

# Iceland Aurora Trip 8-15<sup>th</sup> February 2022

Mike Whybray

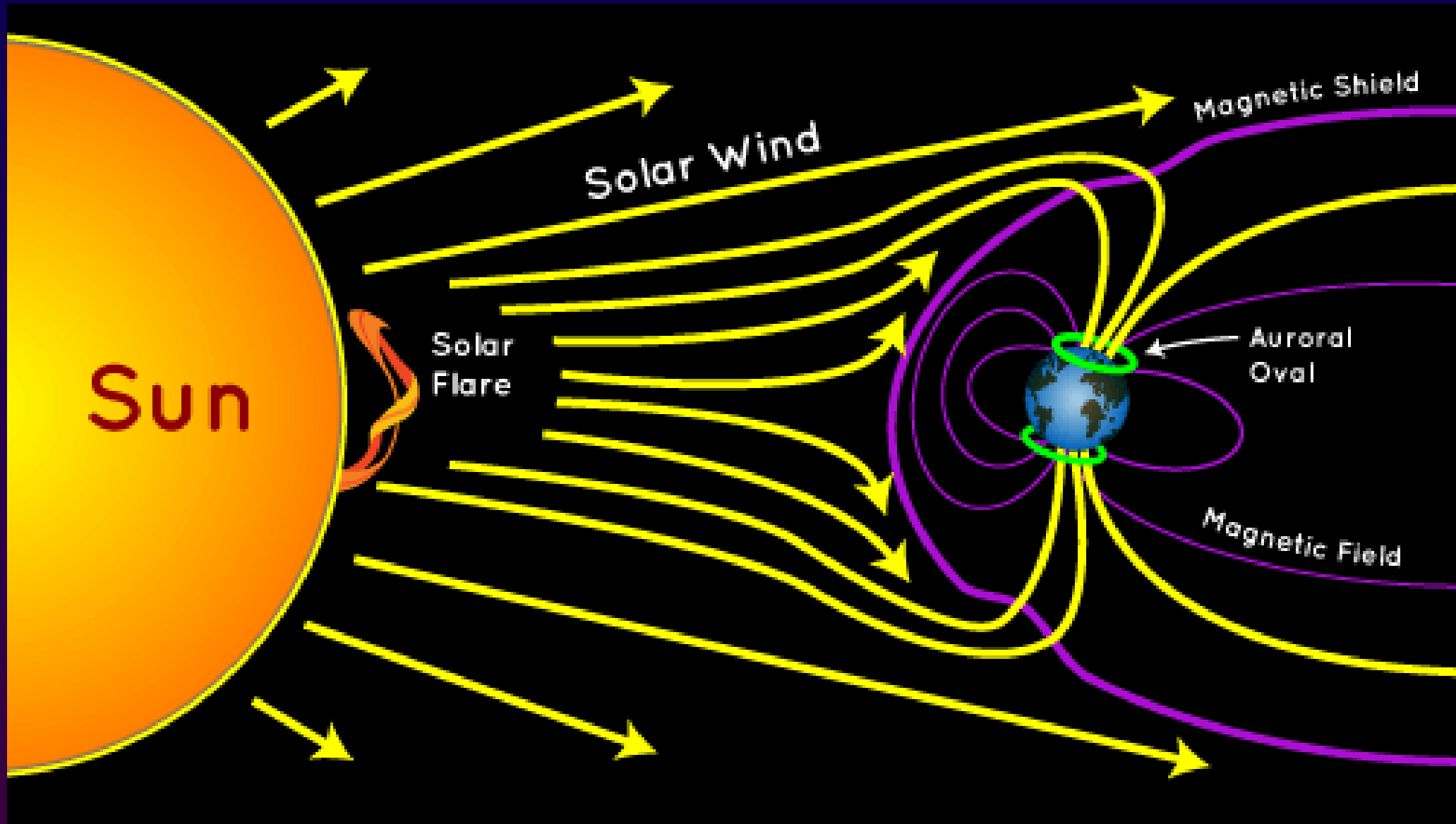


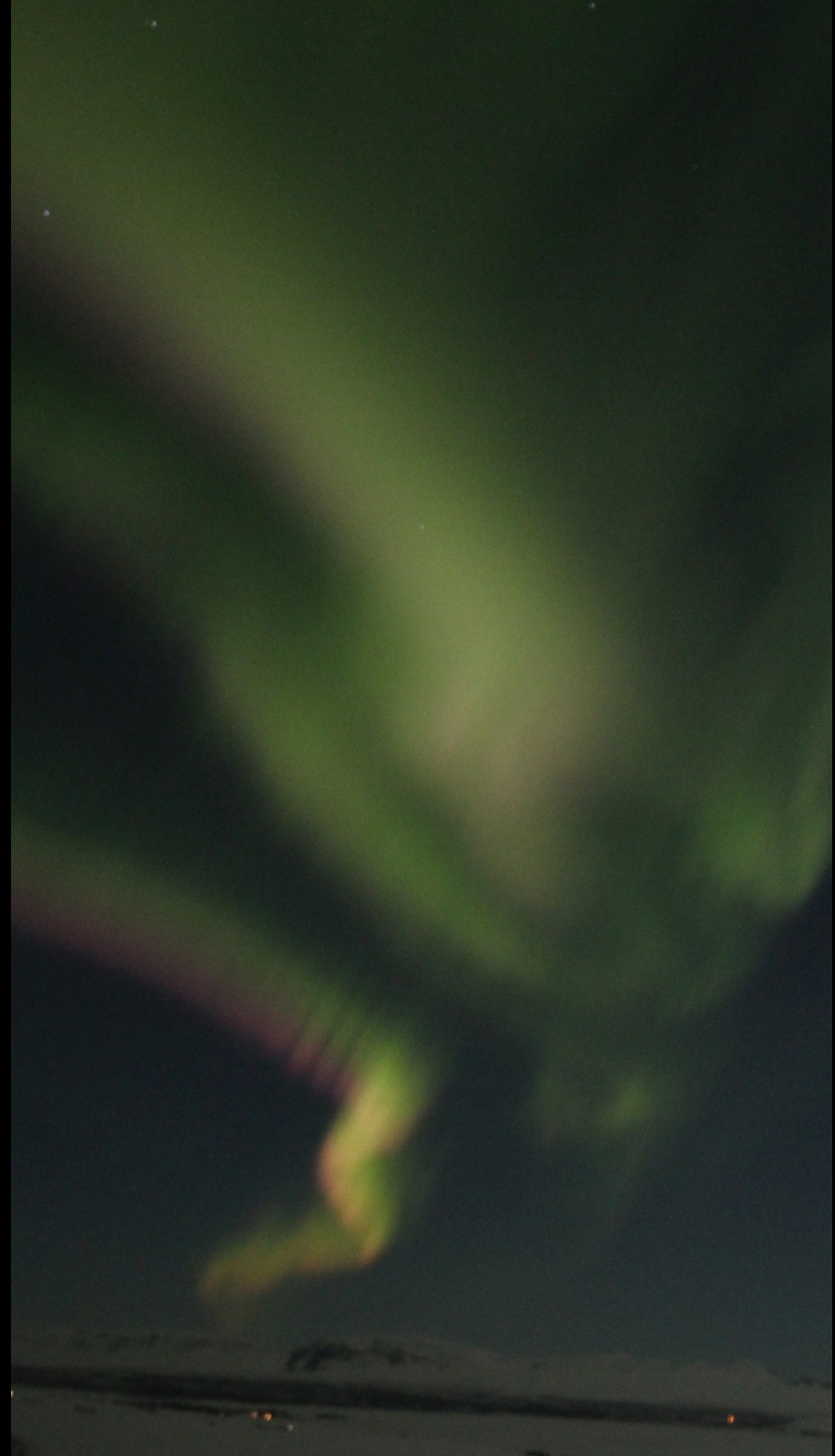
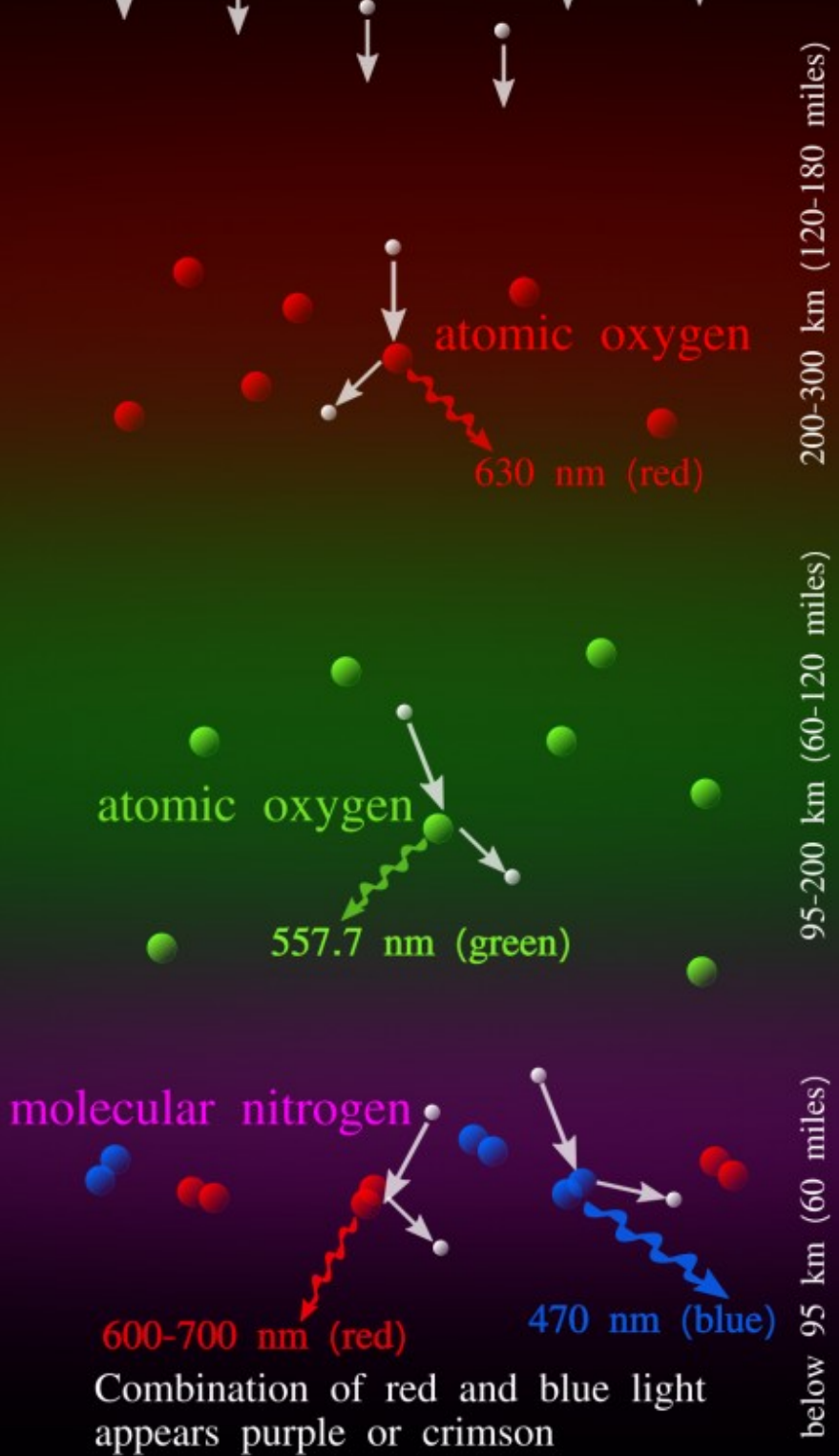
# Talk overview

- What causes aurora
- Planning
- Equipment
- Images and Time-Lapse Videos
- Things to consider next time?
- Other sights in Iceland



# Aurora mechanism







# When to go for aurora?

- **Dark skies** - September - March
- **Moon** - ideally none near midnight
  - between 3rd and 1st quarter 
  - <https://moonphases.co.uk/moon-calendar>
- **Weather** - ideally a clear sky!
  - 10 day forecast e.g. [weather-forecast.com](http://weather-forecast.com)
- **Solar Wind** - ideally fast/dense expected
  - Google “space weather enthusiasts dashboard”

# <https://www.swpc.noaa.gov/communities/space-weather-enthusiasts-dashboard>



55% 08:57

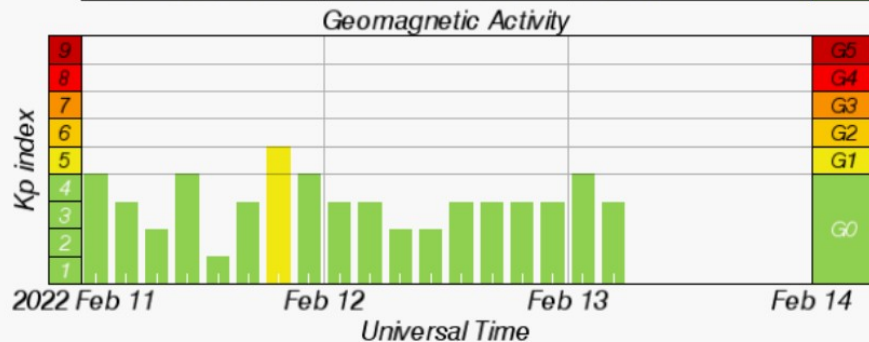
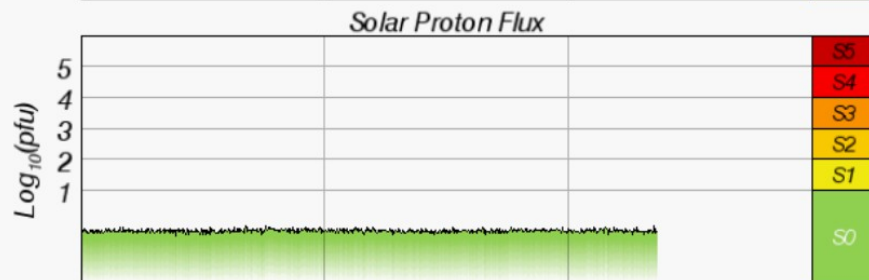
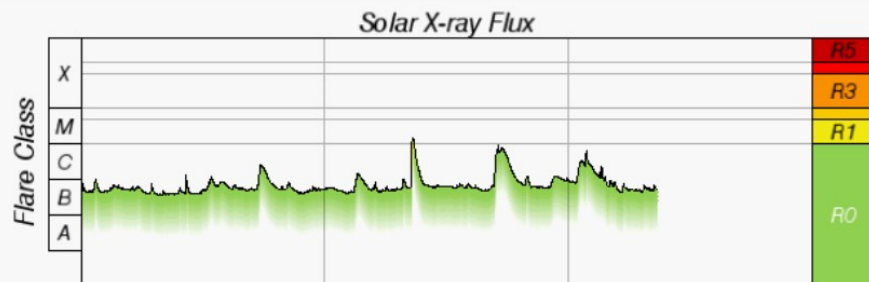
Solar Wind Speed: **517** km/sec

Solar Wind Magnetic Fields: Bt **7** nT, Bz **6** nT

Noon 10.7cm Radio Flux: **111** sfu

## SPACE WEATHER ENTHUSIASTS DASHBOARD

### SPACE WEATHER OVERVIEW



:Product: 3-Day Forecast  
 :Issued: 2022 Feb 12 0030 UTC  
 # Prepared by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center

#### A. NOAA Geomagnetic Activity Observation and Forecast

The greatest observed 3 hr Kp over the past 24 hours was 5 (NOAA Scale G1).  
 The greatest expected 3 hr Kp for Feb 12-Feb 14 2022 is 5 (NOAA Scale G1).

#### NOAA Kp index breakdown Feb 12-Feb 14 2022

	Feb 12	Feb 13	Feb 14
00-03UT	5 (G1)	3	5 (G1)
03-06UT	4	2	5 (G1)
06-09UT	3	2	4
09-12UT	2	1	4
12-15UT	2	1	3
15-18UT	1	1	3
18-21UT	1	2	4
21-00UT	2	4	3

Rationale: G1 (Minor) geomagnetic storms are expected on 12 Feb due to CME influence and are likely on 14 Feb due to an anticipated negative polarity CH HSS.

#### B. NOAA Solar Radiation Activity Observation and Forecast

Solar radiation, as observed by NOAA GOES-16 over the past 24 hours, was below S-scale storm level thresholds.

#### Solar Radiation Storm Forecast for Feb 12-Feb 14 2022

	Feb 12	Feb 13	Feb 14
S1 or greater	1%	1%	1%

Rationale: No S1 (Minor) or greater solar radiation storms are



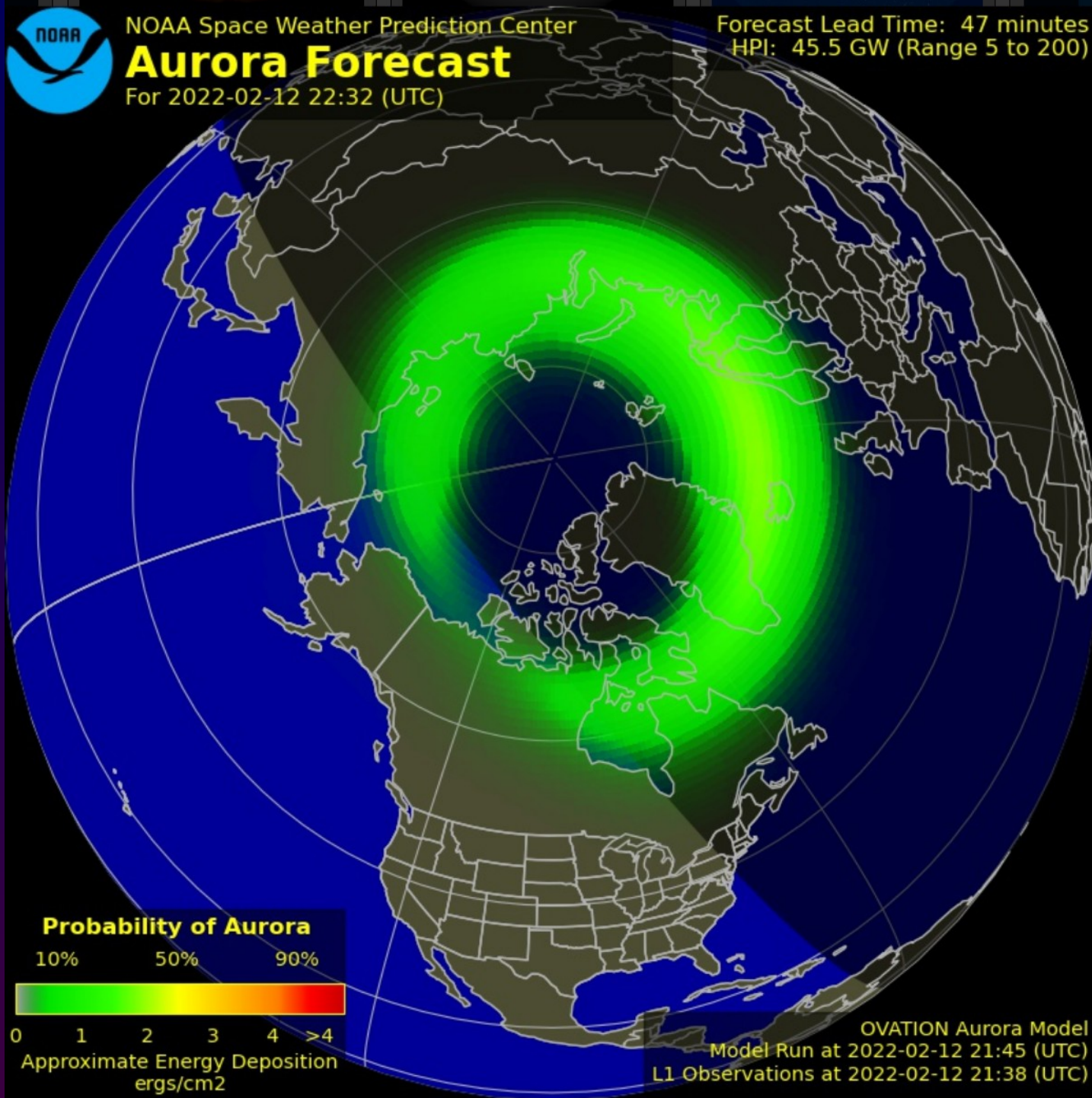
NOAA Space Weather Prediction Center

# Aurora Forecast

For 2022-02-12 22:32 (UTC)

Forecast Lead Time: 47 minutes

HPI: 45.5 GW (Range 5 to 200)



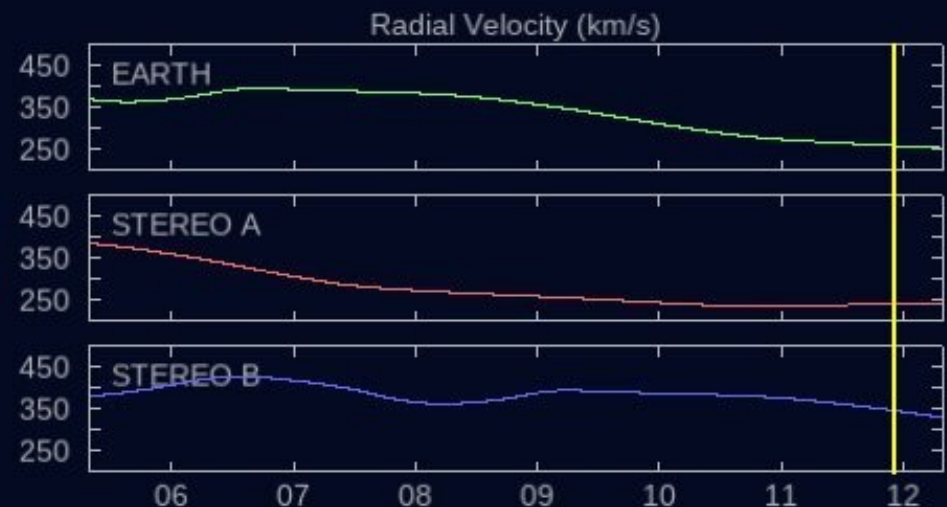
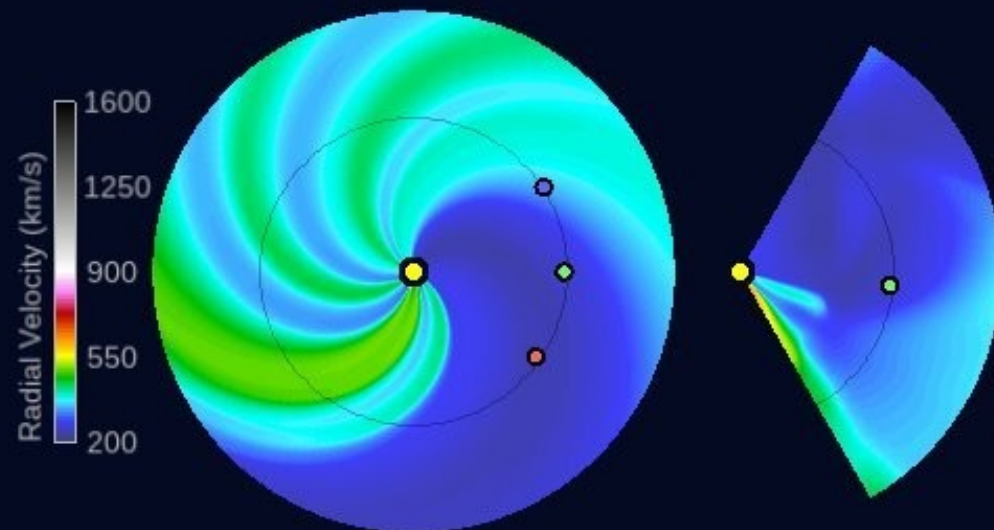
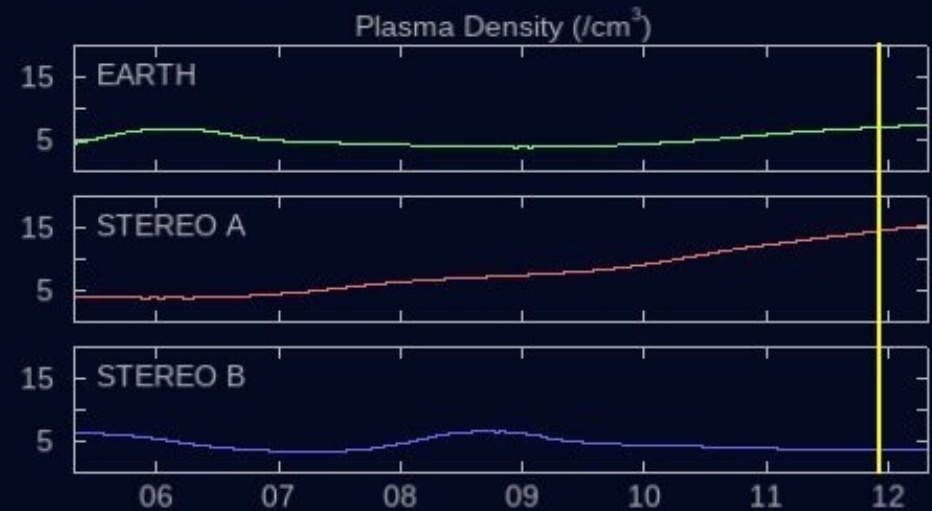
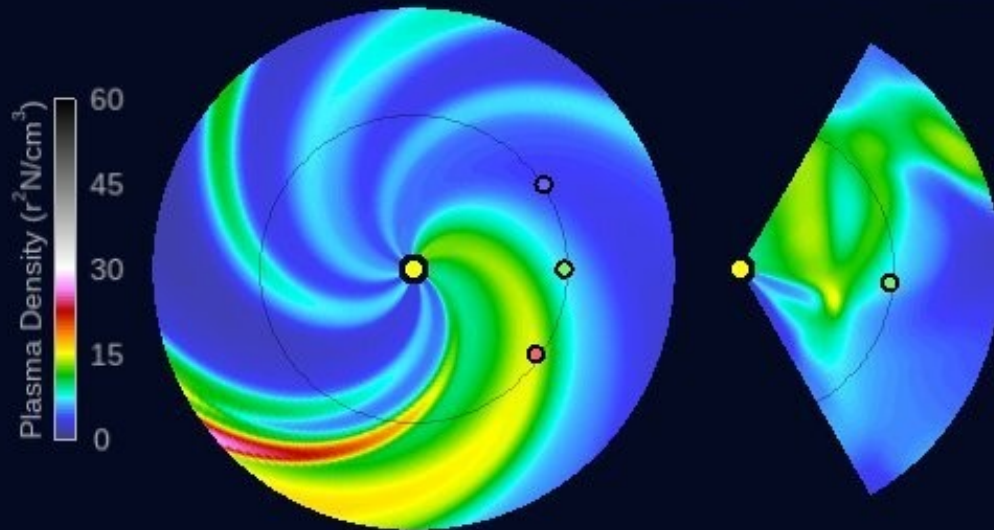
OVATION Aurora Model  
Model Run at 2022-02-12 21:45 (UTC)  
L1 Observations at 2022-02-12 21:38 (UTC)





# Forecast for my trip (8-15th)

2022-02-11 22:00:00

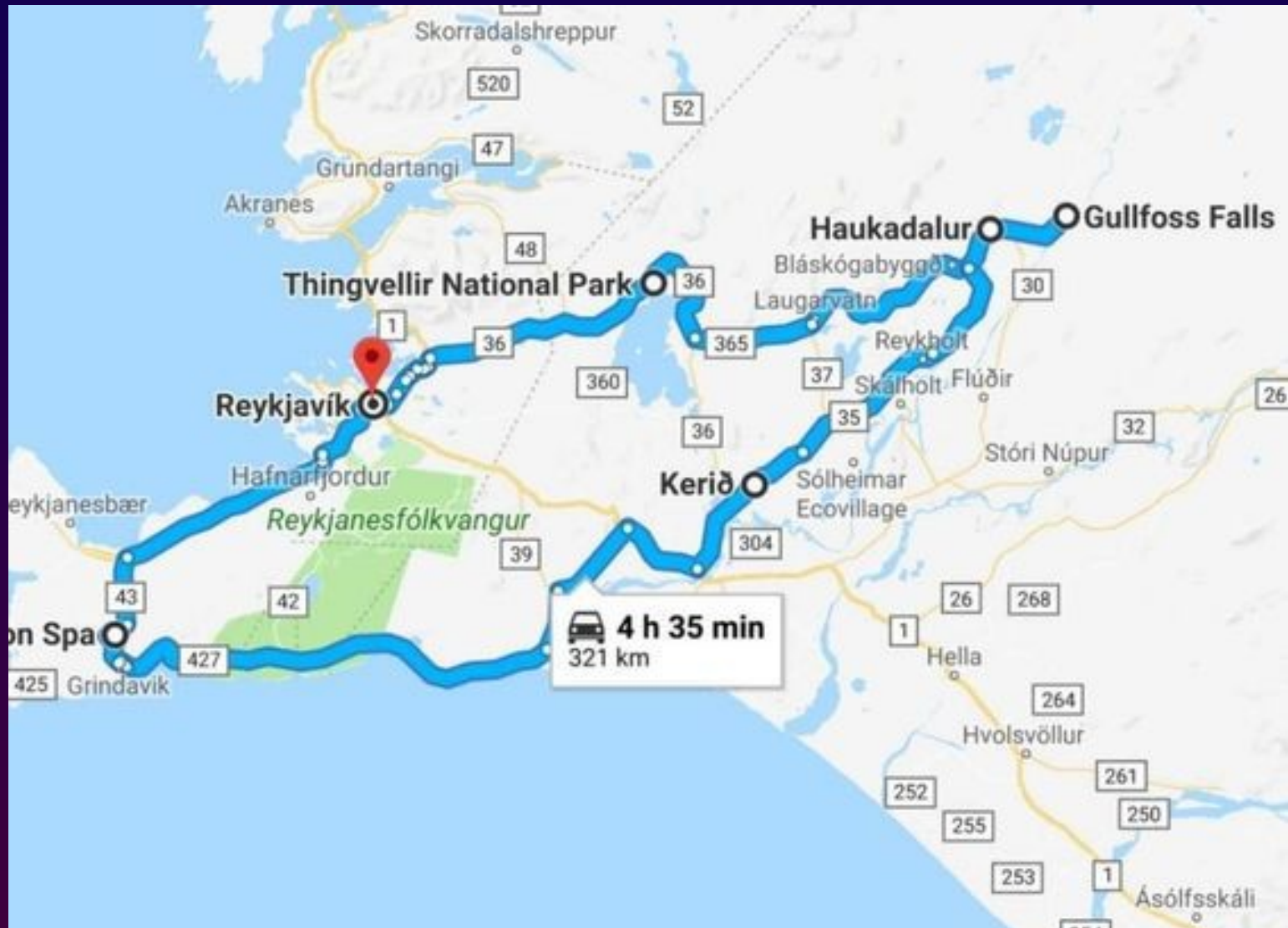


# Where to stay in Iceland?





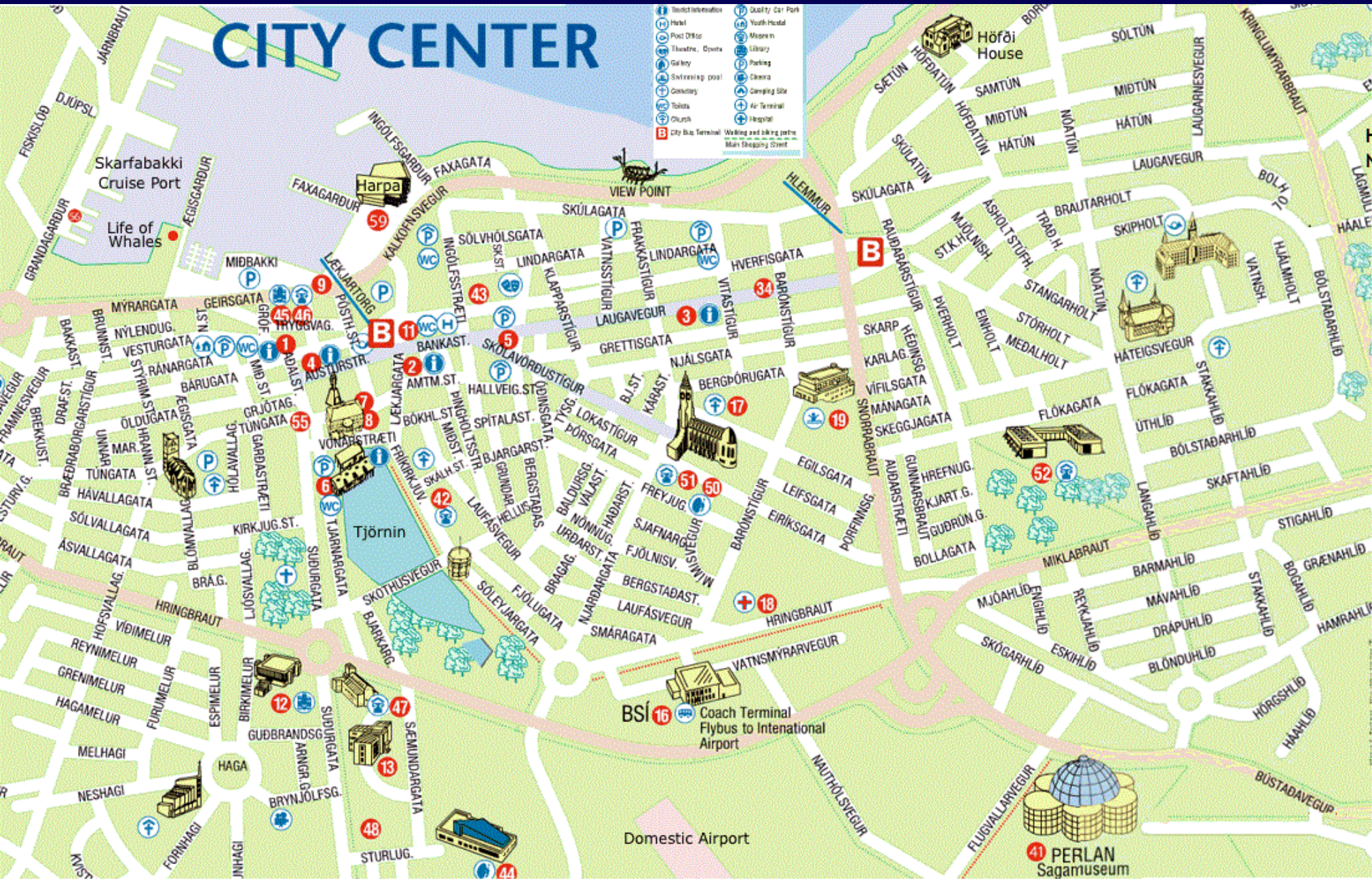
- Flights: Gatwick - Keflavik (Easyjet)
- Transfer bus: Keflavik - Reykjavic
- Local buses
- Hire car





# CITY CENTER

- Tourist Information
- Hotel
- Post Office
- Theatre, Opera
- Gallery
- Swimming pool
- Zoo
- Church
- City Bus Terminal
- Quality Car Park
- Youth Hostel
- Museum
- Library
- Parking
- Cinema
- Campsite
- Air Terminal
- Hospital
- Walking and biking paths
- Main Shopping Street



Hilton Nordica



# Reykjavik Hilton Nordica







# Aurora photography equipment

- Canon EOS 550D digital SLR (18-55mm lens)
- Samyang 14mm F2.8 lens (taped to lock focus!)
- Tripod
- Wired remote control
- 20000 mAh USB battery pack
- USB power to camera cable (voltage converter)
- USB powered lens heater
- Spare SD card
- iPhone 8



# People asked after the talk for more detailed info on some of my kit. Here it is:

- 20000mAh USB battery pack by AUKEY. My model is PB-N36 but is a couple of years old now. Check airline info about whether to put in cabin or hold
- USB to EOS 550D power adaptor. My model is no longer available but looks similar to Amazon item B07CHQPMTV. My camera uses the E8 size battery so look for a power adaptor for your size of battery and voltage, including the dummy battery insert.
- Lens heater - Velcro strap with 5 Watt heating strip, USB power, and inline power adjuster
- iPhone / Android camera remote control - these cost just a few pounds online, you register them as a Bluetooth device on your phone, and pressing the button on the remote takes a photo or starts/stops a video.







Through a glass darkly





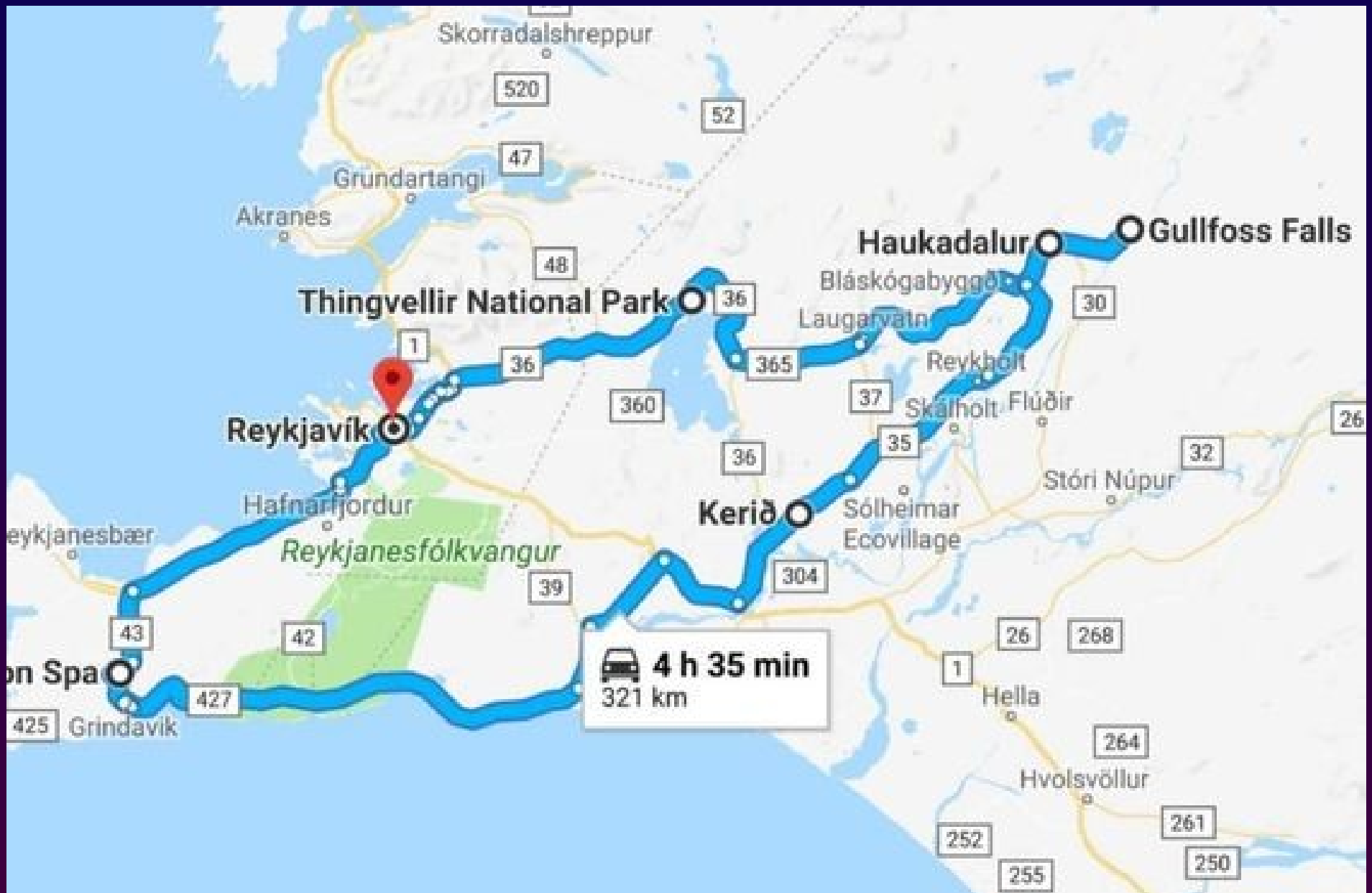








# 12<sup>th</sup> Feb Thingvellir















# EOS 550D Photos

- 5184 x 3456 pixels = 18Mp
- ISO-1600
- 14mm F2.8 Samyang lens
- Stopped down to F3.4
- Exposure 1 second
- Auto dark frame (noise) subtraction
- Contrast and Brightness tweaked to improve display on projector





































# iPhone 8 Photos

- 4032 x 3024 pixels = 12Mp
- ISO-2000
- 4mm F1.8 lens
- Automatic exposure 1/4 second
- Handheld
  
- Contrast and Brightness not tweaked











# Time-lapse Videos

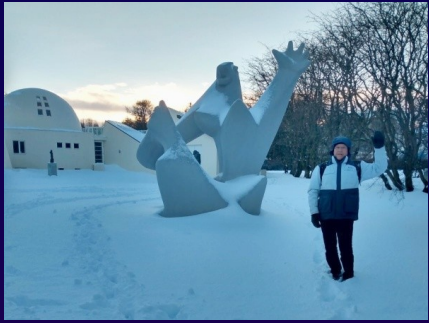
- Photos taken every ~2 seconds
- VirtualDub used to convert JPEG series into a video
- 5 frames/sec display rate
- Speedup  $\sim 2 \text{ sec} / 200\text{ms} = 10\text{x}$



# Things to consider...

- Remember iPhone stand and remote
- Zoom lenses and heaters don't mix?
- Take dark frames rather than using inbuilt dark frame subtraction?
- Use Canon EOS Utility to control camera and check images via USB?
- Practice using the camera!
- 4 x 4 rather than economy car
- Take black bin bags and ties/tape to cover car lights
- If the aurora won't appear...

# Other sights to find in Iceland





ANY  
QUESTIONS ?

