

Optimisation of Graze contacts using GRAZPREP 4.03

Example: The Grazing Occultation of 81 Tauri
Feb 5th 2017 at 1915UT (England)

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Introduction

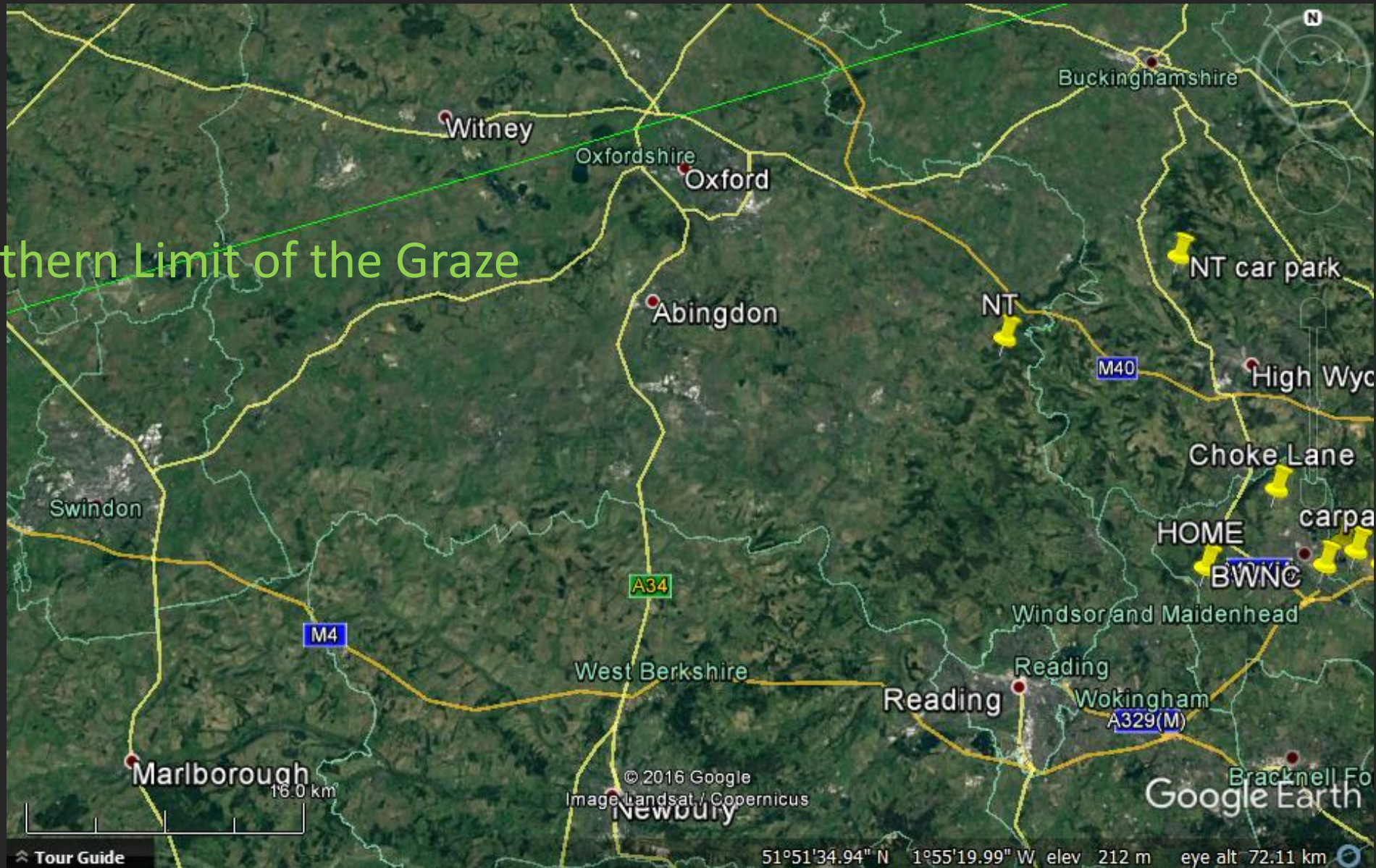
- The HYADES presented three Graze occultations from the UK
 - The nearest track 81 Tauri was near OXFORD on Feb 5th, 2017
 - The star was also a close double
 - I used GRAZPREP 4.03 to predict 14 contacts in conjunction with OCCULT
 - 13 contact were measured – there being no clear double star contacts
 - GRAZPREP has changed my approach to Graze observing.
-
- The equipment used was:
8" F/4 with 2x Barlow, WAT-910HX , GPS-SPRITE2 VTI and Digital Tape

Google Earth

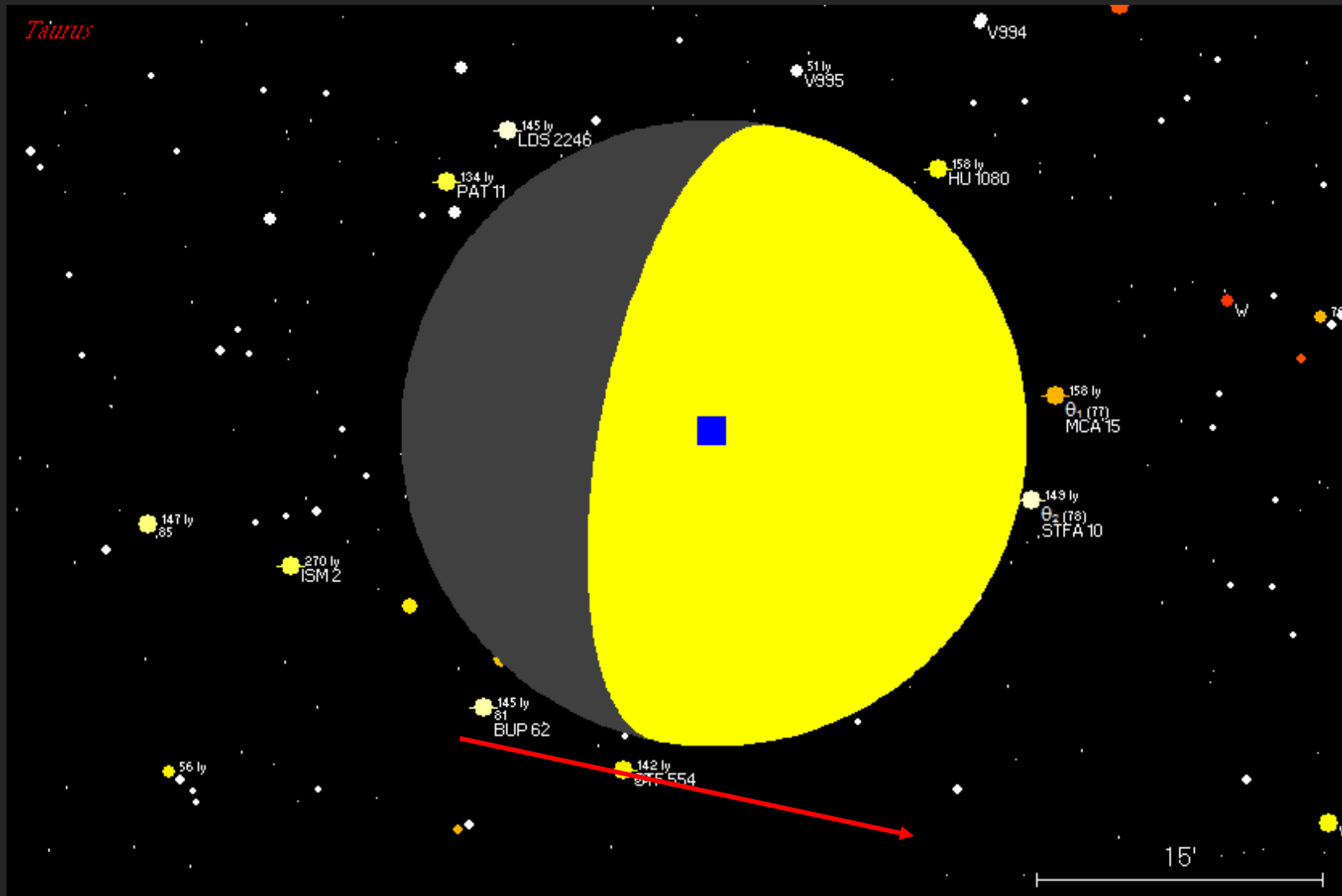
Display of
the kmz file
using occult4



Southern Limit of the Graze



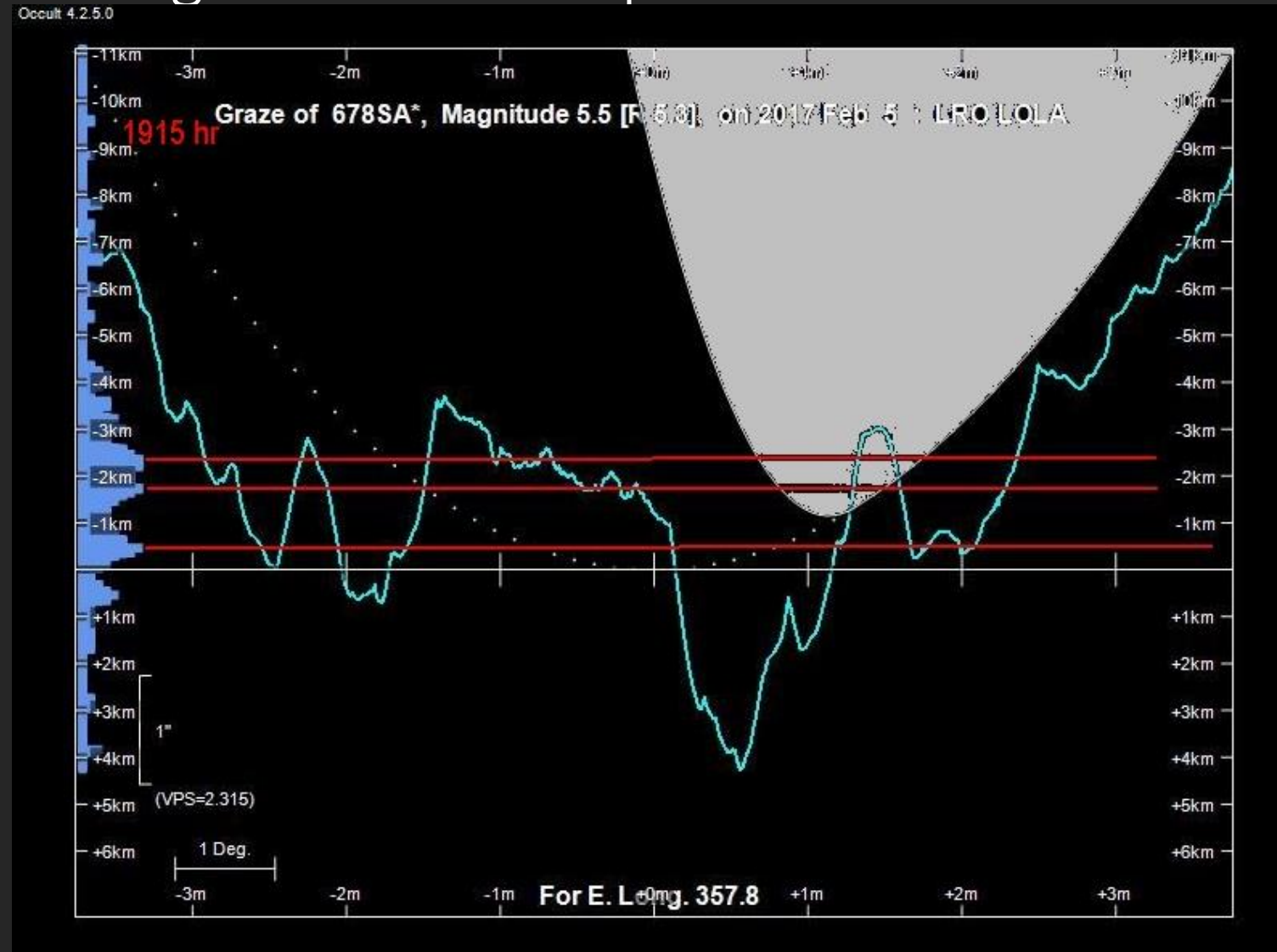
A Simulation with Sky Map Pro. 81 and 82 Tau were occulted.



Optimisation of Graze contacts with GRAZPREP - Tim Haymes -
ESOP XXXVI (2017)

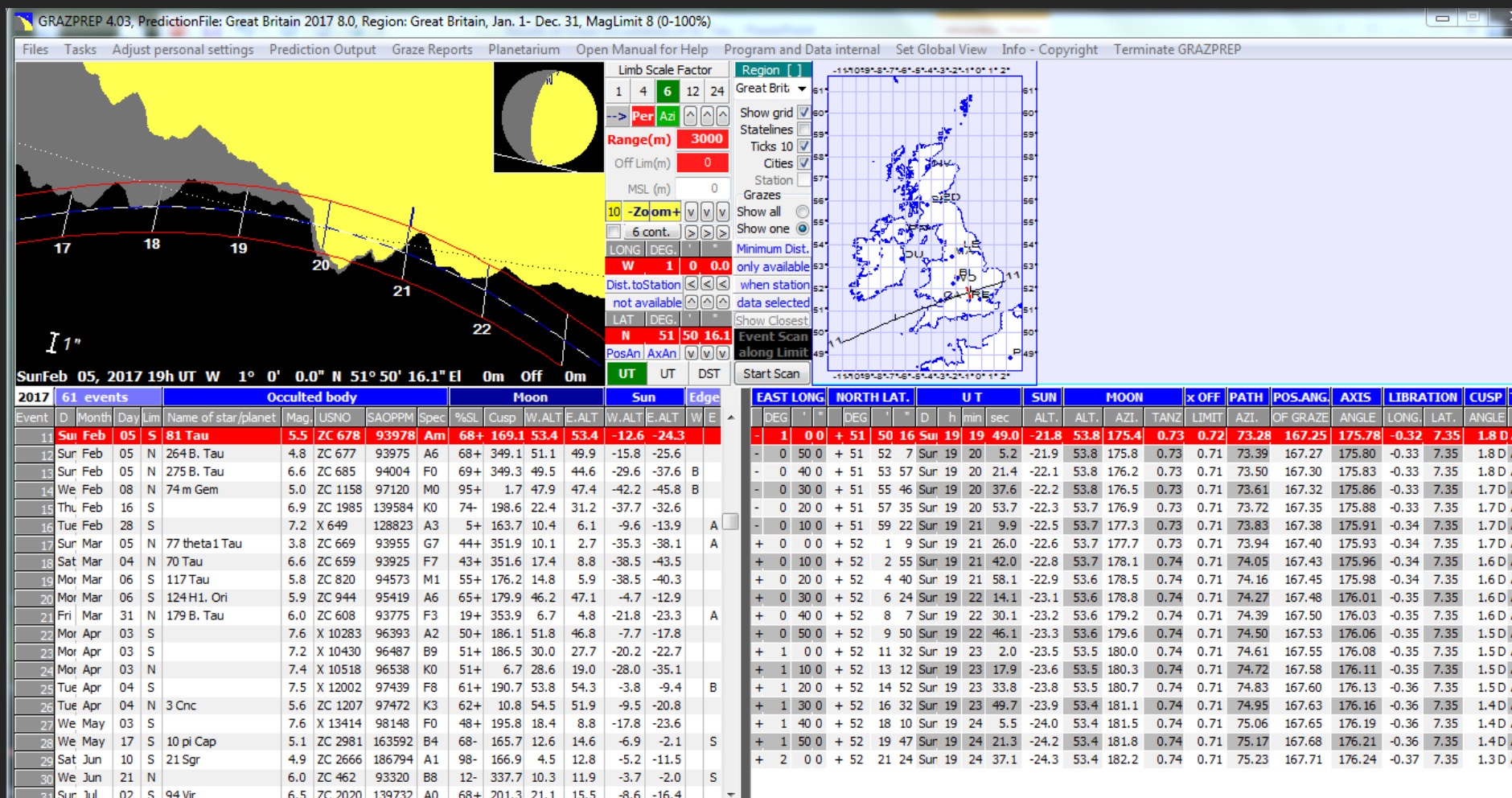
First plan was using Occult 4 limb profile

- Selecting from the histogram plot in Occult 4
- 2.3Km looked promising



GRAZPREP simulation for the mean limb

The prediction file is downloaded or supplied by Eberhard Riedel (IOTA-ES)



Scouting Google Earth to find that “Goldilocks” location

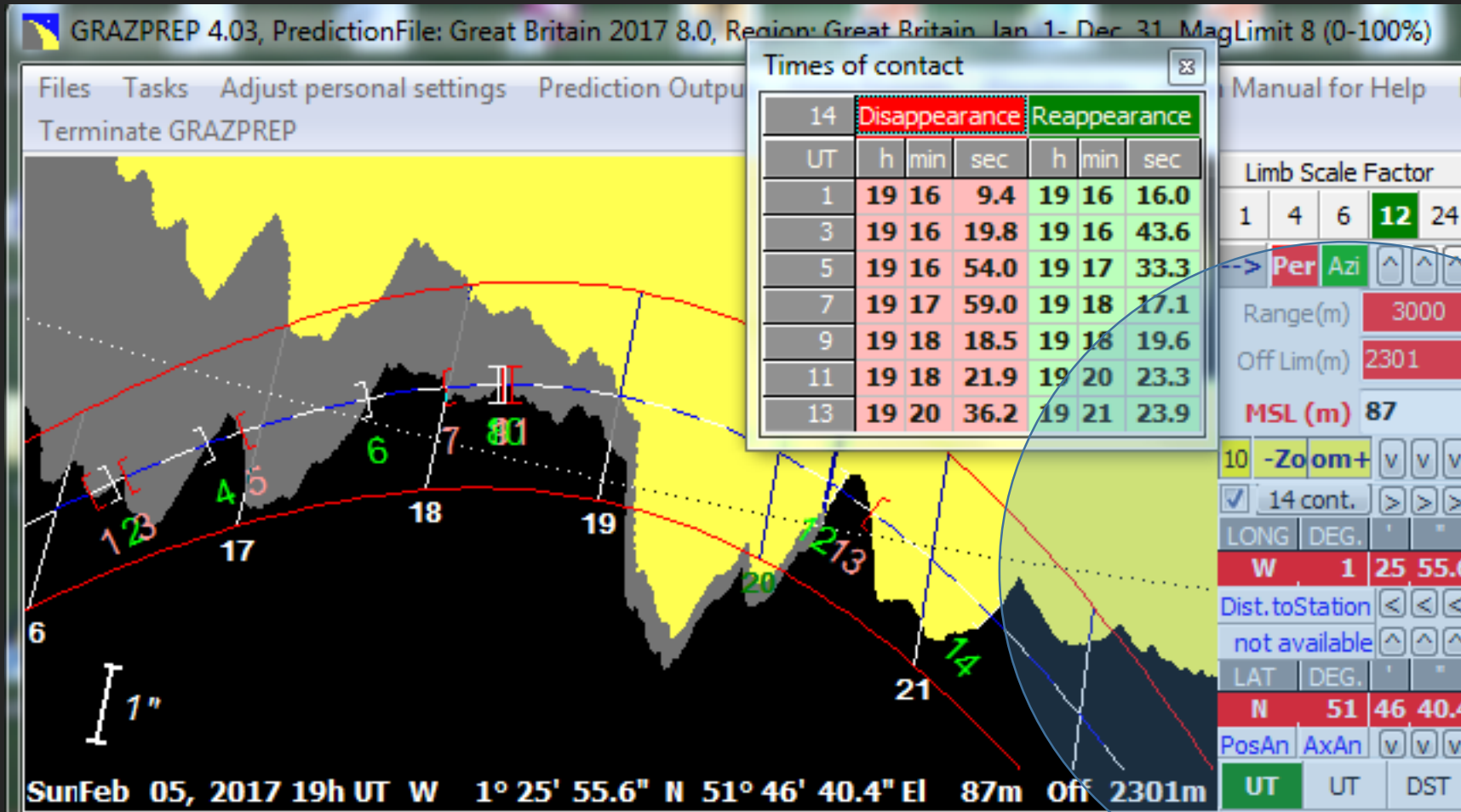
Site selection using Google Earth.



South Leigh Village Hall is 2.30 Km inside the mean limb



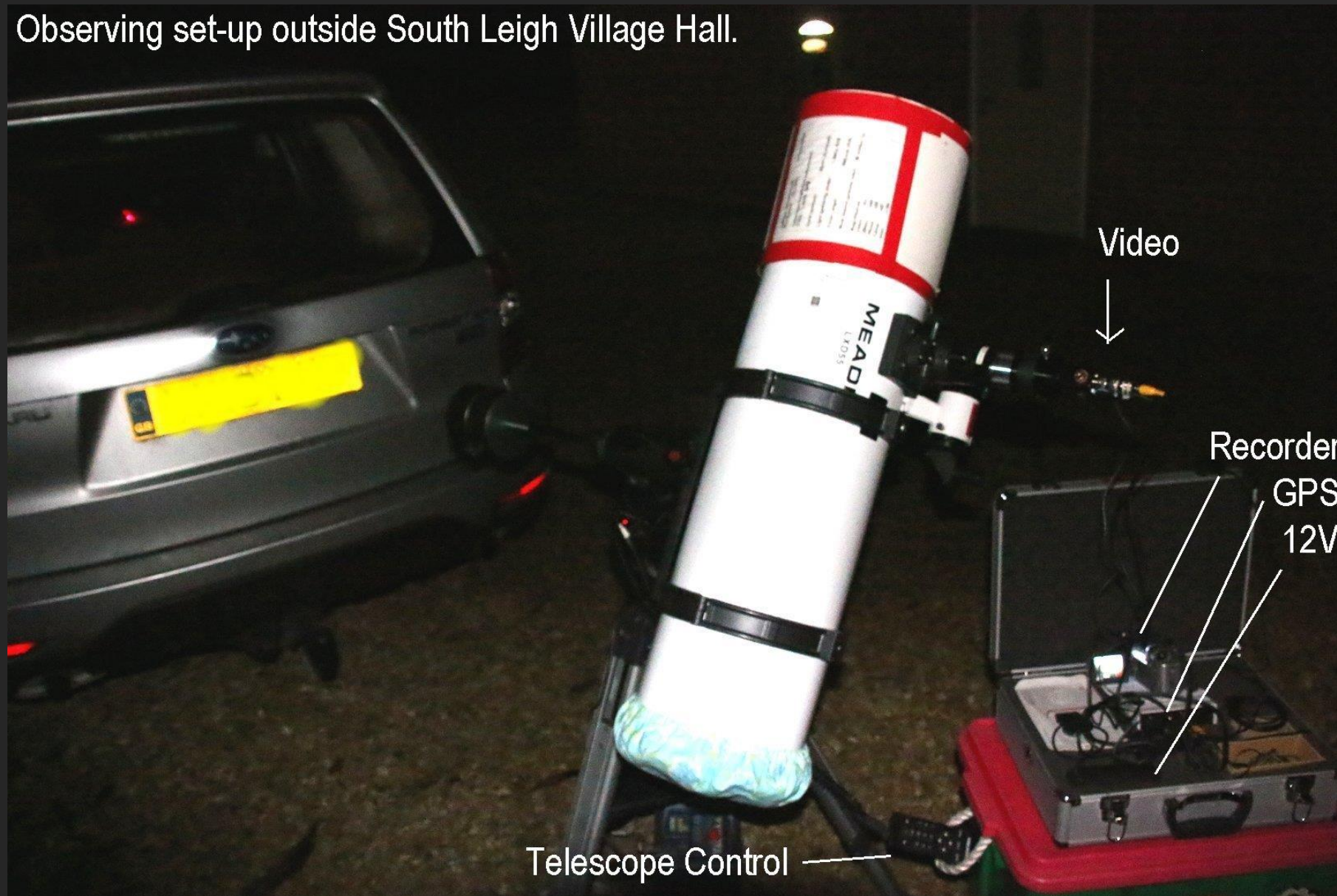
Finding the best limb cross-section using GRAZPREP



Change: longitude and Latitude

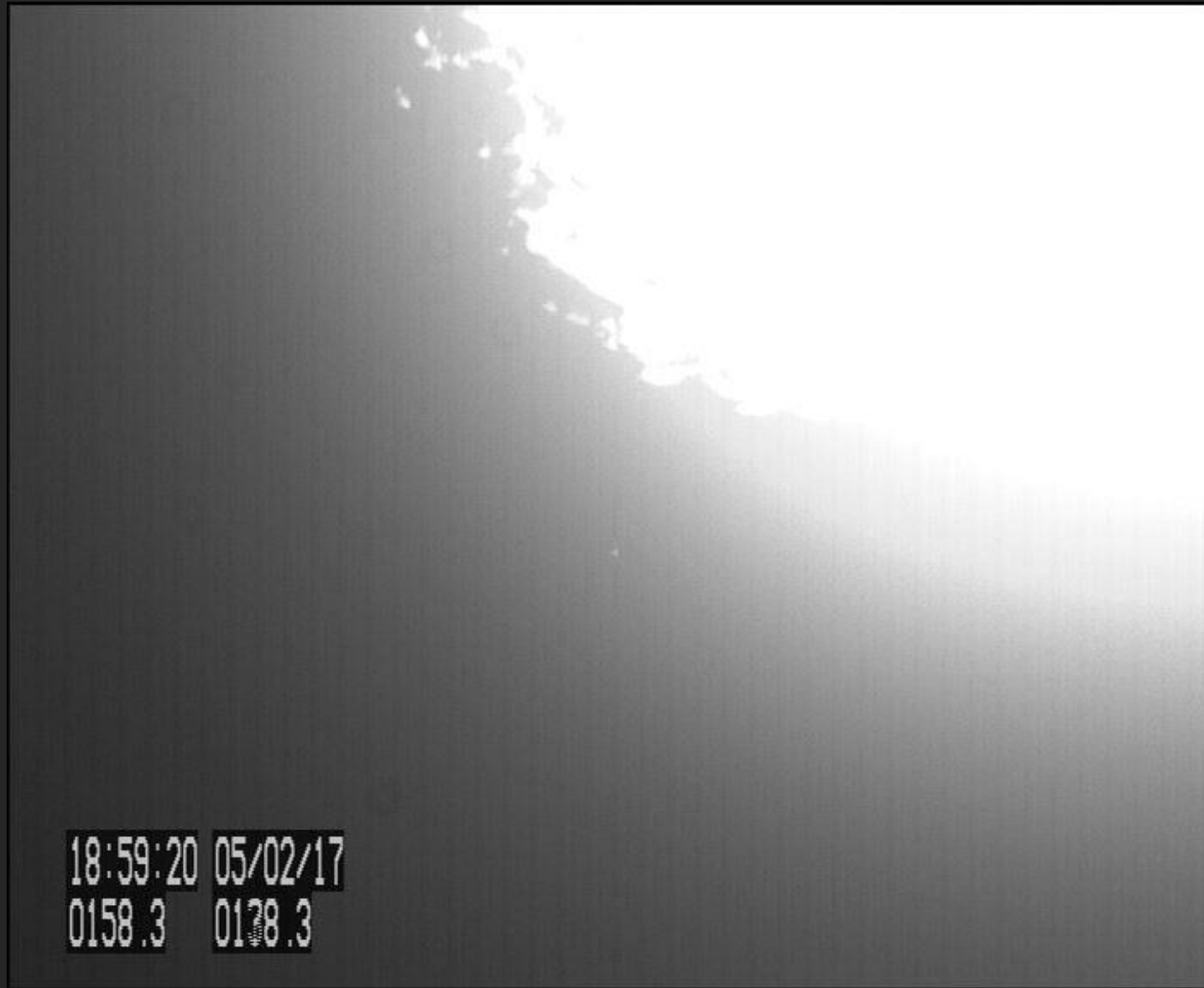
Height : above MSL (m) – *very important* !!!! – large effects possible.

Observing set-up outside South Leigh Village Hall.



View before
the cloud
moved away.

12min before
1-st contact.



- The Cloud dispersed



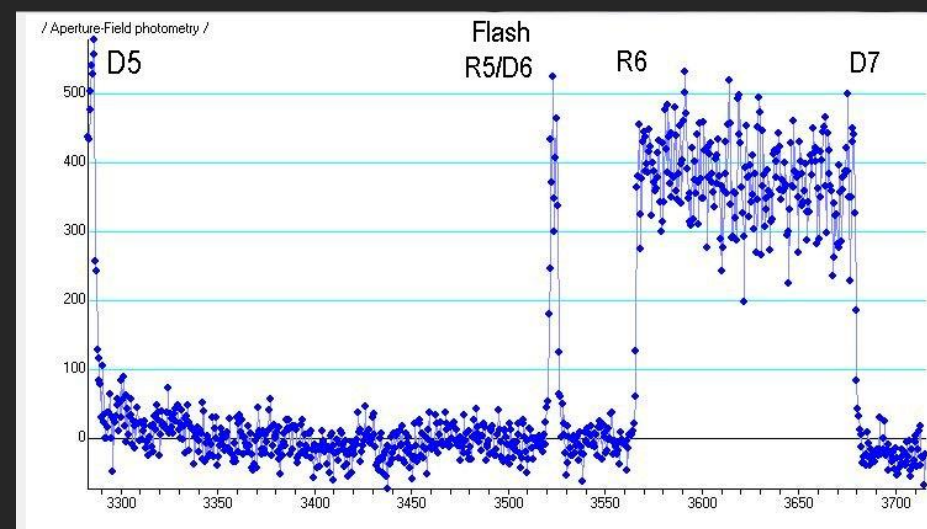
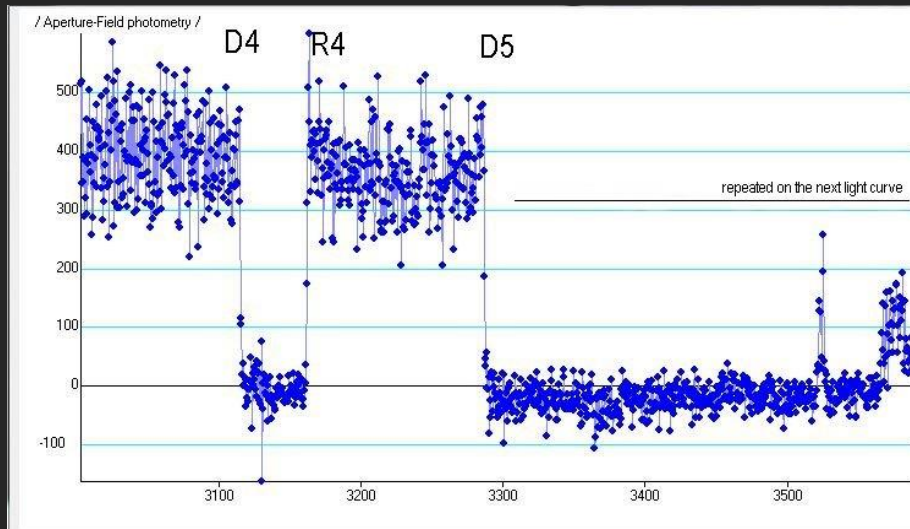
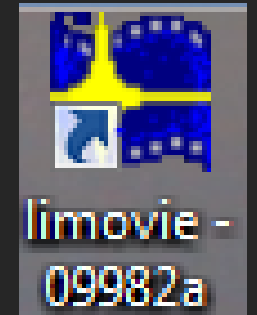
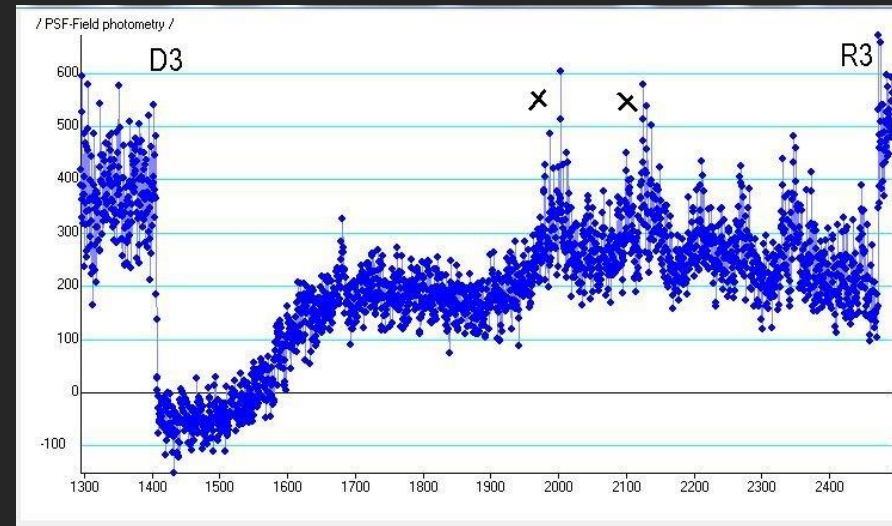
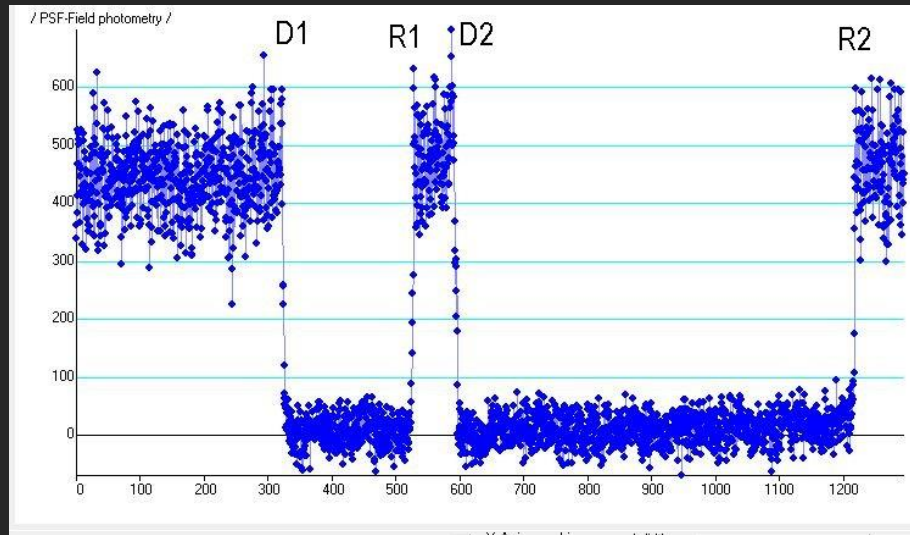
5 min to go...
Moon 68% ILL

GPSBOXSPRITE2
VTI

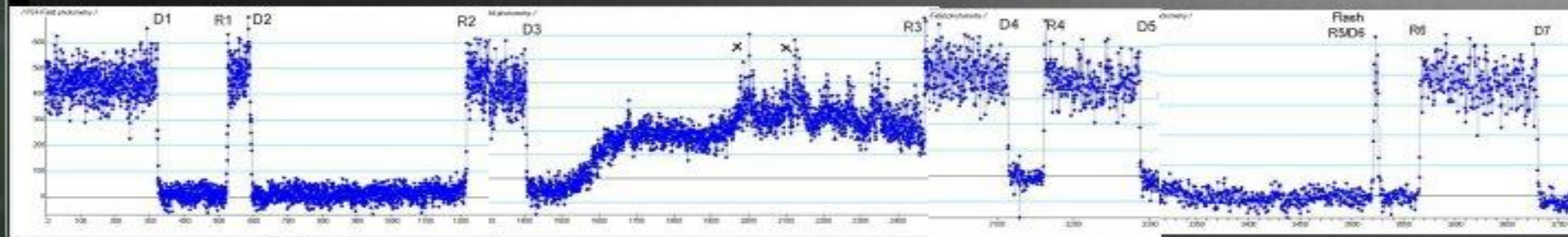
25 fps displayed
but recording is
at Field level i.e
50 fps



Limovie was used to measure 4 light curves avoiding the bright limb

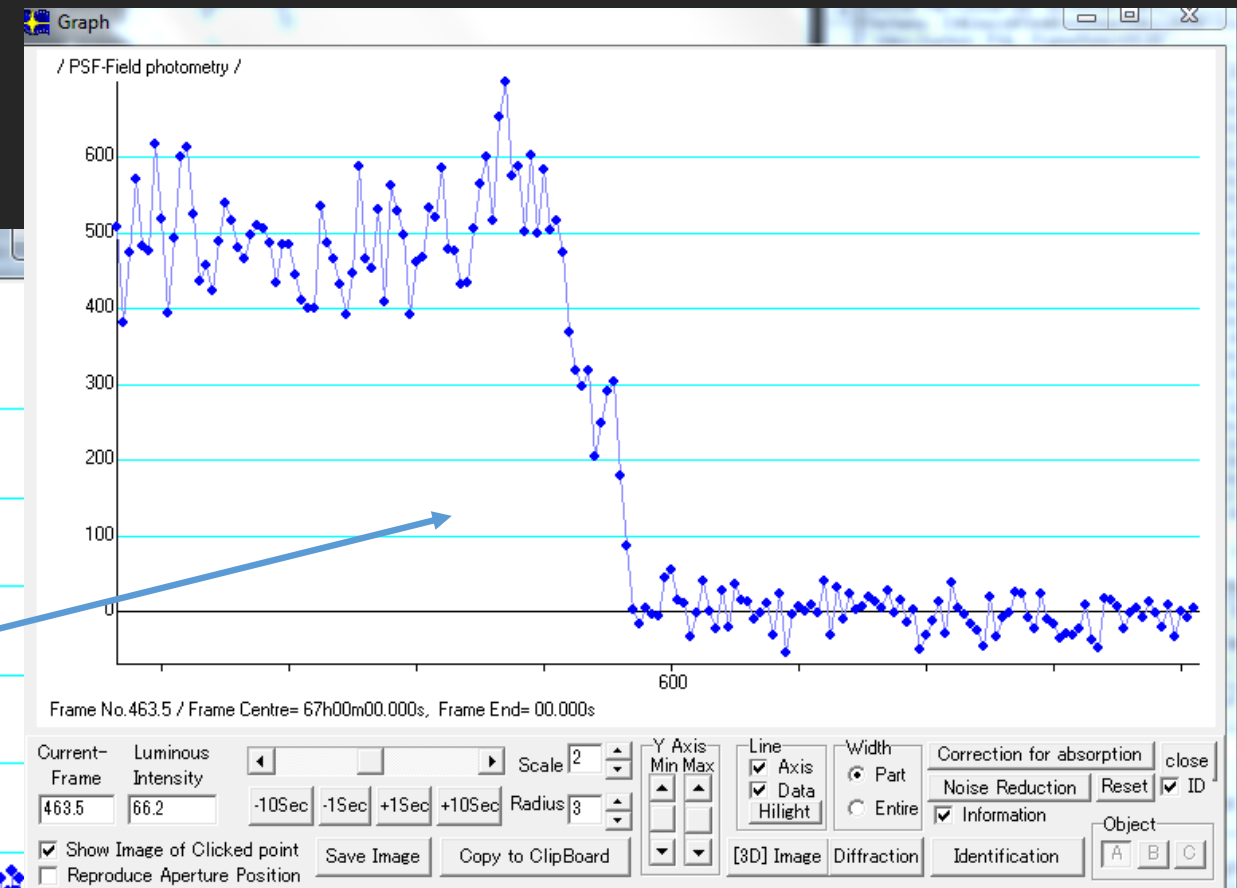
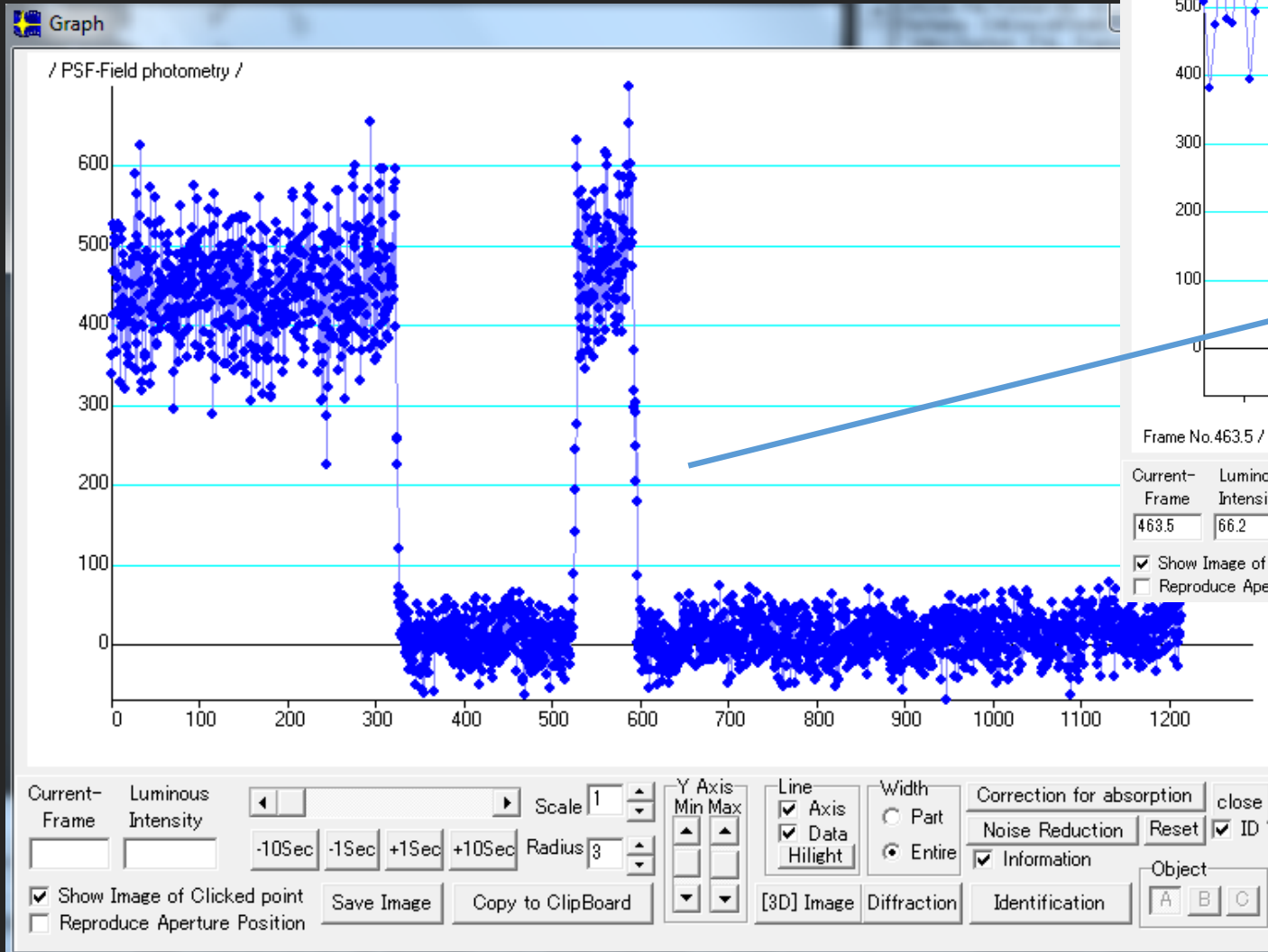


81-Tau, moments before graze.
The large crater outline is Clavius

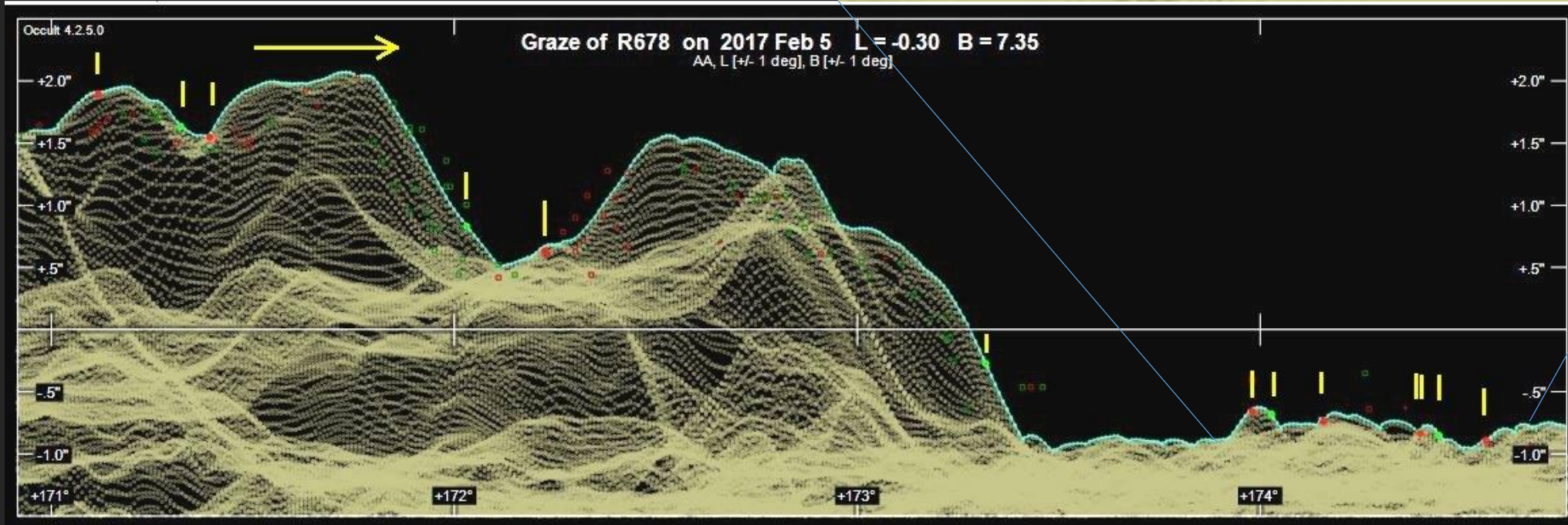
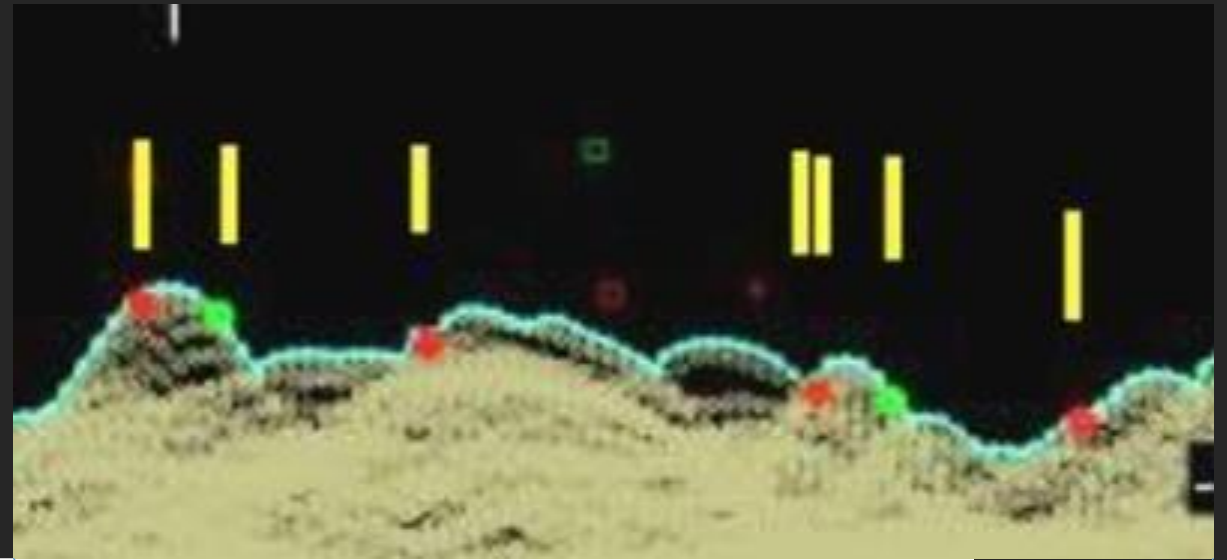


19:15:52 05/02/17
0390.0 0370.0

Detail with LiMovie

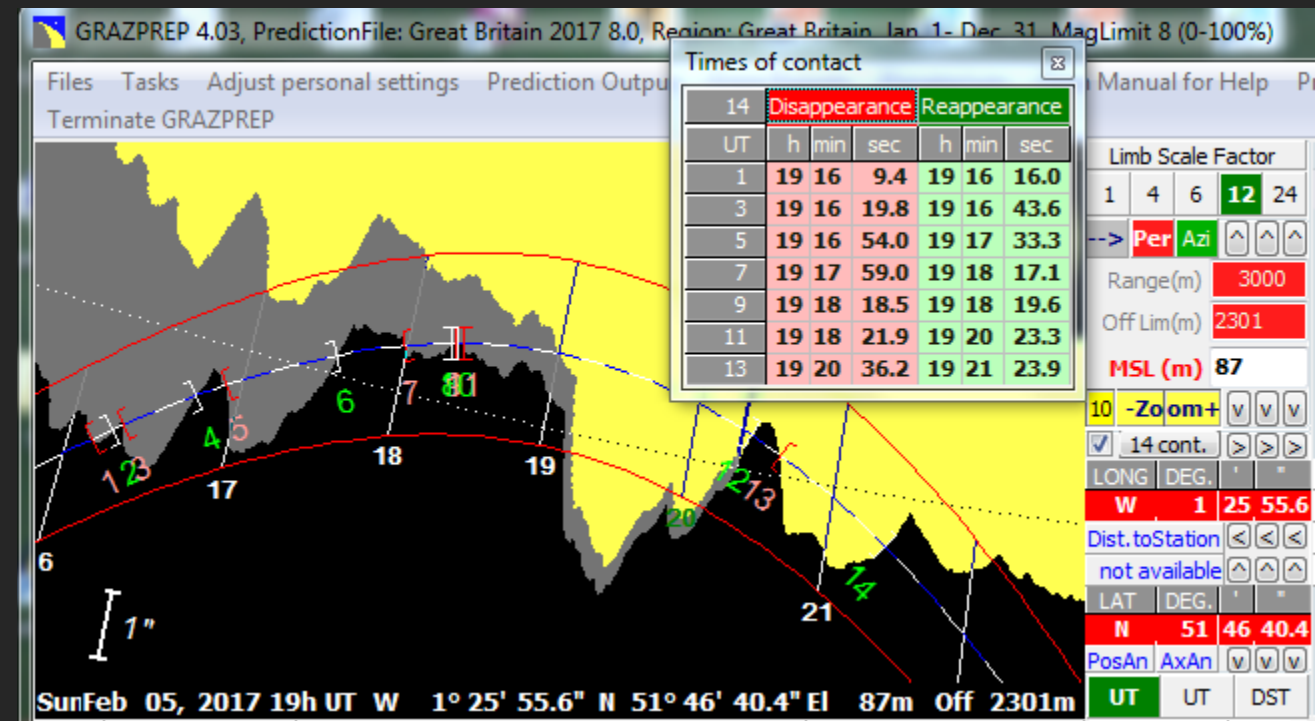


Preliminary reduction using Occult 4



O-C GRAZEPREP

Ph	Obs	Calc - GRAZPREP
1	16m 5.3	16m 9.4
2	16m 13.3	16m 16.0
3	16m 11.2	16m 19.8
4	16m 41.1	16m 43.6
5	16m 48.7	16m 54.0
6	17m 31.2	17m 33.3
7	17m 57.0	17m 59.0
8	17m 58.9	-
9	18m 3.9	-
10	18m 13.2	18m 17.1
11	18m 13.4	18m 18.5
12	18m 15.0	18m 19.6
13	18m 19.6	18m 21.9
14	-	18m 23.3
15	-	20m 36.2
16	-	21m 23.9



A comparison shows:

First 7 contacts agree with GRAZPREP with 2 to 8 sec difference

Then some detail (Ph 8,9) – no GRAZPREP match

Finally three events (Ph 14-16) on the Bright limb NOT SEEN.

Summary:

- GRAZPREP4 was used to find a location with the maximum number of contacts.
- A recording was obtained between cloud.
- Good mapping tools like Google Earth are essential.
- An internet search helped identify locations on the map and in this example : - the names of people to contact (Church Hall)
- Some of the very fine detail observed didn't agree with GRAZPREP (Whereas it did agree with Occult 4)
- This is a really good tool for enhancing graze observations.

Acknowledgements:

Dr. Eberhard Riedel (IOTA/ES), author of GRAZPREP 4

<http://www.grazprep.com>

Dave Herald, author of OCCULT4

<http://www.lunar-occultations.com/iota/occult4.htm>

The graze video can be seen on YouTube: <https://youtu.be/SsZkFPbXZlc>