



A Small Observatory in a Large City

Jennie McCormick
MicroFUN Farm Cove

Farm Cove Observatory

CBA Pakuranga - MicroFUN Farm Cove - IAU Obs code E85



Farm Cove, Pakuranga, Auckland, New Zealand

174°53' 39"E - 36°53' 43"S



Farm Cove



The Observatory



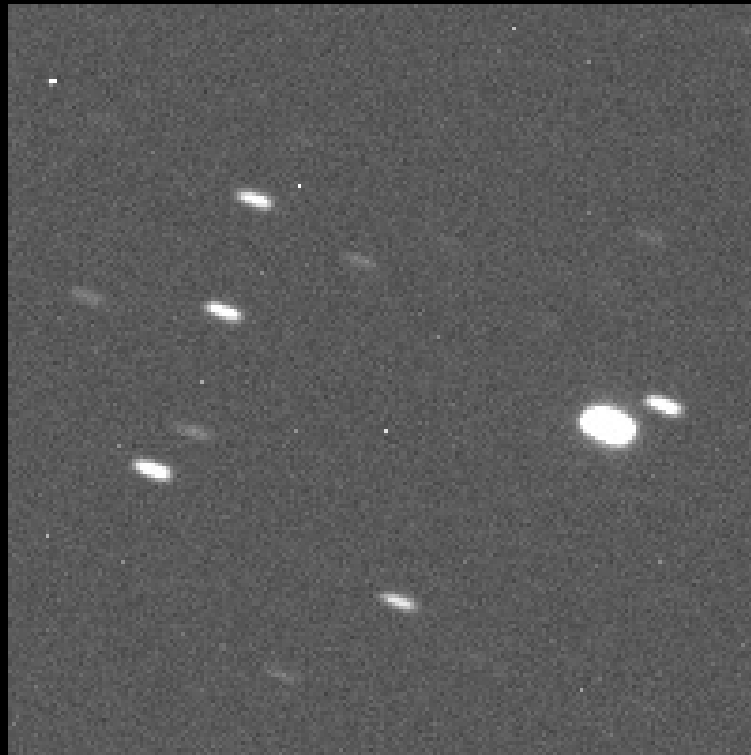
Meade LX200 ACF 14" f/10



- ❖ ACF = Advanced Coma Free Optics
- ❖ UHTC = Ultra High Transmission Coatings

- ❖ Dew/Light Baffle
- ❖ Dew Heater

Problematic RA and DEC Drives

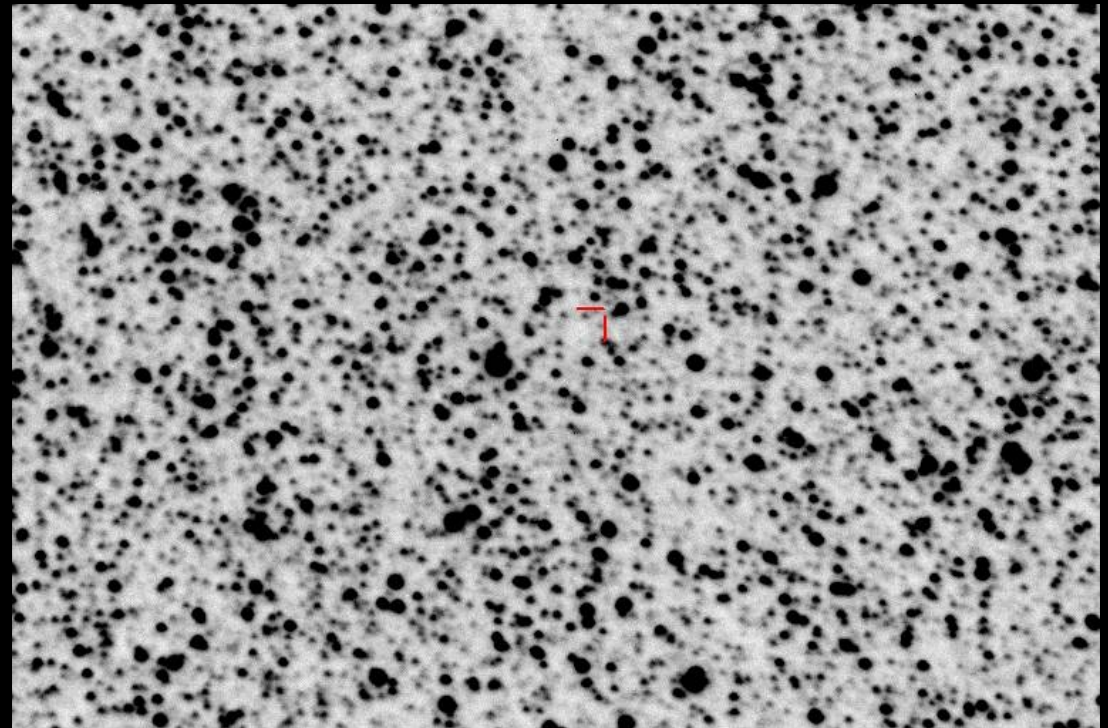


30 Second Guided Image

SBIG ST8XME CCD & dual auto guiding chip



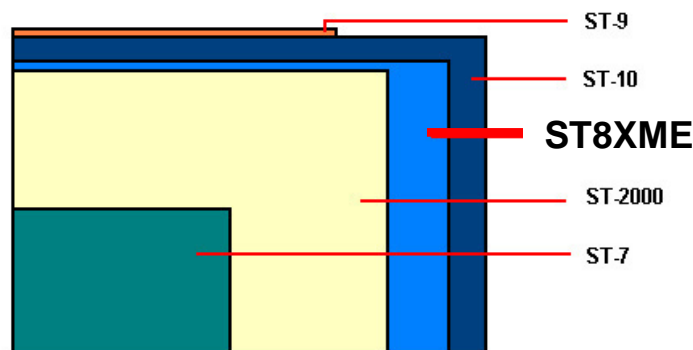
Pixel Size: 9 microns square
Pixel Array: 1530 x 1020
0.53as per pixel
Full Field of view 1x1
13.5' x 9.00'
Full Frame Download: 8s

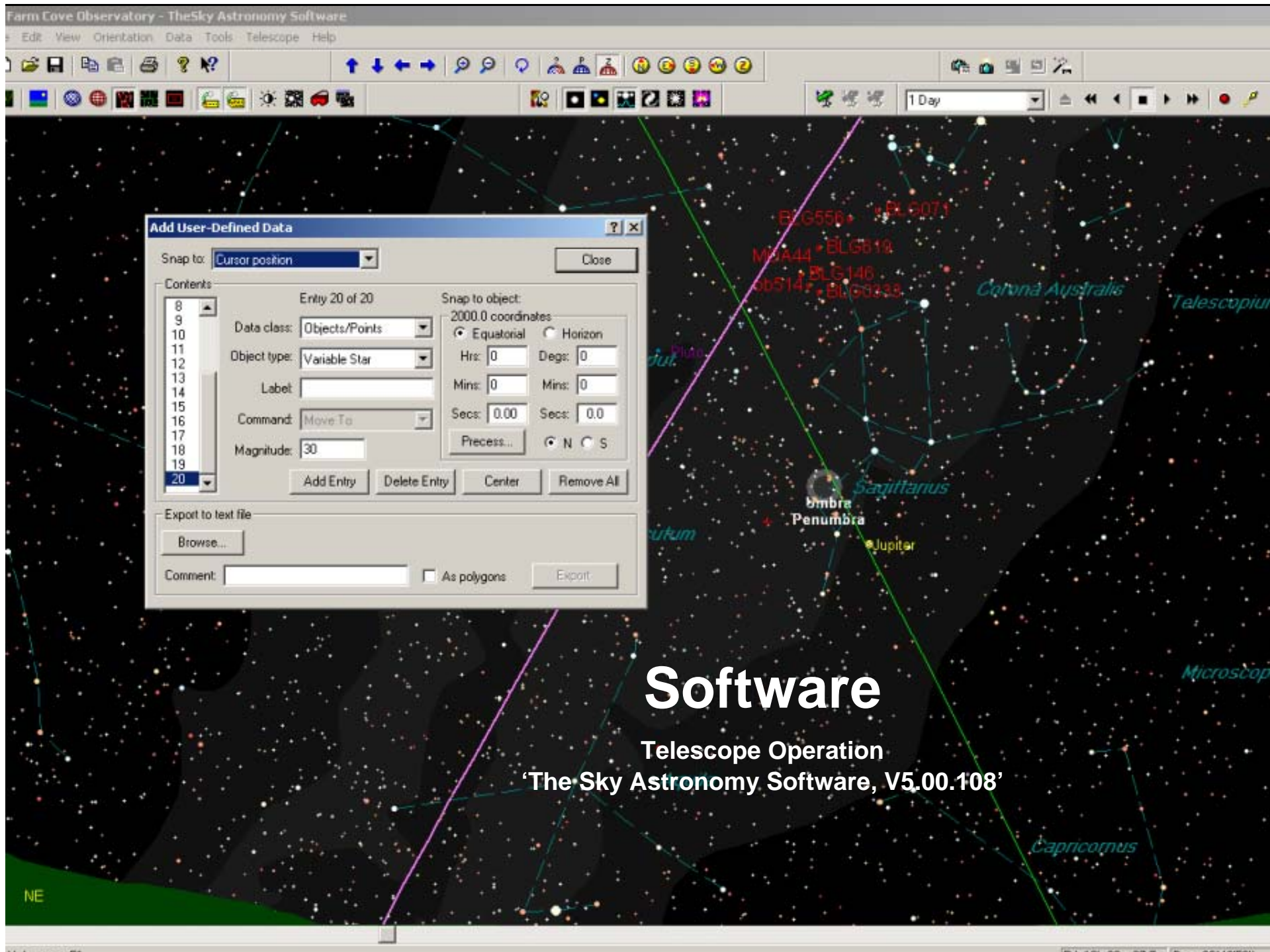


500 x 500 = 4.4' x 4.4'

300s calibrated and cropped full frame images
uploaded to MicroFUN

Relative CCD Sizes





Software

Telescope Operation
'The Sky Astronomy Software, V5.00.108'

MaxIm DL 4 - LV Vela-113

File Edit View Analyze Process Filter Color Plug-in Window Help

100%

LV Vela-113

LV Vela-113

Information

Cursor	[X= 377, Y= 249], Rad= 6, Rad2= 10		
Pixel	1788.000	Magnitude	
Maximum	1848.000	Intensity	0.000
Minimum	1694.000	SNR	0.000
Median	1757.000		
Average	1759.425	Bgd Avg	1760.848
Std Dev	27.112	Bgd Dev	29.215
Centroid	[X= 381.913, Y= 246.000]		
FWHM	1.125"	Flatness	1.000

Mode: Aperture Display in Arcsec Calibrate <<

Magnitude Calibration

Intensity: 85828 Extract from image

Exposure: 300 Set from FITS

Magnitude: 13.44 Apply

Spatial Calibration

Pixel scale X: 1.14

Set... Y: 1.14 FITS scale available

Screen Stretch

Minimum: 1706.2 Maximum: 2740.3 Update <<

Medium auto-stretch settings

Minimum Percentile: 43.2506 Maximum percentile: 97.725 Set Default

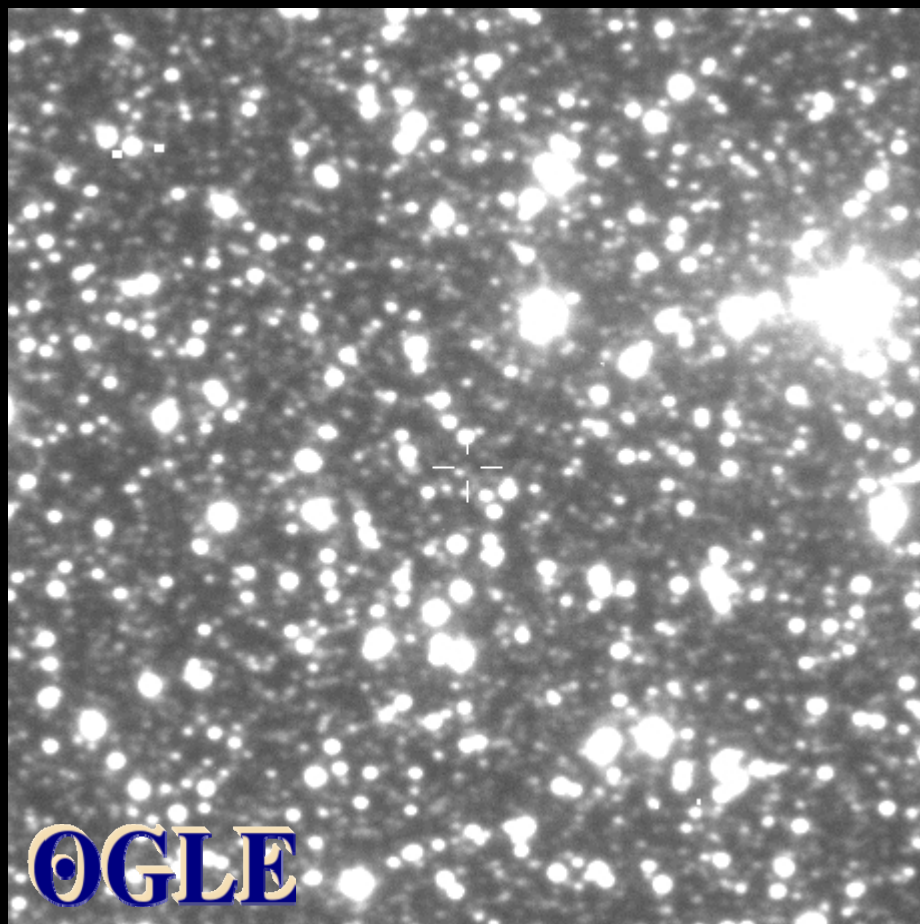
Software

**Camera Control,
Data Acquisition and Data Reduction
'MaxIm DL'**

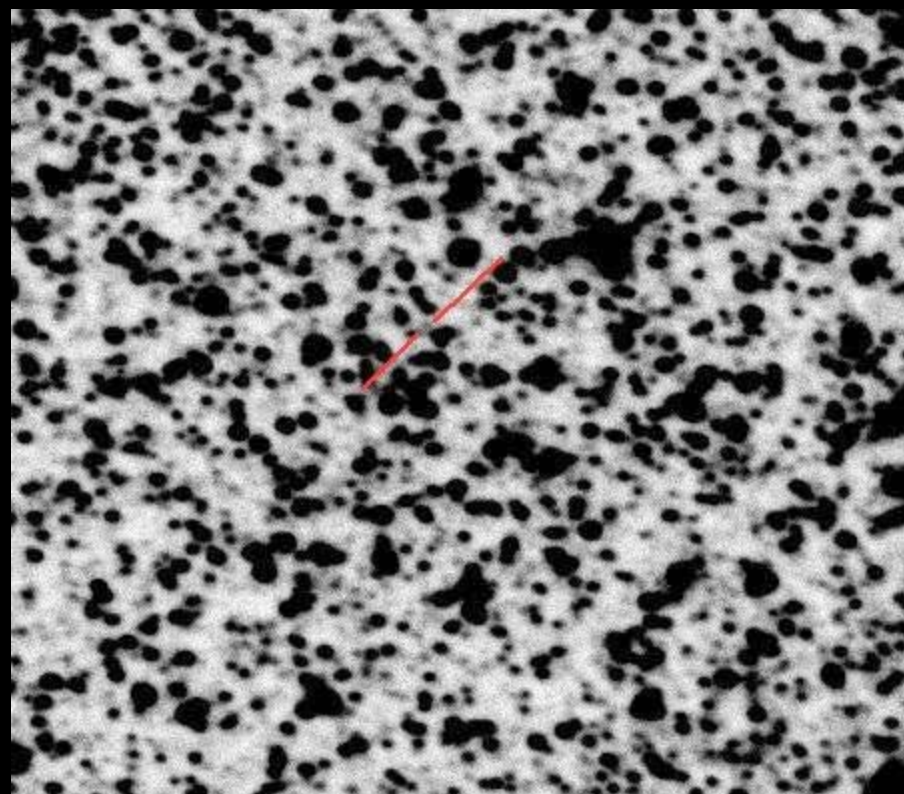
OGLE-2008-BLG-594

Field BLG225.7
Star No 143636
RA (J2000.0) 18:03:40.13
Dec (J2000.0) -27:43:58.4
Remarks

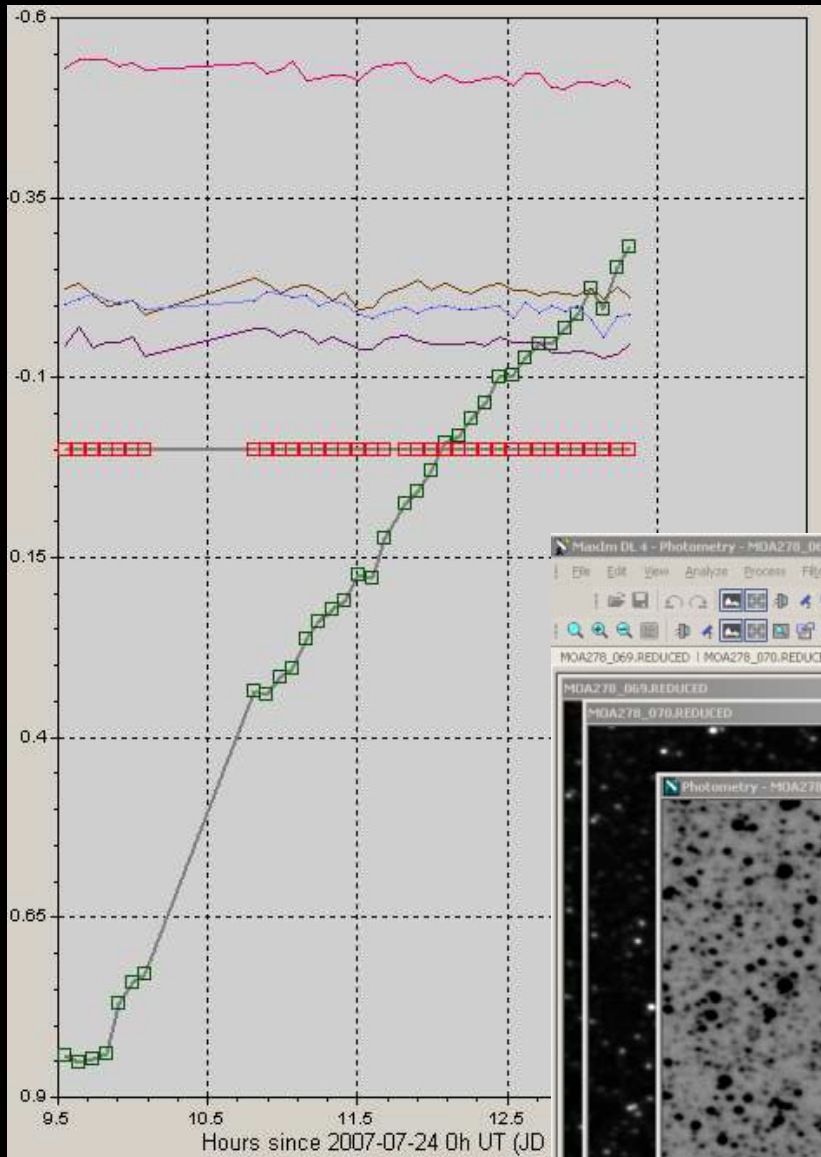
Target ID



OGLE



Temp Photometry



MOA-2007-BLG-278

The screenshot shows the Maxim DL 4 software interface. The main window displays a stack of images with a photometry window open. The photometry window shows the following data:

Pixel	22447.000	Magnitude	14.016
Maximum	23039.000	Intensity	505059.469
Minimum	2854.000	SNR	182.376
Median	5161.000	Bgd Avg	2808.323
Average	7277.676	Bgd Dev	260.516
Std Dev	4977.007	Centroid	(X= 267.321, Y= 223.594)
		Fwhm	2.354"
			Flatness 0.195

The software interface also includes an 'Information' window with cursor coordinates (X= 267, Y= 223), a 'Photometry' window with an image list containing MOA278_067.REDUCI, MOA278_068.REDUCI, MOA278_069.REDUCI, and MOA278_070.REDUCI, and a 'Screen Stretch' window showing a histogram of pixel intensities with a minimum of 3134.3 and a maximum of 1741.3.



Data Calibration



90s 1x1 median combined Master Flat with an average signal to noise ratio of between 24000 and 26000 counts.



5mm thick Opal Perspex® flat field diffuser

Dark Frame Calibration = Master Dark library of median combined frames with corresponding exposure, bin and temperature to the science frames

Collaborations since 2000

2000

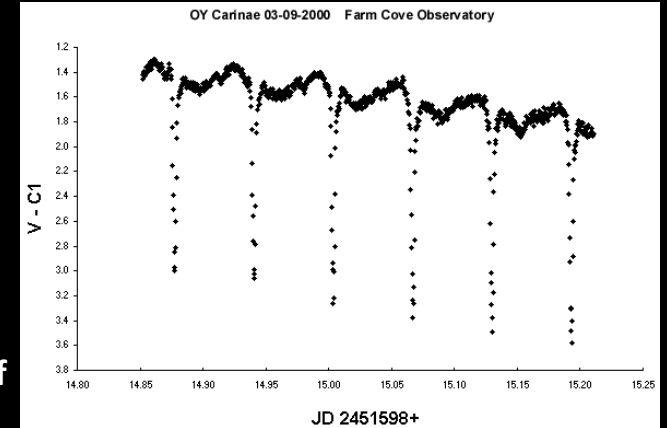


CBA

**Centre for Backyard
Astrophysics**

Columbia University, New York.

A global network of small telescopes
dedicated to photometric observations of
Cataclysmic Variable Stars



2004



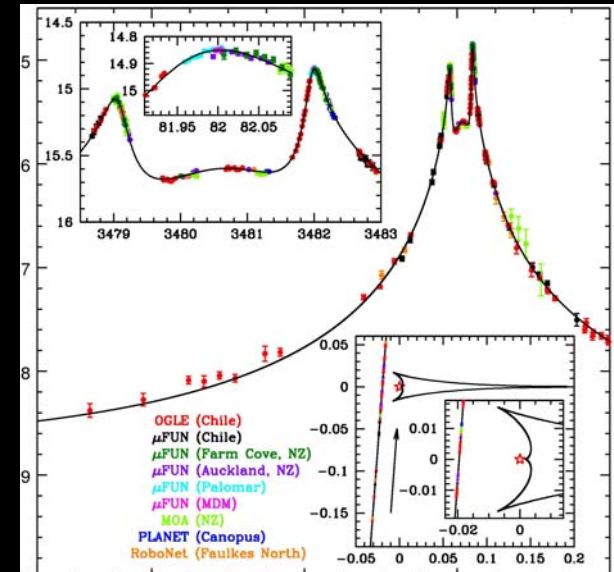
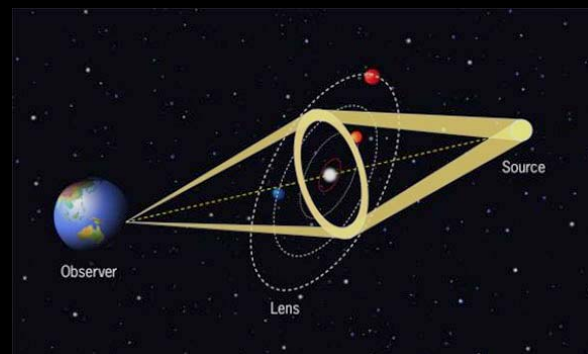
MICROFUN

**Microlensing Follow-up
Network**

The Ohio State University, Ohio.



Picture Chris Pickering, NZ



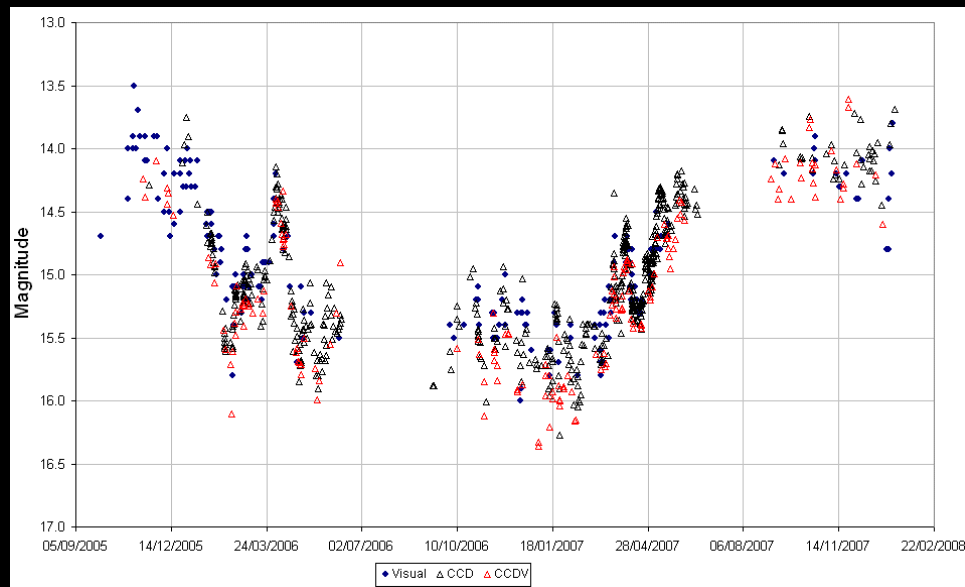
2005



BAA

**British Astronomical
Association**

**Contribution measurements of Binary
Black Hole OJ287+**



2008



Minor Planet Centre
**International Astronomical
Union**

**Astrometric observations of minor planets
and comets in the Solar System**



Picture John Drummond, NZ

MicroFUN Events acquired since 2004

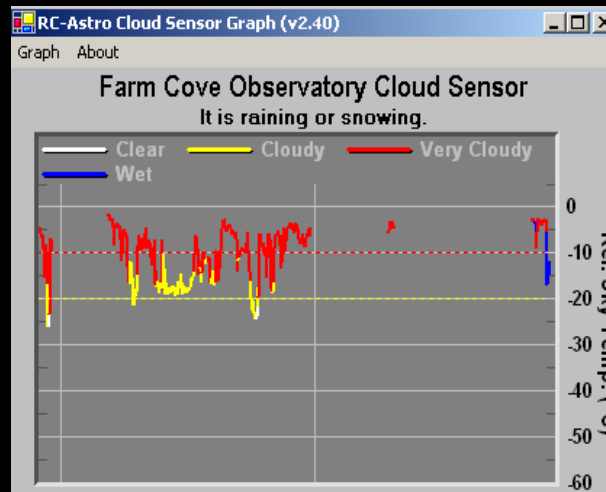
	Events	Hours	OGLE	MOA
2004	3	8.25	3	0
2005	12	71.06	12	0
2006	12	43.02	11	1
2007	29	106.05	16	13
2008	35	109.02	21	14
Totals	91	337.01	63	28

Problems Currently Facing FCO

Light Pollution



Observatory Dome



Weather



Constant refocusing

Merry Christmas Everyone

I wish to acknowledge, Andy
Gould and the MicroFUN team
at Ohio State University
Astronomy Dept

And

Joe Patterson and the CBA at
Columbia University for their
generous support and
guidance since 2000

