

AST251 Project 3 – Evaluating Claims of Extraterrestrial Messaging

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Planet 1

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We have identified what may be an indication of extraterrestrial intelligence, as well as the planet where it may have originated. This document summarizes the information gathered so far about the candidate message and its candidate planet of origin.

Potential evidence for extraterrestrial intelligence

Astronomers have detected a broadband radio transmission that appears to have originated from this planet's solar system. The transmission is believed to contain an image and is displayed below with the most likely aspect ratio. The transmission lasted a short duration and then stopped. The transmission is shown below:

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0101100101110011101100110100110010101000001010100010001000111000001
1000101100110110011000111111100110110111101001111100110100111010010
00001010111111011010001110010111101000000101001001001010111001001
1101111011100010110100001101111011100000111001011100001101001010000
1011000101100110100100010000111011101101011111101001101101111011110
0001100000101010111010000111101010000010001010101001001001011101000
1110000010010110001011011001000101001111011110001101011011111010110
000100111111010011000110010111111101000011110010011101100001110001
```

This signal was first noticed at UTC 2077-03-03/20:19.

Parameters of the candidate planet of origin and its host star

| | |
|----------------------------------|-------|
| Spectral Type | G |
| Stellar Luminosity (Solar Units) | 0.731 |
| Stellar Mass (Solar Masses) | 0.925 |
| Distance to Star (lightyears) | 138.5 |
| Planet Mass (Earth masses) | 2.7 |
| Atmospheric Pressure (atm) | 7.4 |

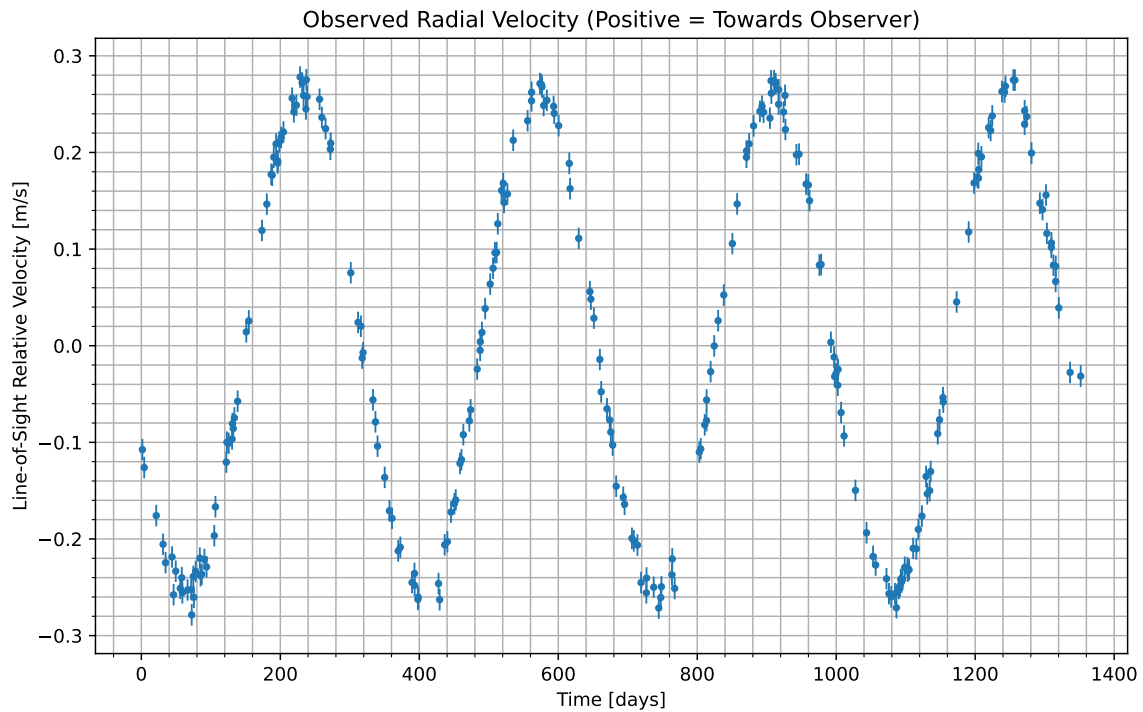


Figure 1: We have isolated the radial velocity of the host star due to the candidate planet. Data begins at UTC 2077-03-05/16:06. Positive values indicate the velocity at which the star is moving towards us; negative indicate the velocity at which it is moving away.

Atmospheric composition of the candidate planet (percent by volume)

| Molecule | Concentration |
|----------|---------------|
| N_2 | 11.3 |
| CO_2 | 60.1 |
| H_2O | 28.6 |

Gas Abundance (percent by volume)

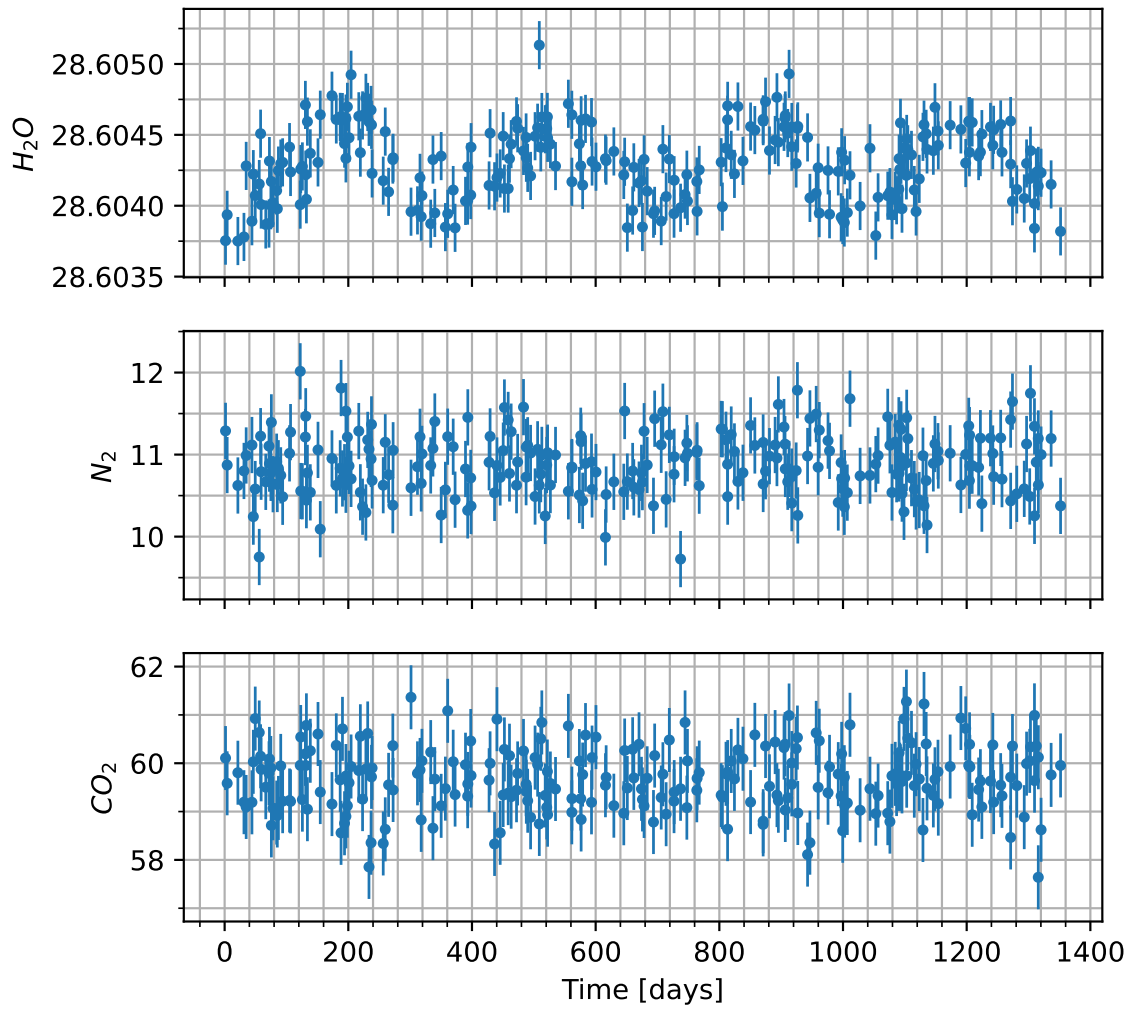


Figure 2: Concentration of various gases in the atmosphere of the candidate planet versus time. Note that the y-axis will usually only show the variation multiplied by some factor, shown in the upper left, and then added to some normal amount, also in the upper-left.

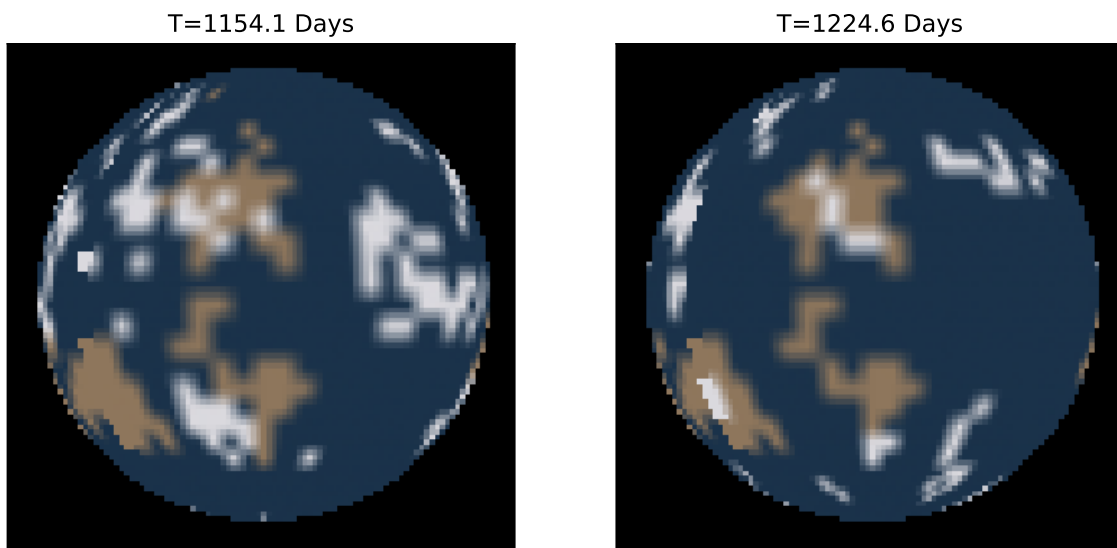


Figure 3: Maps of the surface of the candidate planet taken at two different times. Times are indicated above each image relative to the times shown in the radial velocity curve. Those maps are shown here. Tan areas indicate what we believe to be land, while blue-ish areas indicate what we believe to be liquid regions of some kind. Other colors present reflect the visible color as best as we are able to measure.