

# AST251 Project 3 – Evaluating Claims of Extraterrestrial Messaging

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Planet 1

Tuesday 21<sup>st</sup> June, 2095

**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 microwave 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:

```
00001111111111111111111111111111100010000100000100000010000
0000111000111011111101000010001000010000001000000100000010000
00001100000110011110010001000100001000001000000100000010000
0000110010011000111000100111110000100000100000010000
00001100000110000110000101111111111100000100000010000
00001110001111111111111111111111111111111111111110000010000
```

This signal was first noticed at UTC 2095-01-02/20:49.

## Parameters of the candidate planet of origin and its host star

Spectral Type	M
Stellar Luminosity (Solar Units)	0.00238
Stellar Mass (Solar Masses)	0.187
Distance to Star (lightyears)	21.8
Planet Mass (Earth masses)	1.6
Atmospheric Pressure (atm)	4.0

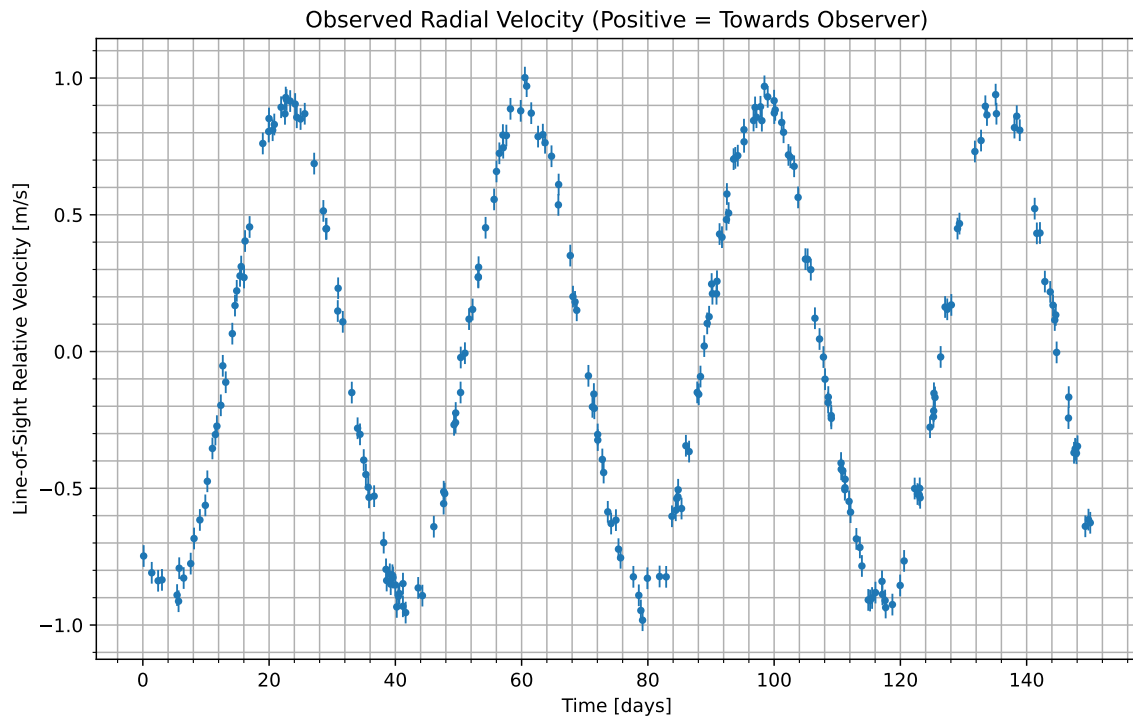


Figure 1: We have isolated the radial velocity of the host star due to the candidate planet. Data begins at UTC 2095-01-03/05:19. Positive values indicate the velocity at which the star is moving towards us; negative indicate the velocity at which it is moving away.

### Atmospheric composition of the candidate planet (percent by volume)

Molecule	Concentration
$H_2S$	35.6
$N_2$	13.1
$CO_2$	10.4
$SO$	14.6
$SO_2$	15.7
$HF$	0.243
$CO$	7.62
$S_2O$	0.02
$S_2O_2$	0.000235

## Gas Abundance (percent by volume)

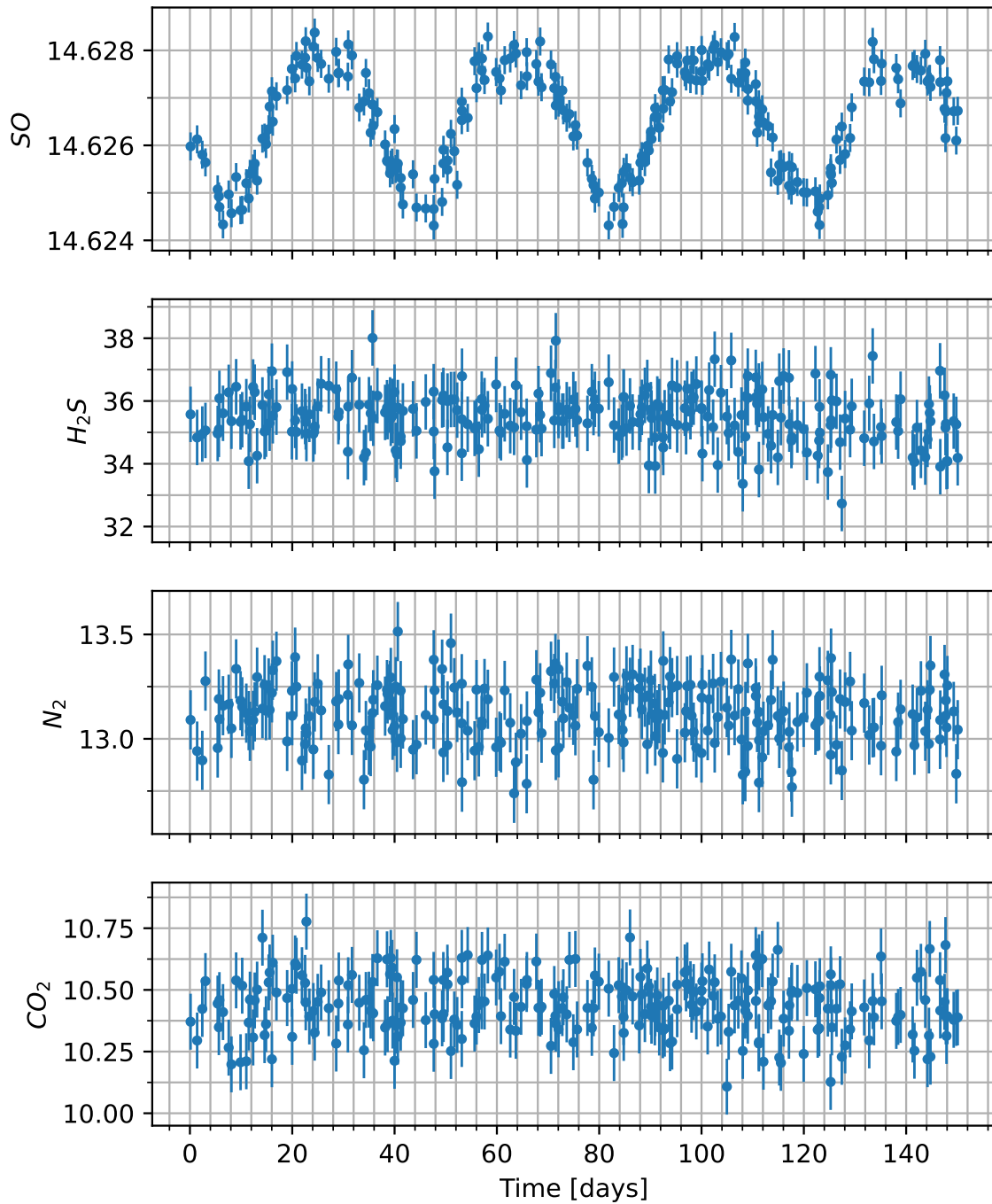


Figure 2: Concentration of various gases in the atmosphere of the candidate planet versus time. Note that the y-axis will usually only show the variation multiplied by some factor, shown in the upper left, and then added to some normal amount, also in the upper-left.

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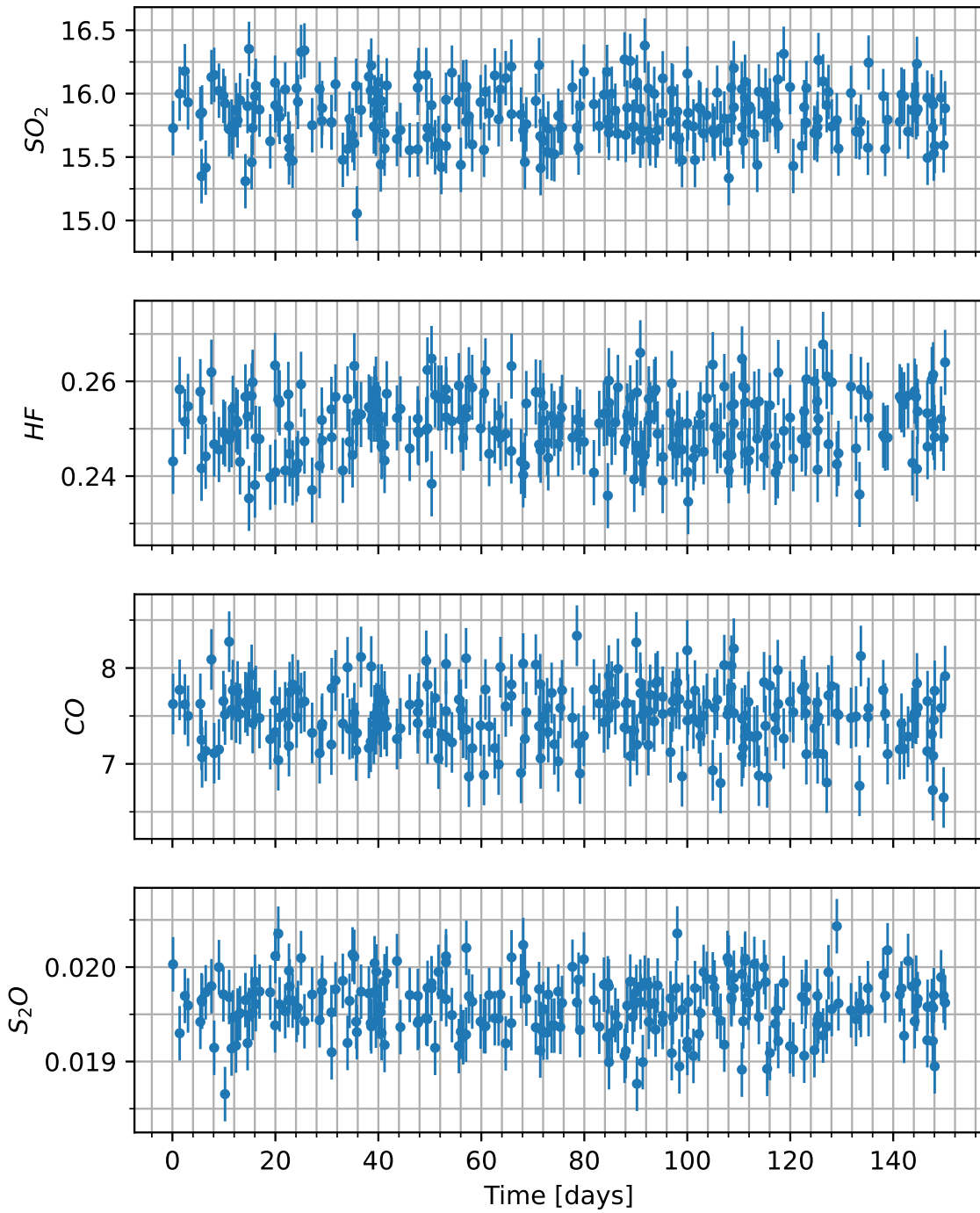


Figure 3: Concentration of various additional gases in the atmosphere of the candidate planet versus time. Note that the y-axis will usually only show the variation multiplied by some factor, shown in the upper left, and then added to some normal amount, also in the upper-left.

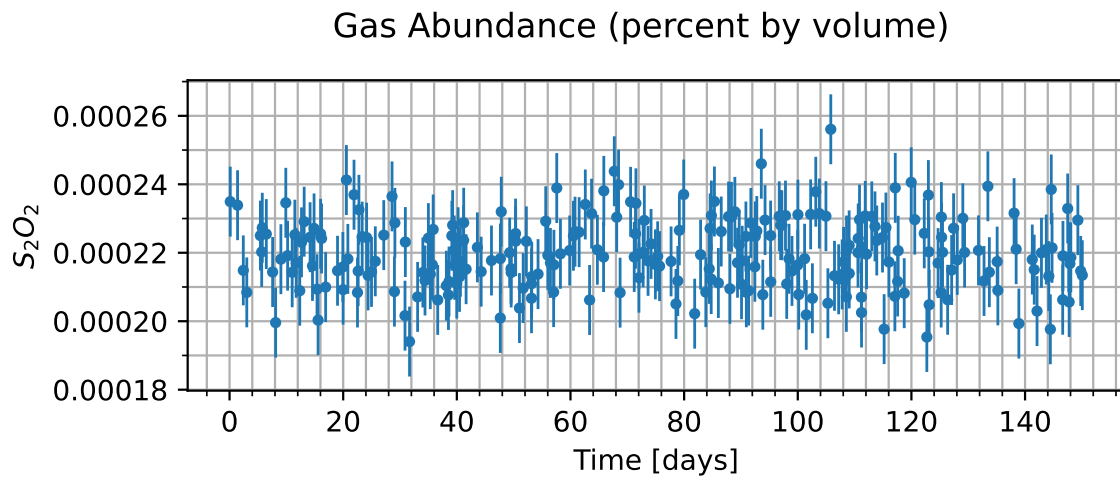


Figure 4: Concentration of various additional gases in the atmosphere of the candidate planet versus time. Note that the y-axis will usually only show the variation multiplied by some factor, shown in the upper left, and then added to some normal amount, also in the upper-left.

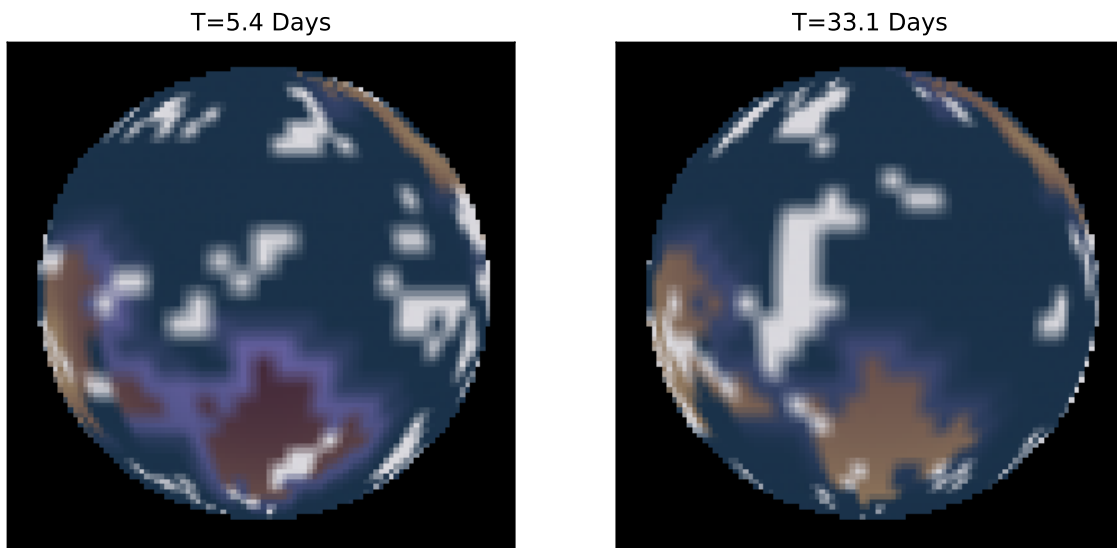


Figure 5: Maps of the surface of the candidate planet taken at two different times. Times are indicated above each image relative to the times shown in the radial velocity curve. Those maps are shown here. Tan areas indicate what we believe to be land, while blue-ish areas indicate what we believe to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