Essential software and applications for aurora hunters and photographers

"The pursuit and exploration for meaning and order, to witness beauty and redemption, to connect with something larger and all of creation."

Presentation map

Welcome

Michael Jordan / hunter

Essential software and applications

Gain a broad knowledge for creating better photographs of auroras using essential software and applications to develop a plan you can execute on location, with a focus on artistic elements

- Visual literacy
- Space weather
- Geomagnetic weather
- Earth weather
- Plan the idea
- Execute the idea
- Process the idea
- Aurora Borealis: a photographer's guide to geomagnetic midnight (Session III)

Essential software and applications

Solar event observation
(Geomagnetic storm watch issued)

Watches: The conditions are favorable for occurrence (1-4 days)

Space event observation
(Geomagnetic storm warning issued)

Warnings: Disturbances that are imminent, expected in the near future with high probability (DSCOVR) (Minutes to a few hours)

Terrestrial event observation
(Geomagnetic storm alert issued)

Alerts: Observed conditions/event onset meeting or exceeding thresholds

Plan (location)

Execute (composing)

Process (showcase)

- Space weather prediction center
- Subscription services
- Space Weather Live
- The Aurora Forecast Service
- Time and date
- Google earth
- PlanIt!
- Windy
- Meteo
- Photoshop
- iMovie

Essential software and applications

Essential
subjective

- genre
- expertise level
- price point
- frequency of usage

Scope
hunter or spectator

- tofte parallel
- 47° geographic
- 57° geomagnetic
- ovation zone

Lifecycle
functional availability

- agile
- versioning
- updates
- deprecation

Categories
functional requirements

- safety
- navigation
- forecasting
- logistical
- processing

Devices
desktop/handheld

- OS support
- caching
- battery life
- connectivity
- mixed reality

Interactive
messaging

- subscriptions
- advisories
- warnings
- alerts
- sharing

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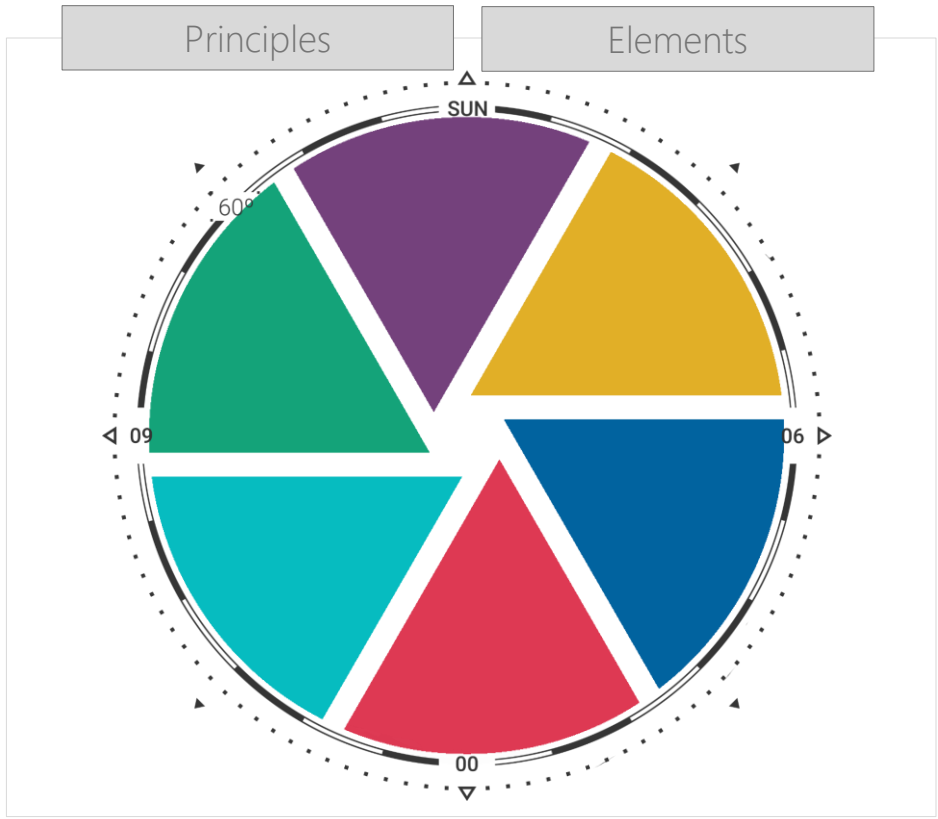
Visual literacy

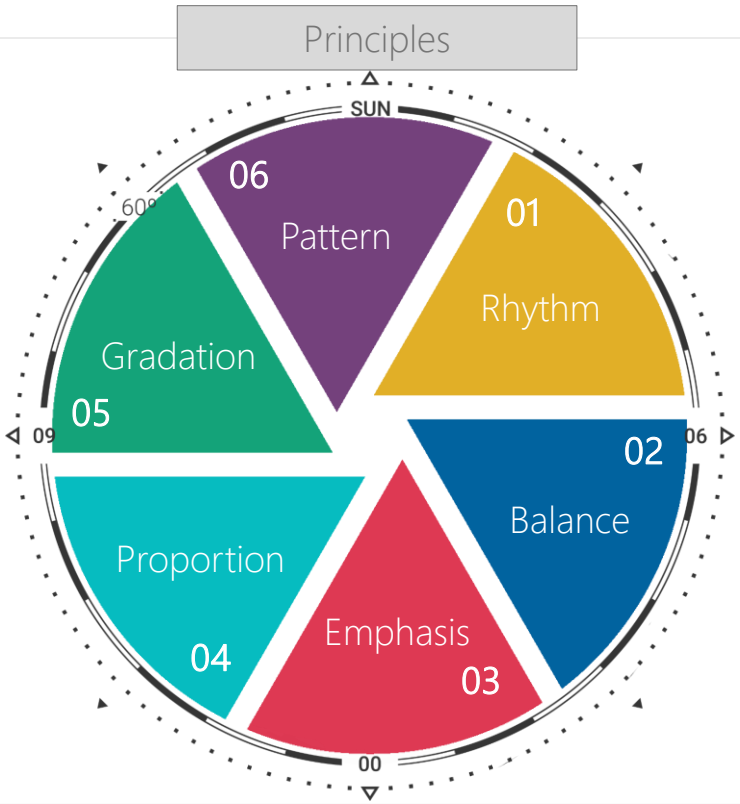


- The **principles** of design help the photographer to carefully plan and organize the visual elements to hold interest and command attention.

- The **elements** of design are the photographer's basic visual symbols and ingredients used to create the photograph.

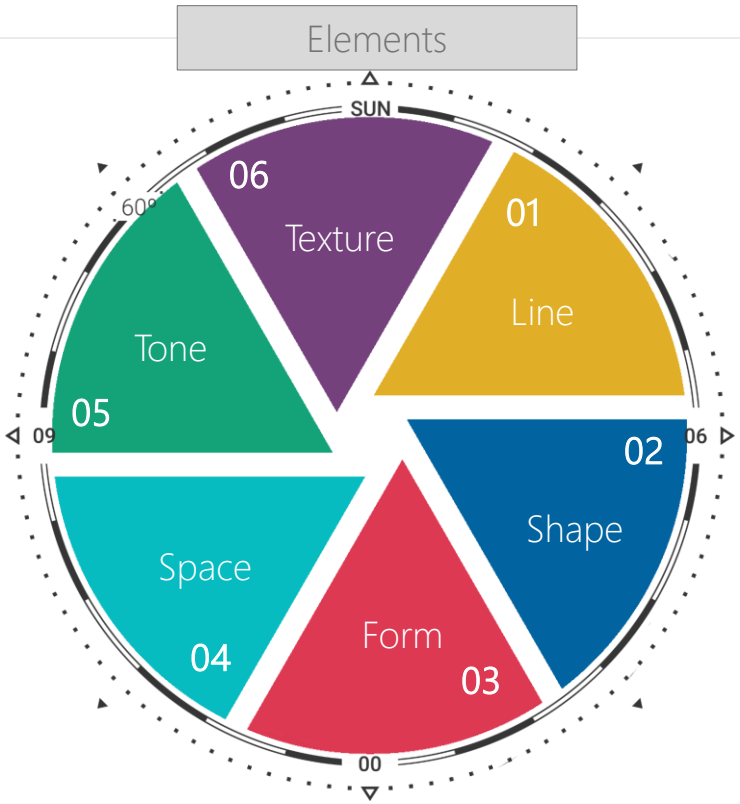
- The **composition** of design is the photographer's orderly arrangement of elements using the principles to achieve a unified whole and visual impact.

Principles



- **Rhythm** is created when one or more elements are used repeatedly to create a feeling of organized movement.
- **Balance** is the distribution of the visual weight of objects, colors, texture, and space.
- **Emphasis** is the part of the design that catches the viewer's attention.
- **Proportion** is the feeling of unity created when all parts relate well with each other.
- **Gradation** is the size and direction to produce a linear perspective.
- **Pattern** is the repeating of an object or symbol all over the photograph. *Repetition* works with pattern to make the photograph seem active.

Elements



- A **line** is a visual path of action and is primarily a means for defining visual form. Lines can be obvious or implied
- A **shape** is a closed line. Shapes are flat and can express length and width.
- **Forms** are three-dimensional shapes expressing length, width, and depth.
- **Space** is the area between and around objects. The space around objects is often called negative space.
- **Tone** is light reflected off of objects. Tone has three main characteristics: hue, value and intensity.
- **Texture** is the surface quality that can be seen and felt. Textures can be rough or smooth, soft or hard.

Composition

Composition

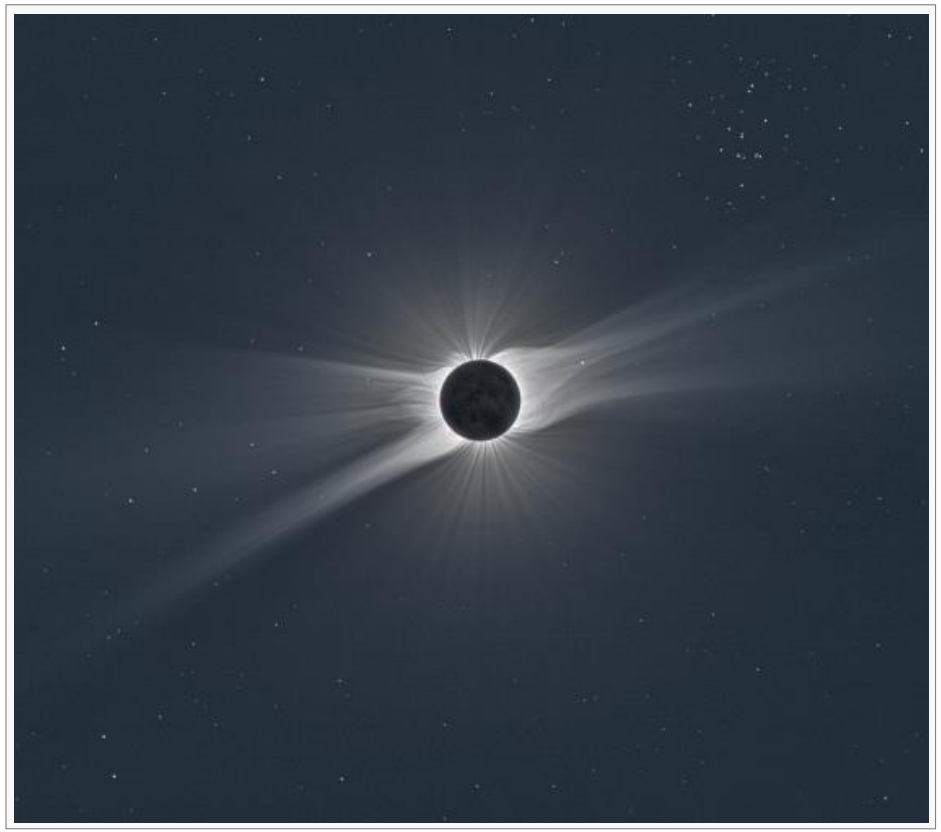
Attributes
- Light
- Focus
- Time
- Motion
- Point of View
- Technique

Content
- Subject
- Background
- Middle ground
- Foreground
- Framing
- Cropping

Style
- Genre
- Theme
- Symbolism
- Metaphors
- Motif
- Juxtaposition

The photographer who works with the principles of good **composition** will create a more interesting photograph and will be arranged to show a pleasing rhythm and movement. The center of interest will be strong and the viewers will not look away, instead, they will be drawn into the work. A good knowledge of composition is essential in producing good photographs.

Presentation map



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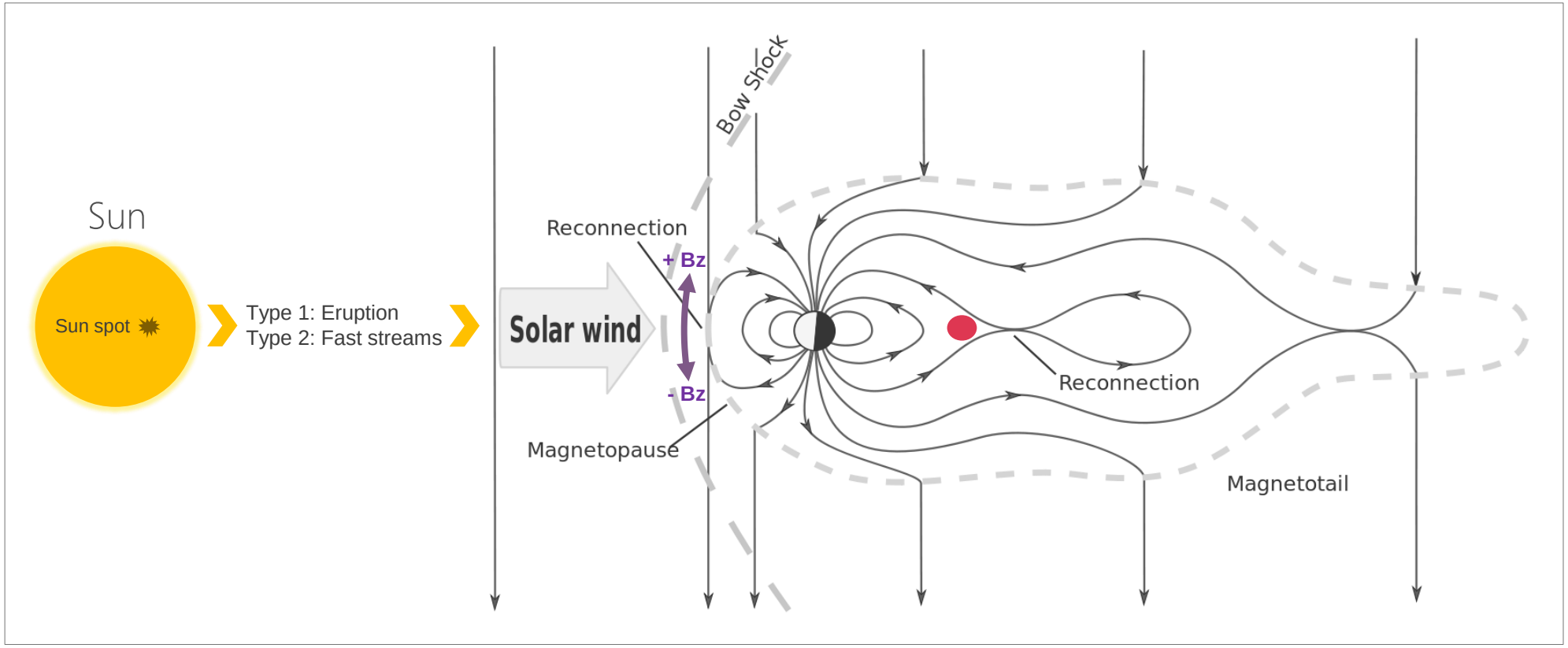

Sun
Sun spot
Type 1: Eruption
Type 2: Fast streams
Solar wind
Bow Shock
Reconnection
+ Bz
- Bz
Magnetopause
Reconnection
Magnetotail

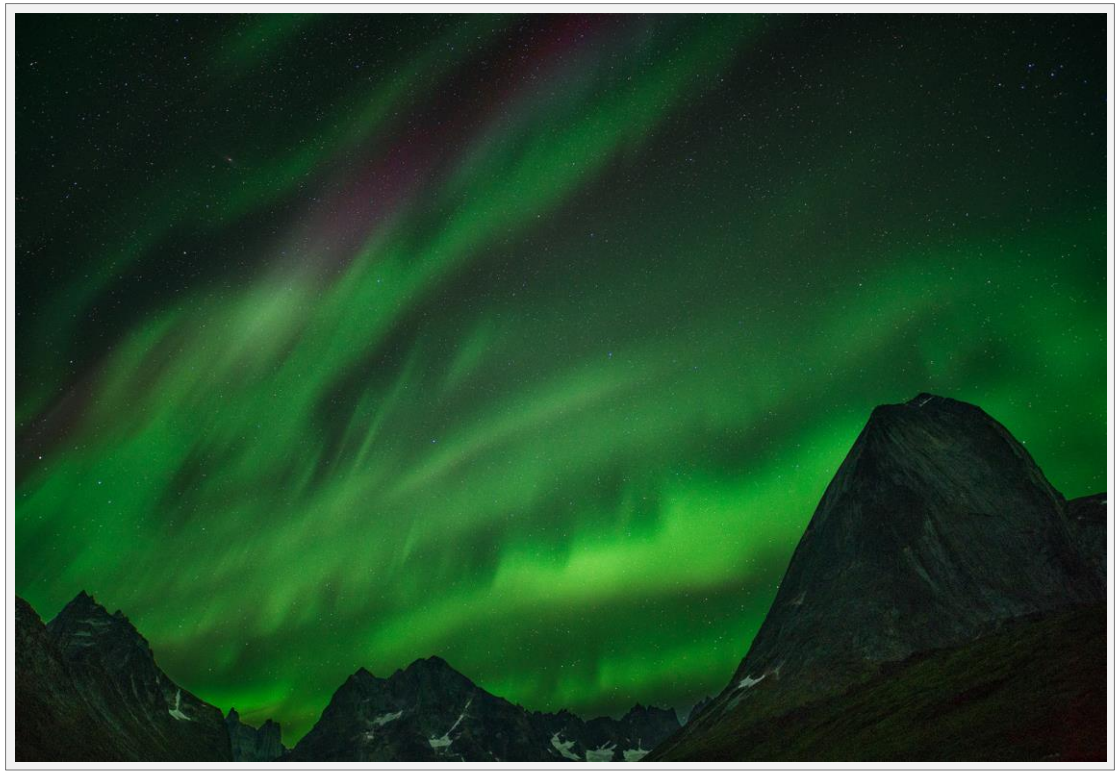
Demonstration

Space Weather Prediction Center

https://www.swpc.noaa.gov/communities/space-weather-enthusiasts (free to use)

Subscription Services

https://www.swpc.noaa.gov/content/subscription-services (free to use)



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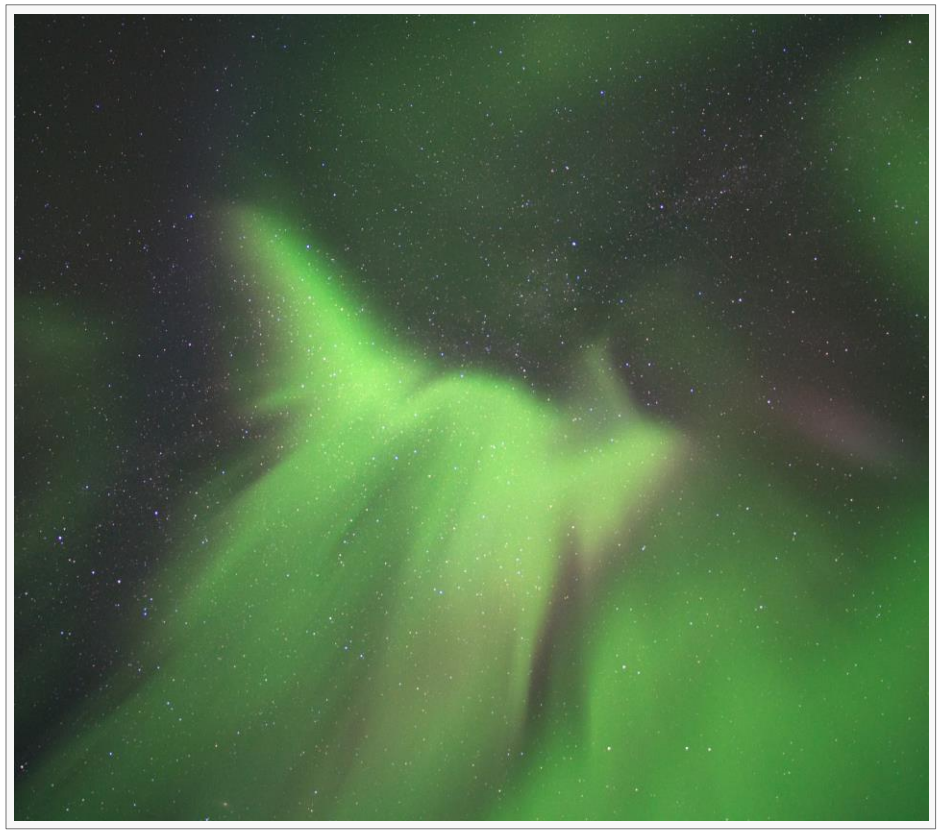

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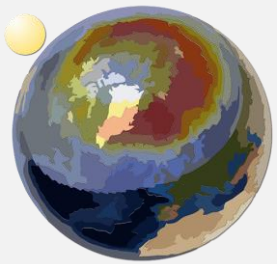
Key indices for successful aurora hunting

Demonstration

Space Weather Live



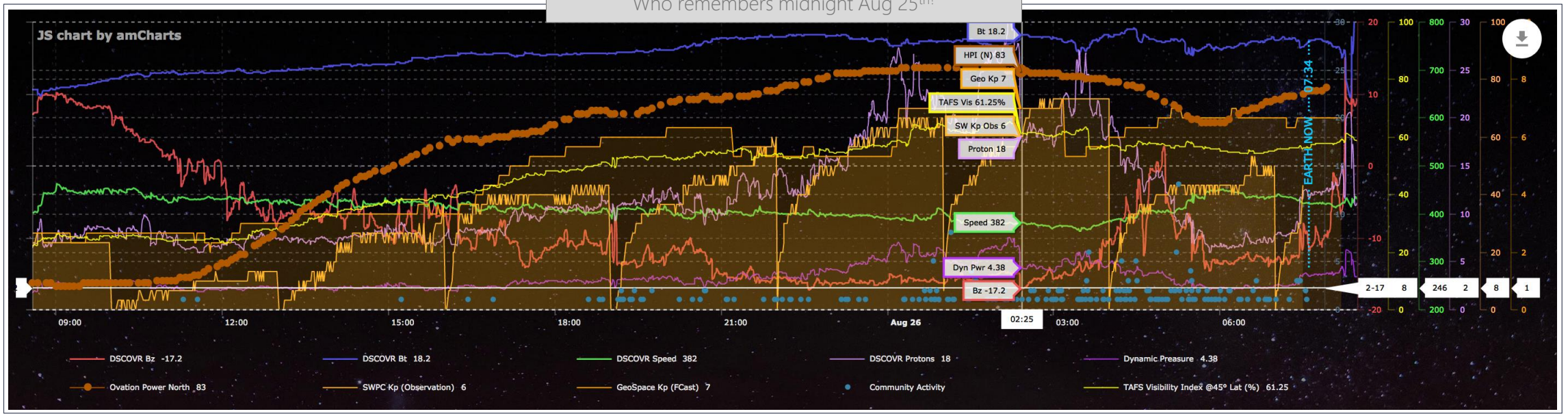
Spaceweatherlive.com

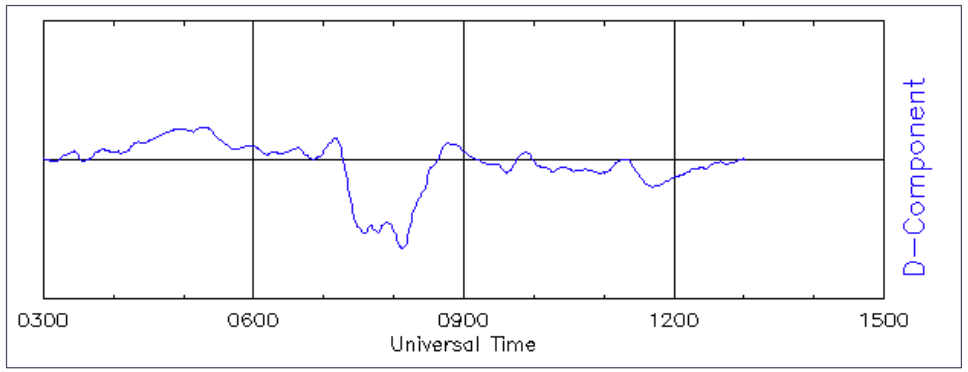
The Aurora Forecast Service

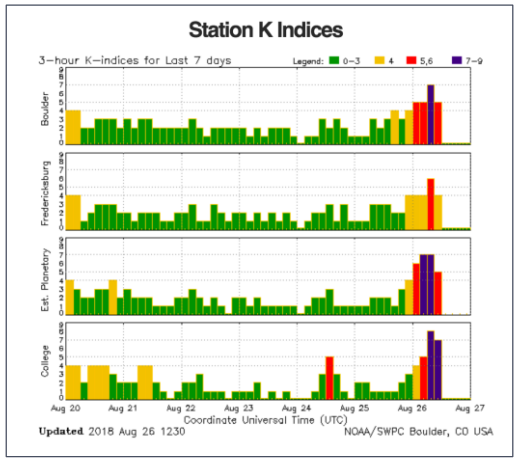
aurora.brendandaveyphotography.com

Geomagnetic weather

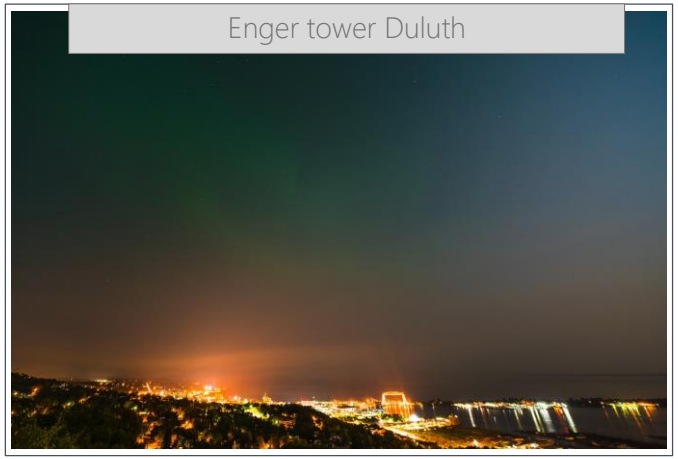
Who remembers midnight Aug 25th?



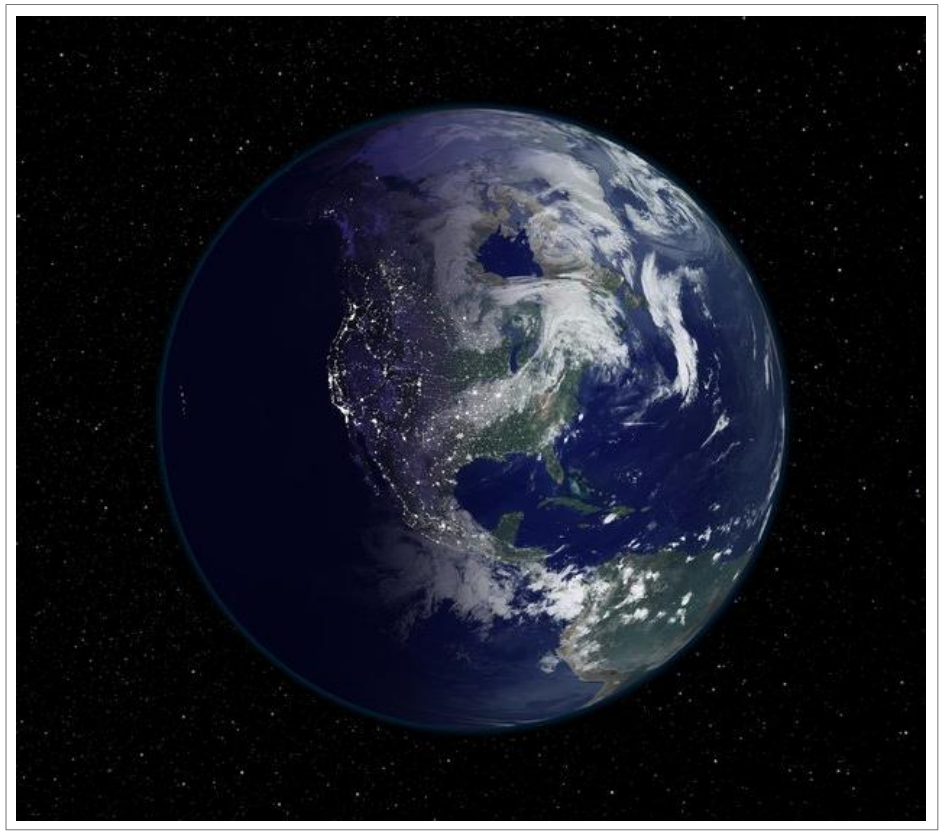




Enger tower Duluth



Presentation map



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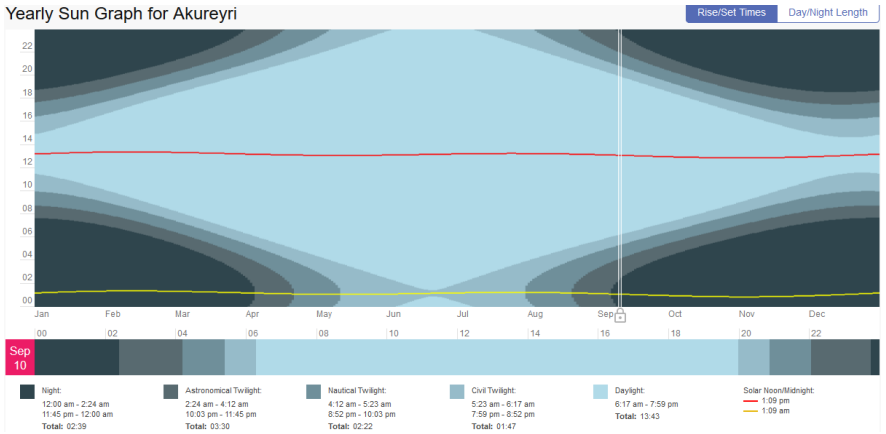
Reference charts

timeanddate.com

Night Day length chart



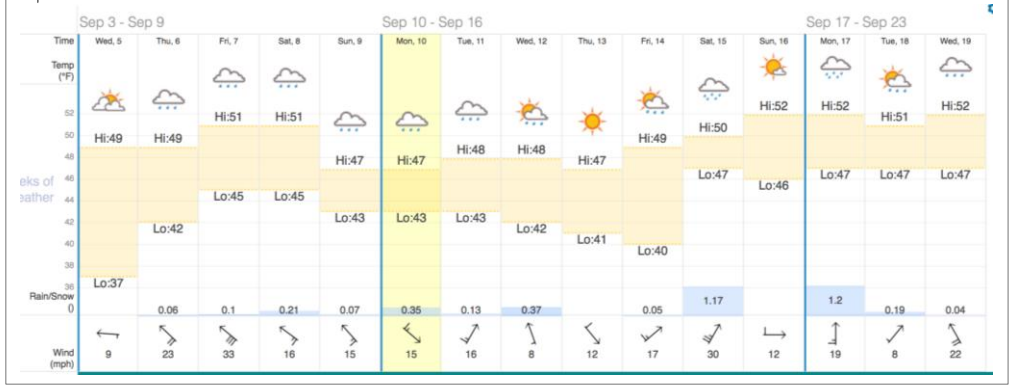
Moon chart

Lunation	New Moon		First Quarter		Full Moon		Third Quarter		Duration
1183	Aug 11	4:57 am	Aug 18	2:48 am	Aug 26	6:56 am	Sep 2	9:37 pm	29d 8h 04m
1184	Sep 9	1:01 pm	Sep 16	6:14 pm	Sep 24	9:52 pm	Oct 2	4:45 am	29d 9h 45m

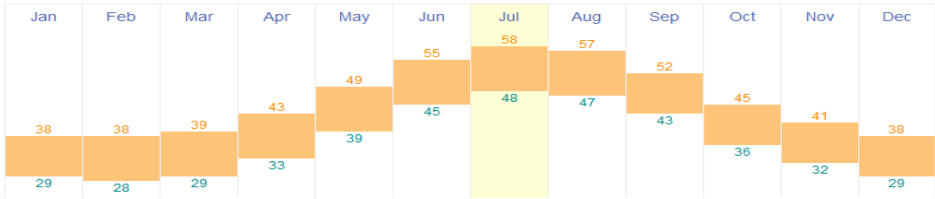
Sunrise sunset chart

2018	Sunrise/Sunset		Daylength		Astronomical Twilight		Nautical Twilight		Civil Twilight		Solar Noon	
Sep	Sunrise	Sunset	Length	Difference	Start	End	Start	End	Start	End	Time	Mil. mi
4	5:58 am (70°)	8:22 pm (289°)	14:24:21	−7:00	Rest of night		3:43 am	10:35 pm	5:02 am	9:18 pm	1:11 pm (31.4°)	93.744
5	6:01 am (71°)	8:18 pm (288°)	14:17:21	−6:59	Rest of night		3:48 am	10:29 pm	5:05 am	9:13 pm	1:11 pm (31.0°)	93.722
6	6:04 am (72°)	8:14 pm (287°)	14:10:22	−6:58	Rest of night		3:53 am	10:24 pm	5:09 am	9:09 pm	1:10 pm (30.7°)	93.699
7	6:07 am (73°)	8:11 pm (286°)	14:03:24	−6:58	- 1:37 am	12:44 am -	3:58 am	10:18 pm	5:12 am	9:05 pm	1:10 pm (30.3°)	93.676
8	6:10 am (74°)	8:07 pm (285°)	13:56:26	−6:57	- 1:58 am	12:22 am -	4:02 am	10:13 pm	5:16 am	9:01 pm	1:10 pm (29.9°)	93.653
9	6:13 am (75°)	8:03 pm (284°)	13:49:29	−6:57	- 2:13 am	12:07 am - 11:55 pm	4:07 am	10:08 pm	5:19 am	8:57 pm	1:09 pm (29.5°)	93.629
10	6:17 am (76°)	7:59 pm (283°)	13:42:32	−6:56	2:24 am	11:45 pm	4:12 am	10:03 pm	5:23 am	8:52 pm	1:09 pm (29.2°)	93.605
11	6:20 am (77°)	7:55 pm (282°)	13:35:36	−6:56	2:34 am	11:35 pm	4:16 am	9:58 pm	5:26 am	8:48 pm	1:09 pm (28.8°)	93.581
12	6:23 am (78°)	7:52 pm (282°)	13:28:40	−6:55	2:43 am	11:26 pm	4:20 am	9:53 pm	5:30 am	8:44 pm	1:08 pm (28.4°)	93.556
13	6:26 am (79°)	7:48 pm (281°)	13:21:44	−6:55	2:51 am	11:18 pm	4:25 am	9:48 pm	5:33 am	8:40 pm	1:08 pm (28.0°)	93.531
14	6:29 am (80°)	7:44 pm (280°)	13:14:49	−6:55	2:58 am	11:11 pm	4:29 am	9:43 pm	5:37 am	8:36 pm	1:07 pm (27.6°)	93.506
15	6:32 am (81°)	7:40 pm (279°)	13:07:54	−6:54	3:05 am	11:03 pm	4:33 am	9:38 pm	5:40 am	8:32 pm	1:07 pm (27.3°)	93.480

14 day forecast chart



Climate chart



Tide chart

http://tides.mobilegeographics.com/calendar/year/5297.html

September 2018

Day	High	Low	High	Low	High	Moon	Sunrise	Sunset
Wed 5	1:41 AM GMT / 2.76 m	8:02 AM GMT / 1.08 m	2:27 PM GMT / 3.09 m	9:02 PM GMT / 1.01 m			6:21 AM GMT	8:29 PM GMT
Thu 6	3:09 AM GMT / 2.91 m	9:25 AM GMT / 0.85 m	3:42 PM GMT / 3.37 m	10:11 PM GMT / 0.68 m			6:24 AM GMT	8:25 PM GMT
Fri 7	4:17 AM GMT / 3.20 m	10:27 AM GMT / 0.52 m	4:41 PM GMT / 3.69 m	11:04 PM GMT / 0.33 m			6:26 AM GMT	8:21 PM GMT
Sat 8	5:10 AM GMT / 3.51 m	11:18 AM GMT / 0.19 m	5:31 PM GMT / 3.99 m	11:50 PM GMT / 0.03 m			6:29 AM GMT	8:18 PM GMT
Sun 9	5:57 AM GMT / 3.79 m	12:04 PM GMT / -0.07 m	6:16 PM GMT / 4.19 m			New Moon	6:32 AM GMT	8:14 PM GMT
Mon 10		12:32 AM GMT / -0.17 m	6:40 AM GMT / 3.98 m	12:47 PM GMT / -0.22 m	6:58 PM GMT / 4.28 m		6:35 AM GMT	8:11 PM GMT
Tue 11		1:13 AM GMT / -0.25 m	7:21 AM GMT / 4.08 m	1:29 PM GMT / -0.24 m	7:39 PM GMT / 4.25 m		6:38 AM GMT	8:07 PM GMT
Wed 12		1:52 AM GMT / -0.20 m	8:01 AM GMT / 4.06 m	2:09 PM GMT / -0.14 m	8:19 PM GMT / 4.09 m		6:41 AM GMT	8:04 PM GMT
Thu 13		2:30 AM GMT / -0.03 m	8:41 AM GMT / 3.93 m	2:50 PM GMT / 0.08 m	8:59 PM GMT / 3.84 m		6:44 AM GMT	8:00 PM GMT
Fri 14		3:07 AM GMT / 0.23 m	9:22 AM GMT / 3.72 m	3:31 PM GMT / 0.39 m	9:40 PM GMT / 3.51 m		6:47 AM GMT	7:56 PM GMT
Sat 15		3:46 AM GMT / 0.56 m	10:05 AM GMT / 3.44 m	4:15 PM GMT / 0.75 m	10:25 PM GMT / 3.16 m		6:49 AM GMT	7:53 PM GMT
Sun 16		4:29 AM GMT / 0.91 m	10:55 AM GMT / 3.14 m	5:08 PM GMT / 1.10 m	11:20 PM GMT / 2.84 m	First Quarter	6:52 AM GMT	7:49 PM GMT

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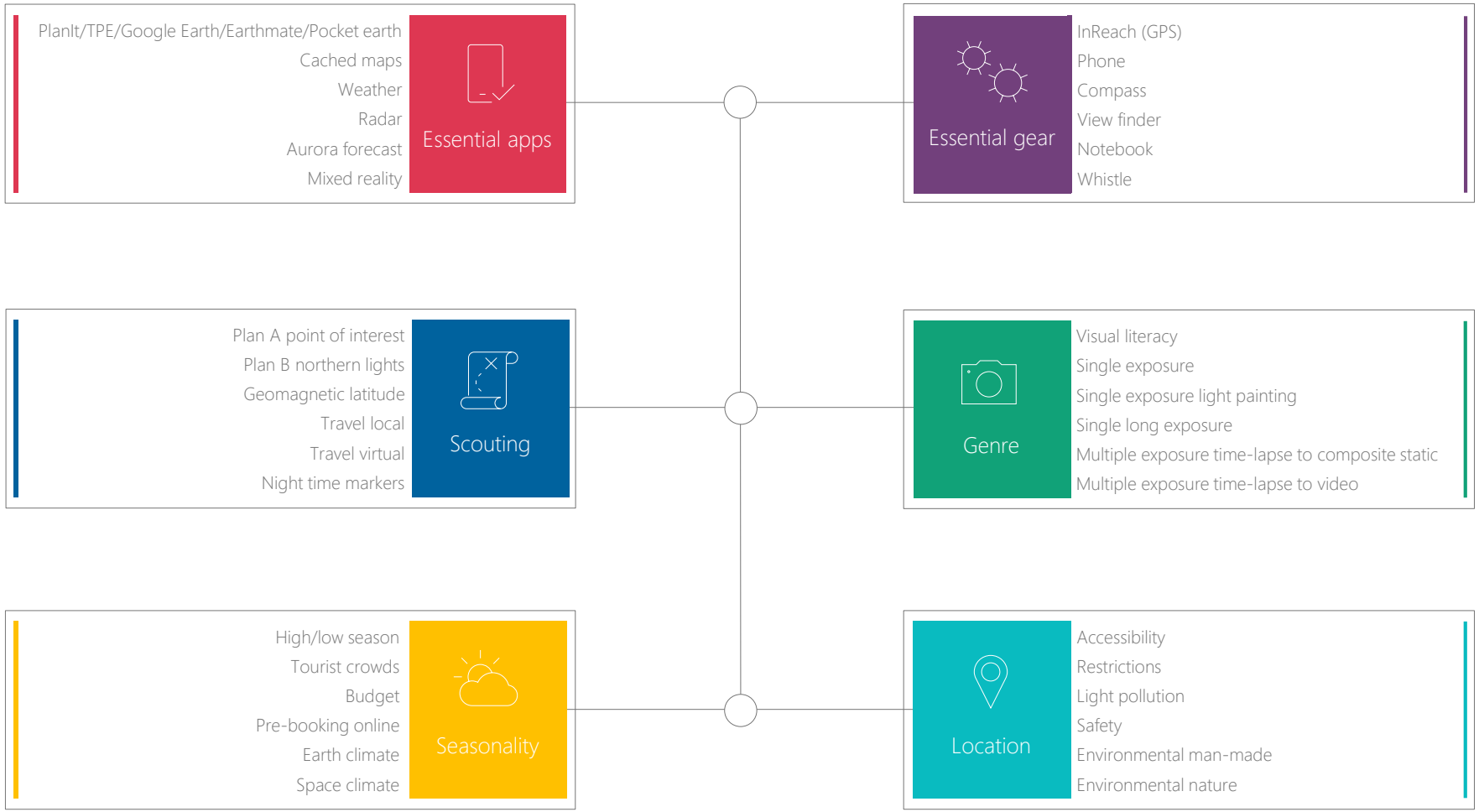
Plan the idea

The mode of transport and location impacts your mobility, restrictions, accessibility, time to point of interest and weight of gear.

Plan the idea



Demonstration

Google Earth

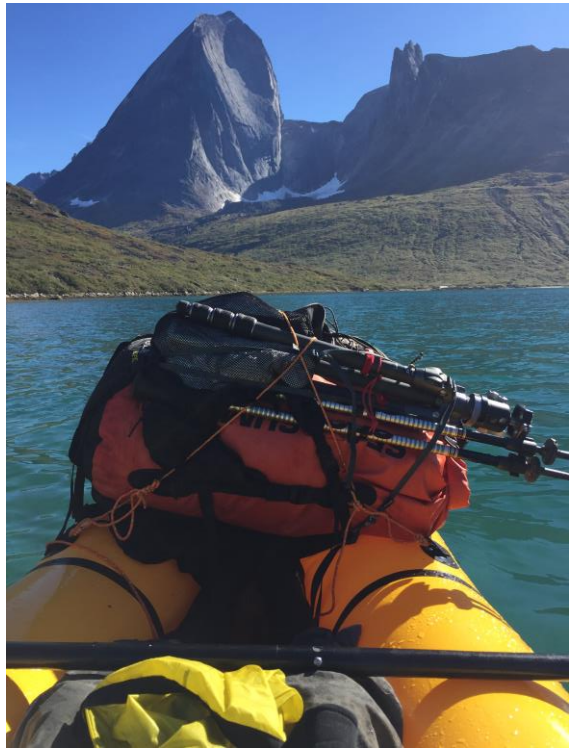
Virtual scouting

- Fjord crossing
- Waterfall location POI for aurora

Desktop version (free to use)

PlanIt!

Mobile device



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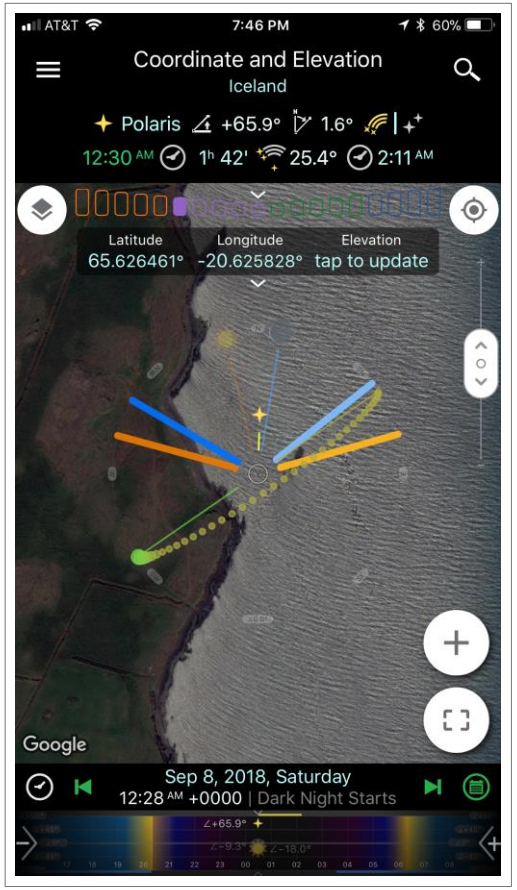
Execute the idea

Scene information



Location information

Title	
Date	
Local time	
Description	
POI	
GPS coordinates	
Next location	
Accommodation	
Cell phone, roaming & WIFI	

Project

Seeing in sixes	
Night	
Day	
Twilight	
Long exposure	
B&W	
Color	

Accessories

Baby wipes	
Toilet paper	
Zip lock bags	
DEET	
Sun cream	
Ear plugs	
Plugs for that country	
Extension plugs	
Car plugs	

Access

Road access	
Parking	
Trail head	
Distance to POI	
Overnight	
Fees	
Restrictions	
Permission	
Closure out of season	

Technique

Static	
Light painting to composite static	
Time-lapse --> composite static	
Time-lapse --> video	

Safety

Meals	
Solar power	
Gas tank full	
Spare keys	
GPS/Location/SOS/Cached maps	
Spare glasses	
Compass	
Medical evac insurance	
Waterproof ID bag	
Bear bell/whistle	
Contact info	
First aid kit	

Scouting

Time to POI	
Best time to shoot	
Time to get back	
Trail markers	
Safety notes	
Accessibility	

Notes

Demonstration

Windy

- Wind
- Clouds
- Air pressure

Mobile device

MeteoEarth

- Wind
- Clouds
- Air pressure

Mobile device

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Process the idea

Single image → Time lapse image series → Composite image

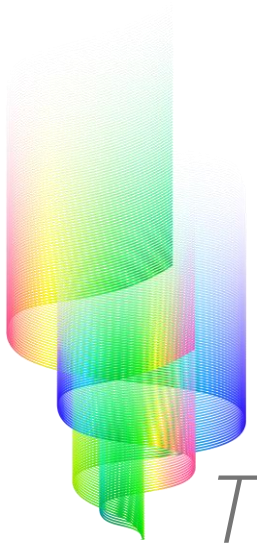
Workflow

- Lens correction
- Masking/cropping
- Brightness/contrast
- Spot removal
- Noise reduction
- Sharpening
- Color enhancements
- Plug-ins
- Local adjustments

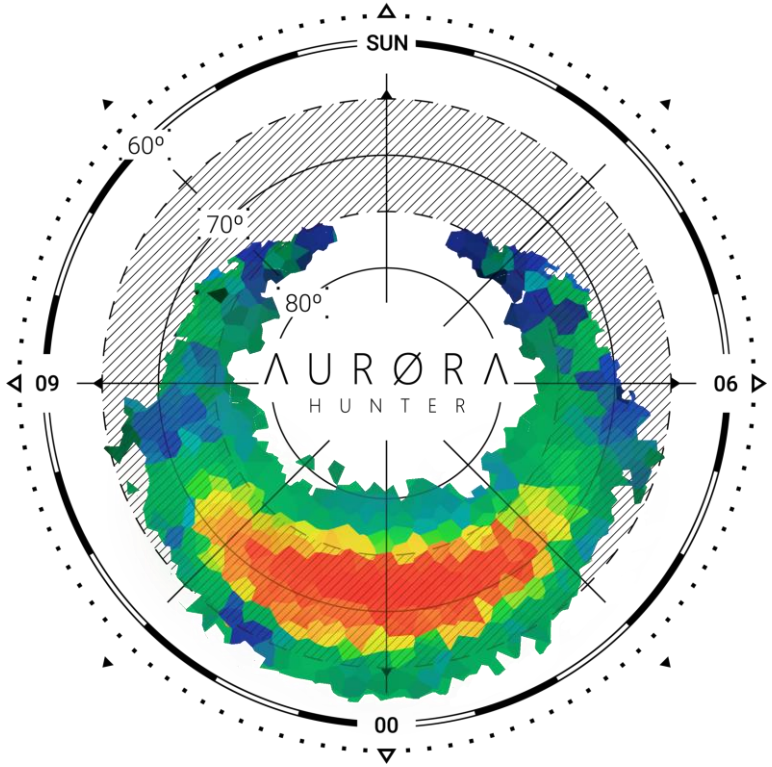
Image Export

- Lossless (RAW)
- Lossy (Jpeg)
- Focus blending
- High Dynamic Range
- Single image
- Time-lapse video
- Composite image
- Print to web
- Print to paper
- Copyright


pilgrimage
photography



Thank you!!



Aurora Borealis: a photographer's guide to geomagnetic midnight (Session III)