

2024 NEA Occultation Events

Steve Preston

Jul 15, 2023

PRIORITY NEA Worldwide Occultations in 2024

Date			U.T.		Diameter		Durn	Star	Mag-Drop			Elon %	Star	d Rely	Planet
y	m	d	h	m	km	"	sec/m	mag	V	R *	o Ill	No.	<1.4	No	Name
2024	Aug	13	13	1.9	0.79	0.002	0.80s	9.9	9.5	9.8	120	TYC 6837-00463-1	s 1.00	65803	Didymos
2024	Nov	7	1	33.1	5.0	0.006	0.30s	10.0	7.1	7.0	145	UCAC4 648-021940	1.05	3200	Phaethon
2024	Dec	8	12	4.7	5.0	0.008	0.22s	11.0	5.3	5.0	151	TYC 2334-00715-1	1.40	3200	Phaethon
2024	Dec	22	8	16.1	4.9	0.007	0.25s	9.4	7.2	7.1	129	TYC 1764-00040-1	s 0.95	3200	Phaethon

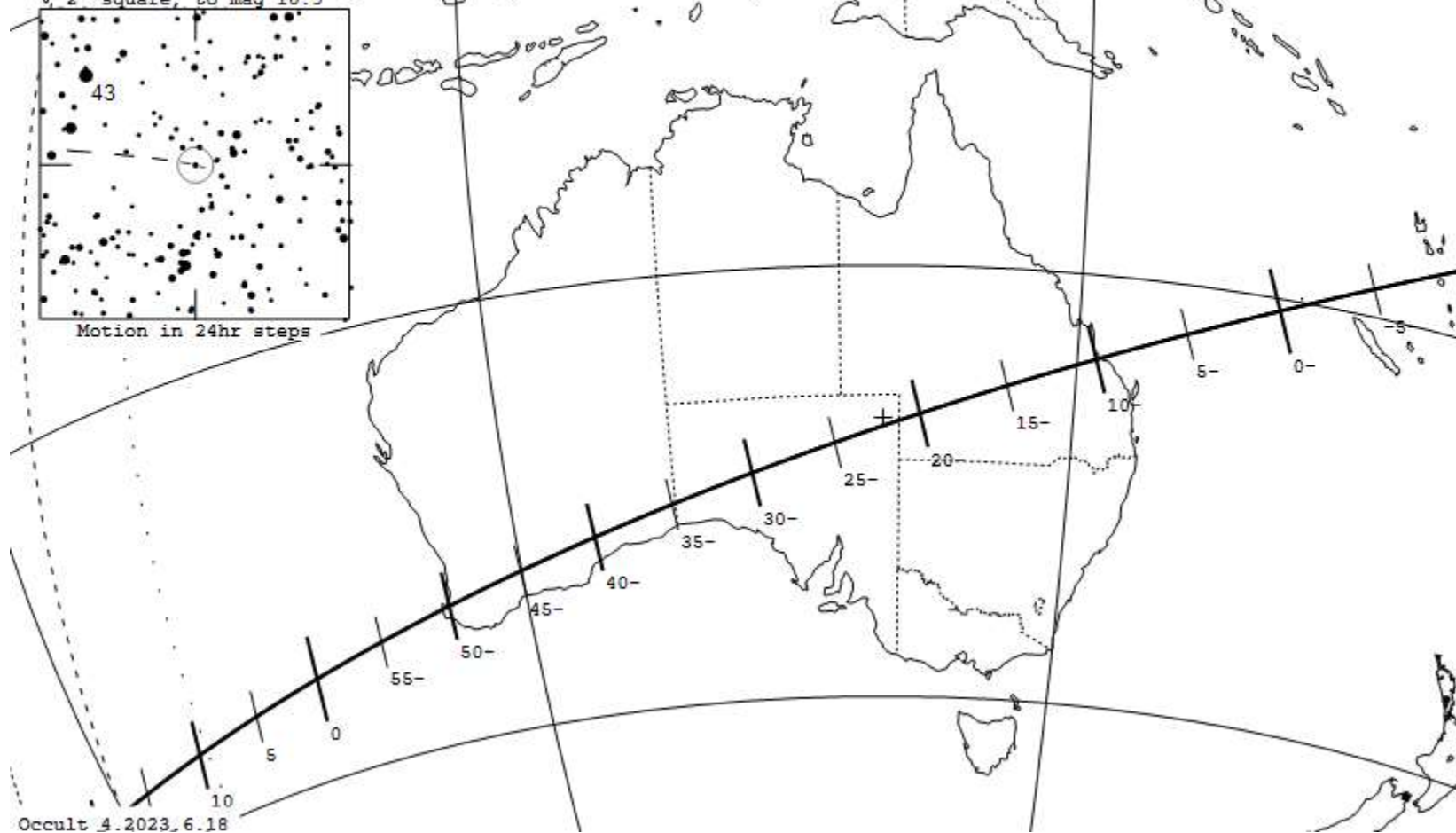
65803 Didymos occults TYC 6837-00463-1 on 2024 Aug 13 from 11h 21m to 14h 42m UT

Star: (Dia = 0.1 mas)
 Mv 9.9; Mb 10.6; Mr 9.2
 RA = 17 20 10.2145 (astrometric)
 Dec = -28 43 13.925
 [of Date: 17 21 44, -28 44 49]
 Prediction of 2023 Jun 13.7
 Reliable 1.0 (good),

Durations: Max = 0.80 secs
 1km = 1.0 secs, 1mas = 0.46 secs
 Mag Drop: 9.5 [100%]v, 9.8 [100%]r
 Sun : Dist = 120°
 Moon: Dist = 20°, illum = 59%
 Error 1.0 x 0.3 mas in PA 103°

Asteroid: (in DAMIT)
 Mag = 19.4
 Dia = 0.79 ± 0.10km, 1.7 mas
 Parallax = 13.930"
 Hourly dRA = -0.607s
 dDec = -1.95"
 JPL#204INTG:2023Mar19, Known errors

1 moon. {Dimorphos} 0km at 1km, Period 0.497days
 2° square, to mag 10.9

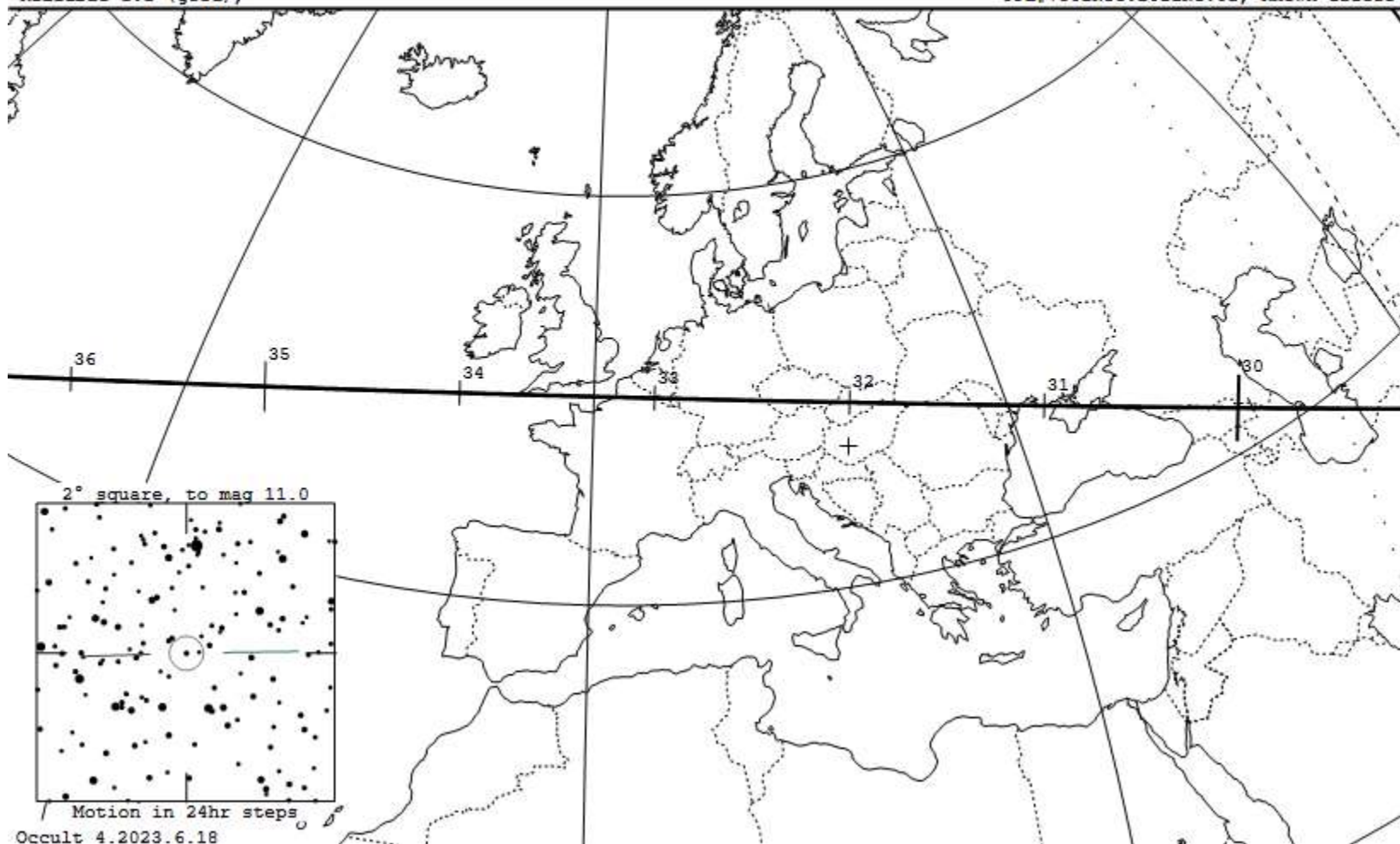


3200 Phaethon occults UCAC4 648-021940 on 2024 Nov 7 from 1h 27m to 1h 39m UT

Star: (Dia < 0.1 mas)
Mv 10.0; Mb 10.2; Mr 9.7
RA = 4 47 5.9174 (astrometric)
Dec = 39 35 39.636
[of Date: 4 48 50, 39 38 21]
Prediction of 2023 Jun 13.7
Reliable 1.1 (good),

Durations: Max = 0.30 secs
1km = 0.060 secs, 1mas = 0.050 secs
Mag Drop: 7.1 [100%]v, 7.0 [100%]r
Sun : Dist = 145°
Moon: Dist = 146°, illum = 27%
Error 3.0 x 1.0 mas in PA 85°

Asteroid: (in DAMIT)
Mag = 17.1
Dia = 5.0 ± 0.4km, 6 mas
Parallax = 7.606"
Hourly dRA = -6.321s
dDec = 1.88"
JPL#780INTG:2022Nov01, Known errors

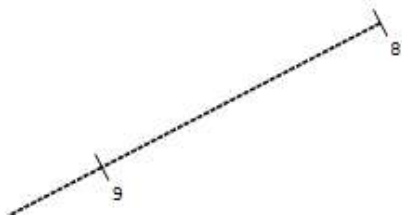
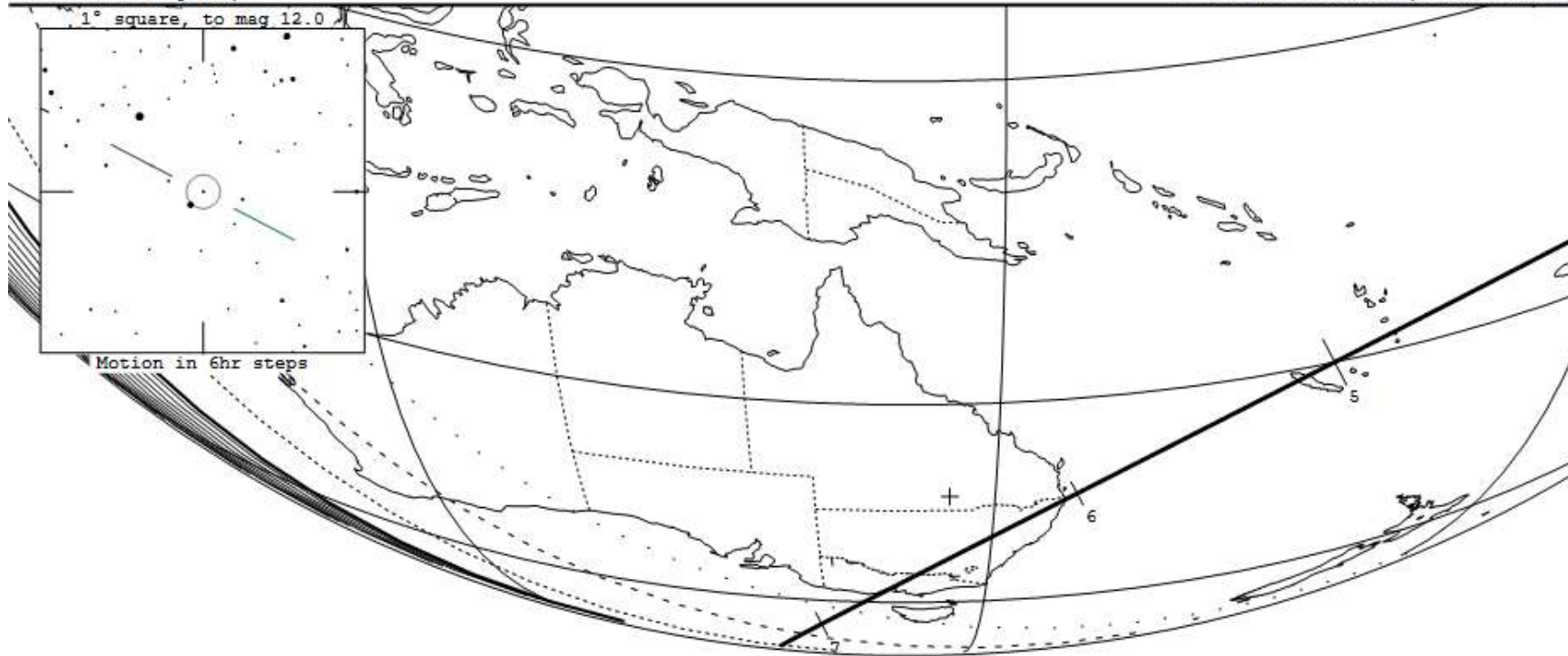


3200 Phaethon occults TYC 2334-00715-1 on 2024 Dec 8 from 12h 2m to 12h 7m UT

Star: (Dia < 0.1 mas)
 Mv 11.0; Mb 11.1; Mr 10.9
 RA = 2 57 1.8606 (astrometric)
 Dec = 34 0 1.338
 [of Date: 2 58 35, 34 6 12]
 Prediction of 2023 Jun 13.8
 Reliable 1.4 (good),

Durations: Max = 0.22 secs
 1km = 0.044 secs, 1mas = 0.029 secs
 Mag Drop: 5.3 [99%]v, 5.0 [99%]r
 Sun : Dist = 151°
 Moon: Dist = 69°, illum = 48%
 Error 2.1 x 1.1 mas in PA 159°

Asteroid: (in DAMIT)
 Mag = 16.3
 Dia = 5.0 ± 0.4km, 8 mas
 Parallax = 9.737"
 Hourly dRA = -9.117s
 dDec = -58.71"
 JPL#780INTG:2022Nov01, Known errors

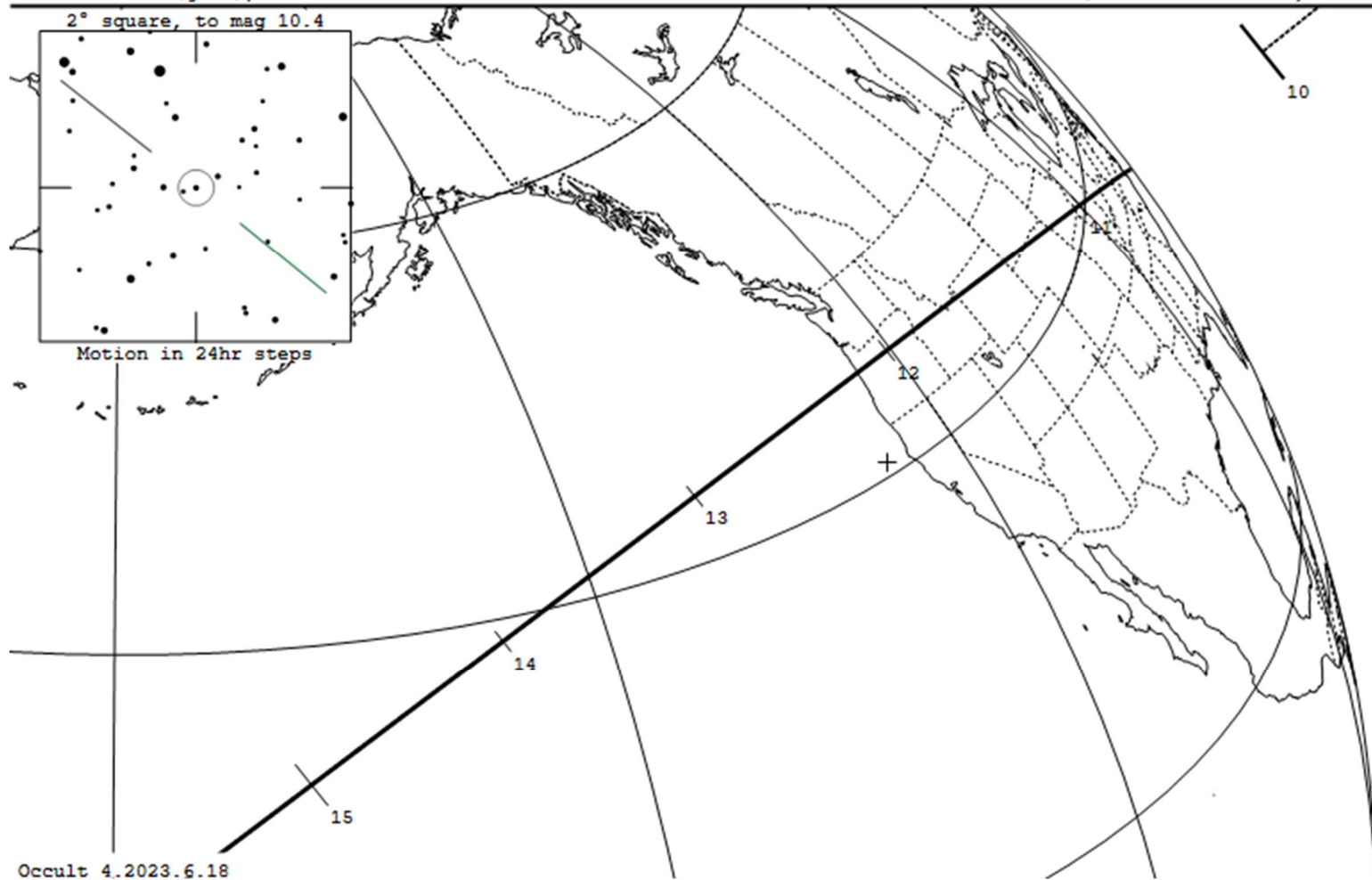


3200 Phaethon occults TYC 1764-00040-1 on 2024 Dec 22 from 8h 11m to 8h 21m UT

Star: (Dia = 0.1 mas)
Mv 9.4; Mb 9.6; Mr 9.0
RA = 2 13 34.5553 (astrometric)
Dec = 27 56 39.582
[of Date: 2 15 2, 28 3 49]
Prediction of 2023 Jun 13.8
Reliable 1.0 (good),

Durations: Max = 0.25 secs
1km = 0.051 secs, 1mas = 0.033 secs
Mag Drop: 7.2 [100%]v, 7.1 [100%]r
Sun : Dist = 129°
Moon: Dist = 132°, illum = 56%
Error 2.0 x 1.0 mas in PA 162°

Asteroid: (in DAMIT)
Mag = 16.6
Dia = 4.9 ± 0.4km, 7 mas
Parallax = 9.689"
Hourly dRA = -6.418s
dDec = -68.08"
JPL#780INTG:2022Nov01, Known errors



Good NEA Worldwide Occultations in 2024

Clusters of observable events with specific asteroids:

- (1685) Toro: 3.8km NEA
 - Eight events from Jan 17 to Feb 27 : Europe, Japan, Australia, North America
 - Max duration of 0.24 to 0.43 seconds, star mag 8.5 to 10.5, uncertainty less than 1 pathwidth
- (276049) 2002 CE26: 3.5km NEA
 - Twelve events from Sep 2 to Sep 16: Europe, Japan, Australia, New Zealand, and North America
 - Max duration of 0.15 seconds, star mag 6.6 to 10.5, uncertainty less than 0.5 pathwidths
- (163899) 2003 SD220: 790 meter NEA
 - Seven events from Nov 19 to Dec 6: Europe and North America
 - Max duration of 0.15 seconds, star mag 9.2 to 10.5, uncertainty less than 2 pathwidths