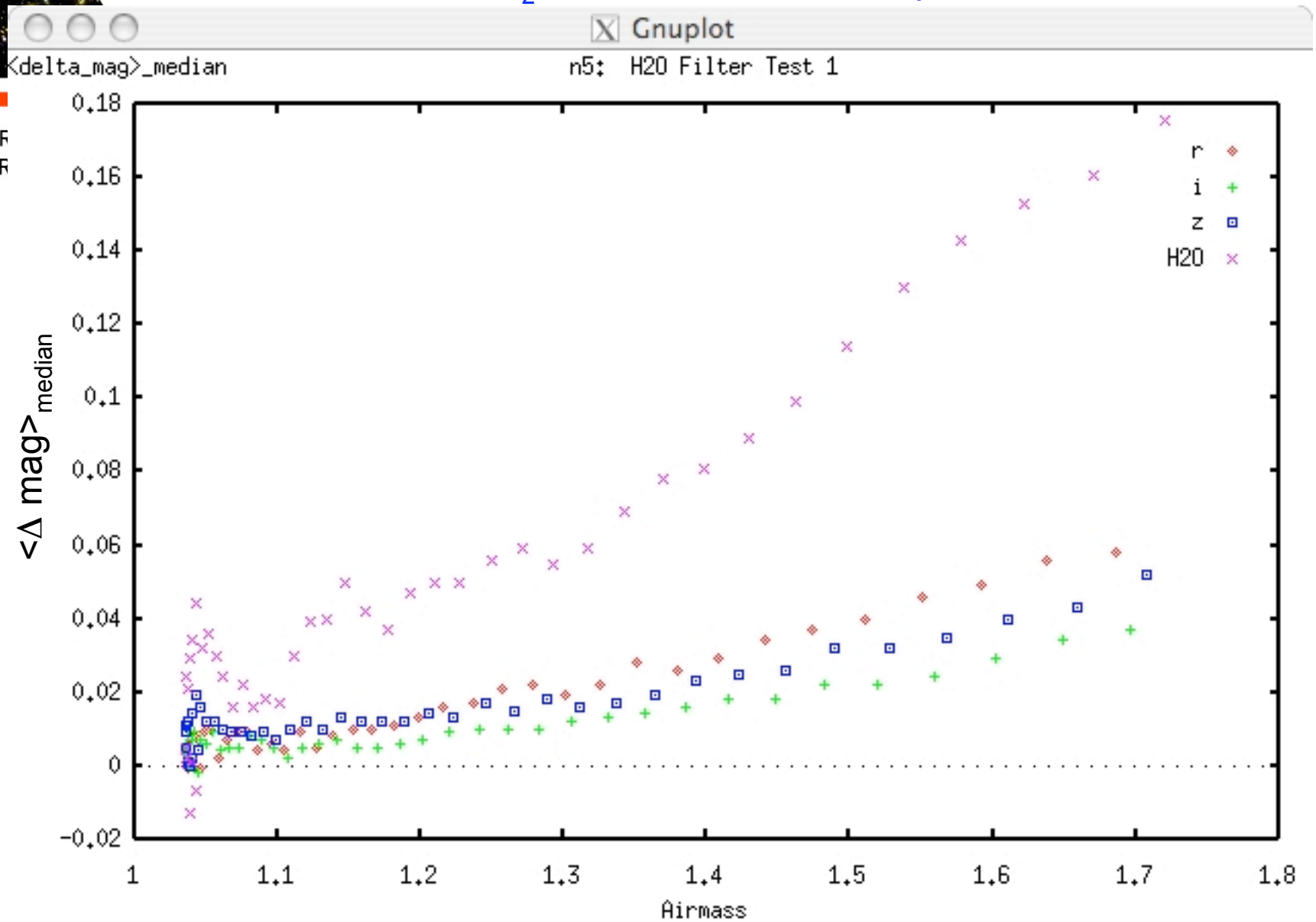
H_2O Filter Test 1: 2008 April 15 UT



$<\Delta\ mag>_{median}$

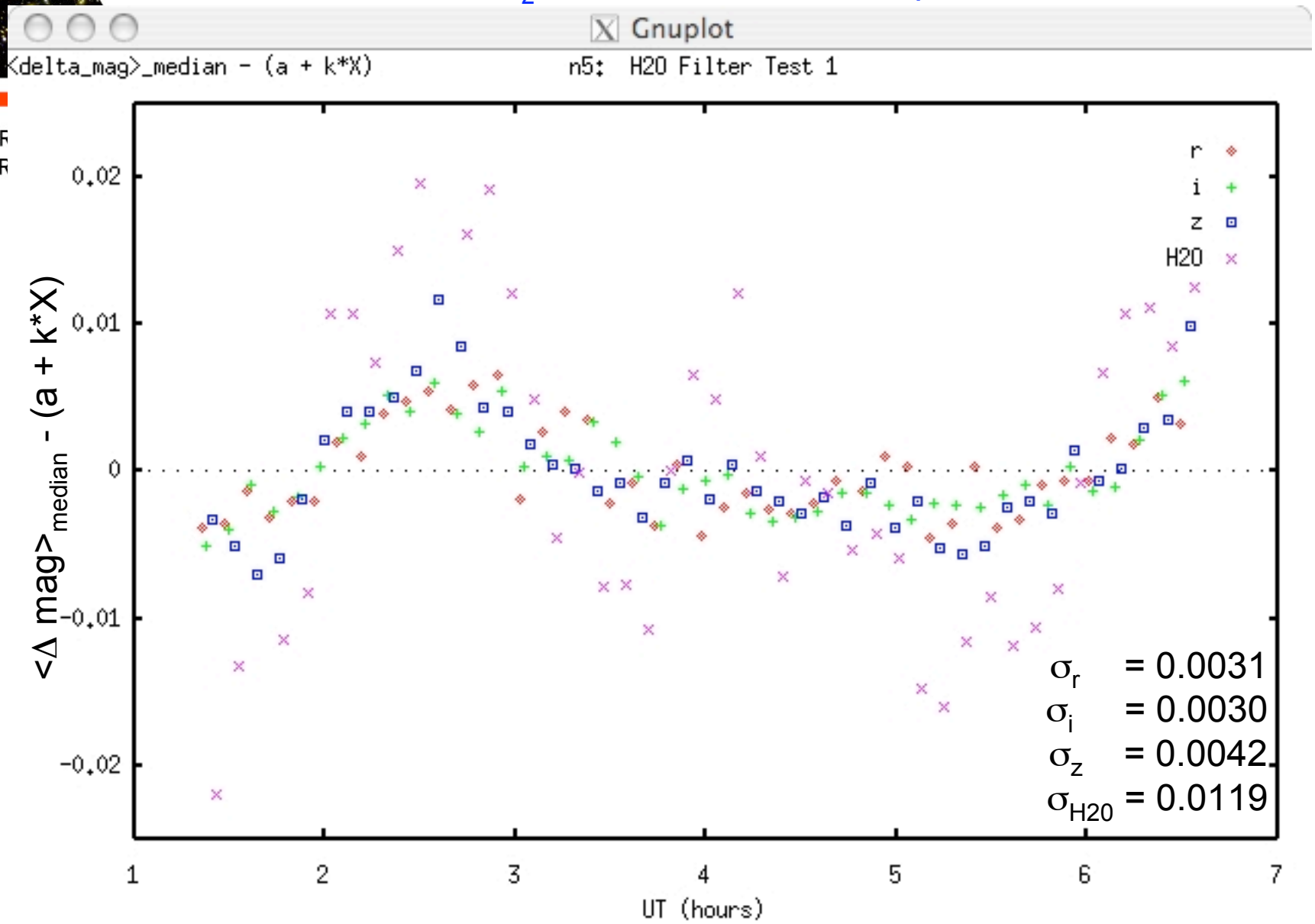
UT (hours)

H_2O Filter Test 1: 2008 April 15 UT



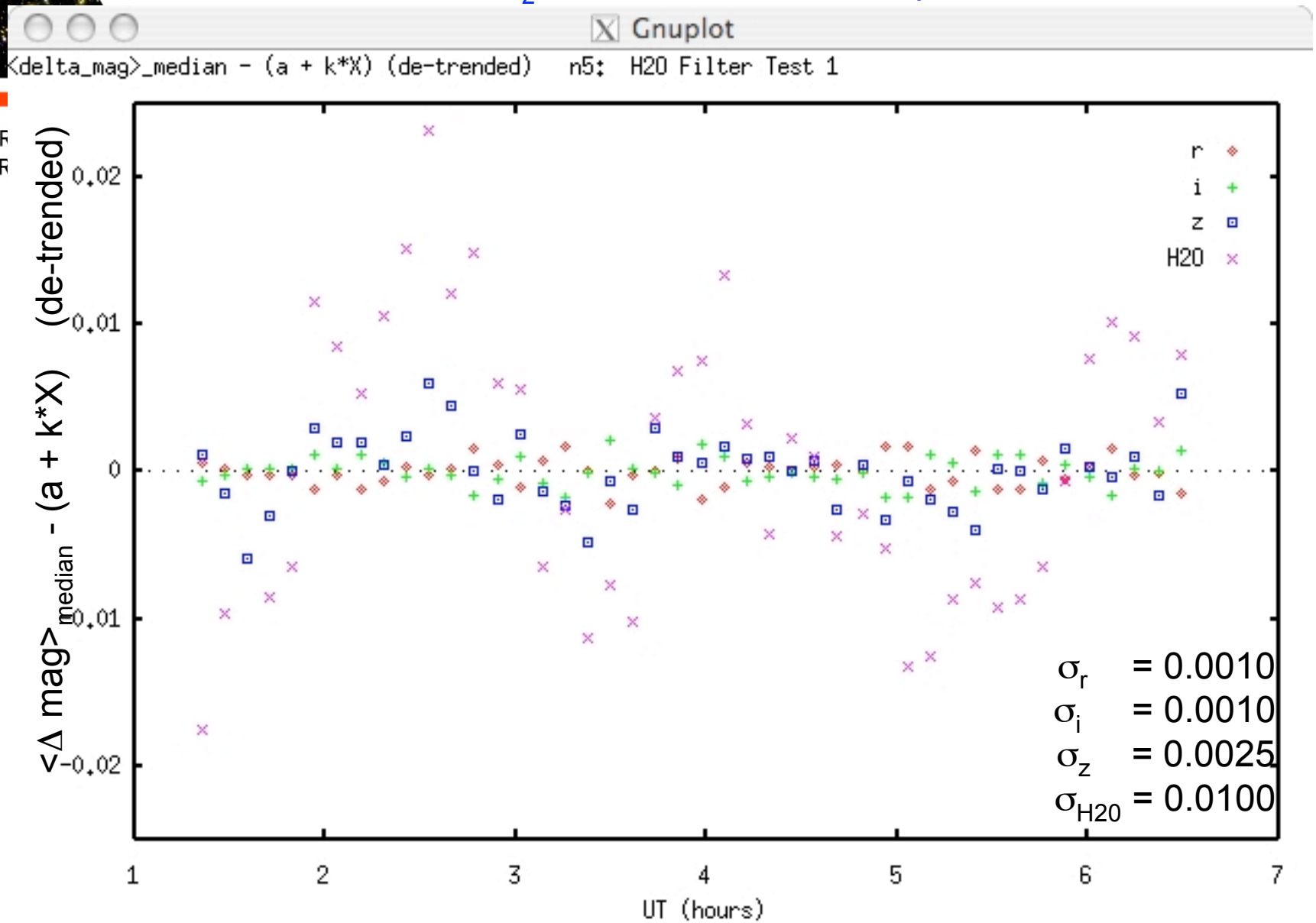
Airmass X

H_2O Filter Test 1: 2008 April 15 UT



UT (hours)

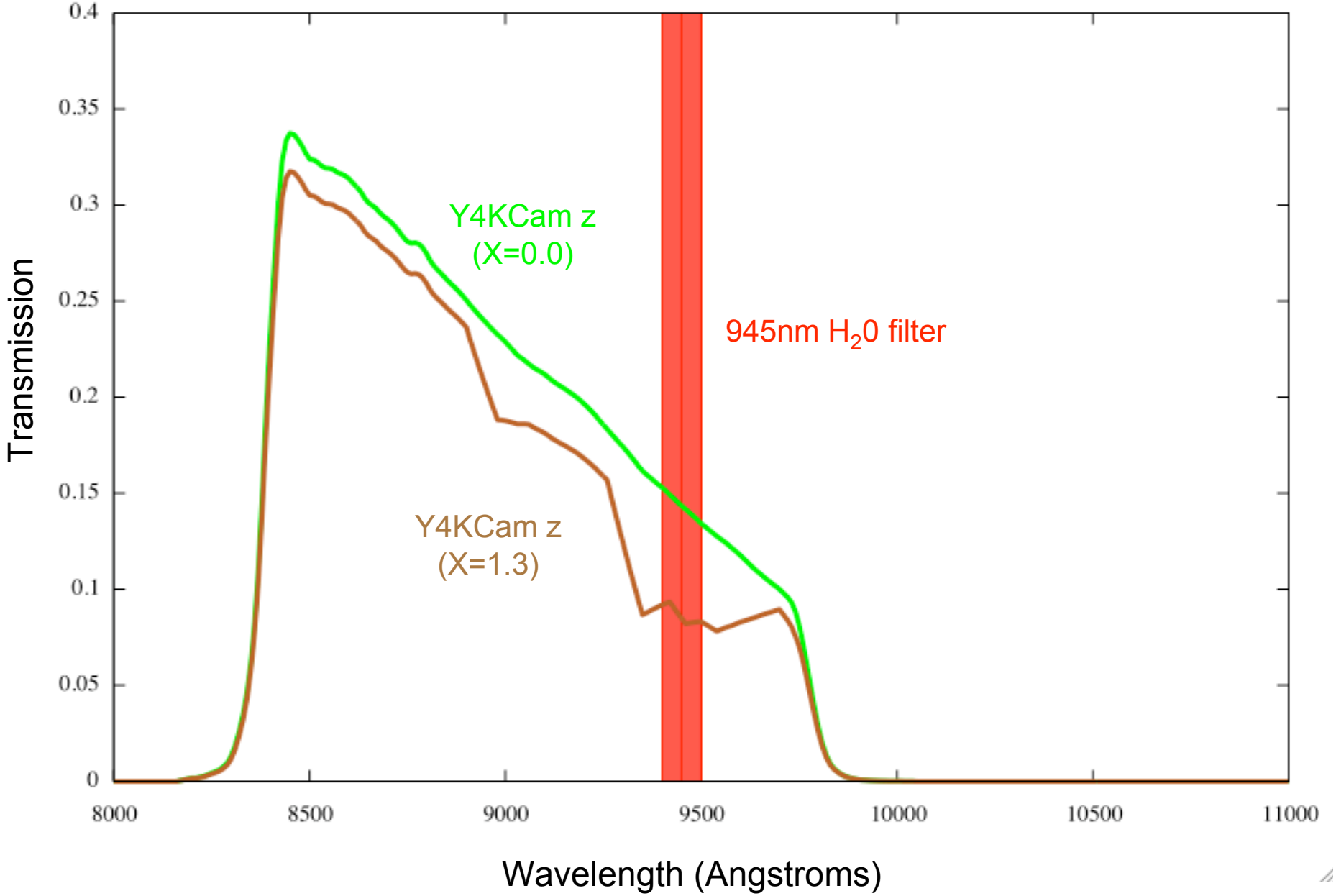
H_2O Filter Test 1: 2008 April 15 UT

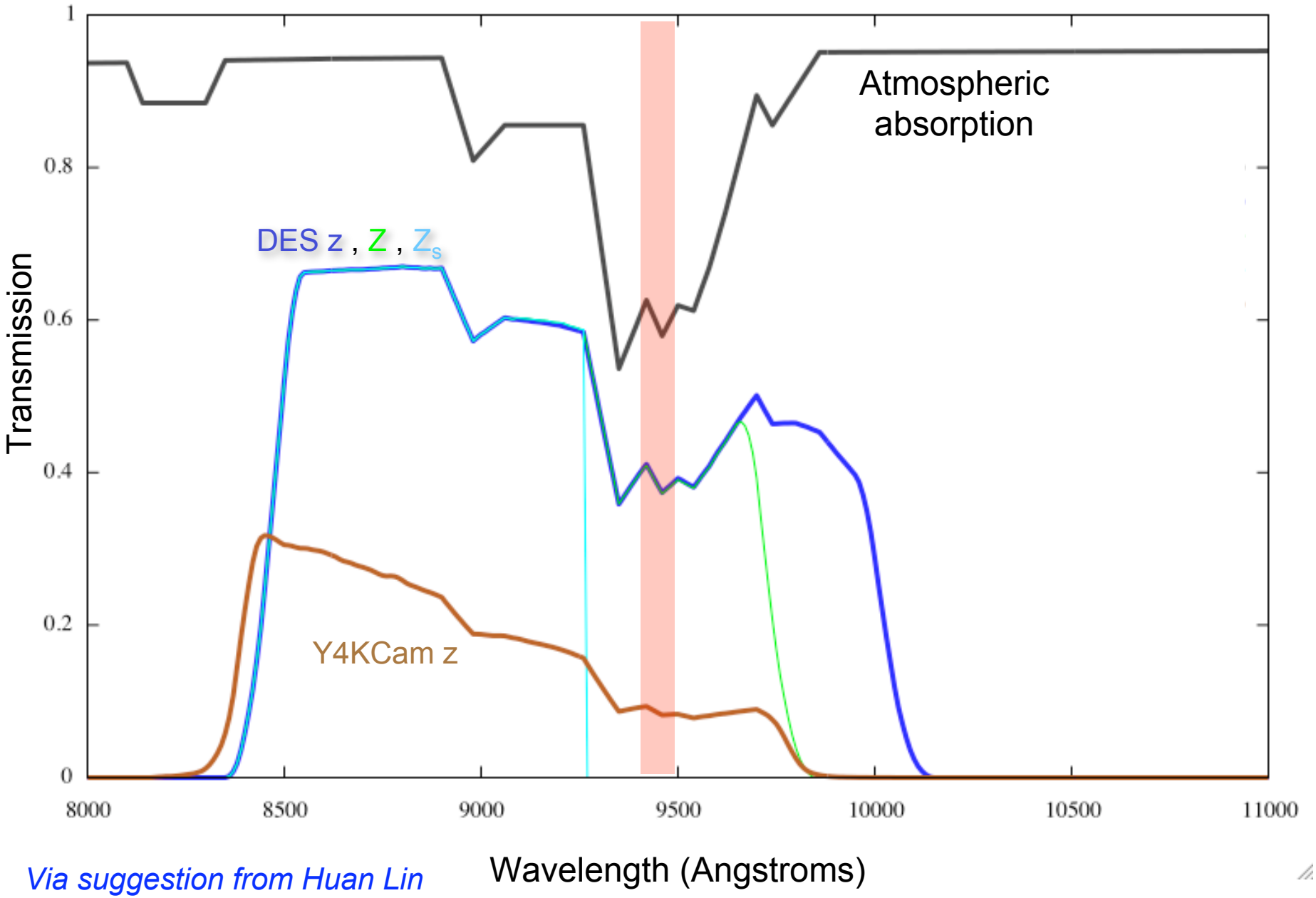


Via suggestion from David Burke

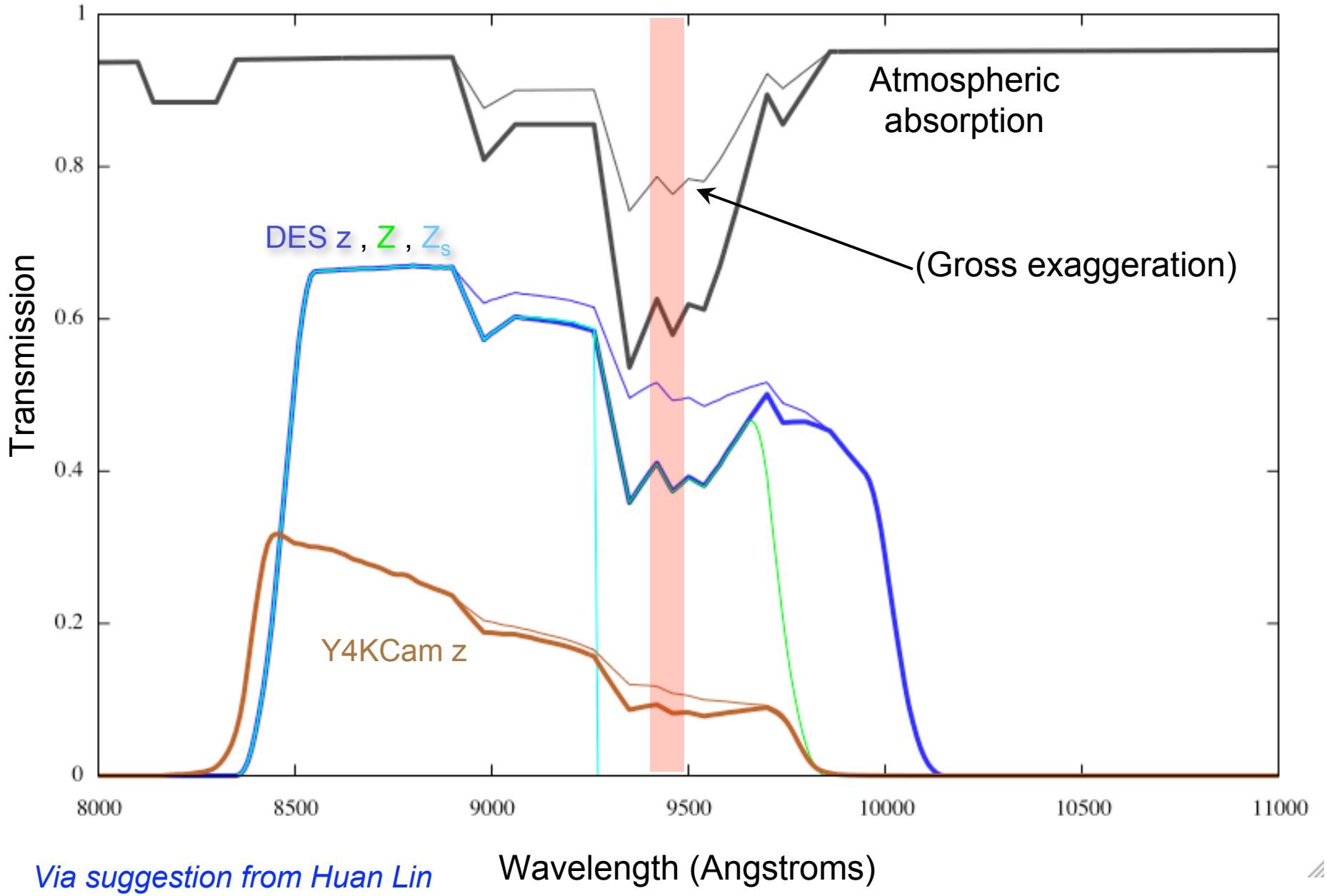
UT (hours)

H_2O Filter Tests (Y4KCam)





Via suggestion from Huan Lin



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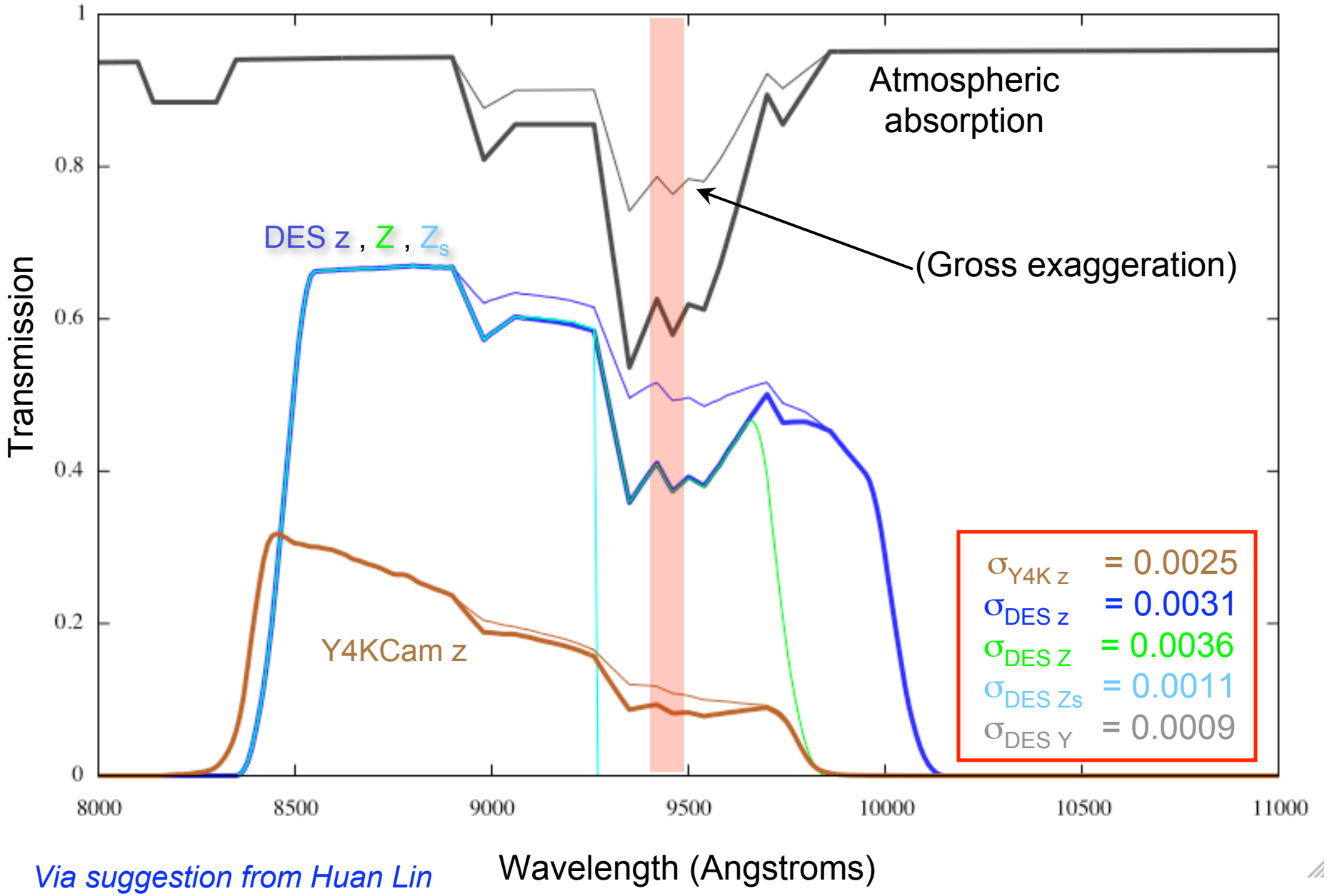
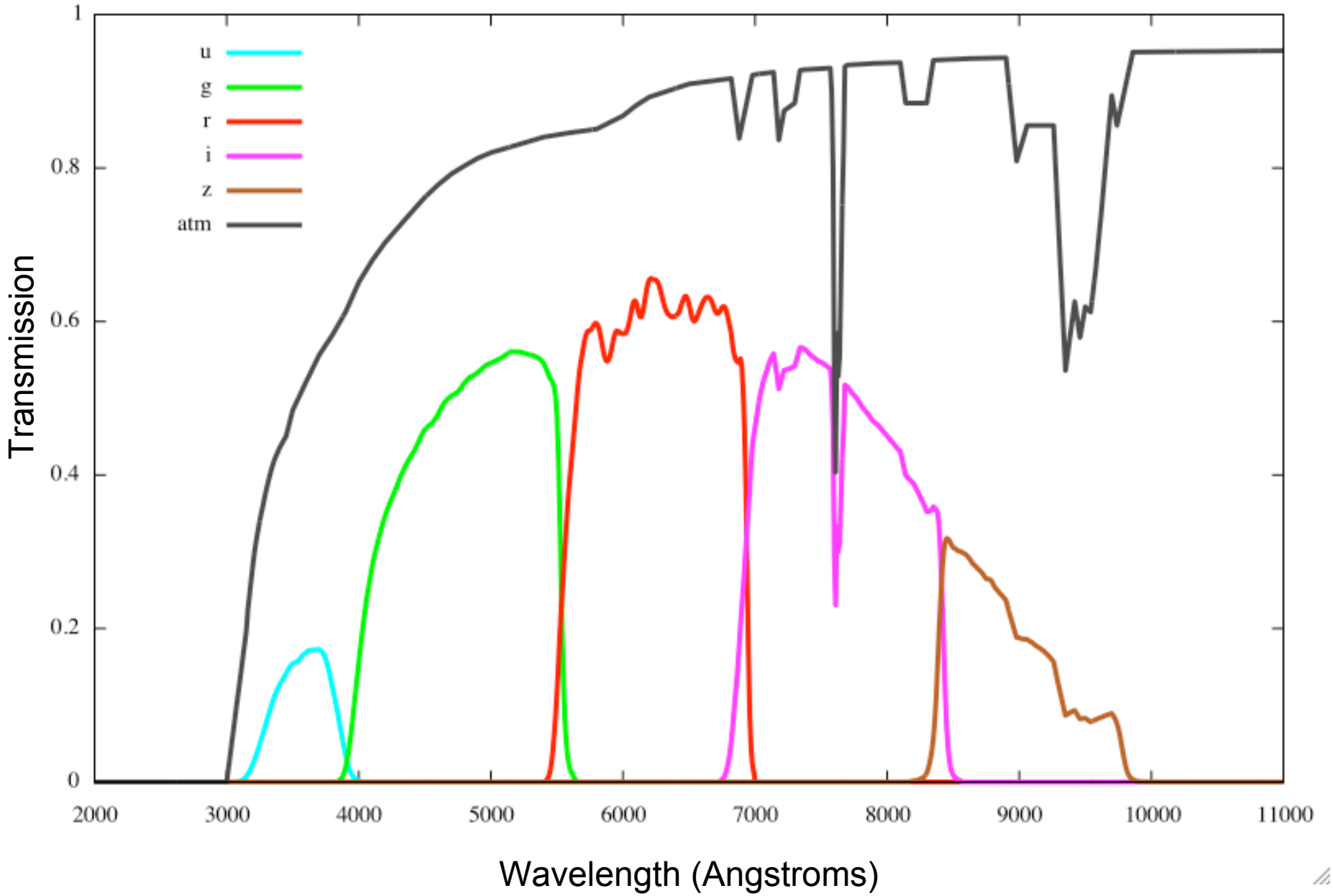


Via suggestion from Huan Lin

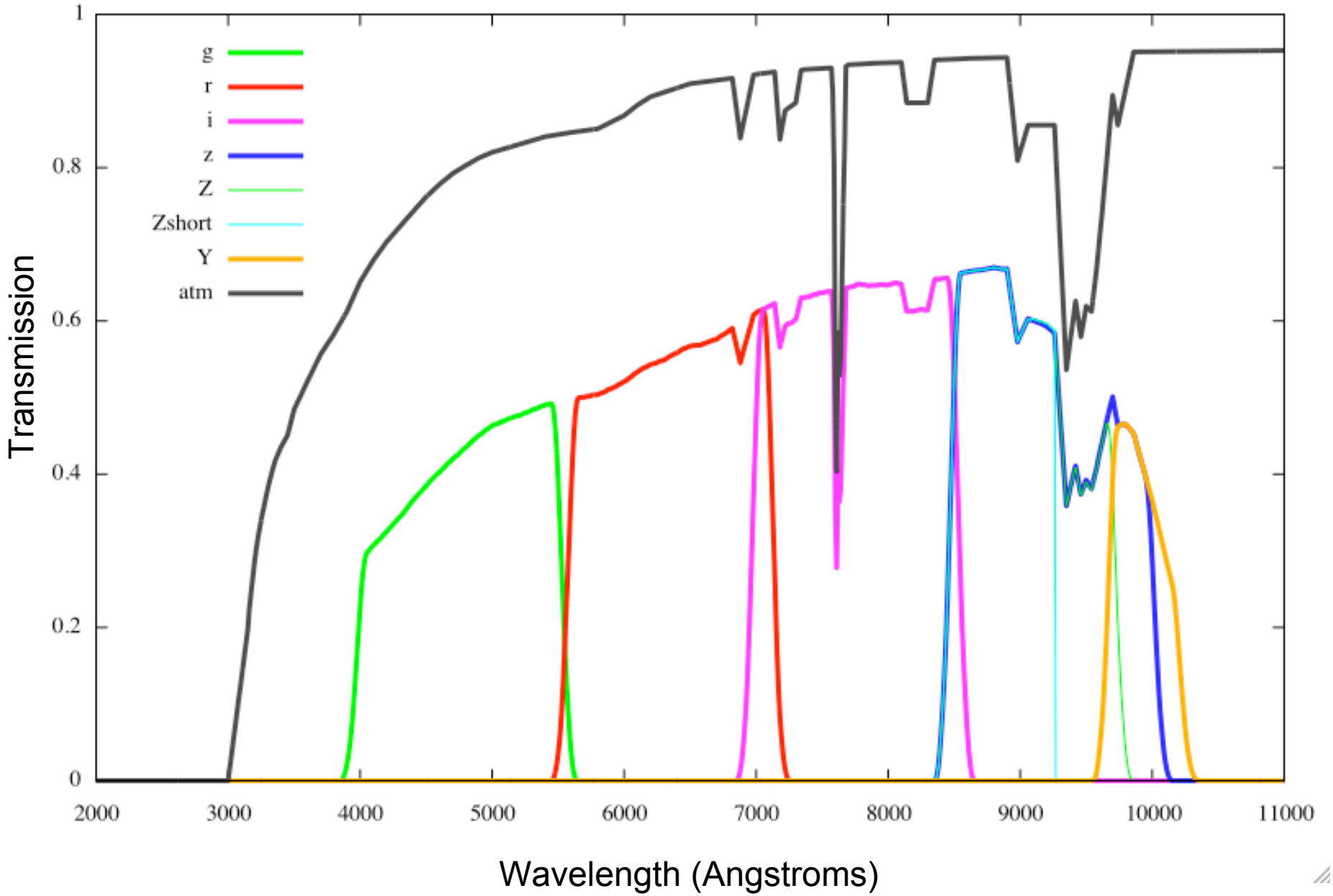
DARK ENERGY
SURVEY

Extra Slides

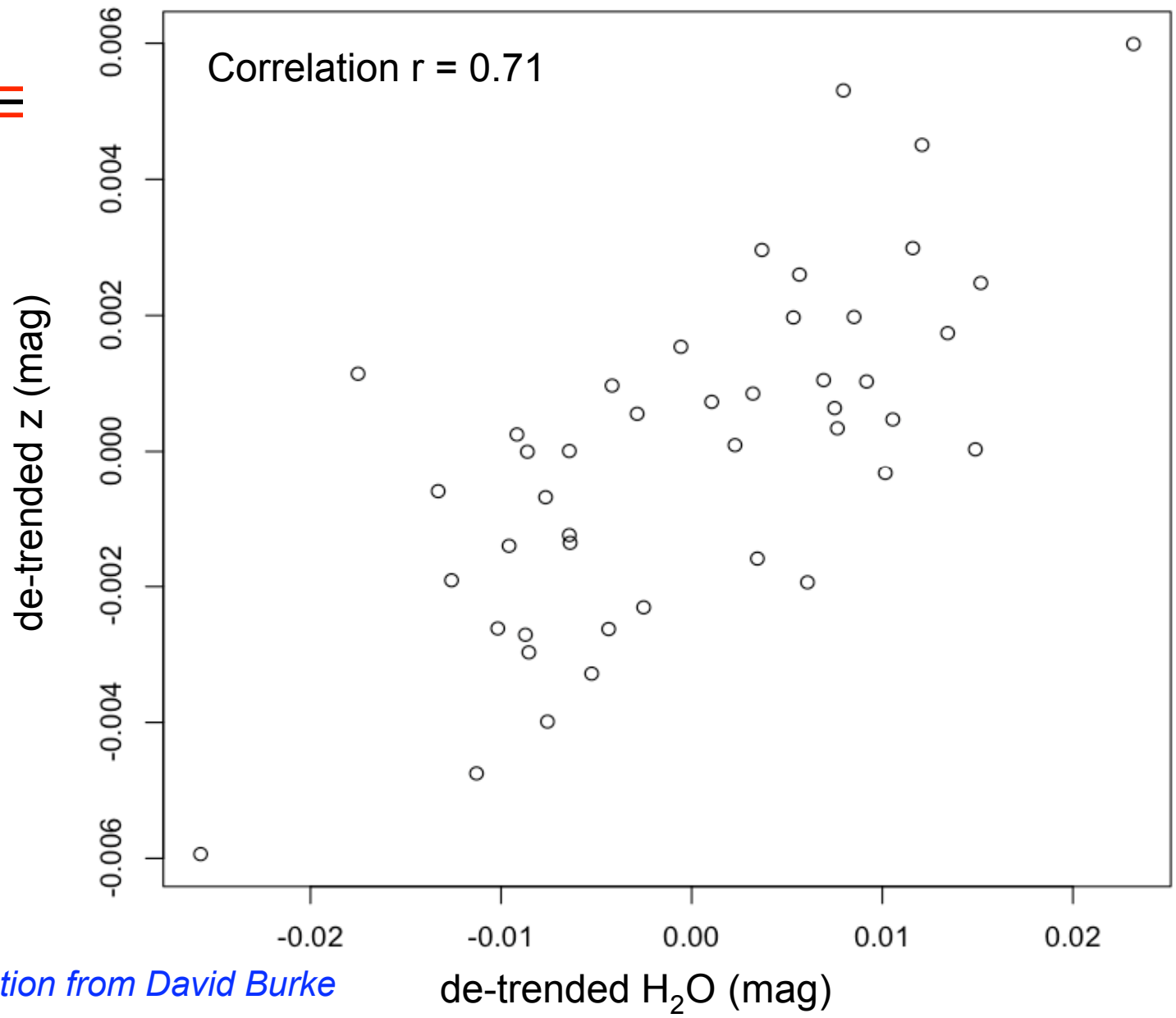
Y4KCam ugriz Total Throughput



DES gri(z,Z,Z_s)Y Total Throughput

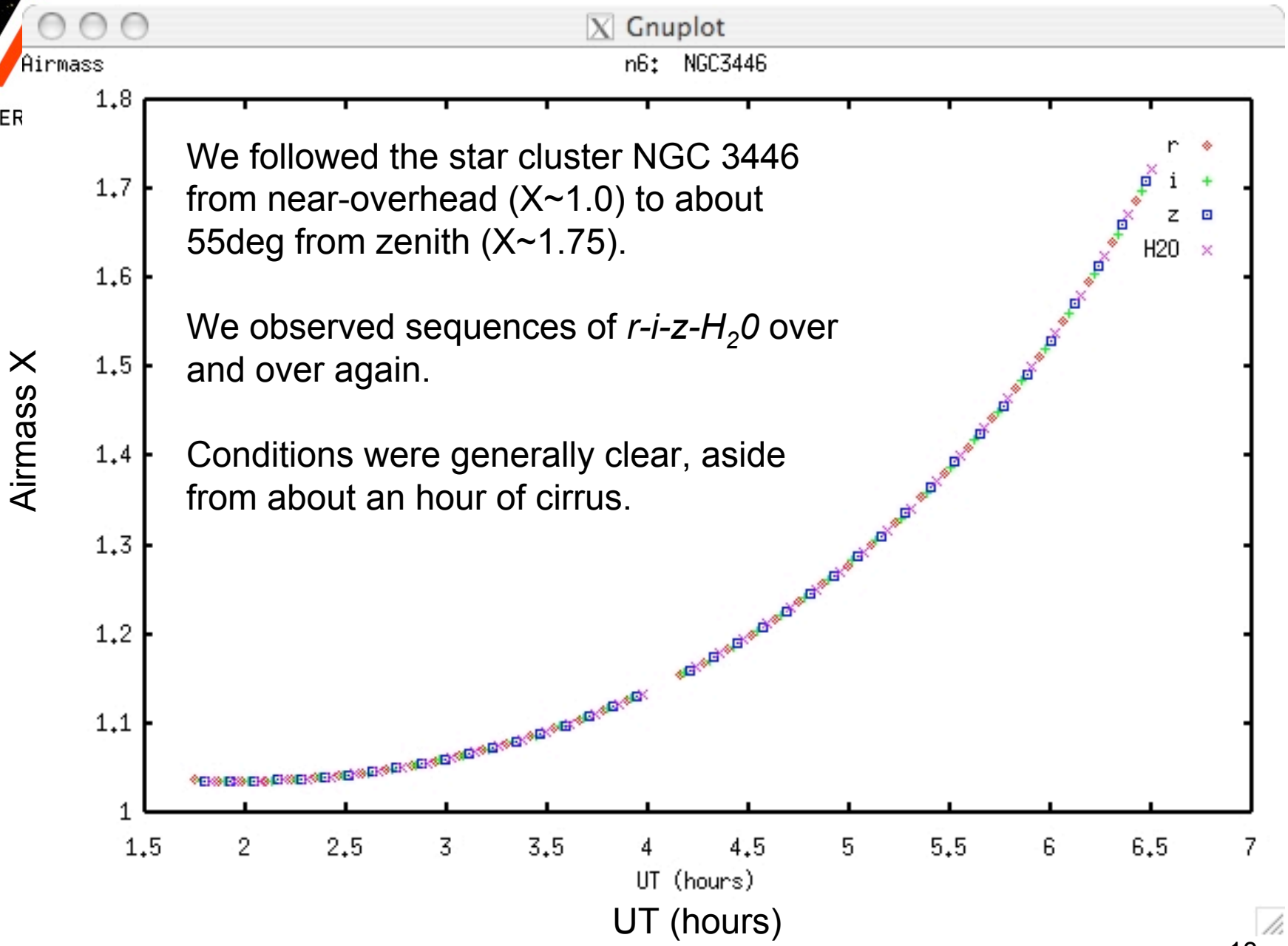


H_2O Filter Test 1: 2008 April 15 UT



Via suggestion from David Burke

H_2O Filter Test 3: 2008 April 16 UT

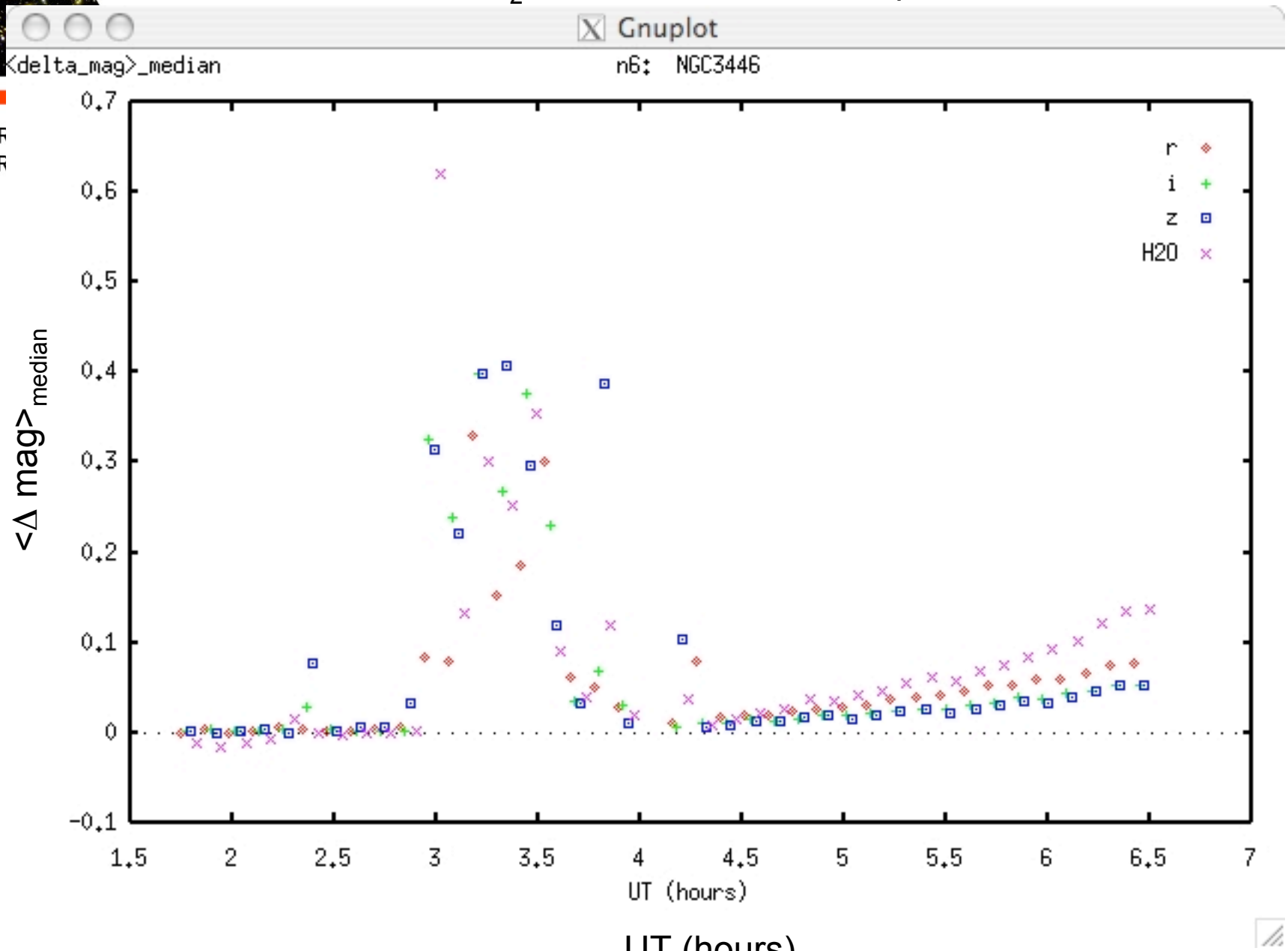


We followed the star cluster NGC 3446 from near-overhead (X~1.0) to about 55deg from zenith (X~1.75).

We observed sequences of *r-i-z-*H_2*0* over and over again.

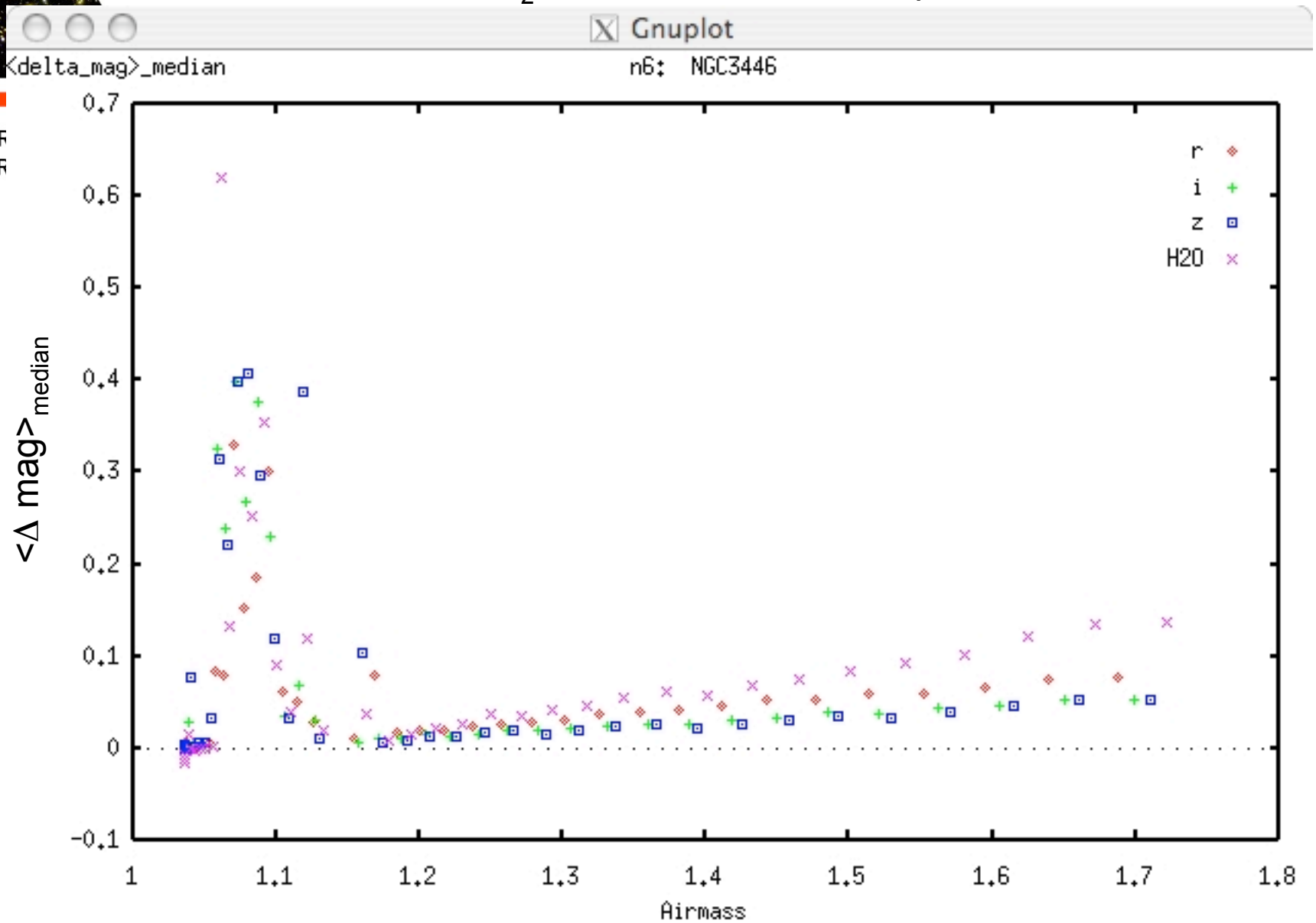
Conditions were generally clear, aside from about an hour of cirrus.

H_2O Filter Test 3: 2008 April 16 UT



UT (hours)

H_2O Filter Test 3: 2008 April 16 UT



$<\Delta\ mag>_{median}$

Airmass X

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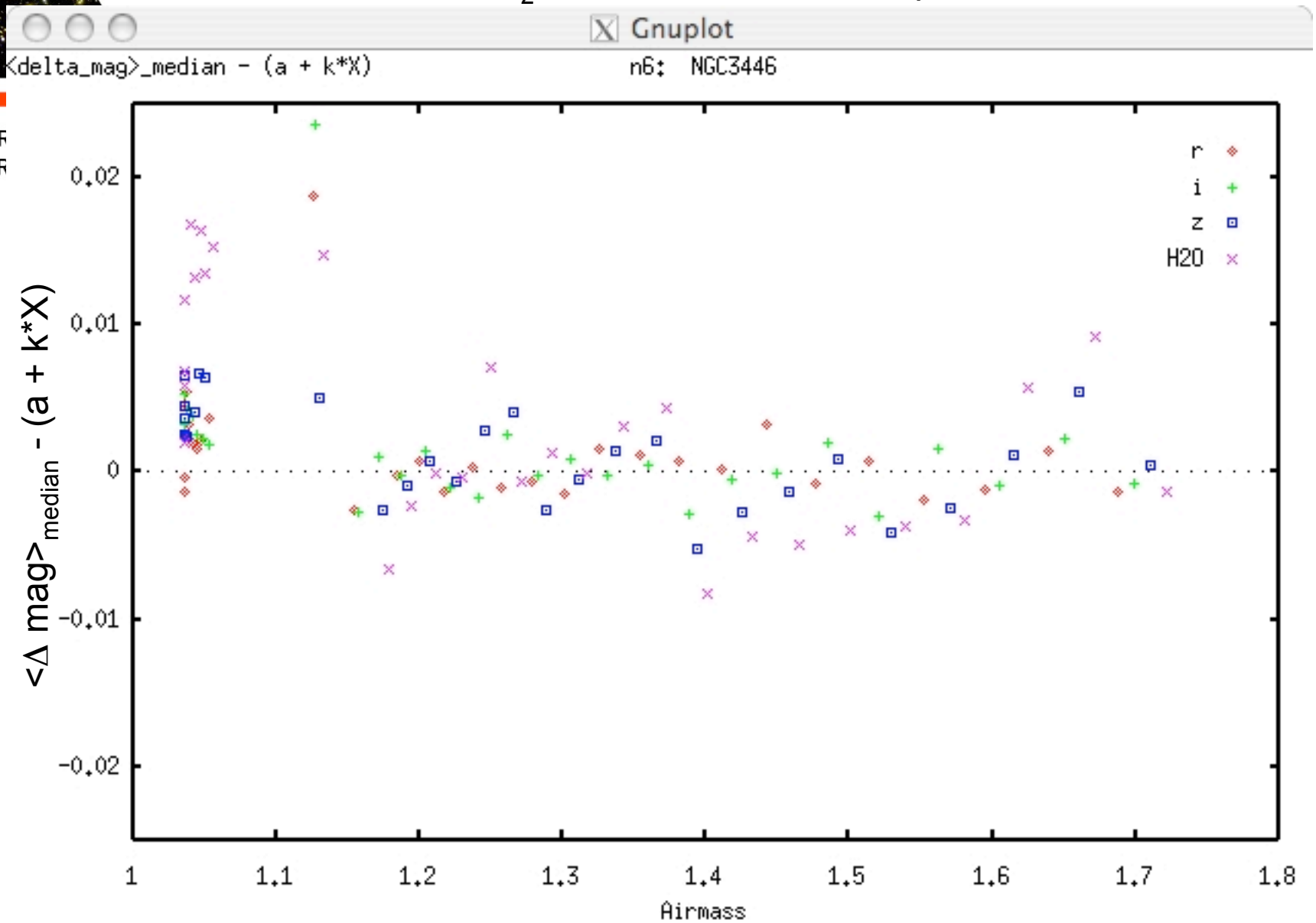

$<\Delta\ mag>_{median} - (a + k*X)$

Airmass X

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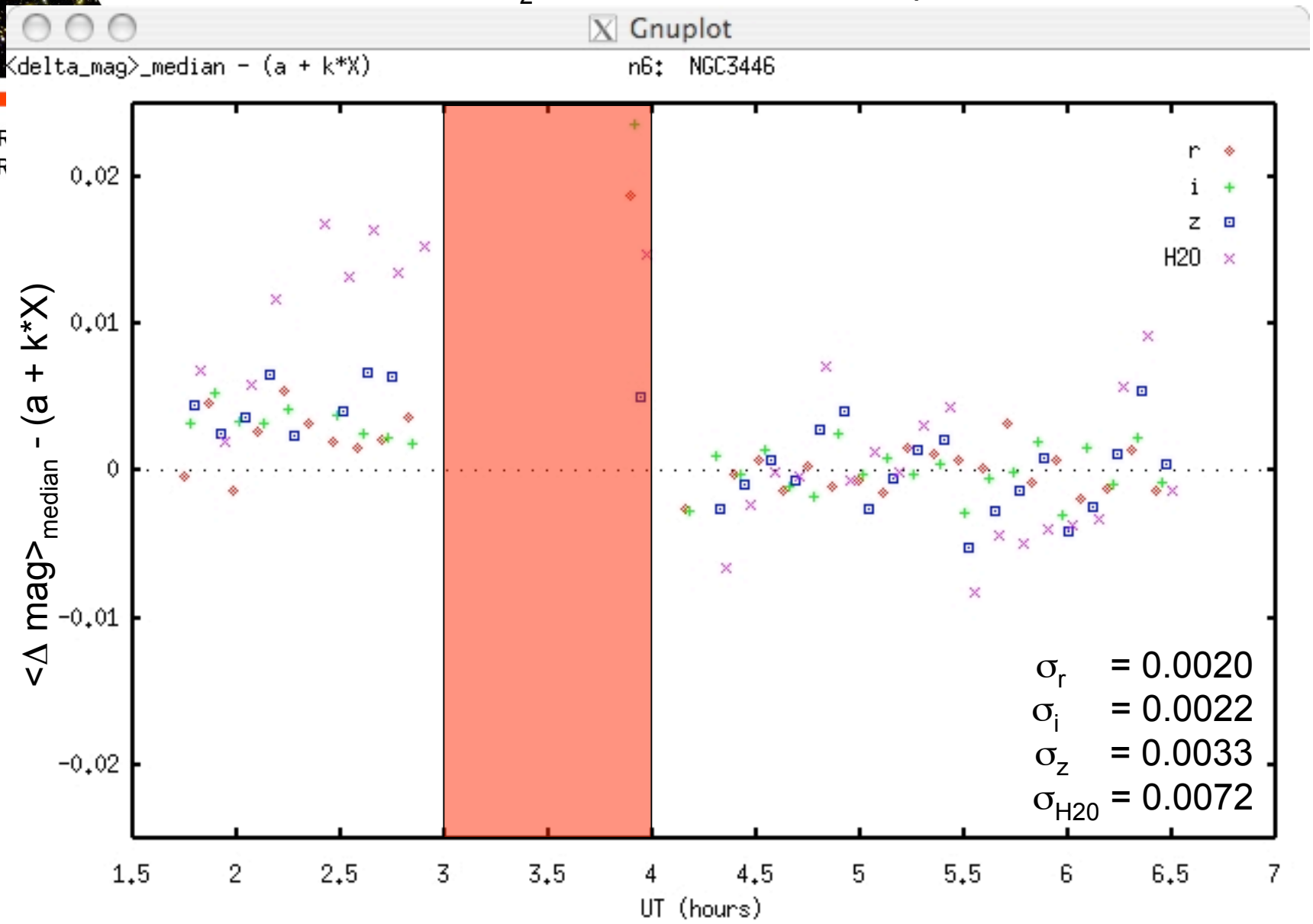

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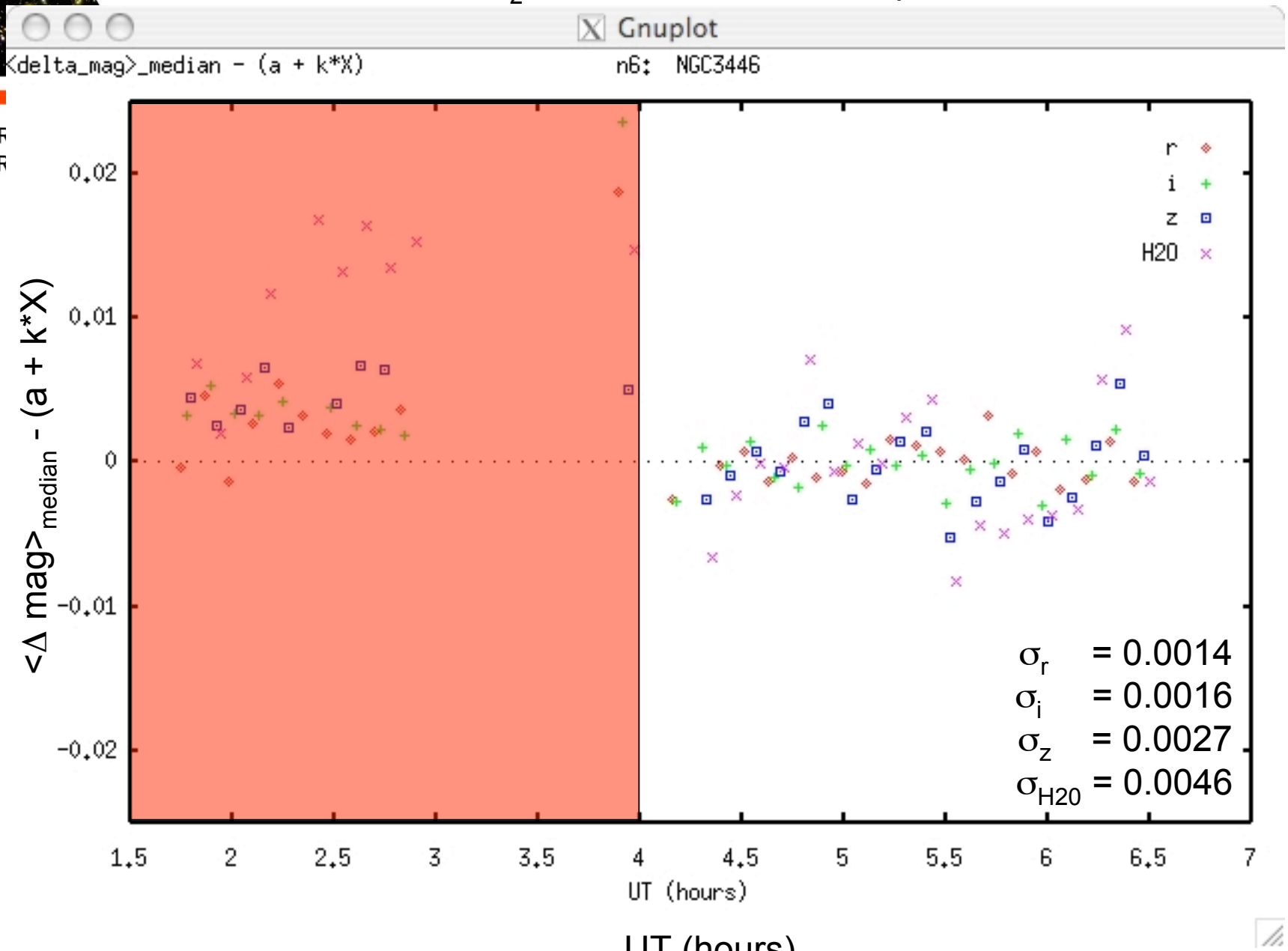
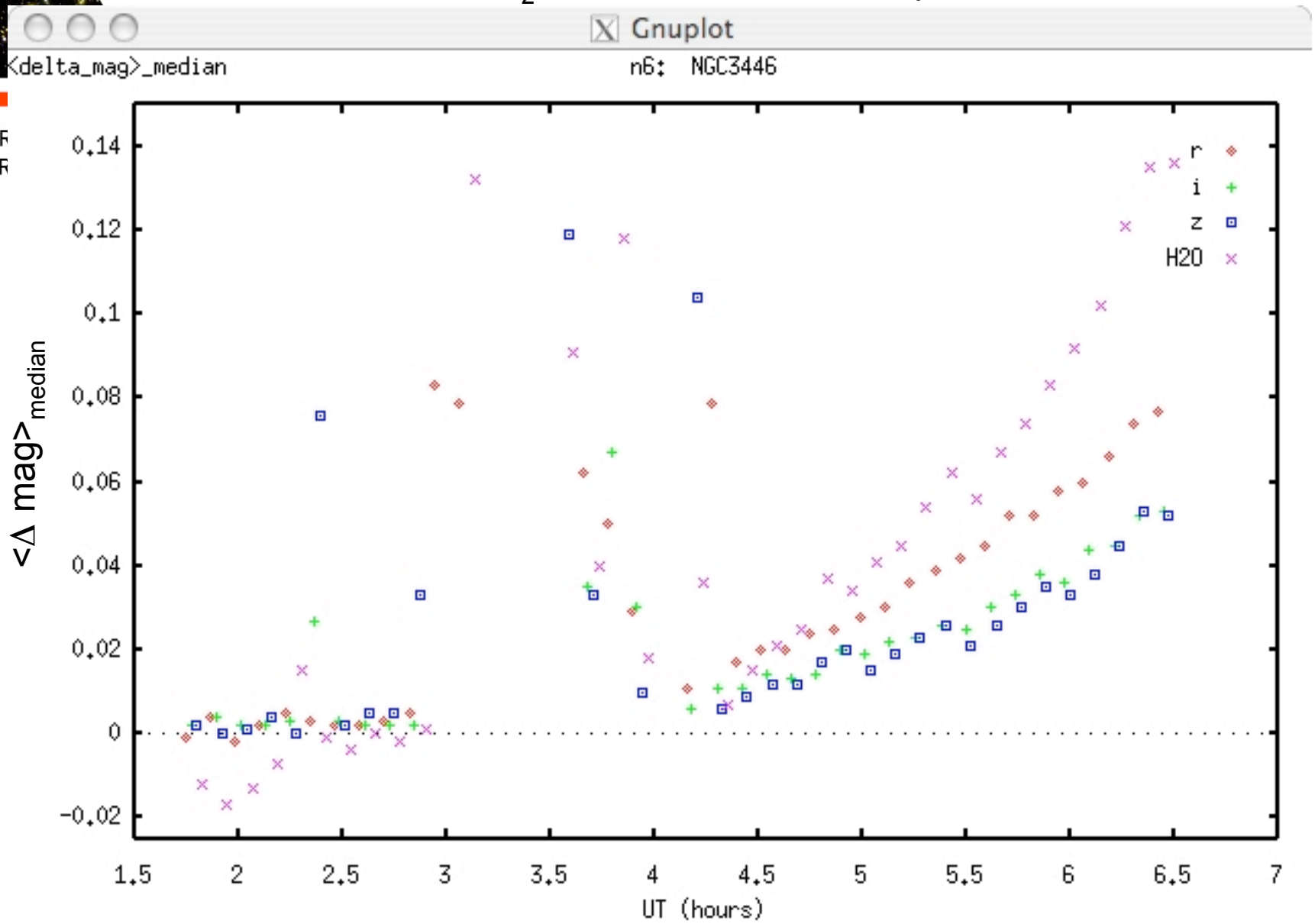


UT (hours)

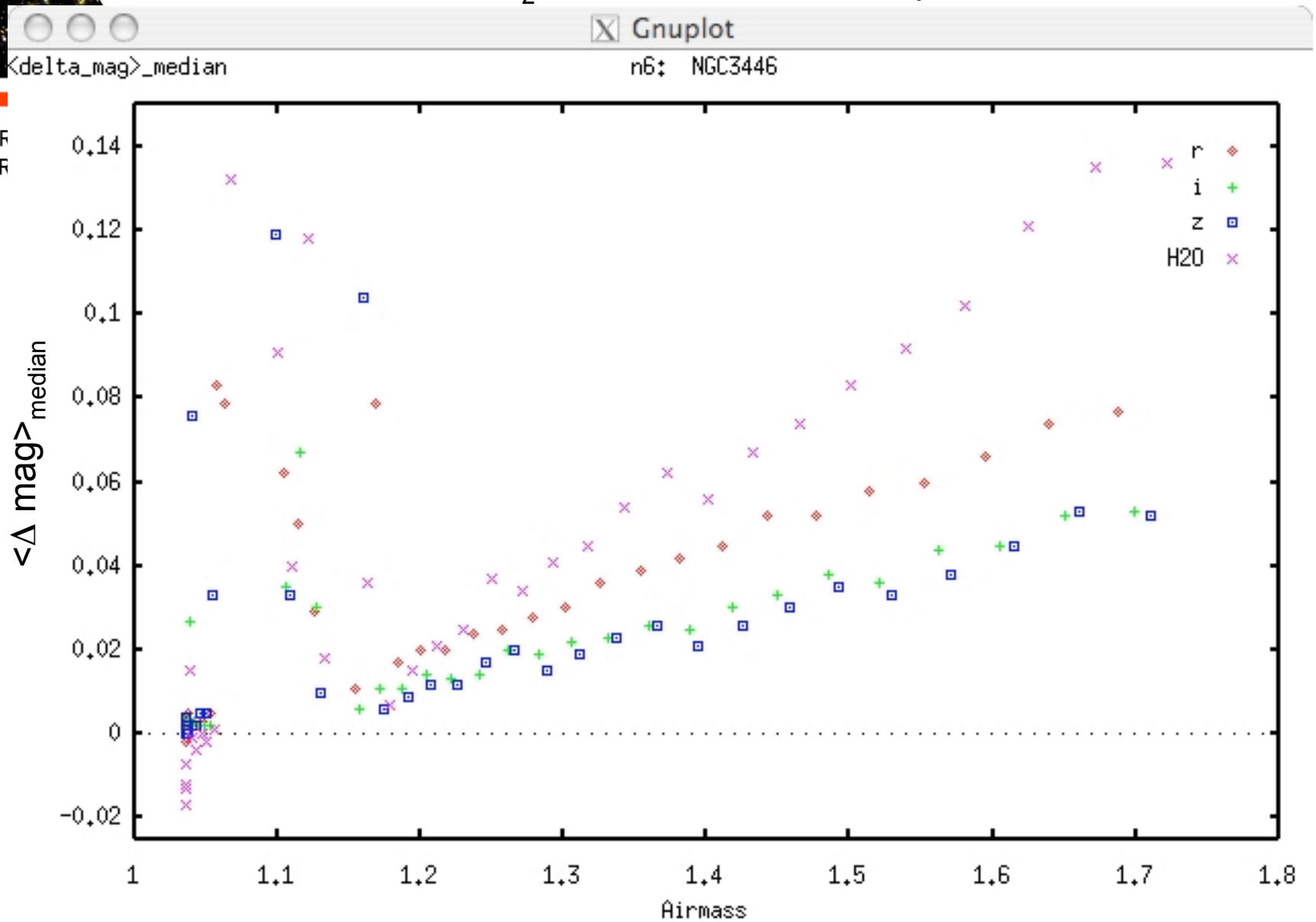
H_2O Filter Test 3: 2008 April 16 UT



$<\Delta\ mag>_{median}$

UT (hours)

H_2O Filter Test 3: 2008 April 16 UT



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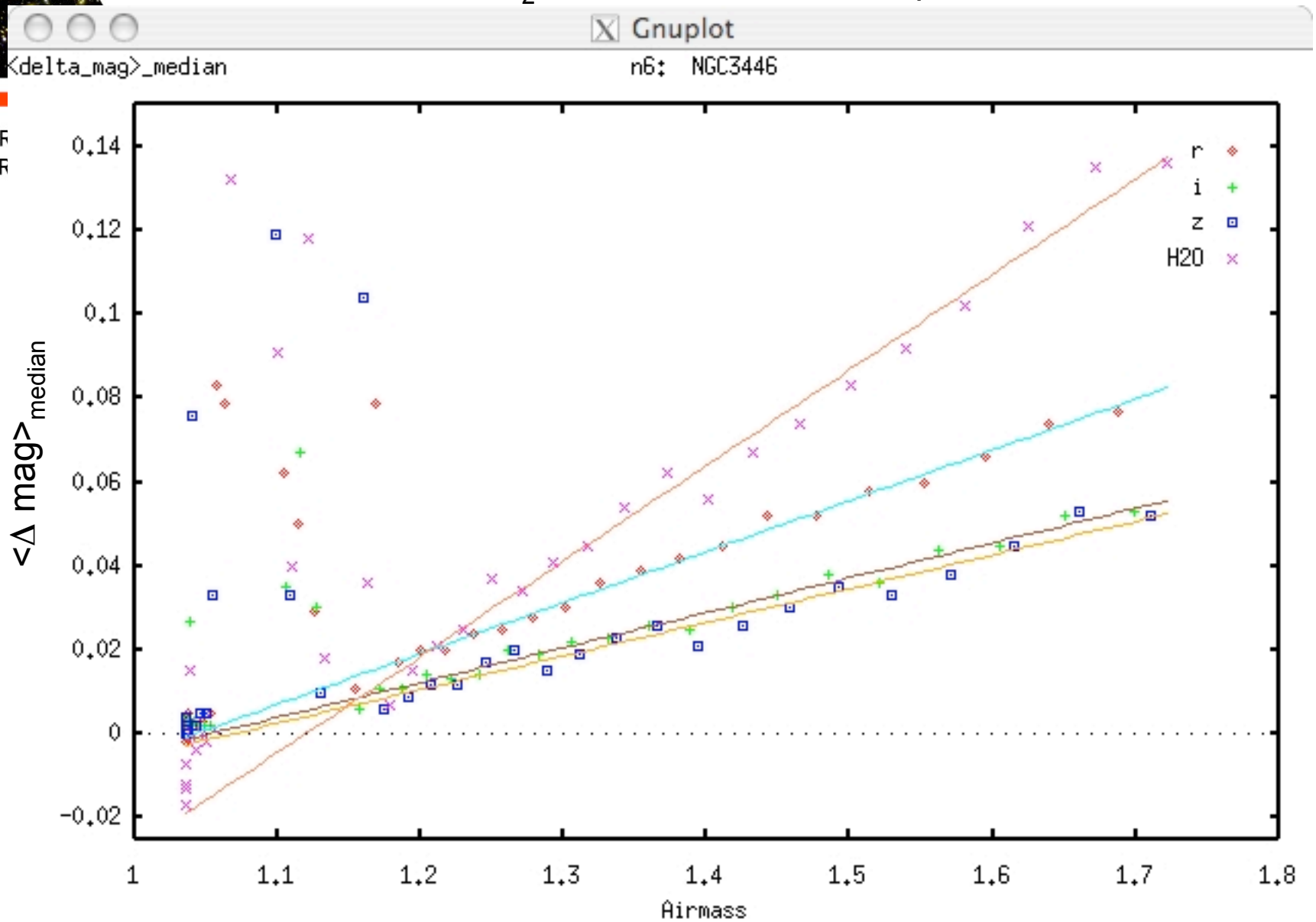

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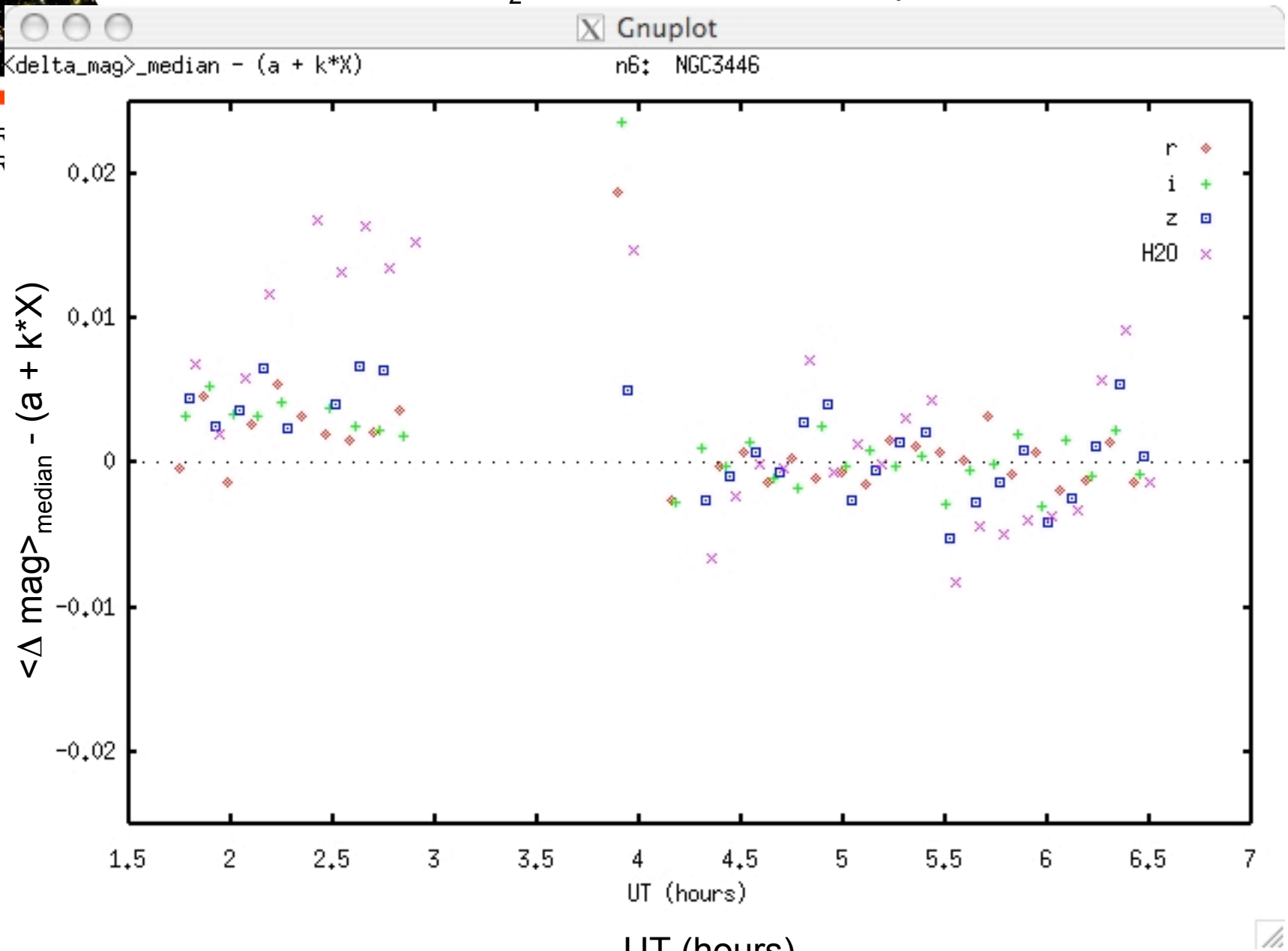
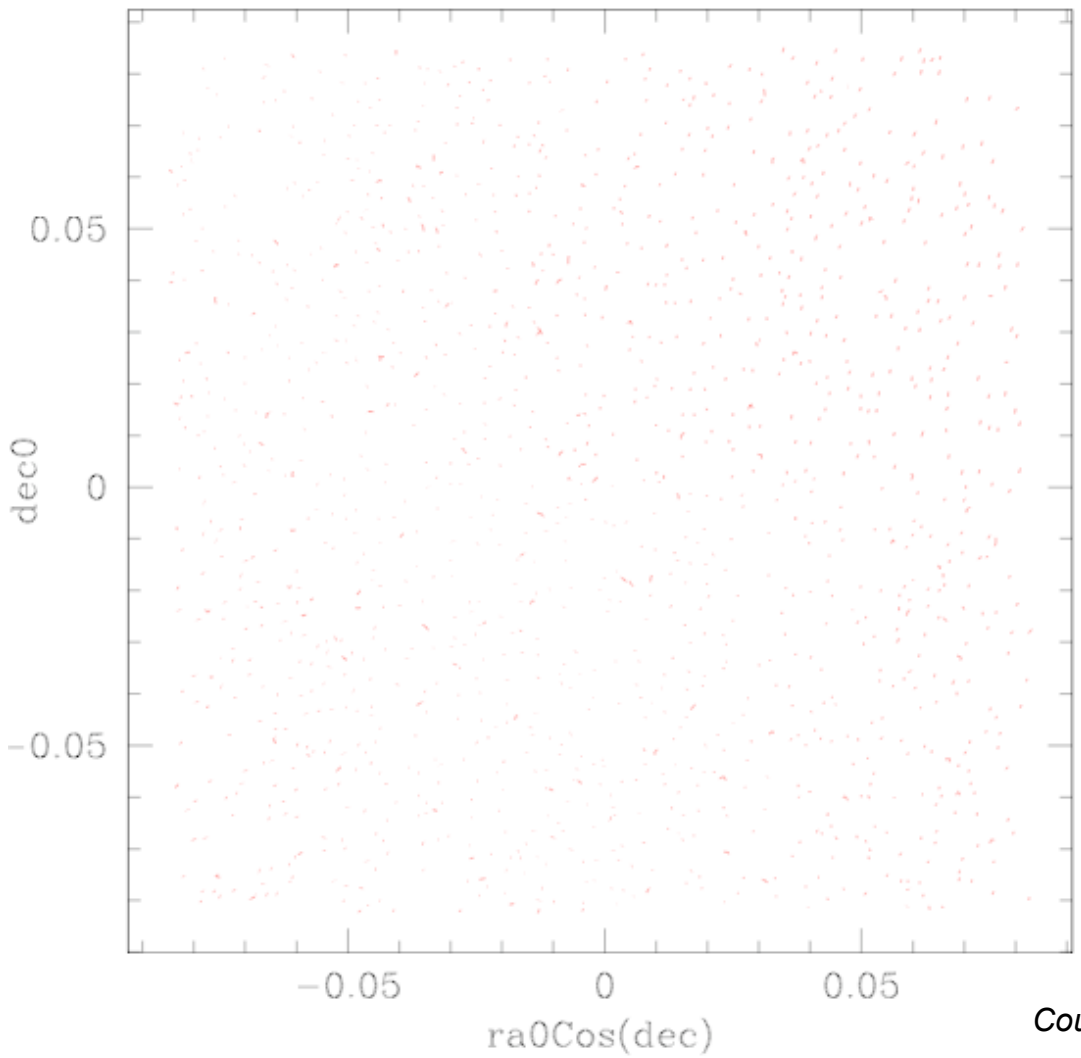


UT (hours)

Astrometry with DECam Chip
(Night 4, NGC 5617)



Courtesy: Sahar Allam

Astrometry with DECam Chip

(Night 4, NGC 5617)

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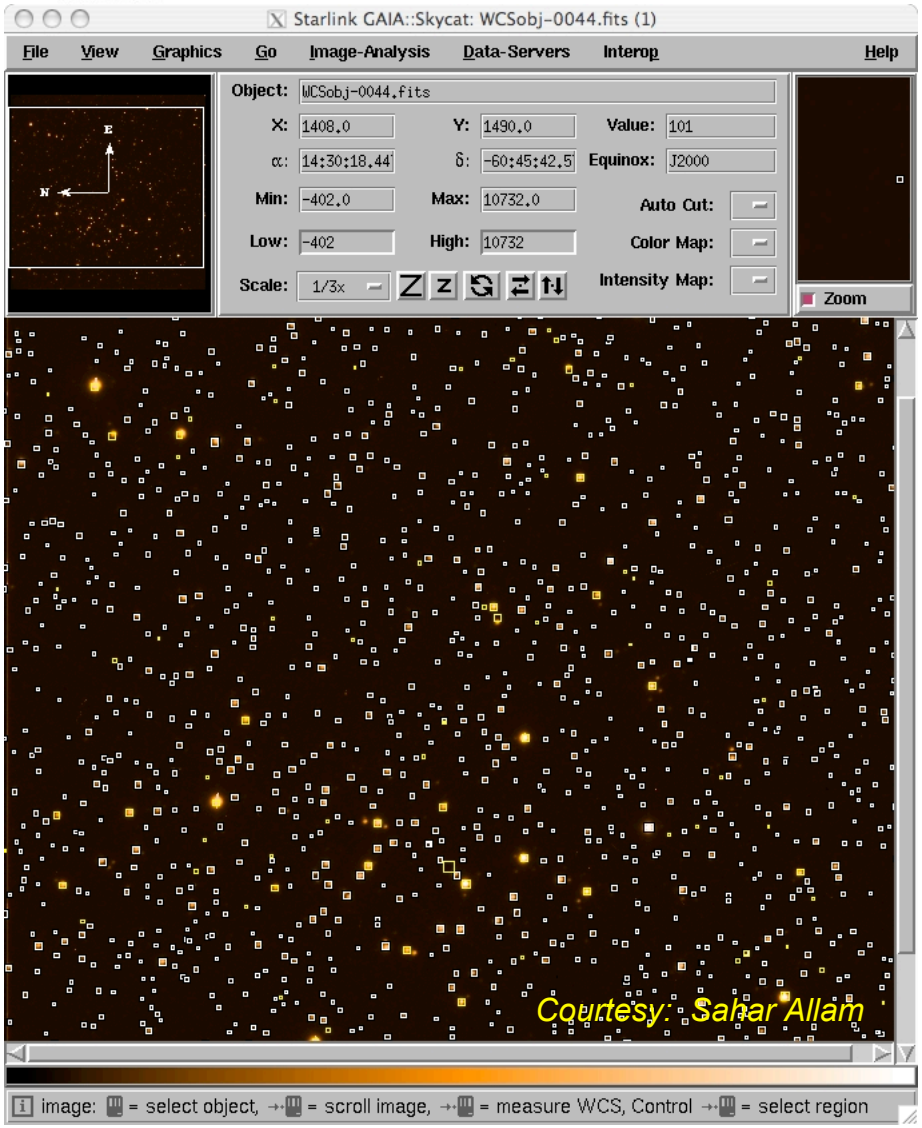

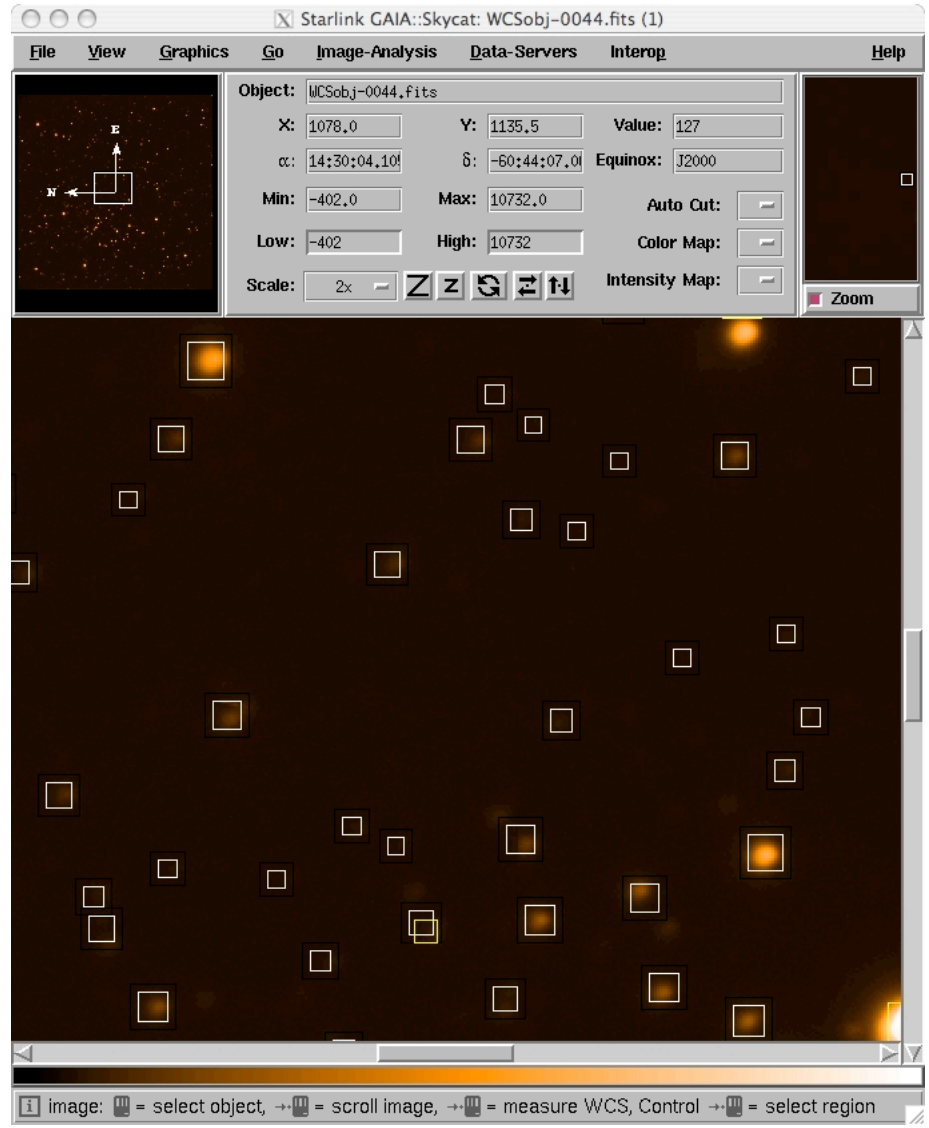

Astrometry with DECam Chip
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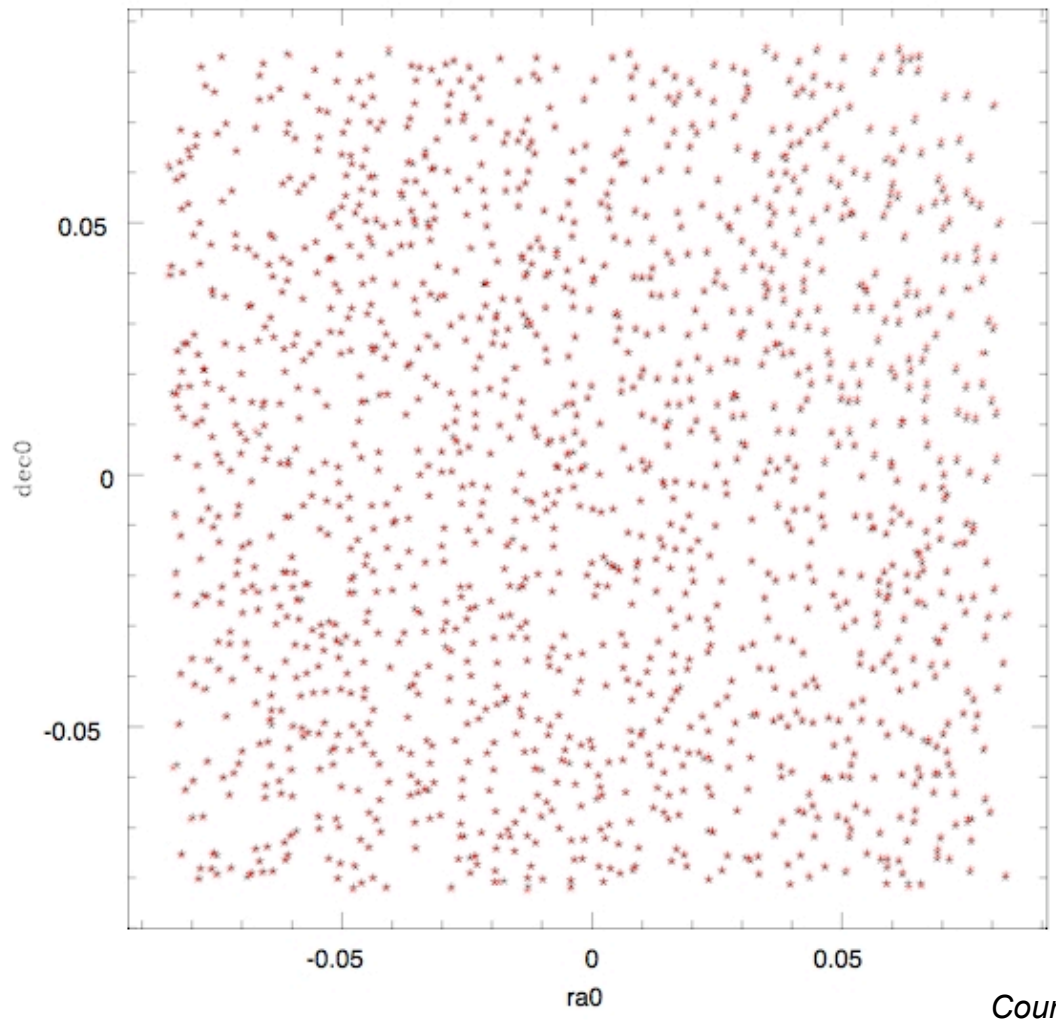
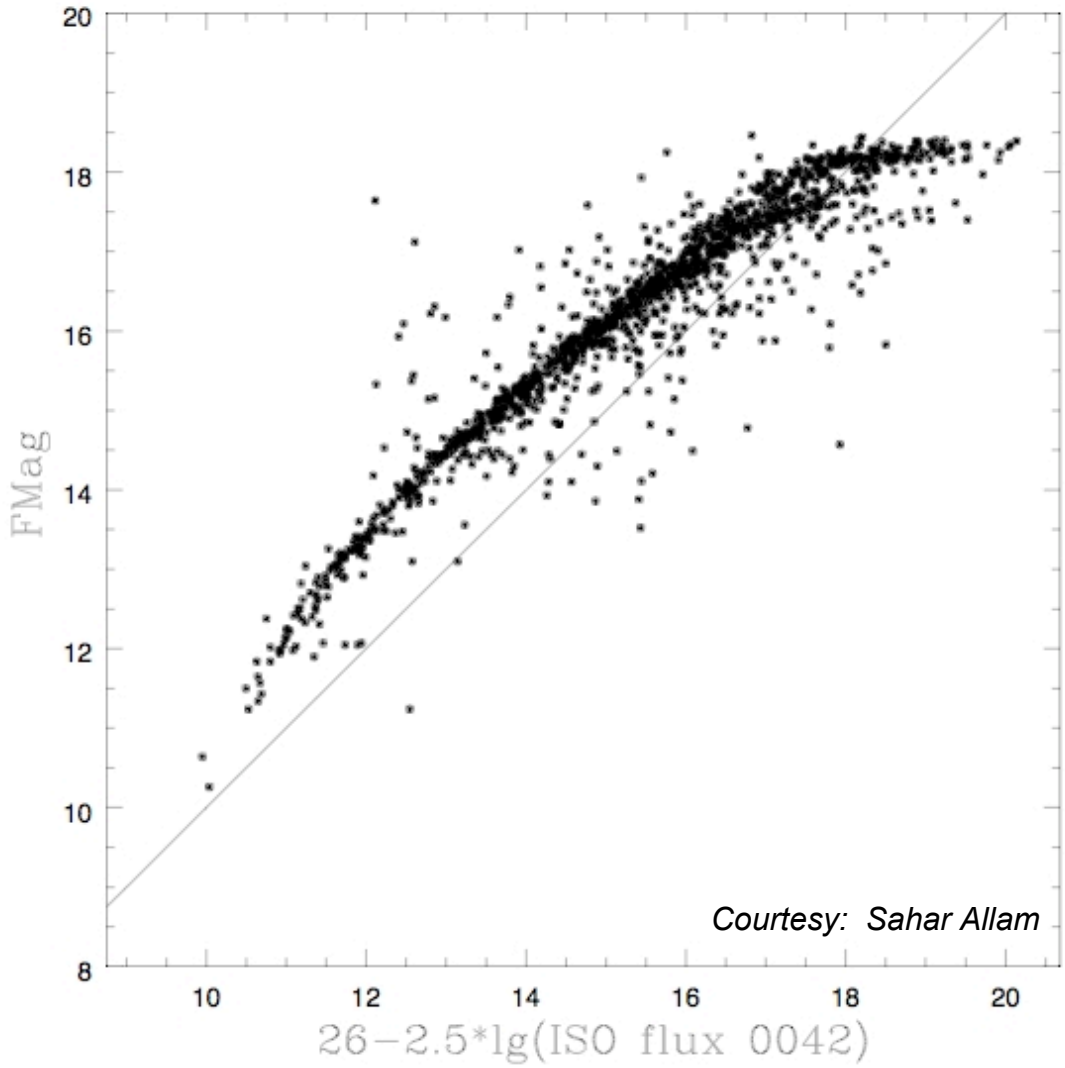


Courtesy: Sahar Allam

Photometry with DECam Chip?
(Night 4, NGC 5617)

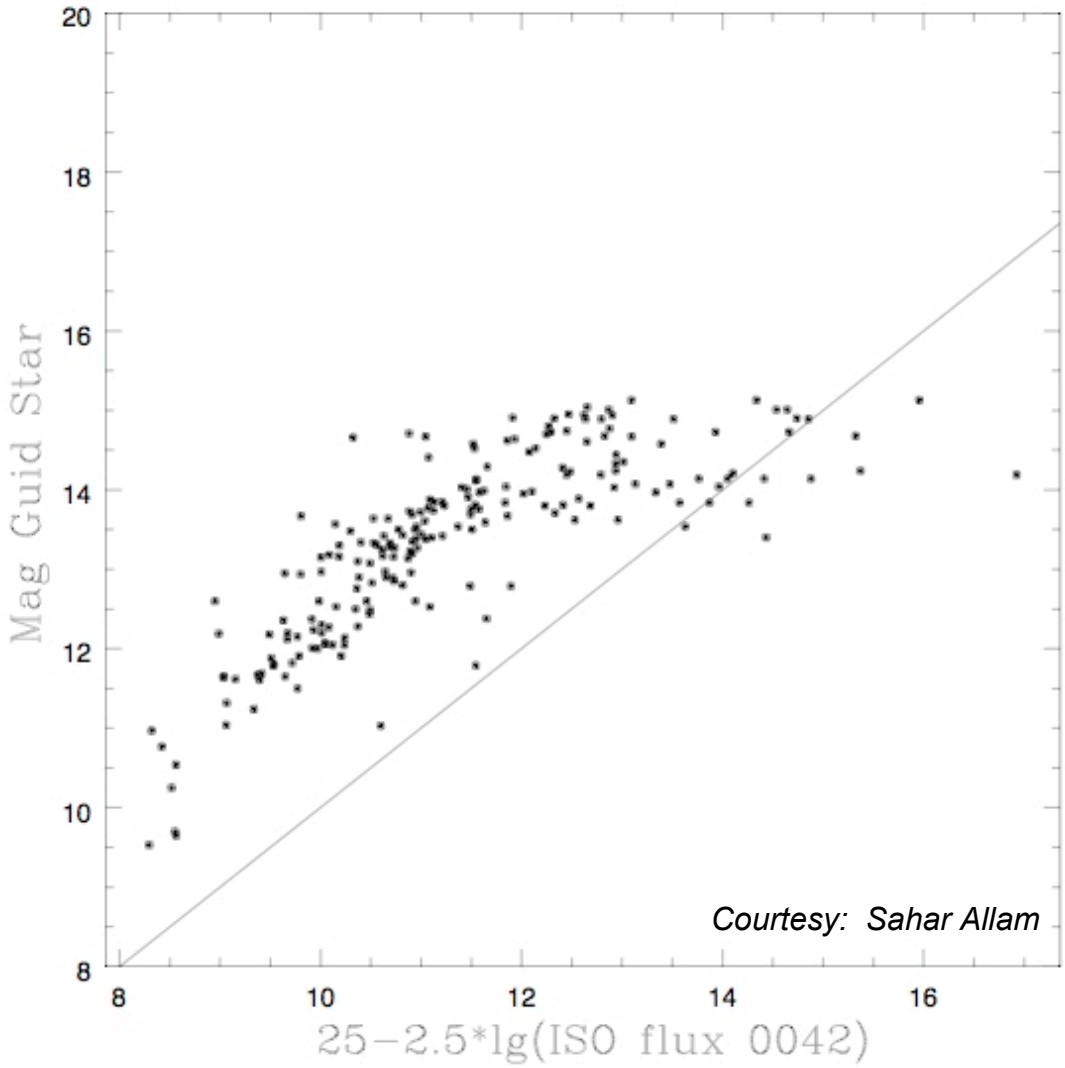
DARK ENERGY SURVEY



- Problems with the electronics
- E6 standard star field observed on same night yielded bizarre values for system throughput (2%-10%, depending on brightness of standard star)
- Here is a plot of photographic plate *F* magnitudes (red) against uncalibrated DECam chip *r* band magnitudes for GSC-2 stars within the NGC 5617 field
  - Broadly "OK" (bright stars are bright, faint stars are faint)
  - Slope < 1
  - Generally best not to do photometric calibration with GSC-2 stars, but definitely useful for getting a rough idea of what is going on

Photometry with DECam Chip?
(Night 4, NGC 5617)

DARK ENERGY SURVEY



- Here is a plot of photographic plate magnitudes against uncalibrated DECam chip *r* band magnitudes for GSC-1 stars within the NGC 5617 field
  - Broadly "OK" (bright stars are bright, faint stars are faint)