

AST251 Project 3 – Evaluating Claims of Extraterrestrial Messaging

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Planet 1

Thursday 9th December, 2100

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 narrowband optical 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 has been observed to repeat itself regularly. The transmission is shown below:

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1111000000000000110000000000000000000000000000000000110000000000001111
1111010111110011111100000010000001011111001111110010000001111
1111011011110011111100000111000001101111001111110011000001111
1111011101110111111100001111100001110111011111110011100001111
1111011110110111111100011111110001111011011111110011110001111
111101111101001111110011111111001111101001111110011111001111
1111000000000011111110000000000000000000000000000000111111000000001111
```

This signal was first noticed at UTC 2059-10-06/18:58.

Parameters of the candidate planet of origin and its host star

Spectral Type	F
Stellar Luminosity (Solar Units)	2.27
Stellar Mass (Solar Masses)	1.23
Distance to Star (lightyears)	8.2
Planet Mass (Earth masses)	1.2
Atmospheric Pressure (atm)	9.6

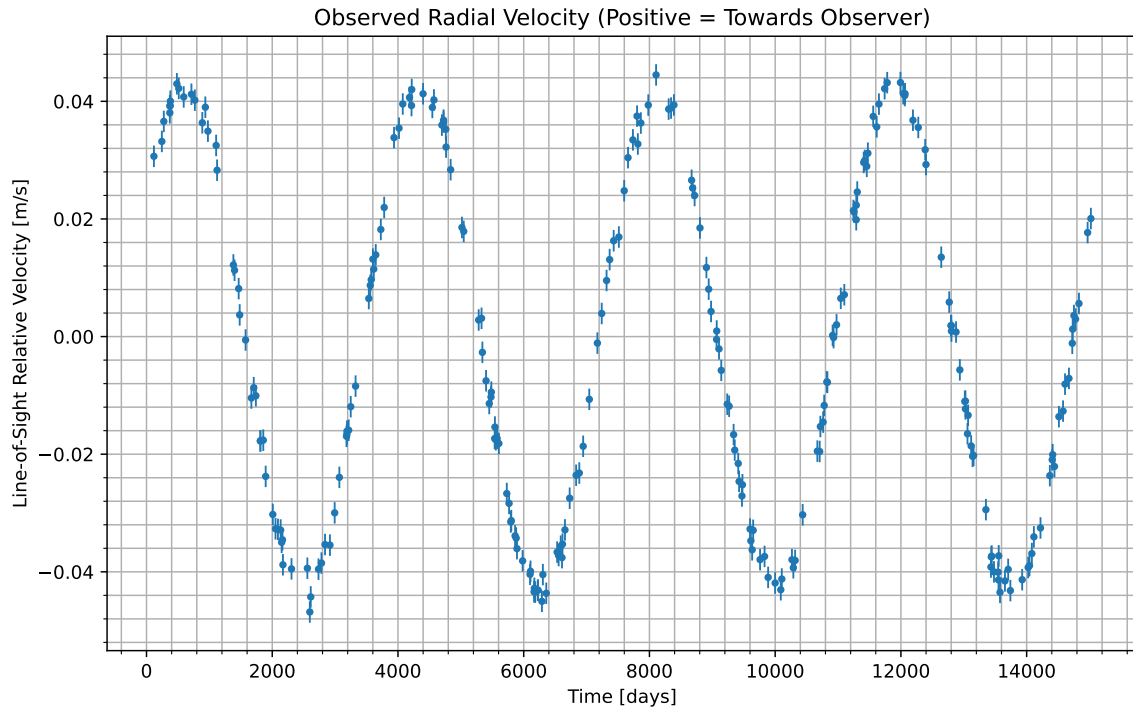


Figure 1: We have isolated the radial velocity of the host star due to the candidate planet. Data begins at UTC 2059-10-06/23:33. Positive values indicate the velocity at which the star is moving towards us; negative indicate the velocity at which it is moving away.

Atmospheric composition of the candidate planet (percent by volume)

Molecule	Concentration
H_2S	47.1
N_2	5.07
CO_2	9.91
SO	10.3
SO_2	17.6
HF	0.268
CO	7.67
S_2O	2.03E-06
S_2O_2	0.00796

Gas Abundance (percent by volume)

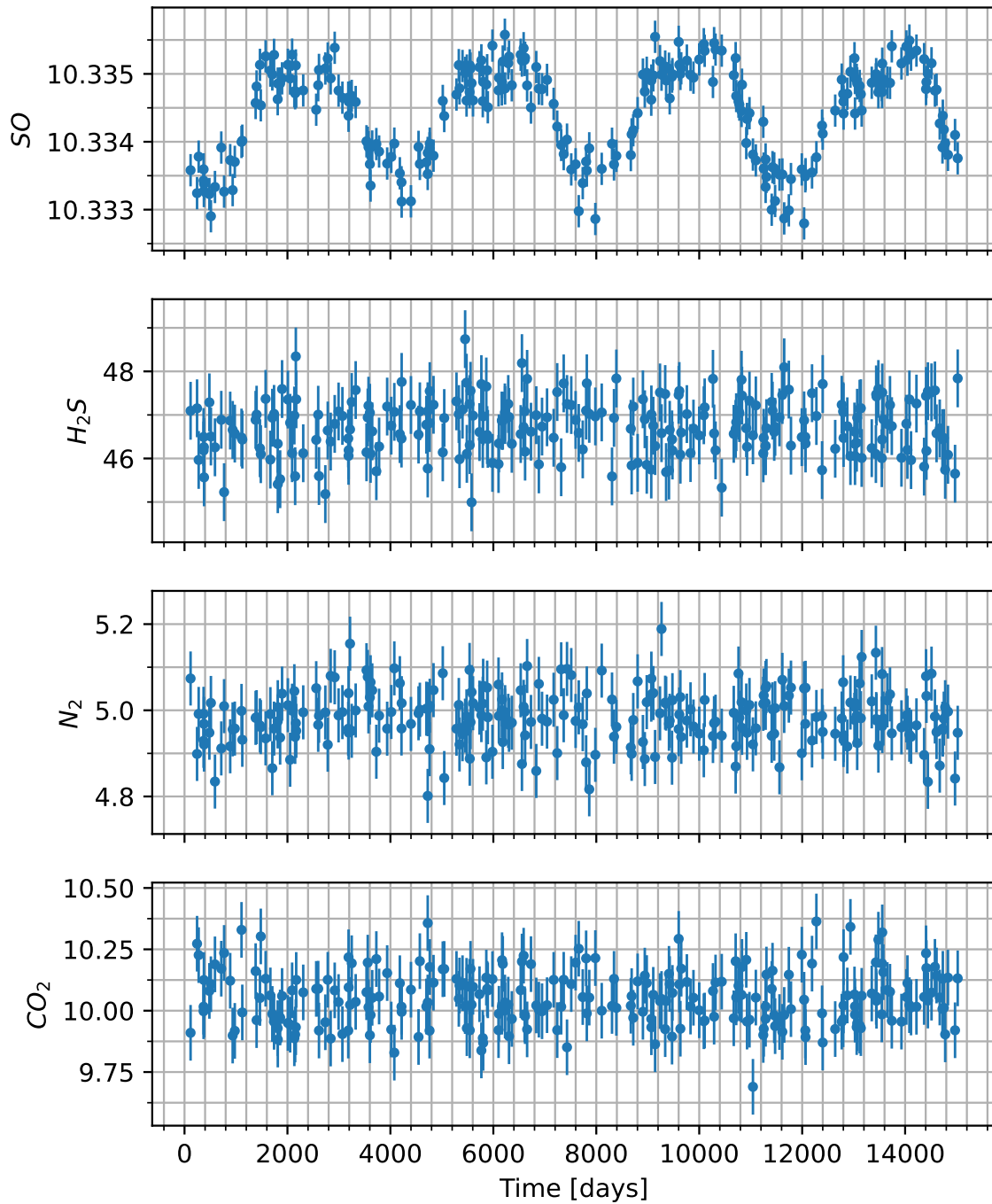


Figure 2: Concentration of various gases in the atmosphere of the candidate planet versus time. Note that the y-axis will usually only show the variation multiplied by some factor, shown in the upper left, and then added to some normal amount, also in the upper-left.

Gas Abundance (percent by volume)

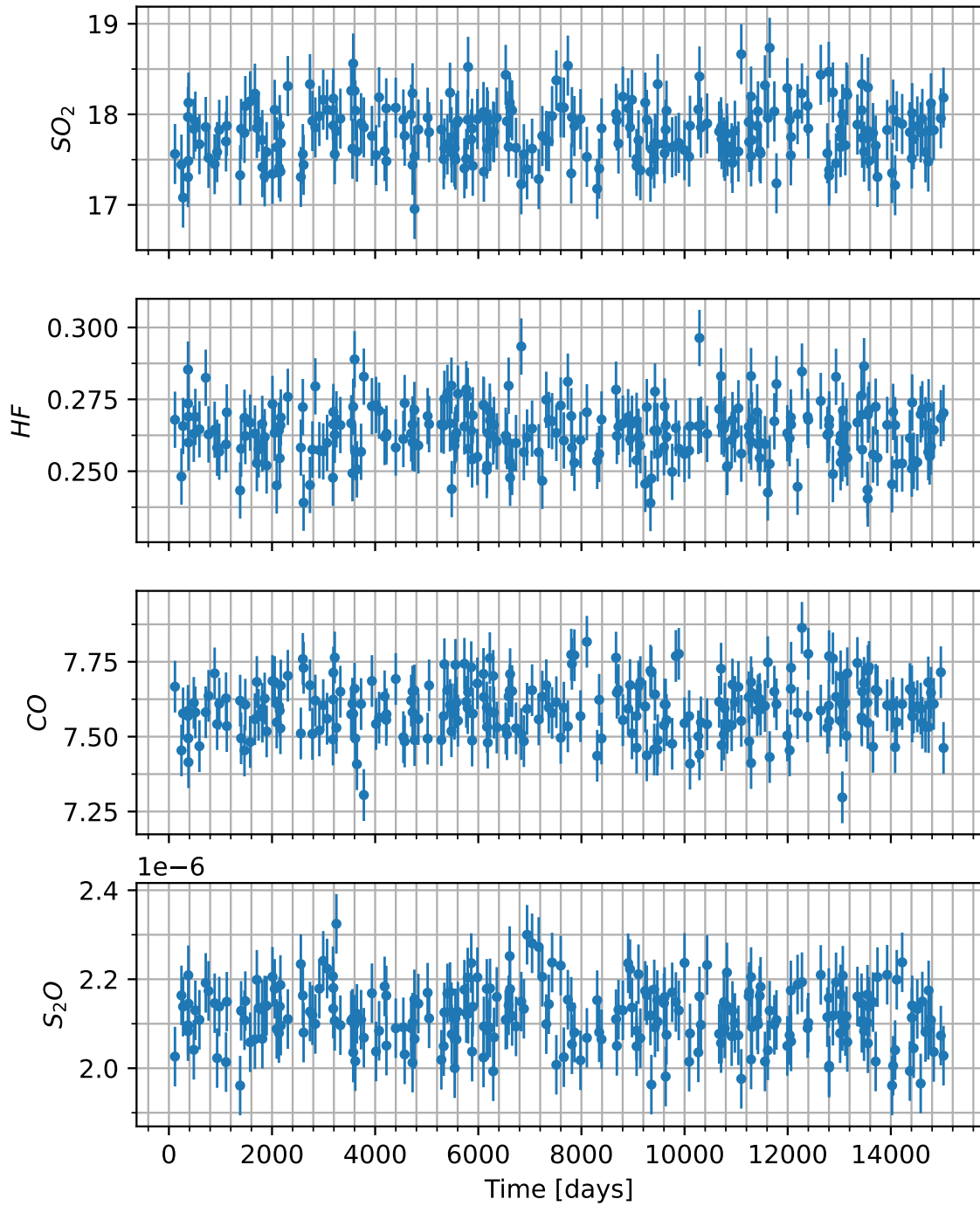


Figure 3: Concentration of various additional gases in the atmosphere of the candidate planet versus time. Note that the y-axis will usually only show the variation multiplied by some factor, shown in the upper left, and then added to some normal amount, also in the upper-left.

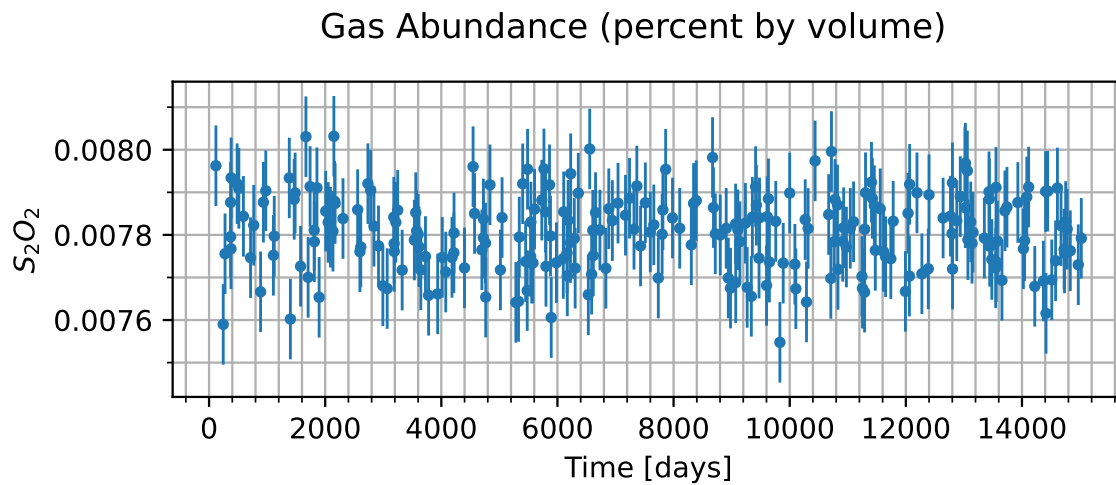


Figure 4: Concentration of various additional gases in the atmosphere of the candidate planet versus time. Note that the y-axis will usually only show the variation multiplied by some factor, shown in the upper left, and then added to some normal amount, also in the upper-left.

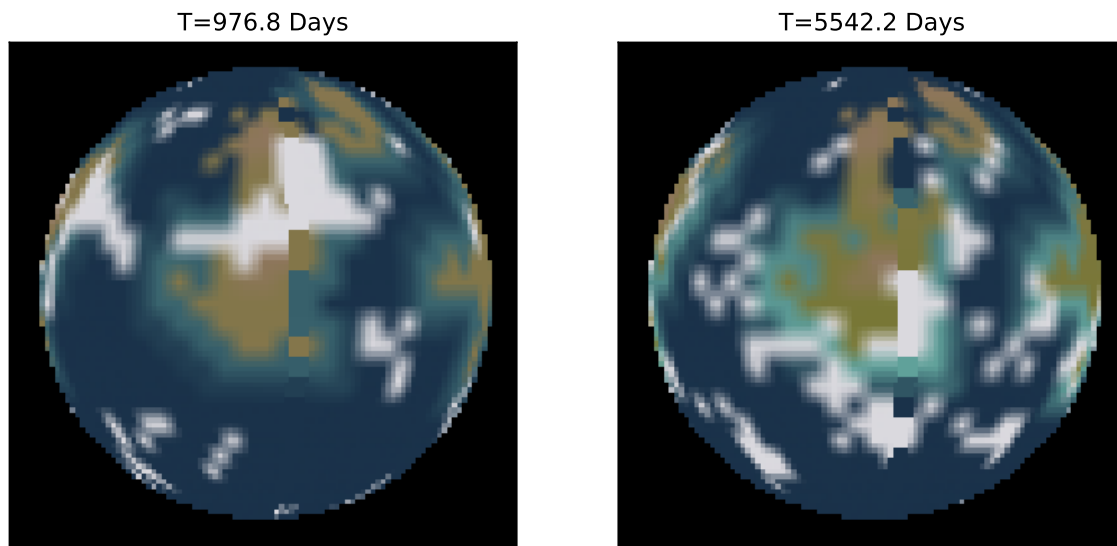


Figure 5: Maps of the surface of the candidate planet taken at two different times. Times are indicated above each image relative to the times shown in the radial velocity curve. Those maps are shown here. Tan areas indicate what we believe to be land, while blue-ish areas indicate what we believe to be liquid regions of some kind. Other colors present reflect the visible color as best as we are able to measure.