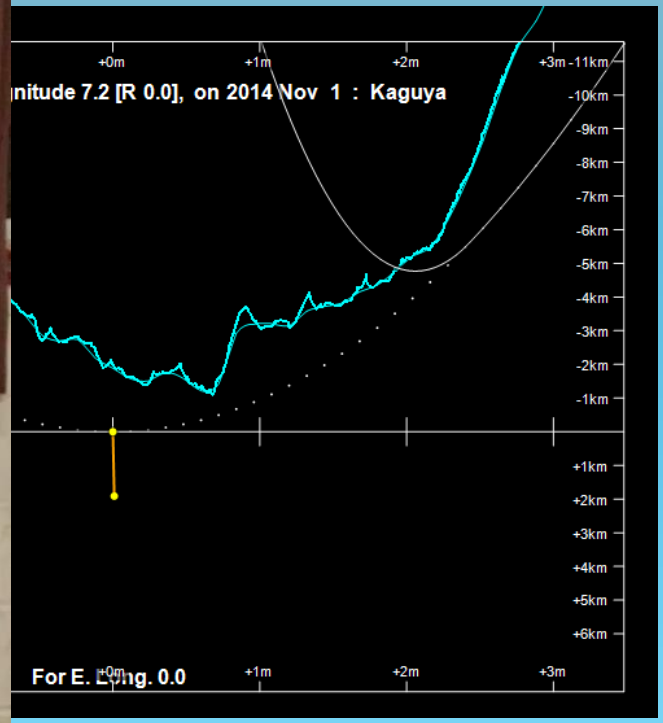
BAA – Present
Recent Observing Successes
SAO-145938 Lunar Graze/ London
(130) Elektra and (275) Sapientia

ESOP35, Guildford, UK, 2016 Aug 20th
Presented by Tim Haymes

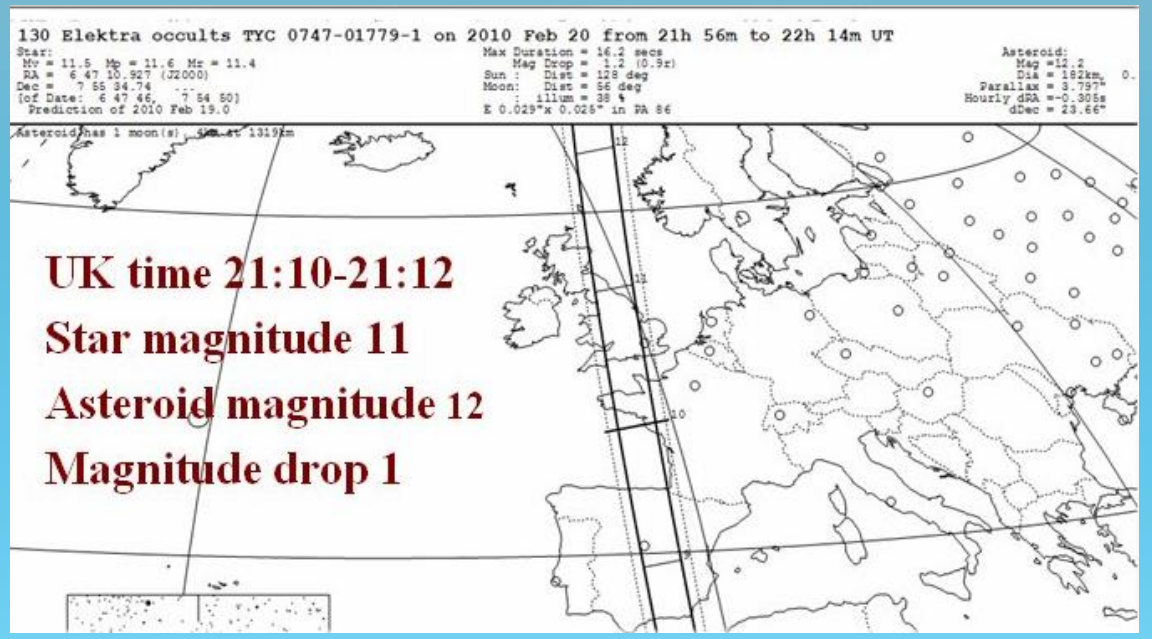
Loughton Astro. Soc. observe the Lunar Graze of SAO-145938 on 2014 Nov 1st – coordinator: Steve Ringwood

	Observer	location	height	Instrument
1	Steve Ringwood	51° 43′ 15.46″ N 00° 10′ 24.87″ E	90m	12″ f/10 ACF
2	Dave Gill	51° 41′ 47.60″ N 00° 06′ 21.76″ E	108m	10″ f/10 SCT
3	Andy Gannon	51° 41′ 09.36″ N 00° 00′ 57.10″ E	27m	132mm ED refractor
4	Malcolm Zack	51° 36′ 32″ N 00° 03′ 59″ E	56m	120mm f/7.5 ED refractor
5	Martin Peston	51° 35′ 31″ N 00° 04′ 26″ E	36m	200mm f/6.3 SCT



(130) Elektra / TYC 0747-01779-1

- On 2010 Feb 20, there was an opportunity to monitor a large asteroid with a predicted track passing South to North over England where good geographical coverage was possible. There were a large number of amateurs in this area.
- Members of the Asteroid and Remote Planets Section (ARPS) were alerted by email, co-ordinated by the Late A.J.Elliott.
- Steve Preston predicted a 0.9 mag drop for a 11th mag target (combined Asteroid+Star). This was just within reach of visual observers and certain for video and CCD.
- Weather was good (!) and 6 chords were obtained.



Observational results

Source: EURASTER.NET (E. Frappa)

Right: =>
Elektra moving through field in Monoceros. Stars 10 to 13 mag

POSITIVE

	duration				
Andrew Elliott	11.23	40.5cm	VIDEO	WAT-902	UK
Richard Miles	12.80	28 cm	CCD		UK
Martin Cole	13.5	28 cm	VIDEO		UK
Alex Pratt	13.9	20 cm	VIDEO	MINTRON	UK
Peter Birtwistle	13.52	40.5cm	CCD	drift Scan	UK
Tim Haymes	10.70	30 cm	VIDEO	WAT 120N	UK
R Simonson et al	6.40	25 cm	VIDEO		UK

MISS

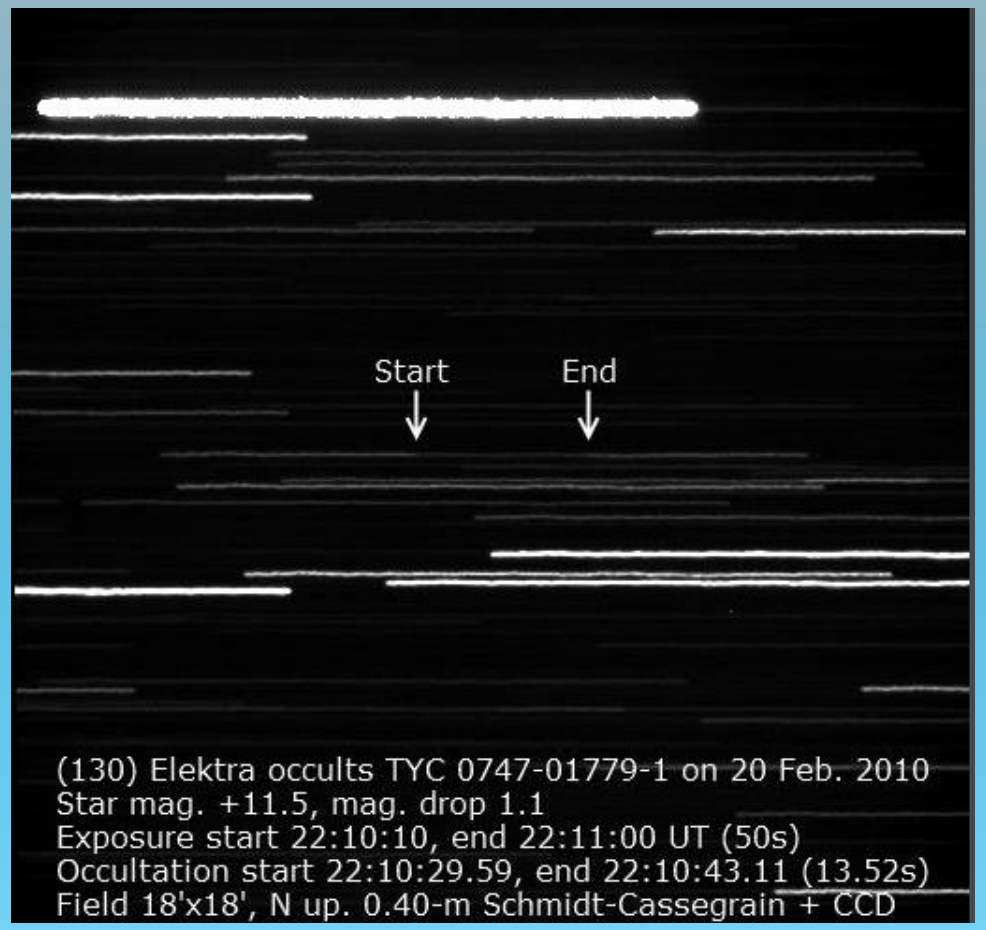
Gerald Roussau	FR
Jan-Maarten Winkle	NL

There were no observations of secondary events.

Great Shefford Observatory (P. Birtwistle)

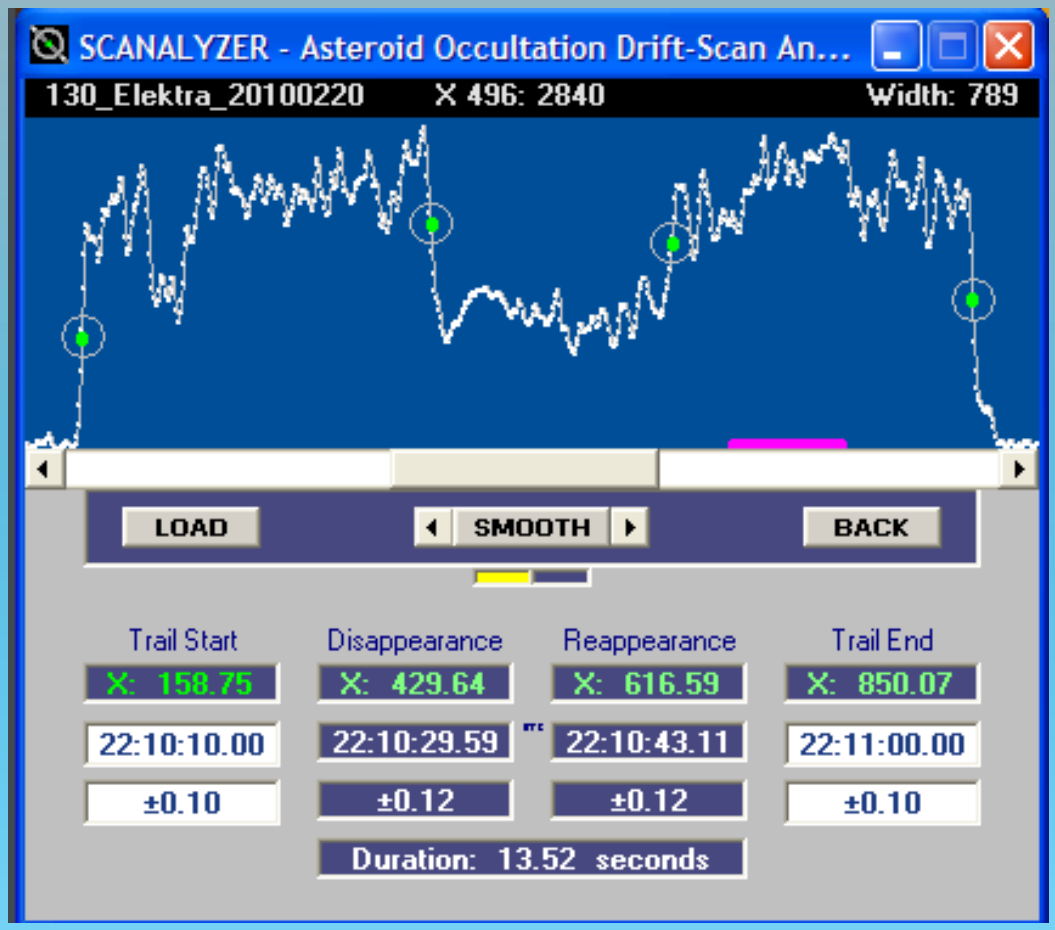
http://www.birtwhistle.org.uk/GalleryMPOccultations.htm

CCD Drift Scan

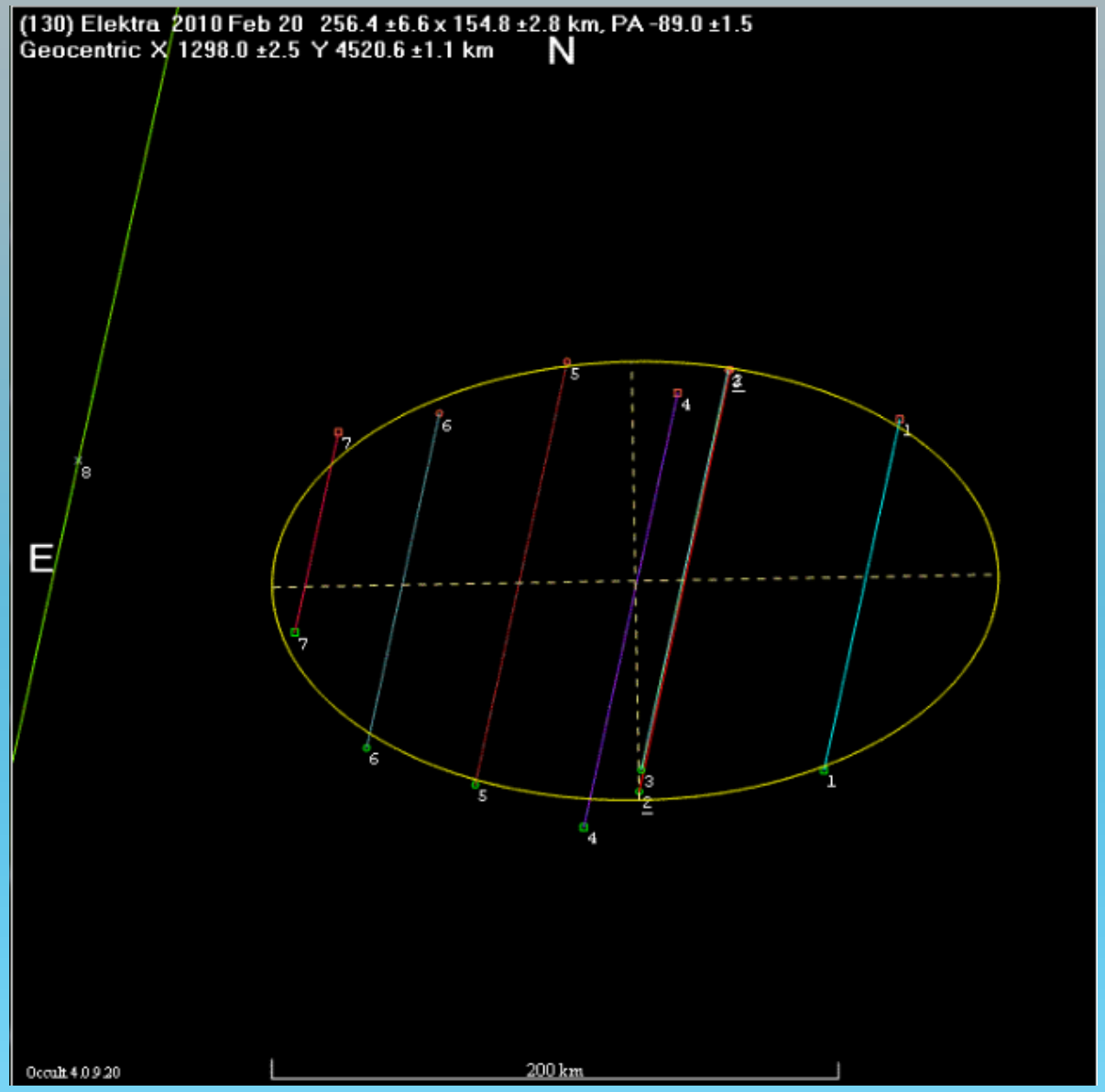


Duration
13.52 s

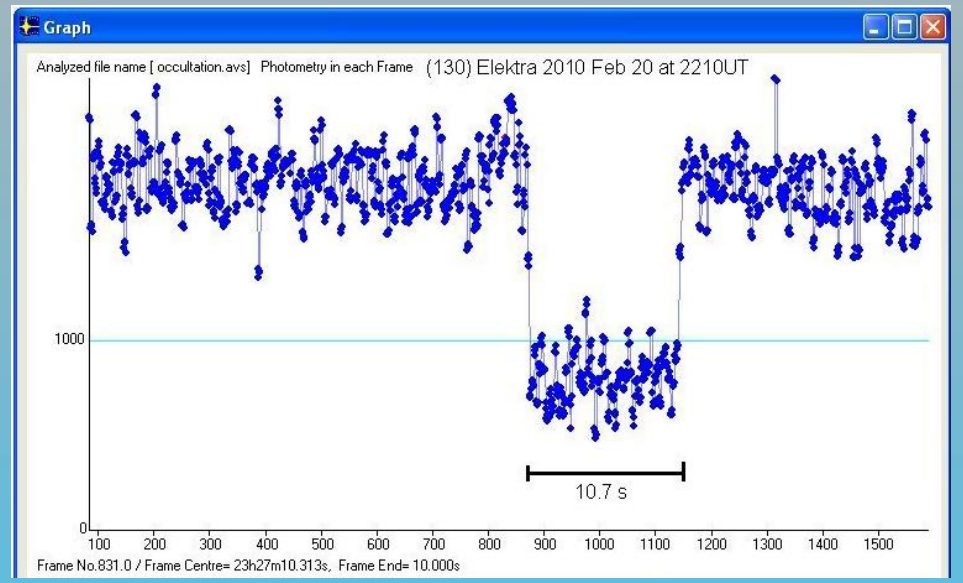
Scanalyzer rduction



Conclusions from EURASTER.NET



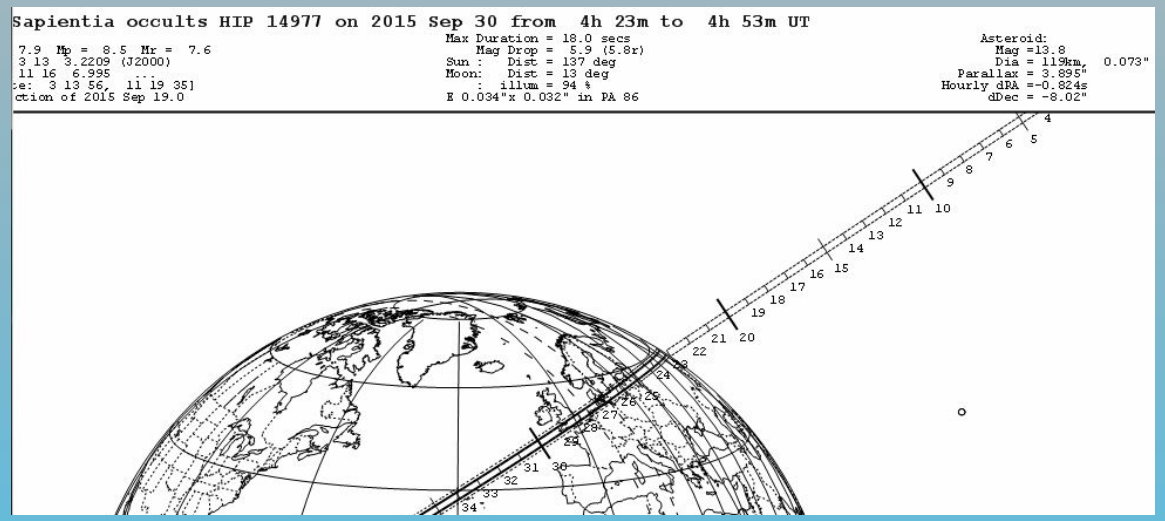
<< Profile Courtesy of Eric Frappa – EURASTER.NET



1) The observed width of 250 Km is larger than the stated size of 182 km by 37%
2) There is a definite non-spherical profile here.
3) These good quality timings indicate a distortion around the centre of the general ellipsoidal form indicated by observer-4 D-R time [Alex Pratt]
4) Chords agree with the DAMIT 3D model

(275) Sapientia / HIP14977

on 2015 Sept 30, 0428UT



Prediction by S. Preston

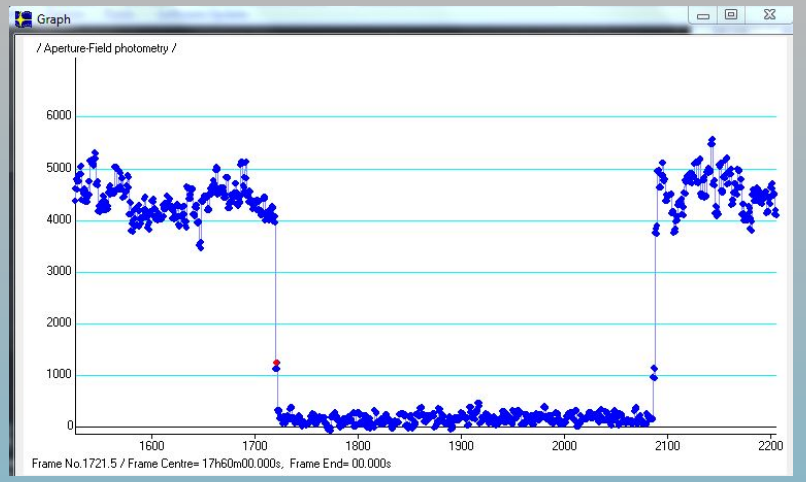
UK observers, using a plot feature in Occult4

SUMMARY

- The most extensive coverage yet of an asteroidal occultation visible from the UK was achieved thanks to the dedication of observers during the early hours of 2015 Sepmber 30. Twenty-one reports were received.
- In all, fifteen positive results from the England together with one from Sweden, two from Germany and from the Netherland were obtained, when the 120km wide main-belt asteroid passed in front of HIP14977 in Aries.

Planning and Observation of (275)Sapientia

PLAY VIDEO>>



- Predictions for this favourable UK event were published in the 2015 BAA Hand Book courtesy of Edwin Goffin, on Steve Preston's web site www.asteroidoccultations.com and in an updated form using the URAT1 star catalogue via UKOCL feed to OccultWatcher – courtesy of John Talbot (UK).
- The event was also in Oliver Klös' "Highlights of Asteroid Occultations in Europe".
- Observation requests were mailed to – UKoccultations Yahoo! group
- Richard Miles sent out a BAA Circular explaining the Science.
- The star was HIP14977 magnitude 7.9
- With a magnitude drop of 5.9, a total disappearance was to be expected.
- Moon-light was a source of difficulty, masking brighter stars.

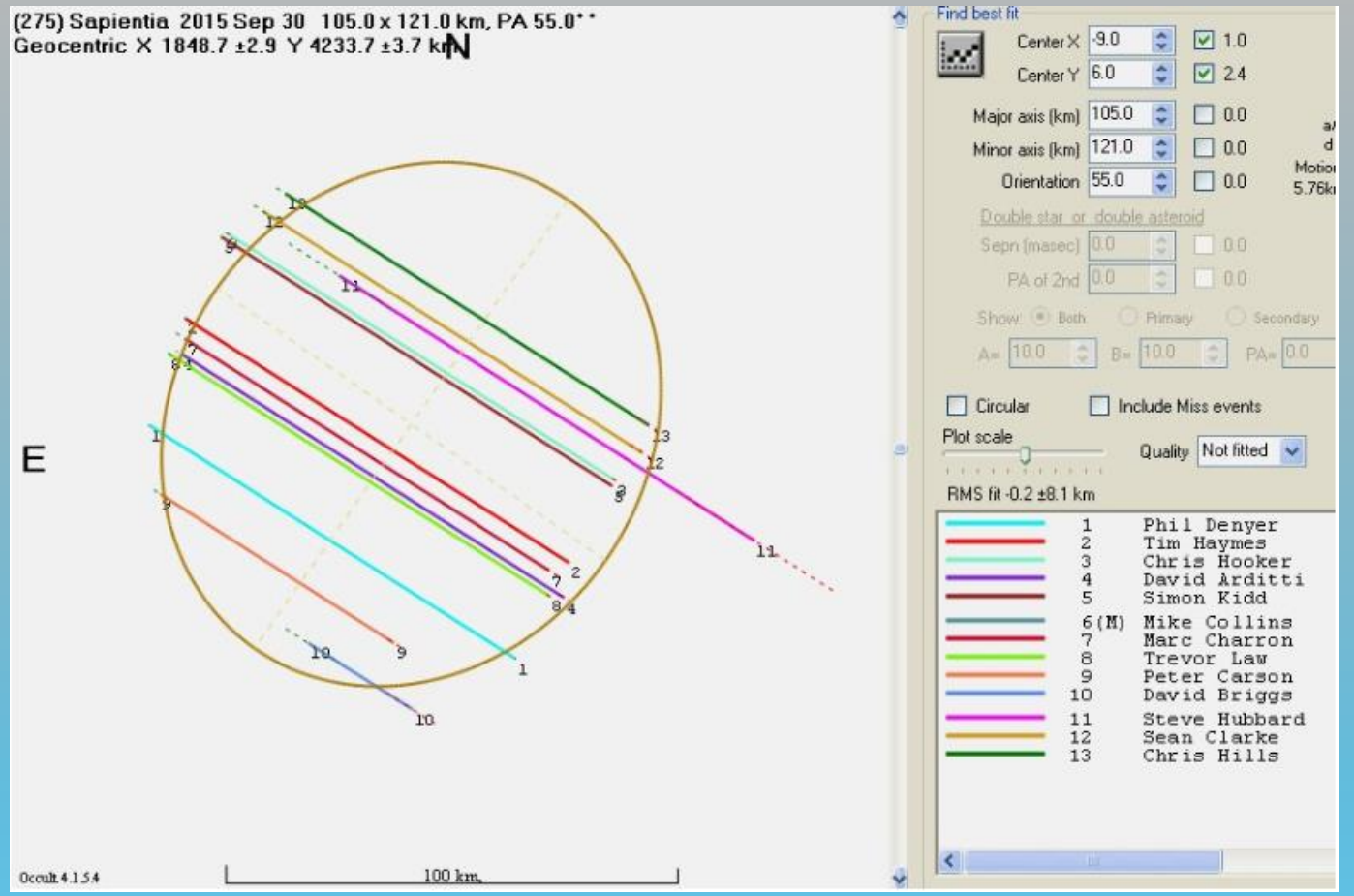
Sapientia Results

Good weather conditions prevailed over the UK .

TABLE OF OBSERVERS

Table 1. Occultation of HIP 14977 by asteroid (275) Sapientia, 2015 September 30

Observer	*Location*	*Duration (sec)*	*Detector*	*Accuracy (sec)*	*Notes*
D. Arditti	W. London	14.7	Video	0.2	
P. Birtwhistle	Gt. Shefford	–	Drift scan	–	No obs., tech. problem
D. Briggs	Clanfield, Hants.	5?	CCD	2?	
L. Brundle	Lowestoft	16.0	Visual	1.5	
M. Charron	Reading	14.6	Nikon D5300	0.5	
P. Carson	Southend	9.0	Webcam	0.25	
S. Clarke	Cuddington, Bucks	14.6	Video	0.5	
M. Collins	Everton, Beds	–	Visual	–	Observed too late
P. Denyer	Hornchurch	14.1	Video	0.02	
C. Hills	Cambridge	14.0	Visual	0.5	
T. Haymes	Maidenhead	14.72	Video	0.08	
S. Hubbard	Gt. Yarmouth	6?	Visual	3	4s time shift applied
C. Hooker	Didcot	14.9	Visual	0.3	
S. Kidd	Stevenage	15.0	Webcam	0.05	
T. Law	Northolt	14.6	Visual	0.1	
H. McGee	Clandon, Surrey	–	Visual	–	Mist, no observation
R. Miles	Stourton Caundle, Dorset	–	Visual	–	Mist, no observation
A. Jones	Maidenhead	14.72	Video	0.02	
M. Jennings	S. London	8.4	Video	0.02	
R. Pierce	Loughborough	–	Visual	–	Fog, no observation
T. Smith	Elstead, Surrey	'Miss'	Visual	–	Star visible, occ. not seen



Above: Raw results plotted with Occult 4 software ---
No corrections applied. Some reported times were improved after an examination of the timing technique used.

[plotted by Tim Haymes]

JBAA 2015 December Vol 125, No.6 Page 331. *Stellar Occultation by (275) Sapientia well seen*. – Author: Richard Miles

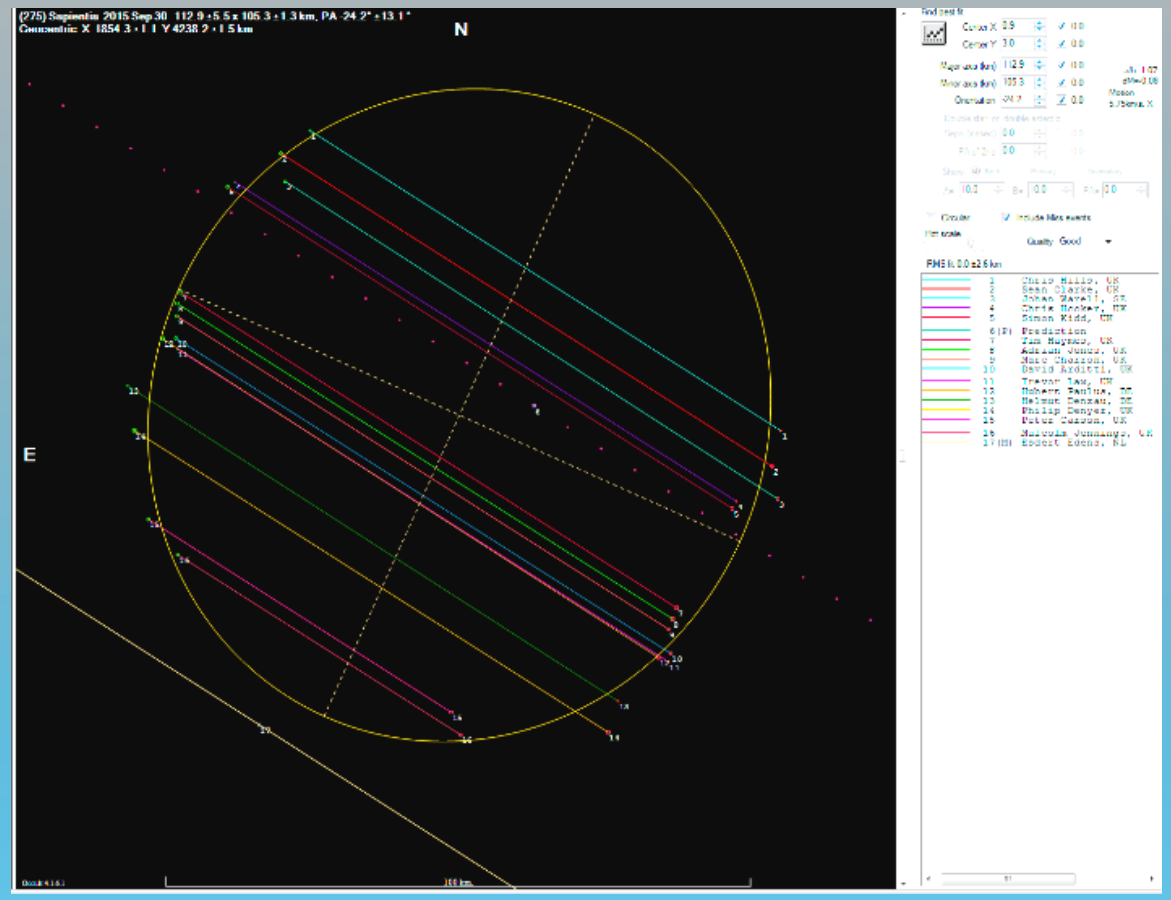
Sapientia Conclusions

- https://youtu.be/j0lpfz_S5Js

1) Good weather conditions and timely alerts led to an excellent response from potential observers in and near the path.
2) An observed shape of 113+/-5 x 105 +/-1 Km is in good agreement with the value of 119km.
3) There was a small path shift to the North, but didn't exceed the calculated uncertainty.
4) Several contributers "new" to occultations have now become regulars observers.
5) Imagers with good CCD cameras capable of video rates are making use of NTP as a time source and submitting observations.
6) The task ahead for the coordinators is to help new observers look critically at the timing errors.

   New observers are unaware of system delays and other sources of timing error and need help when assessing this. This was done for Sapientia results.

   Two observations were rejected as being too uncertain



The final result from EURASTER.NET