



Astrophotography: Assignments

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Aperture
Purley Photography Club

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OVERVIEW

ASSIGNMENT

Using a basic camera and lens on a tripod to photograph either:

- ❖ A large planet or the Moon
- ❖ A widefield nightscape or constellation

CONSIDER:

- ❖ Current Night Sky
- ❖ Subject Options
- ❖ Equipment & Methods

The Current Night Sky

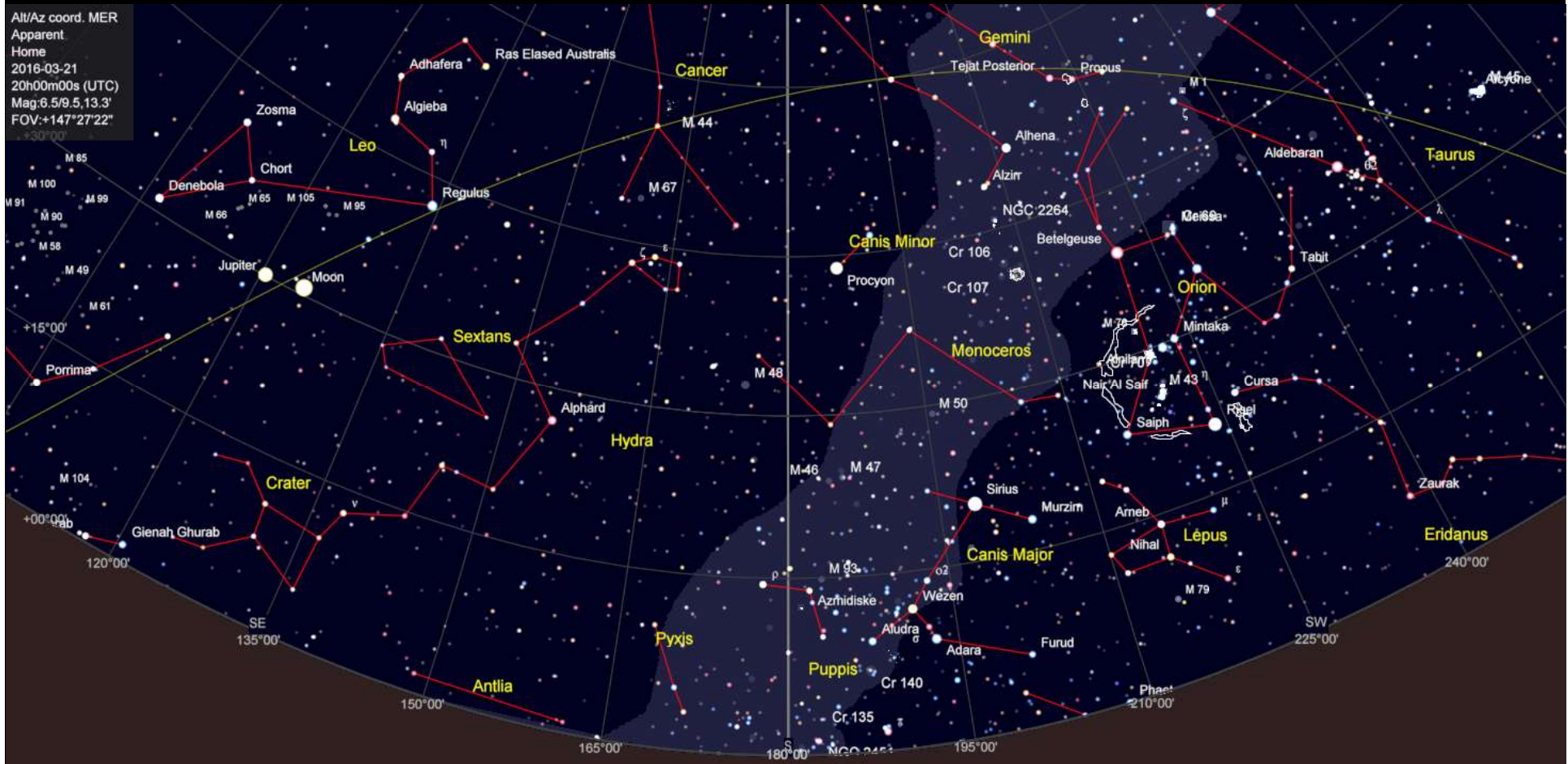
All/Az coord. ARC
Apparent
Home
2018-03-21
20h00m00s (UTC)
Mag:4.6/6.0,60.0'
FOV:+360°00'00"



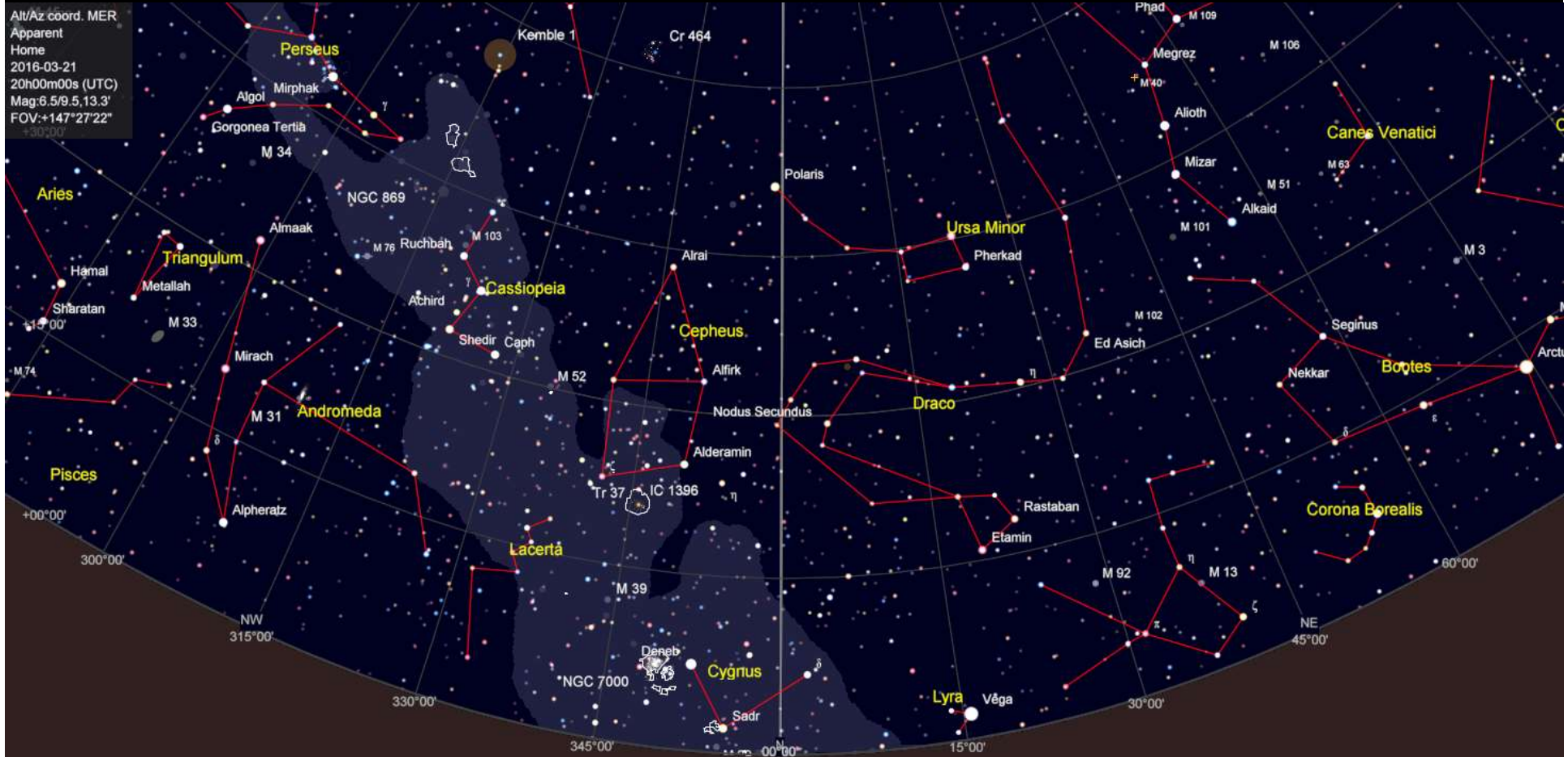
ISSUES:

1. Darkness hours
2. The Moon
3. Ecliptic & planets
4. Constellations
5. DSO objects
6. Timing

The Current Night Sky - South



The Current Night Sky - North



Subject Options



- The Moon
- Jupiter
- Orion (south) Cassiopeia (north)
- Milky Way
- Saturn & Mars (early morning)



EQUIPMENT & METHODS

- DSLR Camera of choice
- Tripod
- Remote hand control, intervalometer or PC control
- Widefield Lens: 20 – 50 mm
- Telephoto Lens: 200 – 300mm
- Use manual camera control and experiment
- Use BULB setting for exposures and experiment *
- ISO try 400 to 1,600
- Try filters if you have them e.g. light pollution

* *Except for Moon and Jupiter*



Equipment & Methods

- Moon / Planetary

- The Moon & Jupiter are very bright = short exposures
- Telephoto lens
- Stop down for better focus
- ISO 400 or lower perhaps?
- Crescent Moon shows better contrast and therefore better detail

- Unlikely to obtain Jupiter's belts but can image x4 moons
- With video and stacking Jupiter's belts visible
- Detail difficulty for anything except Jupiter and Saturn, but...
- Consider conjunctions as an alternative



Equipment & Methods

- Constellations

- Choose dark area & bright stars
- Wide angle lens
- $f_4 - f_8$
- As long exposure as possible (ref. table)
- Try stacking = take subs & few darks



Equipment & Methods

■ Guidelines

- **Exposure Times – The Rule of 500**
- $500 / \text{lens focal length} = \text{maximum exposure}$ (Full Frame)
- For APS-C multiply focal length by the crop factor
- **ISO - Experiment**

	Seconds Before Stars Blur		
Focal Length	Full Frame	Nikon 1.5 crop	Canon 1.6 crop
10	n/a	33	31
14	36	24	22
16	31	21	20
20	25	17	16
24	21	14	13
28	18	12	11
35	14	10	9
50	10	7	6
70	7	5	4
85	6	4	4

EXAMPLES OF WIDEFIELD ASTROPHOTOGRAPHY



The Moon

28th September 2015

Location - Redhill

Canon 700D – unmodded

ISO 400

1/100 sec

f11

Focal length 84mm



Lunar Eclipse - Compilation

Image details as before



Venus – Pleiades - Taurus

11th April 2015

Location – Reigate

Canon 700D – unmodded

ISO 1,600

8 sec

f11

Focal length 55mm



Venus & Jupiter Conjunction

25 th June 2015
Location – Reigate
Canon 700D – unmodded
ISO 400
1/4 sec
f9
Focal length 55mm



Orion Constellation - RAW file

24 th December 2014
Location – Redhill
Canon 700D – unmodded
ISO 1,600
10 sec
f5
Focal length 46mm



Orion Constellation - Stacked

24th December 2014

Location – Redhill

Canon 700D – unmodded

ISO 1,600

24 x 10 sec

f5

Focal length 46mm



WEBSITES

PLANETARIUM & SKY MAPS

Cartes du Ciel: <https://www.ap-i.net/skychart/en/start>

Stellarium: http://www.stellarium.org/en_GB/

Esky: <http://www.glyphweb.com/esky/sky-maps/default.htm>

Moon Atlas: <http://www.moon.com.co/atlas/>

Google Sky: Google Apps

WEATHER & DARKNESS etc

Clear Outside: <http://clearoutside.com/forecast/51.23/-0.18>

PROCESSING

Deep Sky Stacker:

<http://deepskystacker.free.fr/english/index.html>

Registax (video): <http://www.astronomie.be/registax/>

GIMP: <https://www.gimp.org/>

ONLINE FORUM

Stargazers Lounge: <https://stargazerslounge.com/>

Astro Shed:

<http://www.astronomysshed.co.uk/forum/index.php>

TWAN (The World At Night) :

<http://twanight.org/newTWAN/index.asp#>

OTHER

British Astronomical Association: <https://www.britastro.org/>

Royal Astronomical Society: <https://www.ras.org.uk/>

Astronomy Now: <http://astronomynow.com/>

NASA APOD: <http://apod.nasa.gov/apod>

Watch This Space (Man):

<https://watchthisspaceman.wordpress.com/>

QUERIES & HELP: graham.s.roberts@gmail.com

THANK YOU



- For more information go to:
- www.watchthispaceman.wordpress.com

