

Instructions for using the *Heavens Above* (HA) website (<https://www.heavens-above.com/>) for sighting information for the International Space Station (ISS)

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Developing these instructions was prompted by the desire to see the ISS in the night sky (normally only visible from reflected sunlight near dawn and dusk) and finding that the **HA** website works well, is relatively easy to use, and has several very useful features. This effort was also prompted by interest in the current ISS mission (Expedition 55/56) in which an alum of Purdue EAPS, Drew Feustel (<https://www.nasa.gov/astronauts/biographies/andrew-j-feustel/biography>), is currently the Commander of the ISS. It's also educational, and fun, to search and view the ISS as it occasionally passes over us! The ISS makes about 15 orbits of Earth every day traveling at a speed of about 27,600 km/hr and at an altitude of about 410 km.

This web page: <http://web.ics.purdue.edu/~braile/new/HeavensAbove.pdf>

Instructions for using the *Heavens Above* (HA) website (<https://www.heavens-above.com/>) for sighting information for the International Space Station (ISS), continued

The HA website is capable of providing sighting information for other satellites, but the instructions and examples provided here are only for ISS sightings. All images shown on these instructions are from the **HA** website. All added text and highlighting arrows are in red to distinguish them from the website content. The website includes advertizing and requests for donations, but the images that I have used do not have those notations. More information on the ISS can be found at (as well as many other sites):

https://www.nasa.gov/mission_pages/station/main/index.html

https://en.wikipedia.org/wiki/International_Space_Station

This web page: <http://web.ics.purdue.edu/~braile/new/HeavensAbove.pdf>

The Heavens Above website: <https://www.heavens-above.com/>

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3 Easy Steps

1. Click "Continue"
2. Run and Install
3. Open new Tab

Quickmapsanddirections.com

You don't have to click on CONTINUE

The end of Iridium flares?

The first generation of Iridium satellites are being replaced with satellites of a new design which, unfortunately, are not expected to produce predictable flares. Please see our [statement](#) for more information.

Configuration

- Login (optional)
- Change your observing location



Satellites

- ISS Interactive 3D Visualization
- Interactive Animation of Tesla Roadster Trajectory
- 10-day predictions for satellites of special interest
 - ISS
 - Tiangong 2
 - N. Korean satellite
 - Hubble Space Telescope
 - Envisat
 - OTV 5 (USA 277)
- Satellite database
- Daily predictions for brighter satellites



Current position of ISS

Two important steps are shown here. Instructions for the first step will be shown on the next 3 slides, followed by instructions for the second step.

Select location

The red marker shows your currently selected location. You can change the location by either;

1. Searching for a place name.
2. Enter your [what3words](#) address
3. Dragging the marker or clicking on a new location on the map.
4. Entering your coordinates and time zone manually.

Enter place to search for 

Search results

On the HA home page, click on **Change Your Observing Location** (see previous page), then enter a location (such as a location **in the line shown above**), usually a city or town. We've used West Lafayette, Indiana for this example. After entering the location click on **Search** on the web page.



Latitude	<input type="text" value="40.4259"/>	degrees
Longitude	<input type="text" value="-86.9081"/>	degrees
Elevation	<input type="text" value="186"/>	meters
Name	<input type="text" value="West Lafayette"/>	
Time zone	<input type="text" value="(GMT-5:00) USA (Eastern), Canada (Eastern), Bahamas, Haiti"/>	

Scroll down on the page that appears, and if the information is correct (also note that a map appears), click on **Update** to verify the location for the ISS sighting search.

←



3 Ea
1) CI
2) Dc
3) Gc

User:	anonymous	Login
Location:	West Lafayette	(40.4259°N, 86.9081°W)
Time:	19:57:00	(UTC-04:00)
Language:	English	

You don't have to click on START NOW

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- ISS
- Tiangong 2



After selecting **Update**, the details of your selected location will appear on the resulting page – an updated **HA home page**, with detailed location information as shown in the box in the upper right (for better viewing, the box was copied, enlarged, and pasted in a better position on this page). **Now** select **ISS** from the list (as shown above, also, see slide 3 above). A list of sightings for the next 10-day period will appear (see sample list below). If you are interested in a different time period or there are no “good” sightings listed, you can use the **arrow keys** on that page to select a later time period.

ISS - Visible Passes **Sample List.**

Search period start: 30 August 2018 00:00

Search period end: 09 September 2018 00:00



Orbit: 402 x 409 km, 51.6° (Epoch: 11 August)

Passes to include: visible only all

Click on the date to get a star chart and other pass details.

Brightness is the astronomical brightness scale; more negative numbers mean a brighter object. **Start, Highest point, and End** times are given (for your time zone), **Altitude** (degrees above the horizon), and direction (**Azimuth**) to view at the listed times (a 24 hour clock is used) are shown.

Date	Brightness (mag)	Start			Highest point			End			Pass type
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.	
30 Aug	-3.0	06:05:14	17°	SSW	06:07:26	44°	SE	06:10:34	10°	ENE	visible
31 Aug	-1.9	05:15:24	23°	SE	05:15:24	23°	SE	05:18:01	10°	E	visible
01 Sep	-3.8	05:58:08	33°	WSW	05:59:26	72°	NW	06:02:42	10°	NE	visible
02 Sep	-2.6	05:08:08	40°	E	05:08:08	40°	E	05:10:28	10°	ENE	visible
02 Sep	-2.1	06:41:17	10°	WNW	06:43:56	22°	NNW	06:46:35	10°	NNE	visible



From this list, we would likely select the **Sept. 1** pass-over of the ISS as it is predicted to be the brightest, will last for about 6 minutes, and reaches a high “altitude” (angle above the horizon) over our location, so it will be easier to see and will be visible for a longer time. Of course, weather will determine whether or not there are good conditions for sighting. A relatively dark observing location with good visibility of a large portion of the sky is also desirable. The direction (azimuth) that one would likely first see the ISS (in our example, **WSW**), the azimuth of its highest point (**NW**), and the azimuth of its end point (**NE**) should also be noted. **The ISS travels very fast (typically faster than an airplane) across the viewable sky and does not have flashing lights that are usually apparent on airplanes, making it easier to identify.**

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Date	Brightness (mag)	Start			Highest point			End			Pass type
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.	
30 Aug	-3.0	06:05:14	17°	SSW	06:07:26	44°	SE	06:10:34	10°	ENE	visible
31 Aug	-1.9	05:15:24	23°	SE	05:15:24	23°	SE	05:18:01	10°	E	visible
01 Sep	-3.8	05:58:08	33°	WSW	05:59:26	72°	NW	06:02:42	10°	NE	visible
02 Sep	-2.6	05:08:08	40°	E	05:08:08	40°	E	05:10:28	10°	ENE	visible
02 Sep	-2.1	06:41:17	10°	WNW	06:43:56	22°	NNW	06:46:35	10°	NNE	visible
03 Sep	-2.7	05:50:43	28°	WNW	05:51:33	33°	NNW	05:54:33	10°	NE	visible
04 Sep	-1.9	05:00:35	30°	NNE	05:00:35	30°	NNE	05:02:27	10°	NE	visible
04 Sep	-1.4	06:34:11	10°	NW	06:36:14	15°	NNW	06:38:17	10°	NNE	visible
05 Sep	-1.9	05:43:04	19°	NW	05:43:43	20°	NNW	05:46:14	10°	NNE	visible
06 Sep	-1.2	04:52:51	19°	NNE	04:52:51	19°	NNE	04:54:10	10°	NE	visible
06 Sep	-1.2	06:27:06	10°	NNW	06:28:34	12°	N	06:30:02	10°	NNE	visible
07 Sep	-1.4	05:35:16	14°	NNW	05:35:58	14°	NNW	05:37:52	10°	NNE	visible
08 Sep	-0.7	04:45:01	13°	NNE	04:45:01	13°	NNE	04:45:46	10°	NNE	visible
08 Sep	-1.0	06:19:38	10°	NNW	06:20:54	12°	N	06:22:10	10°	NNE	visible



After selecting the sighting that you are interested in, click on the **blue date** (in our example, **01 SEP**). The **night sky image** shown on the following page will appear.

Important note:

Predicted sighting information (start and end times, etc., shown in the Table on the previous slides) changes a small amount with time, so if you have identified a sighting time several days or more earlier, then it is a good idea to check the sighting information a few hours before the predicted start time.

The highlighted circle is the region where the satellite is at least 10° above your horizon. The size of the circle depends on the height of the satellite.

The **Ground Track** view (shown here for the example sighting) is very useful to see the direction and timing of the ISS sighting relative to your location.

