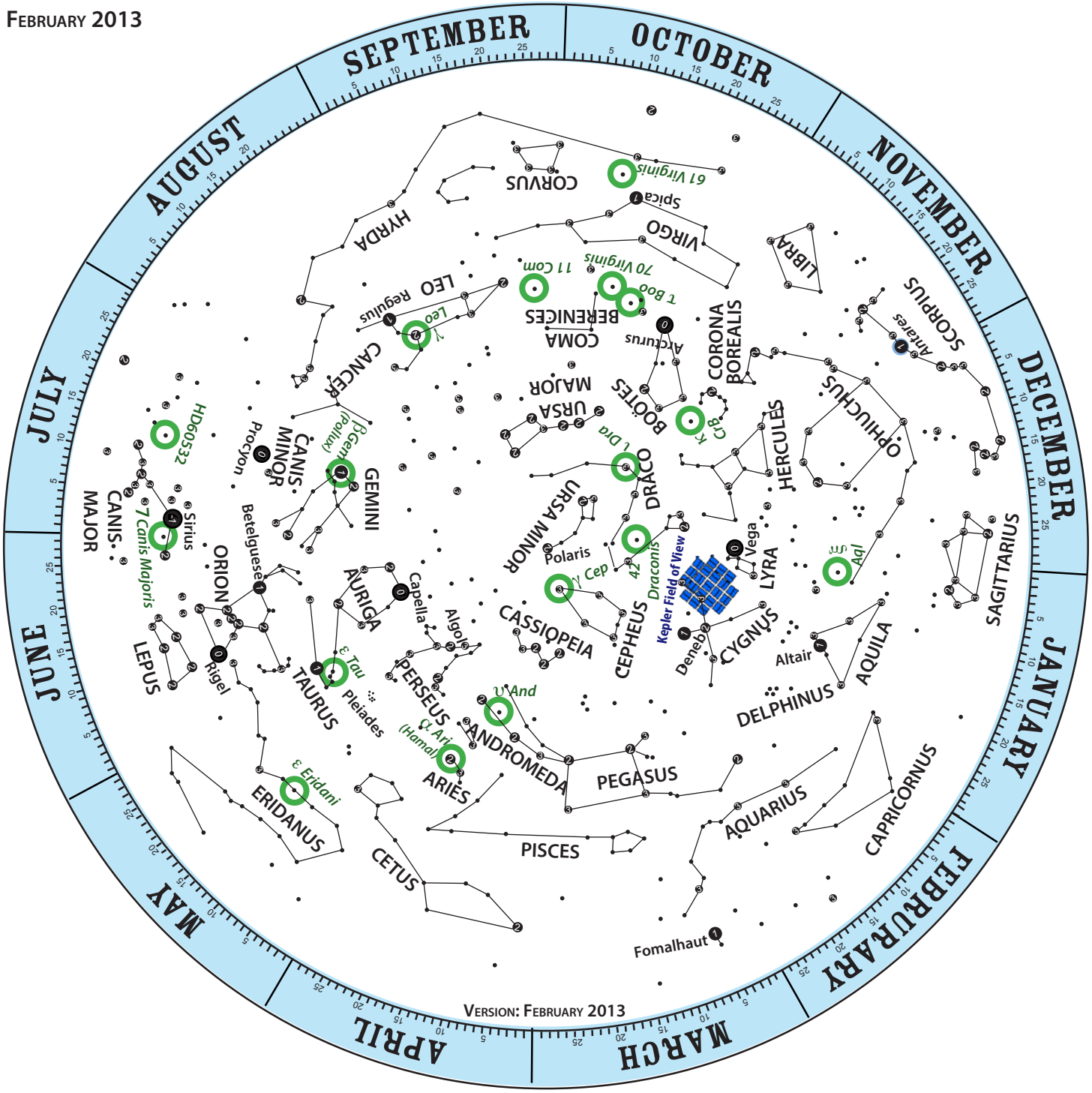

INSTRUCTIONS FOR ASSEMBLING UNCLE AL'S KEPLER STAR WHEELS

Step 1: Copy Star Wheel and Star Wheel Holder pages on heavy cardstock or use glue stick or doublestick tape to adhere the pages onto a file folder or heavy cardstock.

Step 2: Cut along the solid outer circle of the Star Wheel and along the solid lines on the Star Wheel Holder, removing the grid areas.

Step 3: On the Star Wheel Holder, fold along the 3 dotted lines.

Step 4: Tape the sides so that the Star Wheel Holder forms a pocket for the Star Wheel to go into.

Step 5: Place the Star Wheel in the Star Wheel Holder.

Instructions for Using Uncle Al's Star Wheels

1. Align your date and time, and then look up at the sky
2. Locate the constellation you want to find on the map.
3. Turn your map so the horizon it is closest to is at the bottom.
4. The star positions in the sky should match those on the wheel.

Tape

Tape

Uncle Al's Star Wheels are based on LHS Sky Challengers created by Budd Wentz.
Uncle'Al's Star Wheels - http://www.uncleal.net/uncle-als-starwheels
Kepler Star Wheel - http://kepler.nasa.gov/education/starwheel/
[this site has latest version of starwheels, holders, and a page of star & planet details]

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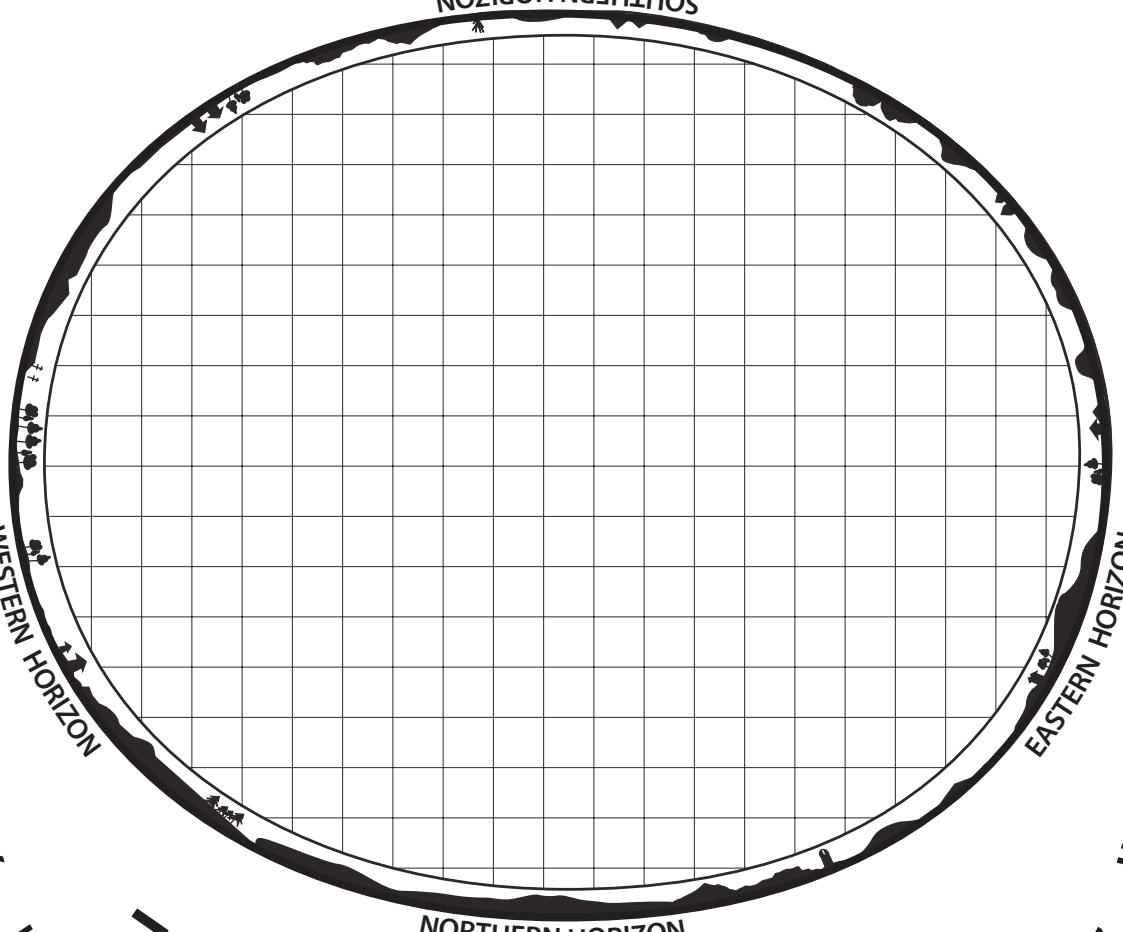
NASA's *Kepler Mission* website - kepler.nasa.gov

SOUTHERN HORIZON



Green circles denote stars wtih exoplanets.
Star magnitudes are shown for 1st, 2nd, & 3rd mag

Blue squares show the Kepler field of view (CCD array)

6PM 7PM 8PM 9PM 10PM 11PM 12AM 1AM 2AM 3AM 4AM 5AM 6AM

KEPLER STAR WHEEL

HOLDER FOR LATITUDES ABOUT 30°-50°N

UNCLE AL'S HANDS-ON UNIVERSE

STAR WHEEL HOLDER

STAR/PLANET DETAILS

	PLANET NAME	V	RA	DEC	Period	Semi-major axis	Planet Mass (min)	Distance	Star Mass	Star Temp	Star Radius
				Unit:	day	au	mjupiter	pc	msun	k	rsun
1	beta Gem b	1.15	07:45:19.364	+28:01:34.72	589.64	1.73	2.69	10.36	2	4666	11.01
2	alpha Ari b	2	02:07:10.286	+23:27:46.00	380	1.18	1.86	20.18	1.5	4553	17.65
3	gamma Leo A b	2.12	10:19:58.162	+19:50:30.70	428.5	1.19	8.82	39.89	1.23	4300	42.55
4	gamma Cep b	3.21	23:39:20.982	+77:37:55.08	905.57	2.14	1.77	14.1	1.59	4888	5.01
5	iota Dra b	3.29	15:24:55.784	+58:57:57.68	511.1	1.53	12.72	31.03	1.82	4545	11.99
6	epsilon Tau b	3.53	04:28:36.933	+19:10:49.88	594.9	1.93	7.62	44.96	2.7	4901	12.28
7	epsilon Eri b	3.72	03:32:56.422	-09:27:29.90	2500	3.38	1.05	3.22	0.82	5145	0.74
8	7 CMa b	3.95	06:36:40.999	-19:15:20.55	763	1.88	2.65	19.75	1.52	4792	2.3
9	upsilon And c	4.1	01:36:47.977	+41:24:22.99	241.33	0.83	1.92	13.49	1.31	6212	1.38
	upsilon And d	4.1	01:36:47.977	+41:24:22.99	1278.12	2.52	4.12	13.49	1.31	6212	1.38
	upsilon And b	4.1	01:36:47.977	+41:24:22.99	4.62	0.06	0.67	13.49	1.31	6212	1.38
10	HD 60532 b	4.45	07:34:03.206	-22:17:46.25	201.3	0.76	1.03	25.3	1.44	6095	2.35
	HD 60532 c	4.45	07:34:03.206	-22:17:46.25	604	1.58	2.46	25.3	1.44	6095	2.35
11	tau Boo b	4.5	13:47:16.037	+17:27:24.39	3.31	0.05	4.12	15.62	1.34	6387	1.42
12	xi Aql b	4.71	19:54:14.822	+08:27:41.94	136.75	0.68	2.81	56.27	2.2	4780	10.45
13	11 Com b	4.78	12:20:43.093	+17:47:33.55	326.03	1.29	19.43	88.89	2.7	4742	18.39
14	kappa CrB b	4.79	15:51:13.937	+35:39:29.62	1261.94	2.8	2.01	31.1	1.84	4970	3.52
15	42 Dra b	4.83	18:25:58.988	+65:33:48.77	479.1	1.19	3.89	96.53	0.98	4200	36.15
16	61 Vir c	4.87	13:18:24.972	-18:18:31.00	38.02	0.22	0.03	8.56	0.94	5571	0.98
	61 Vir d	4.87	13:18:24.972	-18:18:31.00	123.01	0.47	0.07	8.56	0.94	5571	0.98
	61 Vir b	4.87	13:18:24.972	-18:18:31.00	4.22	0.05	0.02	8.56	0.94	5571	0.98
17	70 Vir b	4.97	13:28:25.950	+13:46:48.68	116.69	0.48	7.46	17.99	1.1	5544	1.6

Abbreviations:

RA - Right Ascension
DEC - Declination
V - Magnitude of star

Greek letters used

α	alpha	ι	iota
β	beta	υ	upsilon
γ	gamma	τ	tau
ε	epsilon	κ	kappa
		χ	xi

And - Andromeda
Aql - Aquila
Ari - Aries
Boo - Boötes
Cep - Cepheus
Cma - Canis Major
Com - Coma Berenices
CrB - Corona Borealis
Dra - Draco

Eri - Eridanus
Gem - Gemini
Tau - Taurus
Vir - Virgo

HD - Henry Draper catalog #
b - 1st planet discovered
c - 2nd planet discovered
d - 3rd planet discovered

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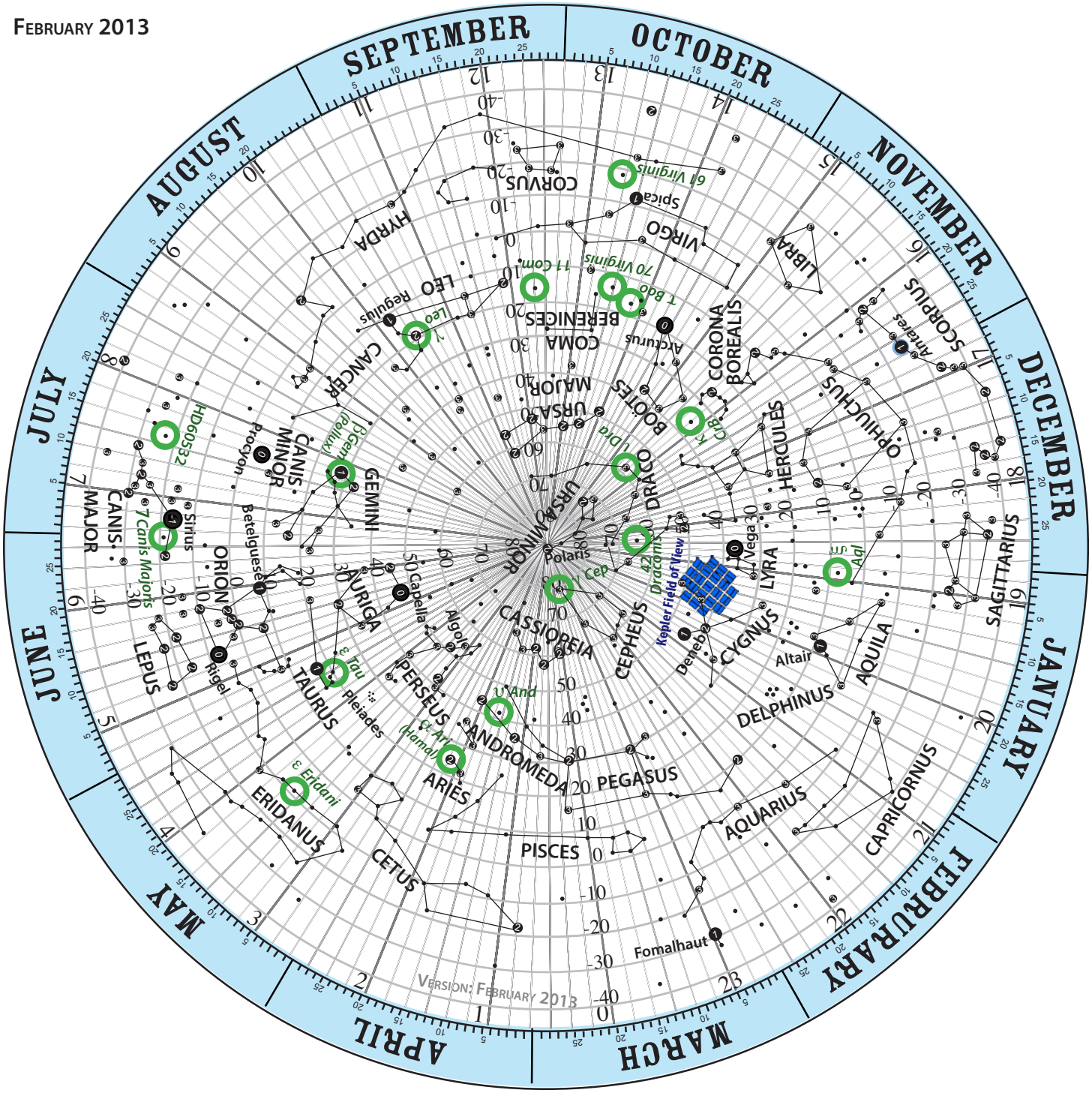

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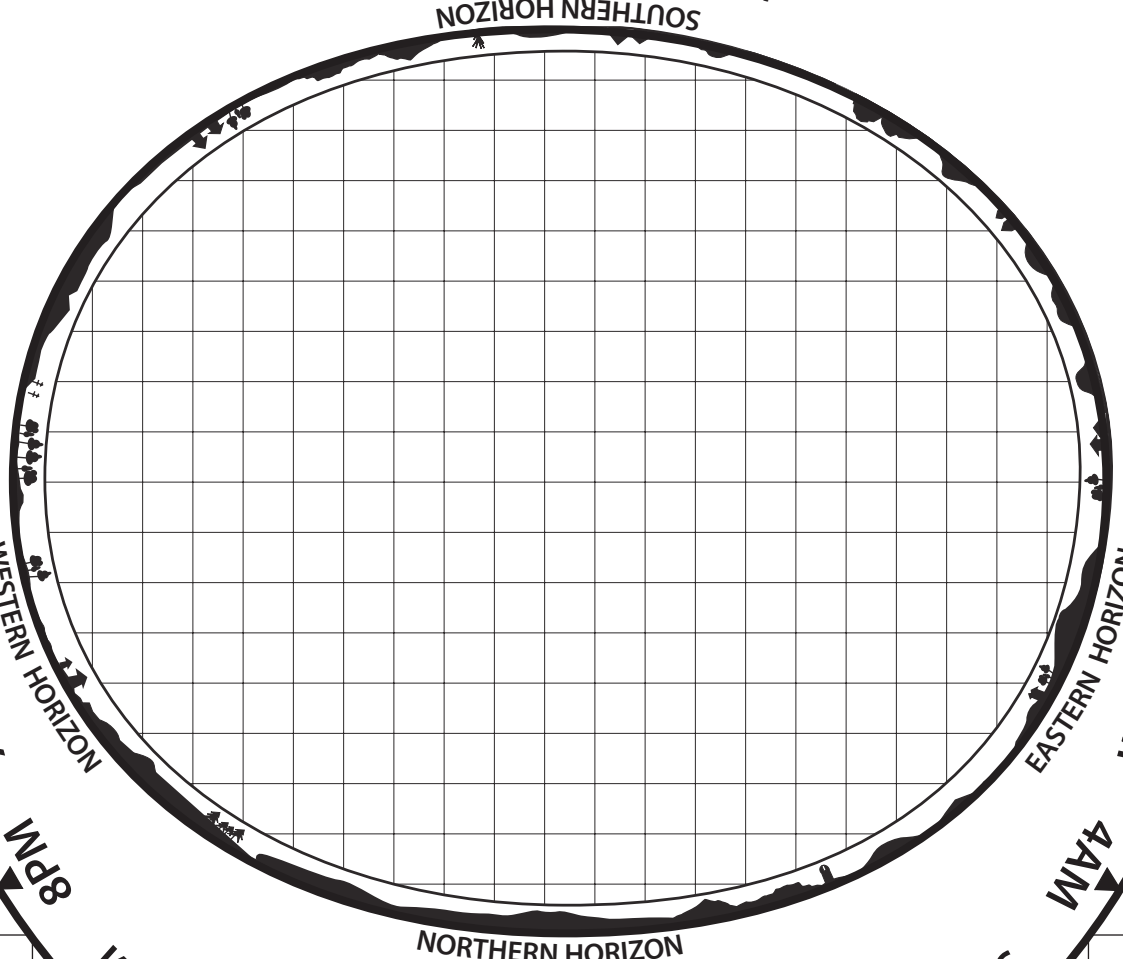
Kepler Star Wheel

Uncle Al's Hands-On Universe



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STAR WHEEL HOLDER for high latitudes

HOLDER FOR LATITUDES ABOUT 50°-70°N