The Total Eclipse of the Sun Observed near the s. limit in Maine on 2024 April 8

EVAC meeting
2024 May 17

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International Occultation Timing Association (IOTA)

http://occultations.org/

Arizona Occs: **http://iota.jhuapl.edu/AZoccs.htm**

Total Solar Eclipse, 2024 April 8
Where to observe, based on climatological data?

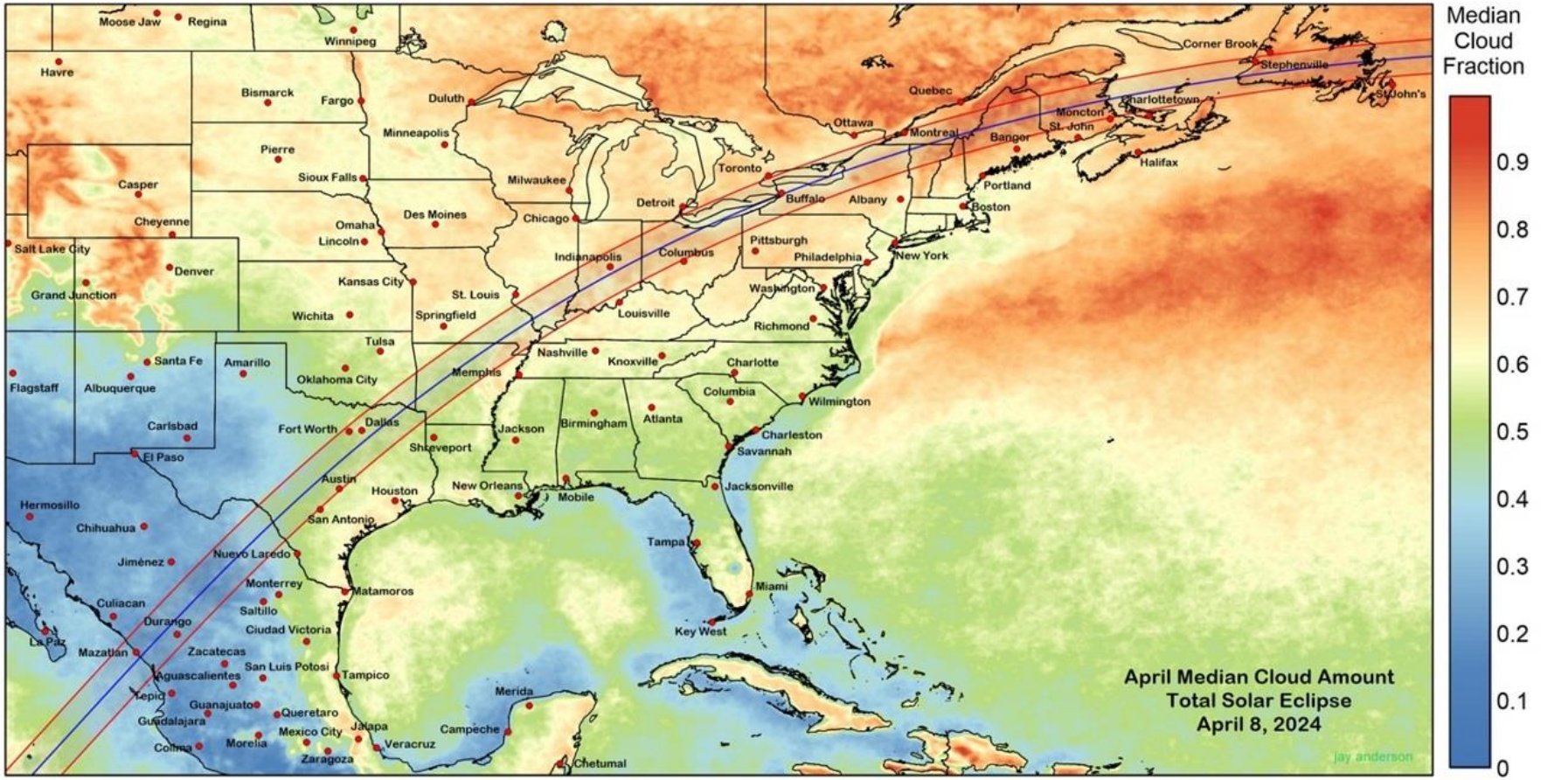
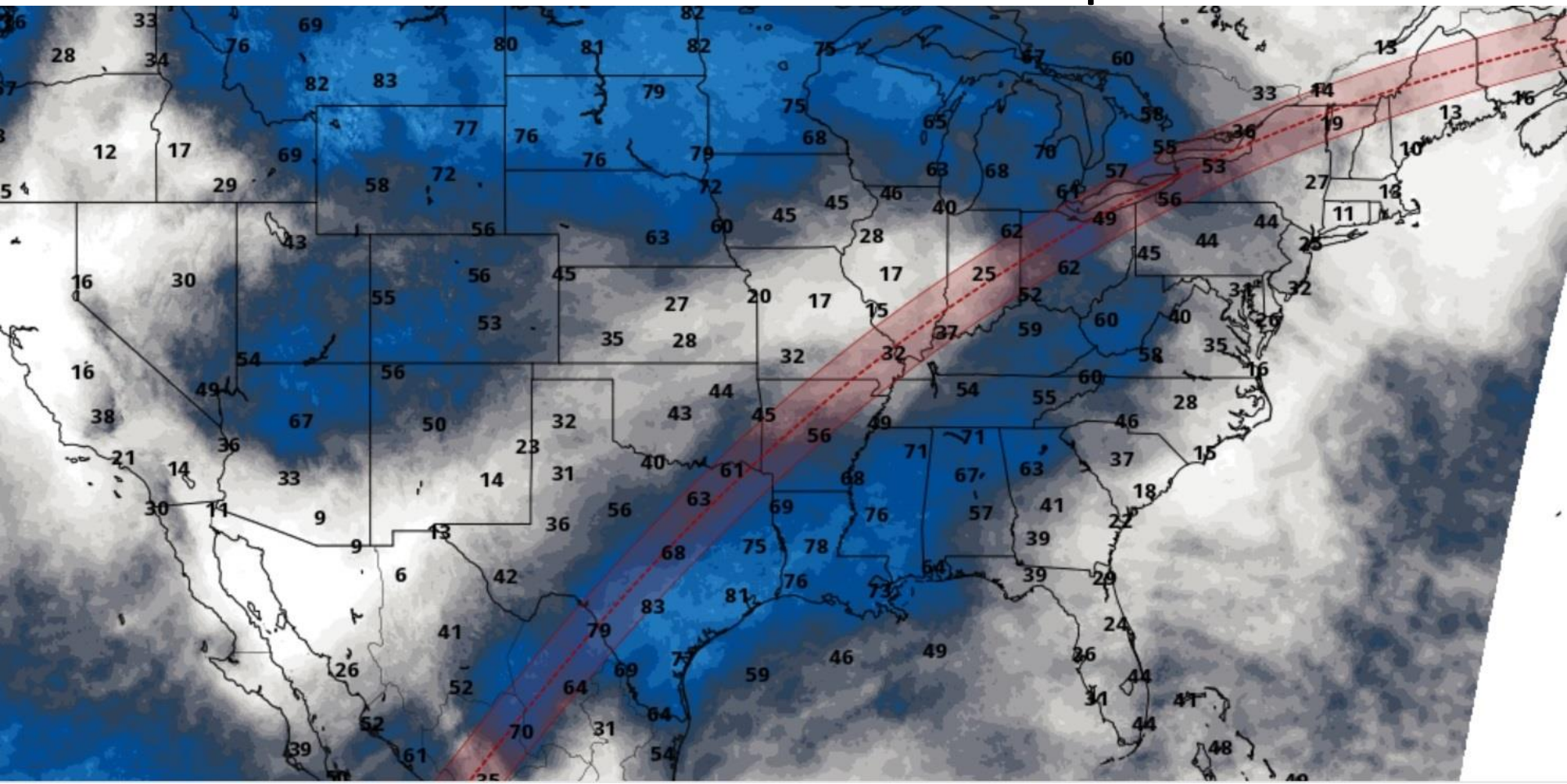


Figure 3: Average April (2000-2020) cloud cover measured from the Aqua spacecraft at approximately 1330 local time from 2000 to 2020. Data: NASA. Eclipse track: Fred Espenak. From Jay Anderson, https://eclipsophile.com/2024TSE/

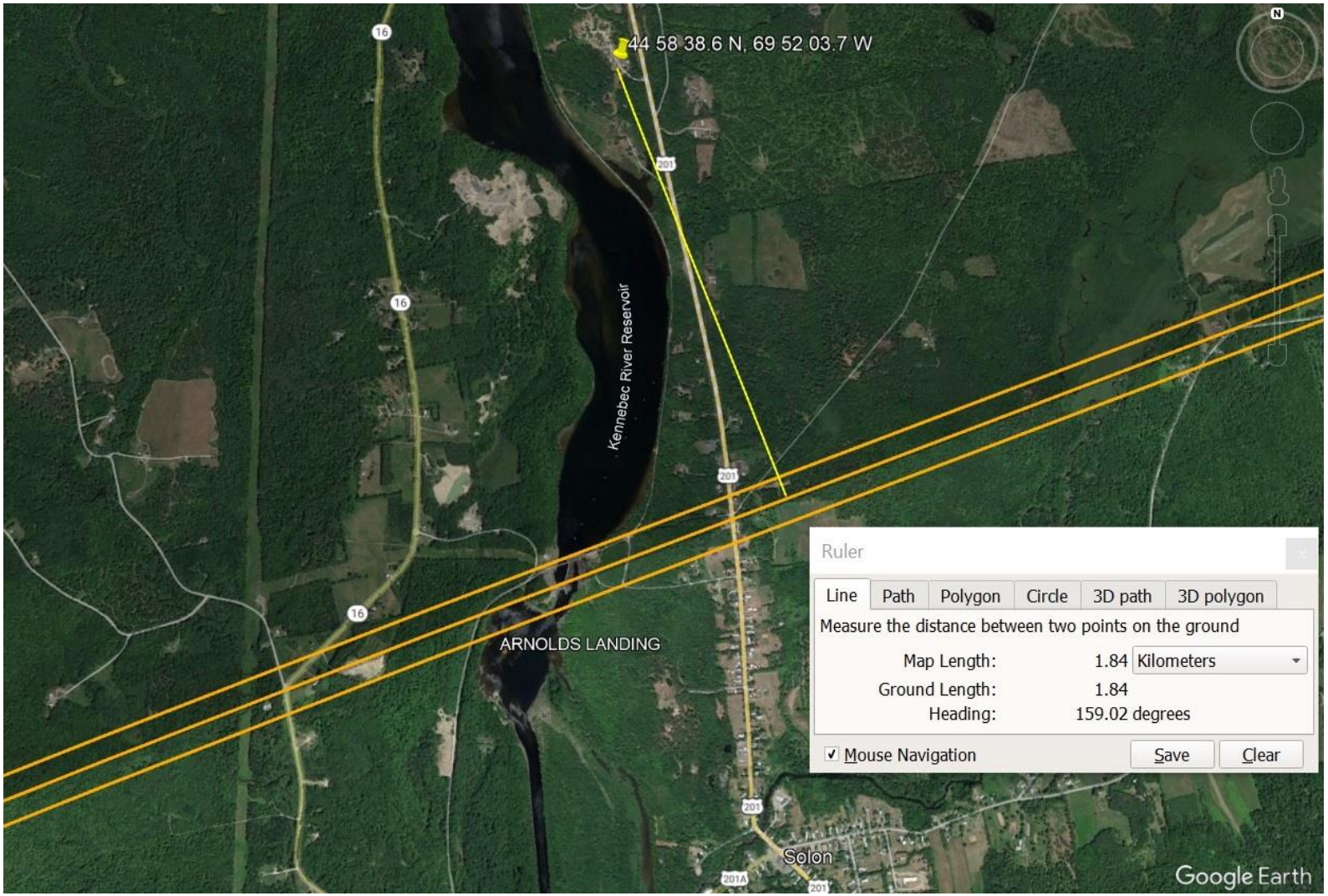
Based on this, we booked a motel on the northwest side of Ft. Worth, Texas months in advance, planning to drive there from Arizona in early April.

Total Solar Eclipse, 2024 April 8
Cloud Cover Forecast as of April 3rd



All the models agreed, opposite the climatological data, Texas would be very cloudy with the best chance to see the eclipse being Maine. We cancelled Ft. Worth and rented an SUV at Manchester, NH airport, then were able to fly there from PHX on Southwest on Apr. 4. On Apr. 5, we drove to Falmouth, ME, to plan to observe the eclipse with Joan's sister, Gail, and her husband Dan Knowles. They reserved a trailer spot at a camp in Bingham, near the s. limit 2h. from Falmouth.

Observing Site, Total Solar Eclipse, 2024 April 8



Our site was at 44° 58' 38.6" N, 69° 52' 03.7" W, h 114m

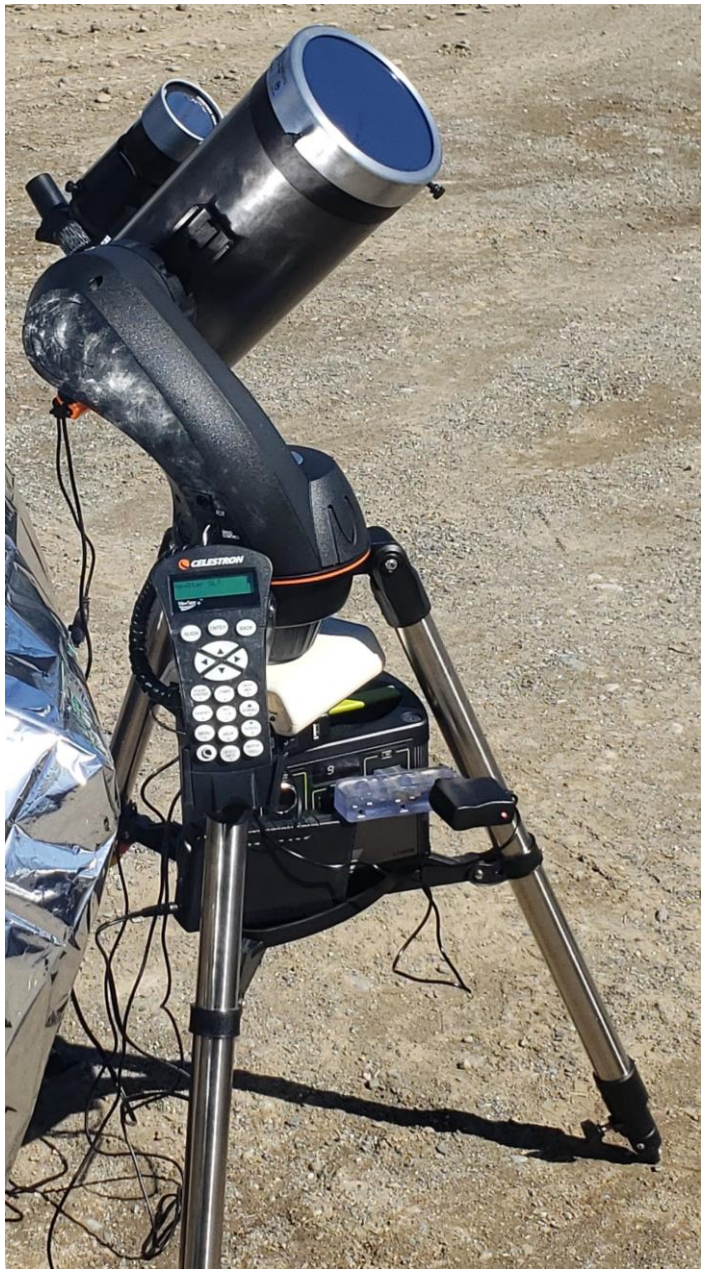
We wanted to be closer to the s. limit than Bingham, so we got permission to observe at the Over Look Mobile Home park, on the north side of Solon, ME; 5 miles south of our campsite; and 1.8 km north of the southern limit calculated by John Irwin taking into account the lunar limb.

Total Solar Eclipse, 2024 April 8

Our site on the north side of Solon, Maine

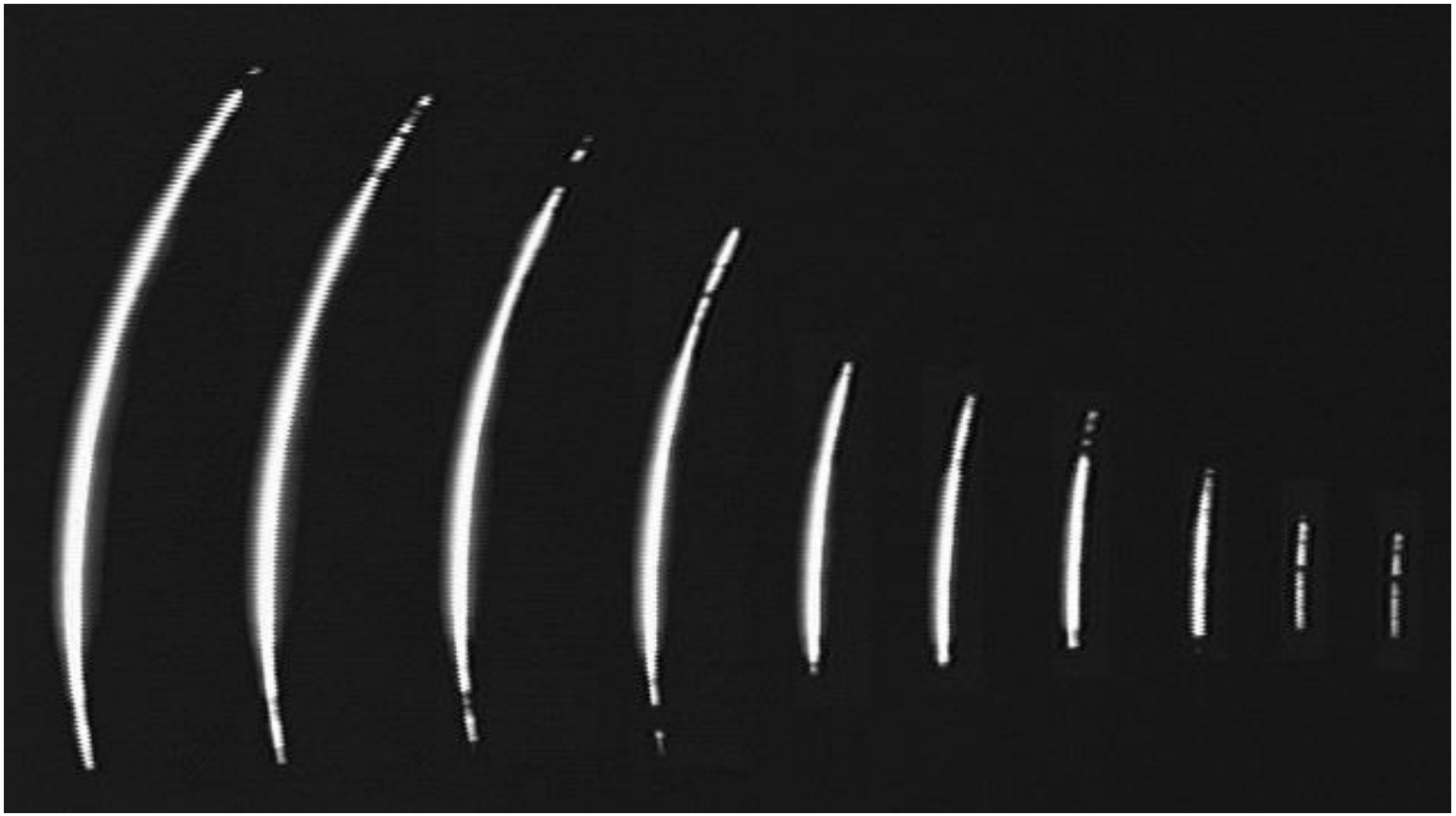
Left, Joan (seated looking at computer under a billowing (in the eclipse wind) mylar space blanket for shade), and right, Gail (seated) and Dan (standing) Knowles.

Our Telescope, Total Solar Eclipse, 2024 April 8



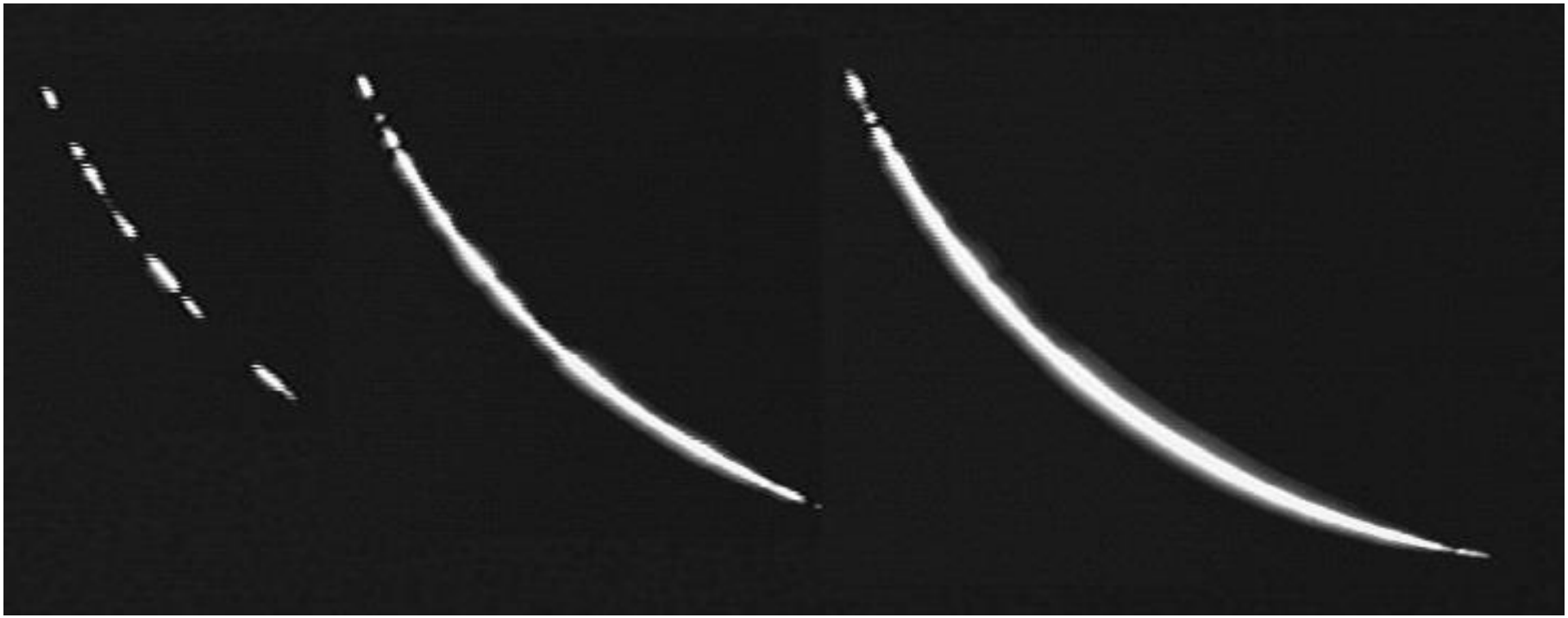
Our GoTo Celestron 127mm Schmidt-Maksutov telescope with Orion solar filter; the camera is a black-and-white Runcam Night-eagle 2 Astro rolling shutter NTSC video camera using an IOTA Video Time Inserter (light tan box on top of battery just under the scope. The solar filter was removed during totality.

Total Solar Eclipse, 2024 April 8
Sequence of Baily's Beads before 2nd contact



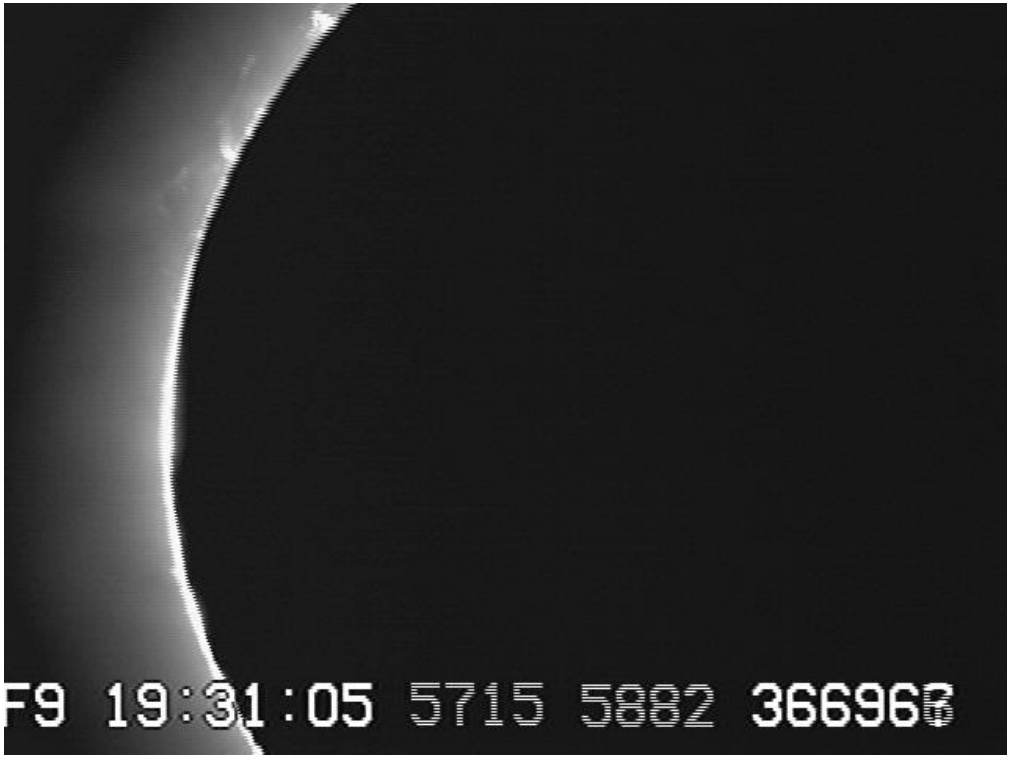
At 3-second intervals from 19:30:34 to 19:31:02 UT
(3:30:34 – 3:31:02 pm EDT)

Total Solar Eclipse, 2024 April 8
Baily's Beads after 3rd contact



Baily's Beads at three times after 3rd contact, at 19:32:13, 19:32:25, and 19:32:37 UT, from left to right.

Total Solar Eclipse, 2024 April 8
Totality after 2nd contact



Showing the chromosphere, some prominences, and the inner corona

Total Solar Eclipse, 2024 April 8, 3rd contact

Actually, a couple of seconds after, it could only be estimated to about ±2 seconds

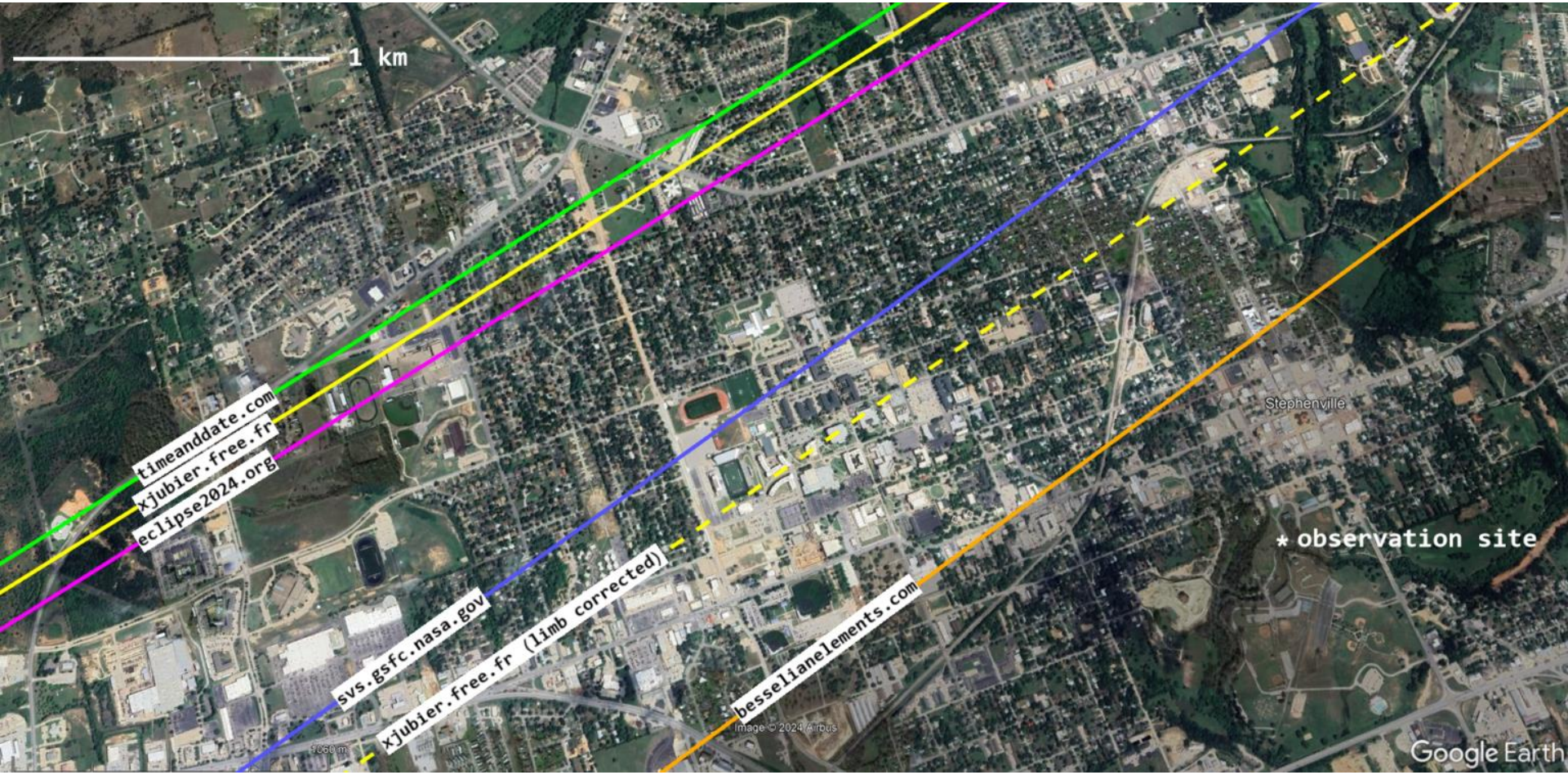
Total Solar Eclipse, 2024 April 8, Gail Knowles

Totality showing 2nd contact beads and the inner corona, taken with a COOLPIX-B700 camera.

Total Solar Eclipse, 2024 April 8, Others near limits

Left, **Djounai Baba Aissa and four other Algerians** participating in IOTA observations 3 km south of the northern limit at Corinth Community Park, northwest of Dallas, Texas. Right, their image of 2nd contact showing the red chromosphere, prominences, and inner corona. **Roger Venable** recorded Baily's beads with an IOTA system like ours near the northern limit in Indiana.

Total Solar Eclipse, 2024 April 8, N. Limit, Stephenville, Texas

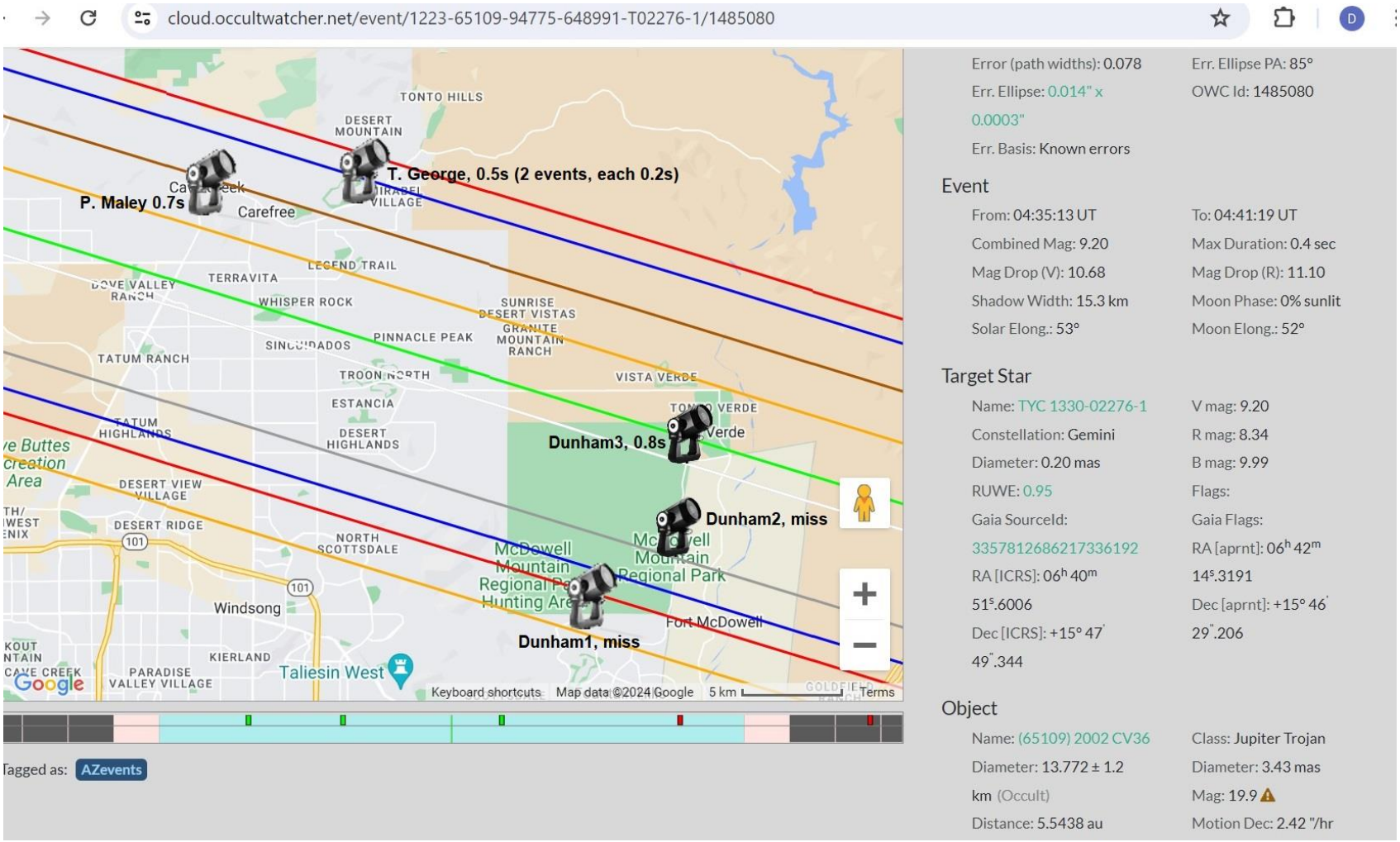


Observations by Luca Quaglia and others at the site shown, only 0.6 km south of John Irwin's (Besselianelements.com) limb-corrected northern limit. They observed with special grating-ruled glasses to observe the flash spectrum visually, noting to with 1s when the contacts occurred (with a GPS 1PPS audio recording) when the flash spectrum changed from absorption (photosphere) to emission (chromosphere); they had 13.7s of totality, in good agreement with John Irwin's calculation (see https://www.besselianelements.com/eclipse-maps-accuracy/)

Total Solar Eclipse, 2024 April 8, Center, Jeff Ball in Indiana

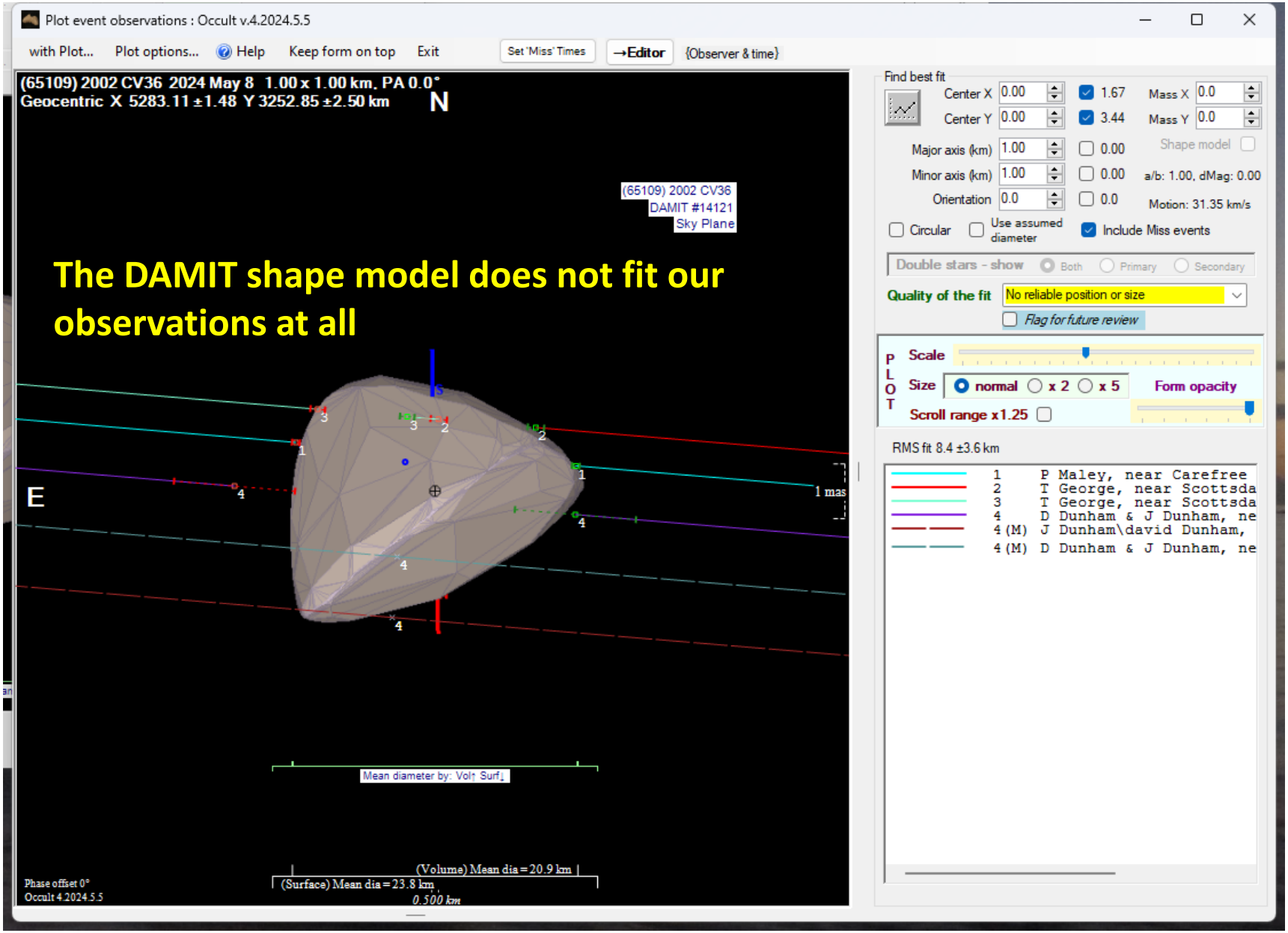
The Northern Virginia Astronomy Club's Jeff Ball recorded Baily's beads at 120 frames/sec so although he had very short Baily's beads compared to our limit observations and over a shorter arc of the Moon, he got this interesting image. More is on his Web page at https://www.earthandskyphoto.com/imported-20091124163944

Occultation of 9.2mag star by small Trojan asteroid (65109) 2002 CV36, 2024 May 7, across N. Phoenix area

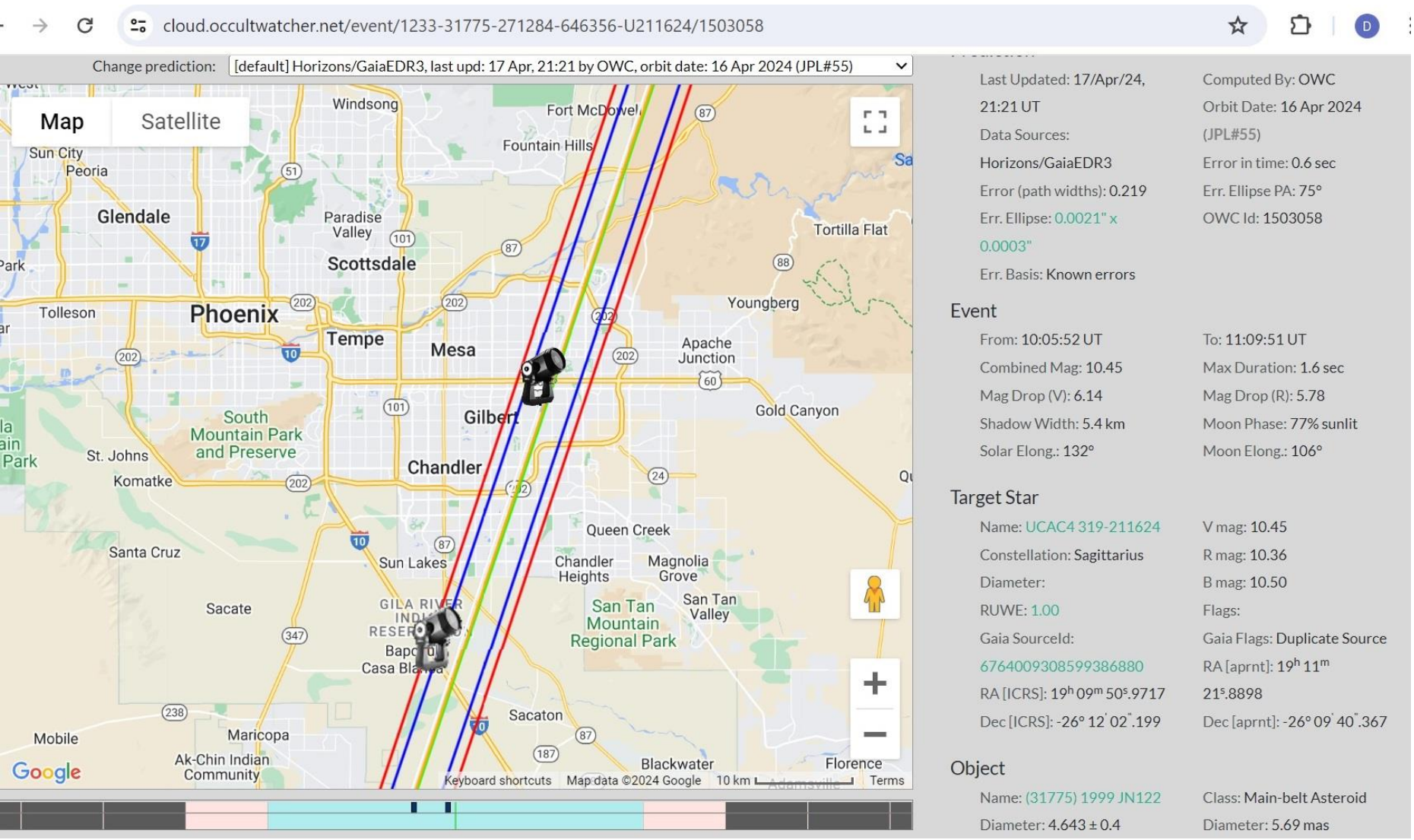


With the help of IOTA's new Astrid camera that uses plate solving to tell the observer how to adjust the scope to get to the altitude and azimuth of a predicted occultation, we ran 3 stations for this event (2 misses and one positive); P. Maley and T. Geoge also recorded the occultation (both positive)

Occultation of 9.2mag star by small Trojan asteroid (65109) 2002 CV36, 2024 May 7/8, Sky Plane Plot by Tony George

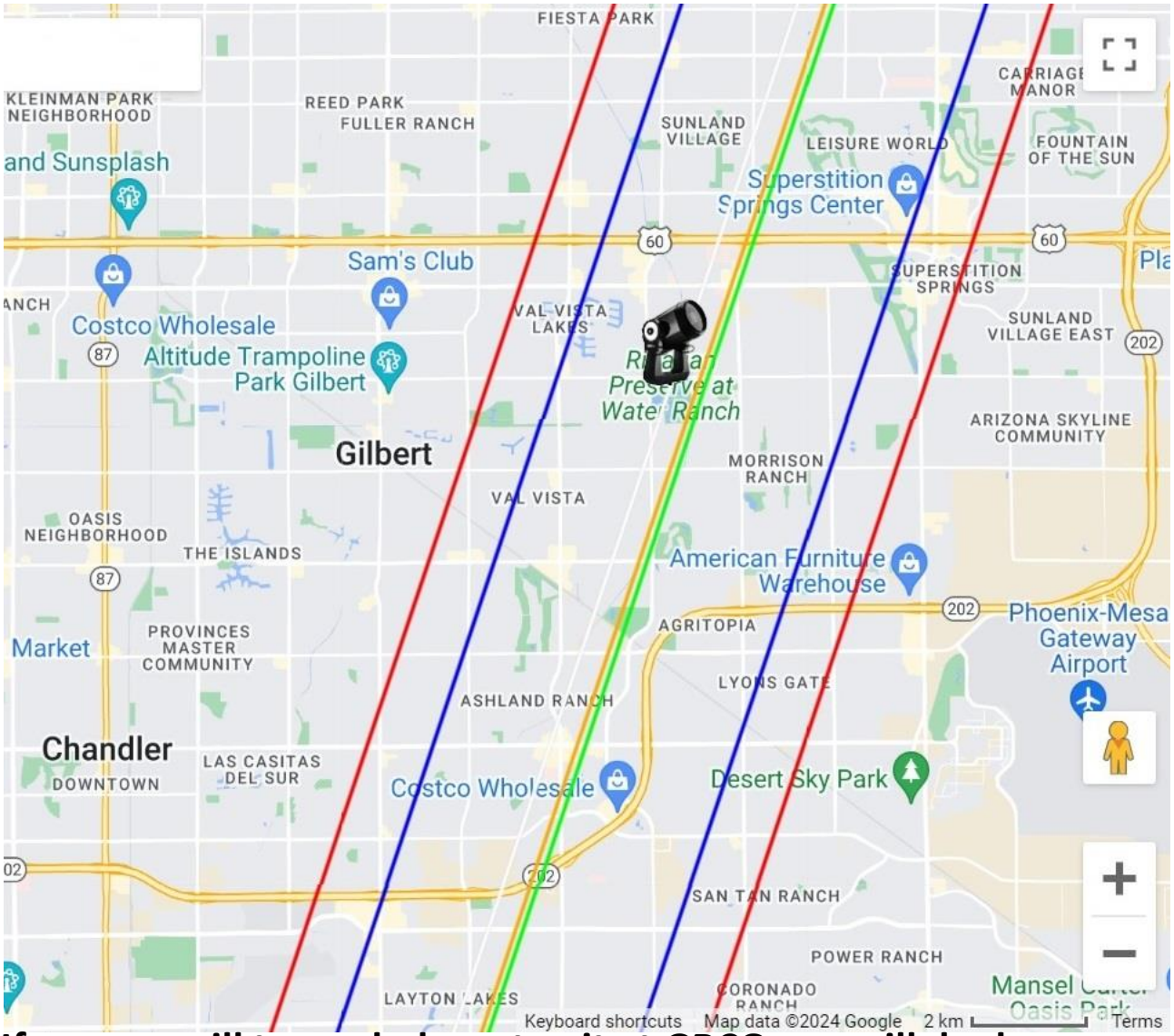


Occultation of 10.4mag star by small asteroid (31775) 1999 JN122, 2024 May 18, 4:03 am MST over Phoenix area



Star coordinates and general event information is to the right of the map. the star will be 30° high in the south (azimuth 182°). The sky will be dark enough, with the Sun 15° down.

Occultation of 10.4mag star by small asteroid (31775) 1999 JN122, 2024 May 18, 4:03 am MST TONIGHT



The predicted central line passes just east of GRCO, as shown in this zoomed-in chart of the path over Gilbert. The star may be a close double, according to Gaia, which flagged the event with a “duplicated source flag”. But it could mean a poor Gaia astrometric solution; those even 2-3 path-widths outside the path limits have a chance for an occultation. If the star is a close double, the occultation magnitude drop could be less than the 6 mags predicted. The predicted central duration of the occultation is 1.6s.

If anyone will try, or help us try, it at GRCO, we will deploy our scopes in the area; otherwise, we’ll be near the Bush Highway.