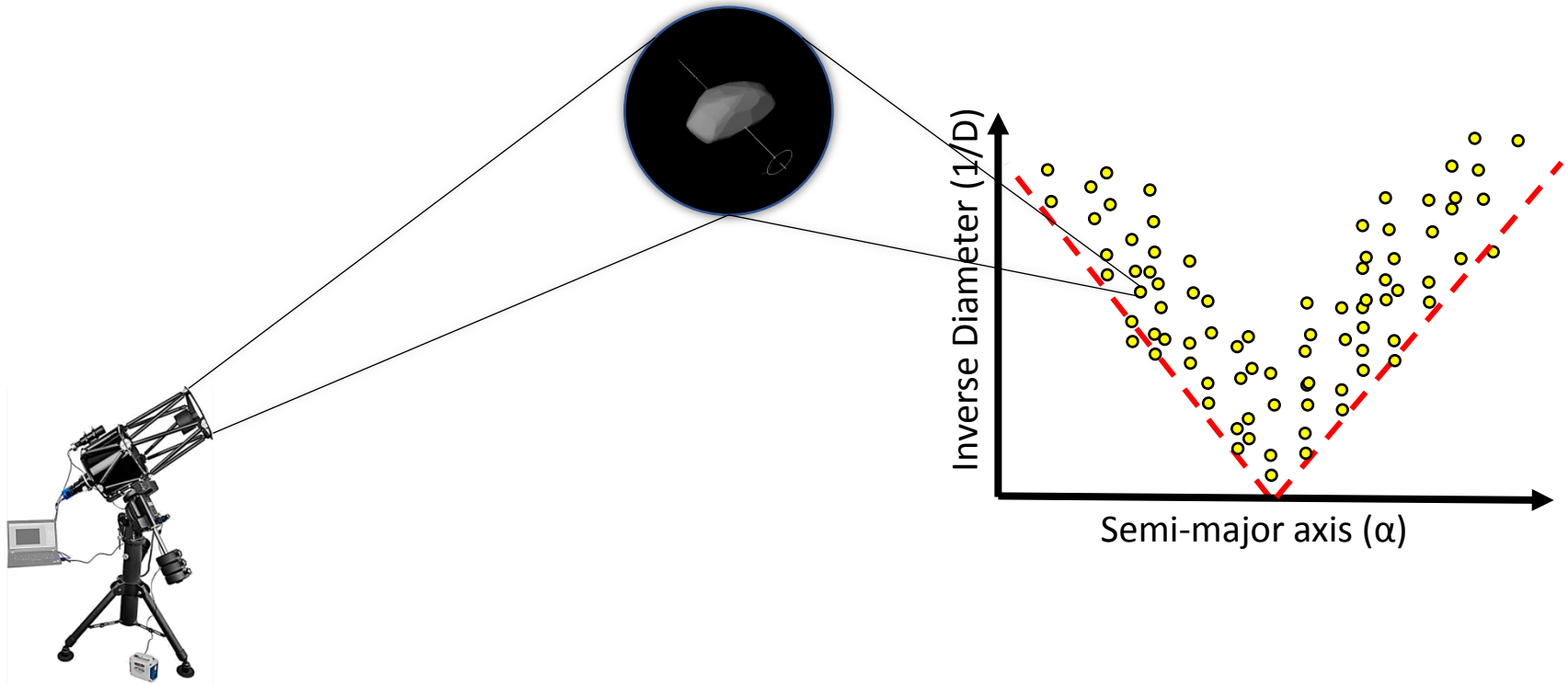
Ancient Asteroids

An international observing campaign, that aims towards the characterization of dispersed collisional asteroid families in the Main Belt of our Solar System.

Observer's guide:
Web Application



HELLENIC REPUBLIC
National and Kapodistrian University of Athens
EST. 1837

University of Athens Observatory

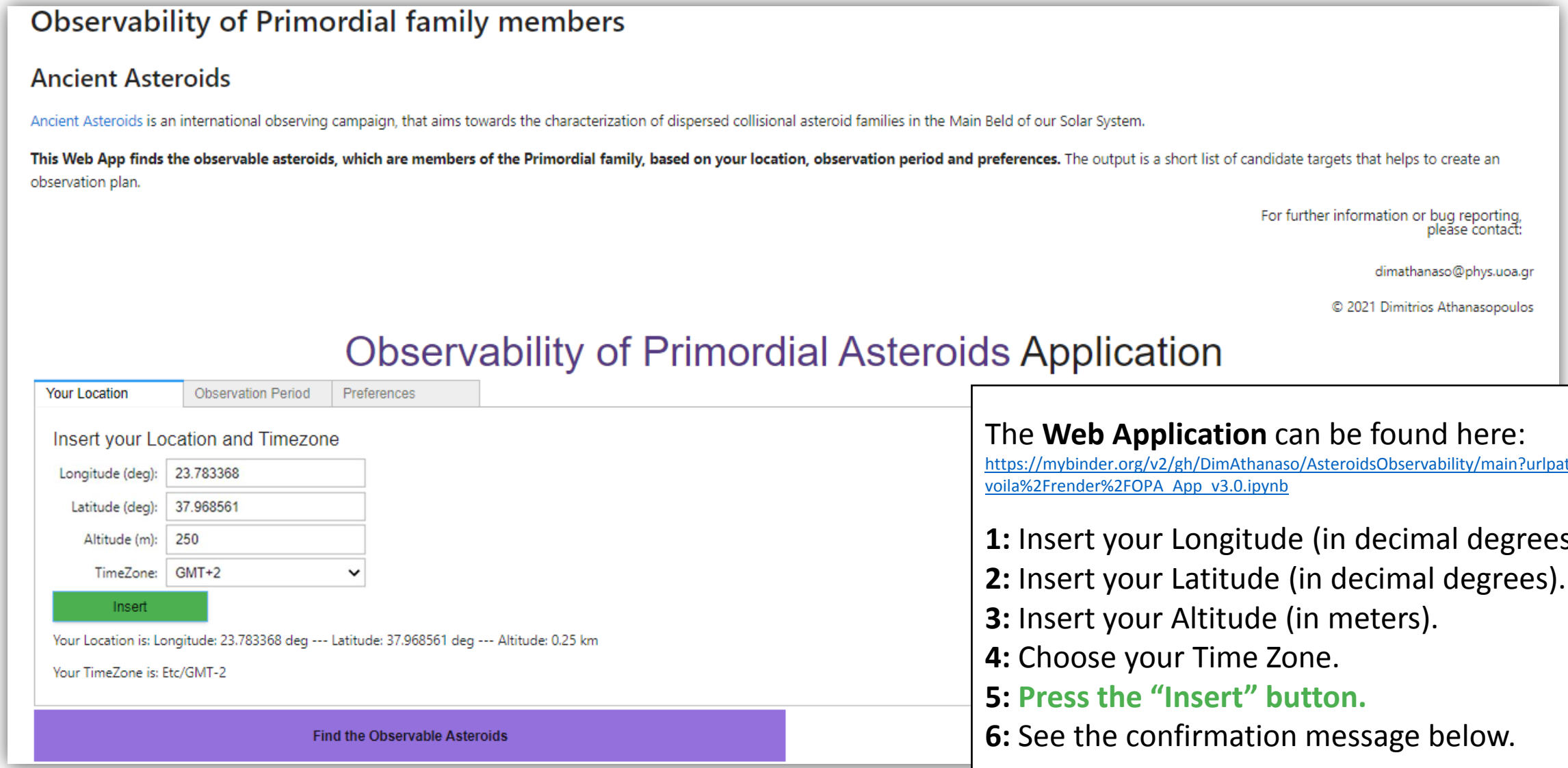
OBSERVATOIRE DE LA CÔTE D'AZUR
UNIVERSITÉ CÔTE D'AZUR

ARISTOTLE UNIVERSITY OF THESSALONIKI

OBSERVATORY LOWELL

ASTRONOMICKÝ ÚSTAV UK
Matematicko-fyzikalni fakulta
V Holesovickach 2
180 00, Praha 8

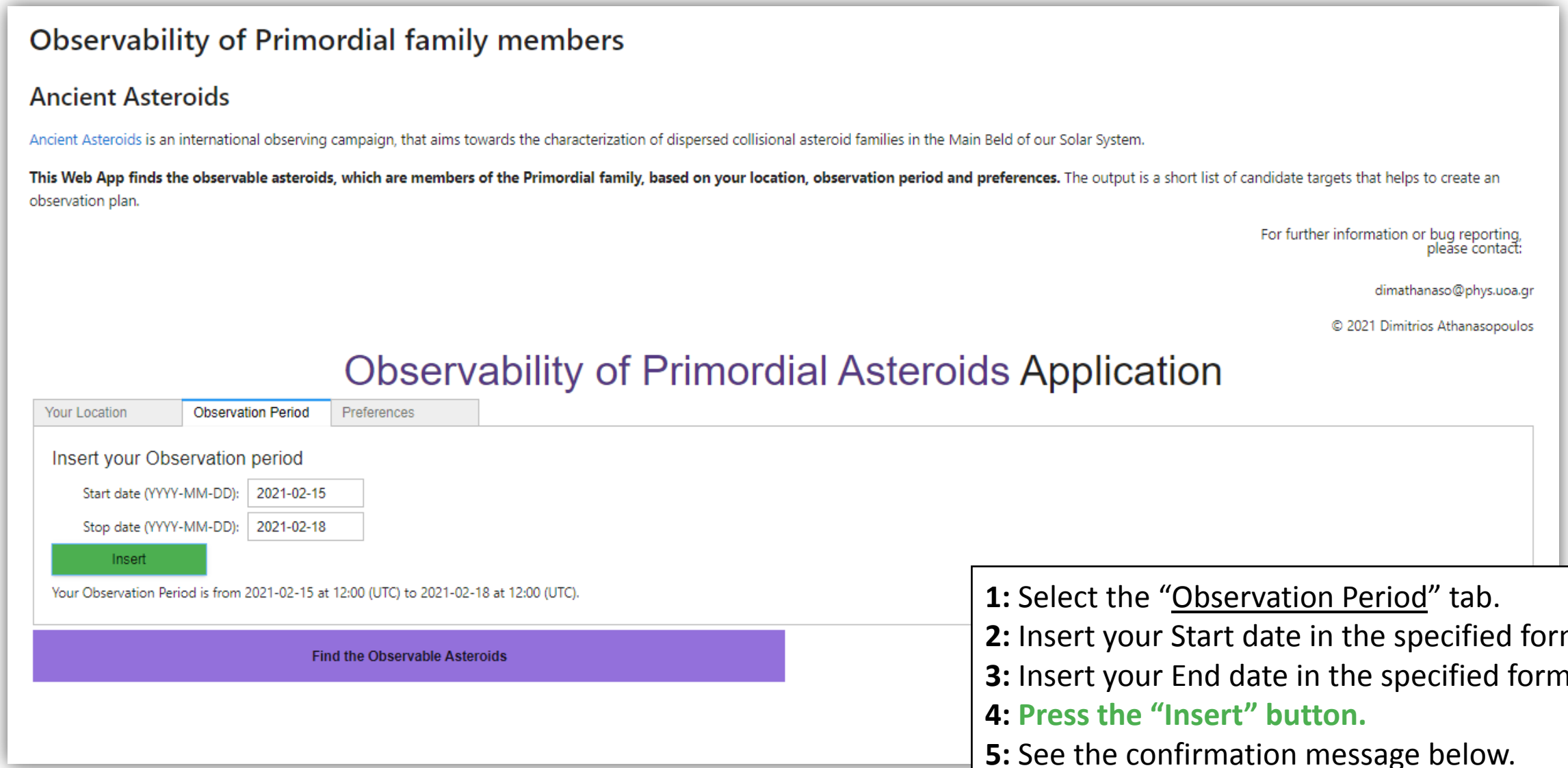
Step A:



The **Web Application** can be found here:
https://mybinder.org/v2/gh/DimAthanaso/AsteroidsObservability/main?urlpath=%2Fvoila%2Frender%2FOPA_App_v3.0.ipynb

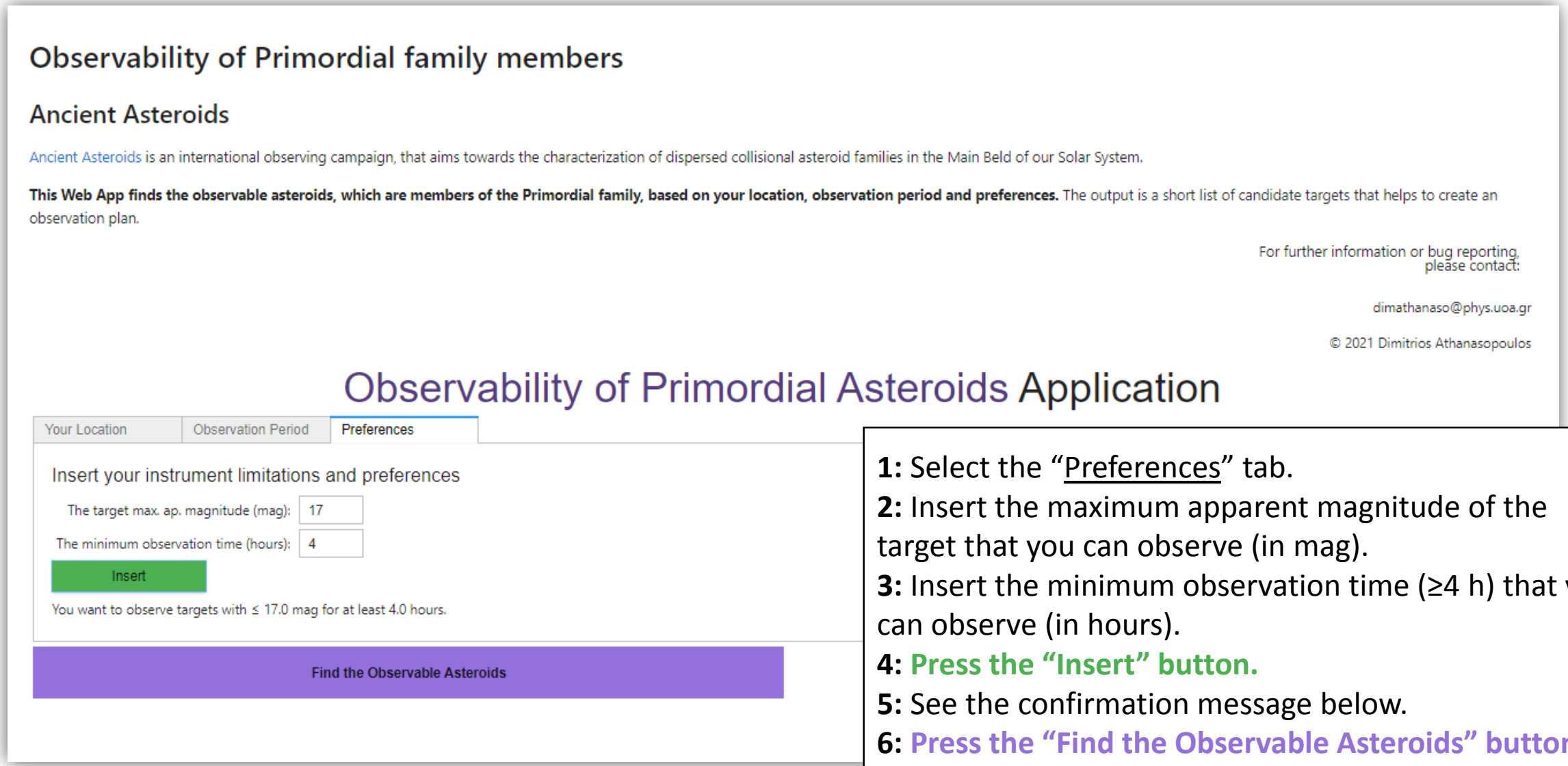
1: Insert your Longitude (in decimal degrees).
2: Insert your Latitude (in decimal degrees).
3: Insert your Altitude (in meters).
4: Choose your Time Zone.
5: **Press the "Insert" button.**
6: See the confirmation message below.

Step B:



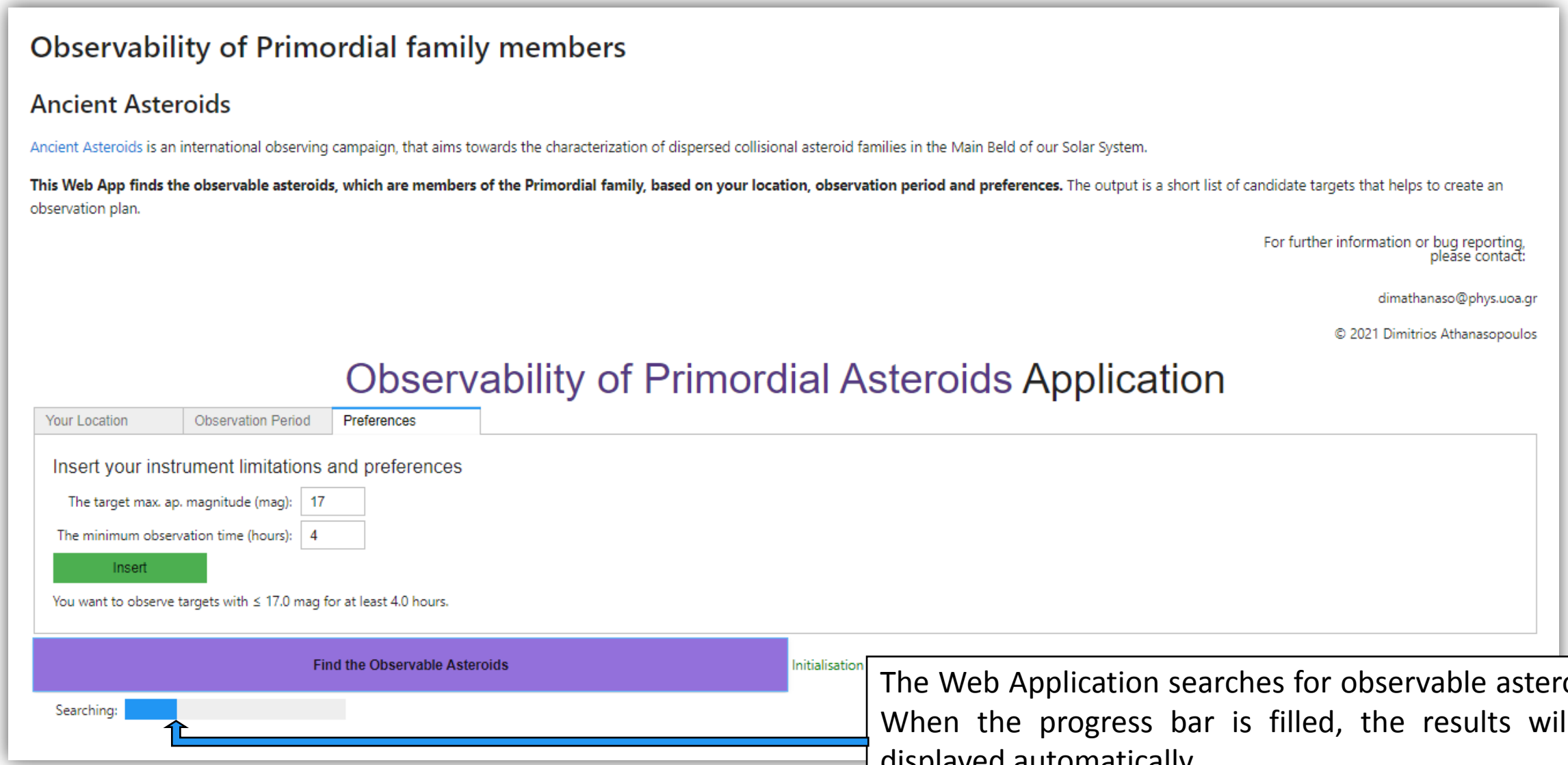
1: Select the "Observation Period" tab.
2: Insert your Start date in the specified format.
3: Insert your End date in the specified format.
4: **Press the "Insert" button.**
5: See the confirmation message below.

Step C:



1: Select the "Preferences" tab.
2: Insert the maximum apparent magnitude of the target that you can observe (in mag).
3: Insert the minimum observation time (≥4 h) that you can observe (in hours).
4: **Press the "Insert" button.**
5: See the confirmation message below.
6: **Press the "Find the Observable Asteroids" button.**

Wait to search asteroids…



The Web Application searches for observable asteroids. When the progress bar is filled, the results will be displayed automatically.

Step D:

Find the Observable Asteroids

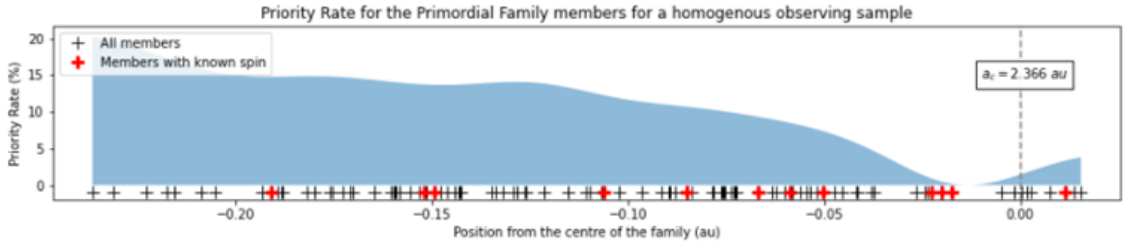
Initialisation completed!

The observable asteroids

Target	Max. Duration (h)	Min. V (mag)	P (h)	λ_1 (°)	β_1 (°)	λ_2 (°)	β_2 (°)	Priority Rate (%)
4422 Jarre (1942 UA)	7.0	16.506	5.43	-	-	-	-	14.0
2768 Gorky (1972 RX3)	4.0	16.805	4.51	-	-	-	-	14.0
25343 (1999 RA44)	9.0	16.784	0.00	-	-	-	-	11.0
43725 (1978 RK9)	7.0	16.704	0.00	-	-	-	-	11.0
2792 Ponomarev (1977 EY1)	4.0	16.919	137.57	-	-	-	-	10.0
428 Monachia (A897 WA)	8.0	15.281	3.63	-	-	-	-	8.0
2536 Kozyrev (1939 PJ)	5.0	16.514	7.19	-	-	-	-	8.0
853 Nansenia (A916 GN)	7.0	14.917	7.93	-	-	-	-	7.0
783 Nora (A914 FB)	8.0	15.212	34.40	-	-	-	-	1.0
282 Clorinde (A889 BA)	4.0	14.987	6.42	-	-	-	-	1.0
1244 Deira (1932 KE)	7.0	14.401	210.60	107	-56	314	-46	0.0
220 Stephania (A881 KA)	4.0	15.984	18.20	26	-50	223	-62	0.0

The ephimerides were produced by the JPL's HORIZON system. The physical parametrers have been retrieved from the Minor Planet Physical Properties Catalogue (Delbo, Walsh, Bolin, Avdellidou, Morbidelli, 2017, "Identification of a primordial asteroid family constrains the original planetesimal population", Science. 357, 1026 - 1029) and the spin pole data from the DAMIT (Ďurech, Sidorin, Kaasalainen, 2010, "DAMIT: a database of asteroid models", A & A, 513, A46).

To characterise an asteroid family concerning the rotational state of its members, a homogeneous observing sample, along the distance from the centre of the family is required. The following diagram shows the priority rate for each Primordial family member as a function of its position from the centre of the family. The crosses indicate the position of the members within the family. The red crosses indicate members with known spin state.

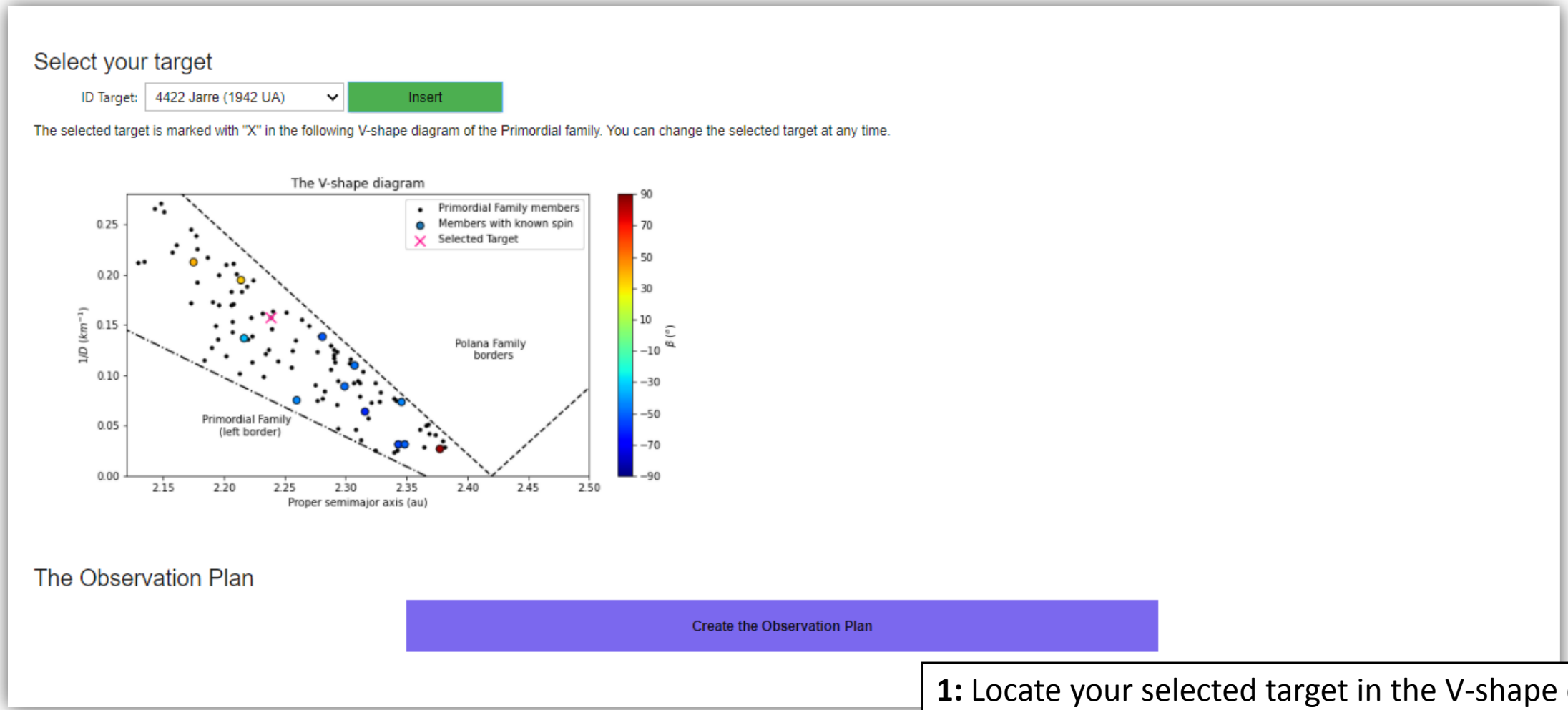


Select your target

ID Target: 4422 Jarre (1942 UA) Insert

1: Choose your target from the drop down list.
2: **Press the "Insert" button.**

Step E:



1: Locate your selected target in the V-shape diagram. You can change the selected target at any time.

2: **Press the "Create the Observation Plan" button.**

Your Observation Plan is ready!

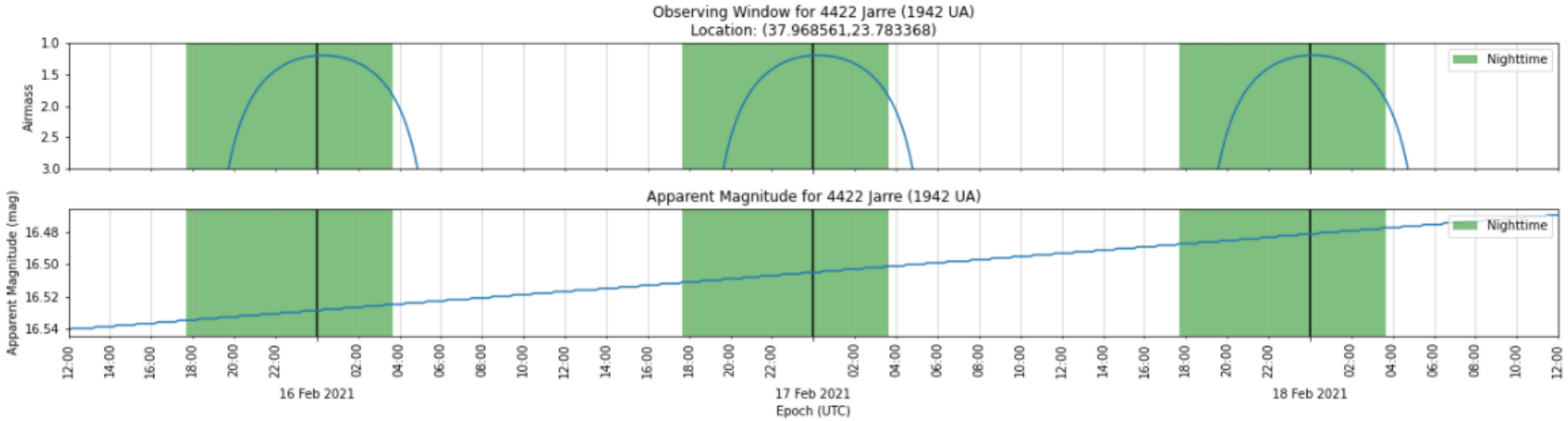
Create the Observation Plan

The diagrams below shows the observation plan for the selected target, based on your location. The table lists the observational parameters for the given location and date, including the duration of the observing window, the coordinates of the target at the beginning and end of the observing window, as well as the time, when the target is high enough above the horizon (airmass >3). Note that the observation time is given in UTC, and the time zone in added next to it. The apparent magnitude of the target is changing as a function of time, as shown on the bottom diagram.

Location: (37.968561,23.783368) Timezone: Etc/GMT-2

The target 4422 Jarre (1942 UA) is observable for these dates:

Mid-Date	Duration (h)	V (mag)	Observation Start (UTC + Timezone)	Observation End (UTC + Timezone)	Start Point [RA,DEC]	End Point [RA,DEC]	Solar Phase (°)	PABLon (°)	PABLat (°)
2021-02-16	7.833333	16.529	2021-02-15 19:50:00+02:00	2021-02-16 03:40:00+02:00	[174.29718, 4.37285]	[174.23634, 4.40998]	9.5190	168.2477	1.4482
2021-02-17	8.000000	16.505	2021-02-16 19:40:00+02:00	2021-02-17 03:40:00+02:00	[174.11631, 4.48646]	[174.05248, 4.52508]	9.0947	168.2478	1.4731
2021-02-18	7.833333	16.481	2021-02-17 19:40:00+02:00	2021-02-18 03:30:00+02:00	[173.92911, 4.6029]	[173.86497, 4.64135]	8.6684	168.2453	1.4978



Now you are ready to observe!

That's it!
You can still change the selected target and start over again.

Contact the Team

Any questions, queries or other communication, related to the Ancient Asteroids project, should be addressed to:

Kosmas Gazeas
PI and Scientific Coordinator, National and Kapodistrian University of Athens
kgaze@physics.auth.gr, *kgaze@phys.uoa.gr*

AND COPY to:

Dimitrios Athanasopoulos
PhD candidate, National and Kapodistrian University of Athens
dimathanaso@phys.uoa.gr

The email should have the title: "Ancient Asteroids", otherwise it will be omitted.

http://users.uoa.gr/~kgaze/research_asteroids_en.html