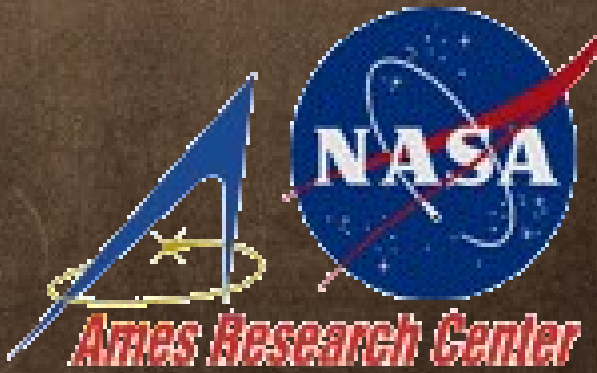
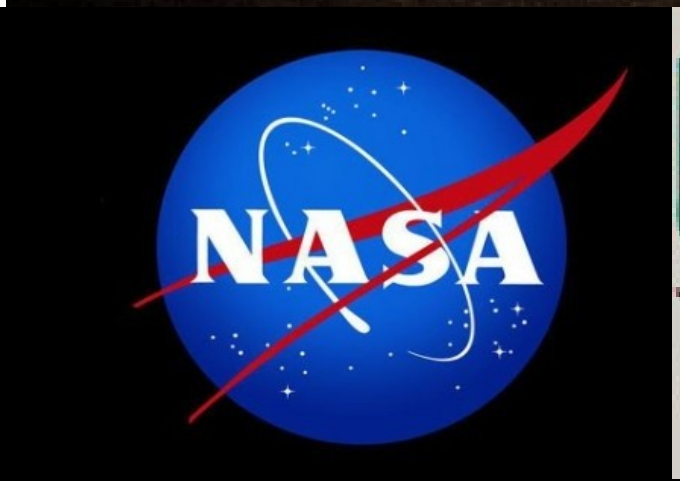
Welcome



to the second EPSCoR collaboration meeting.



Thanks to Pam for hosting us.

A welcome to new(-ish) faces; Gustavo, Shannon, and Kent.

A pending goodbye to Amanda (and Curtis and Ethan).

We are, in time, half way through this grant.

But I know that for myself, it feels like it has really yet to begin fully.

So I very much value this collaboration meeting- a time to get together with colleagues (including students) , to share my ideas and to hear yours.

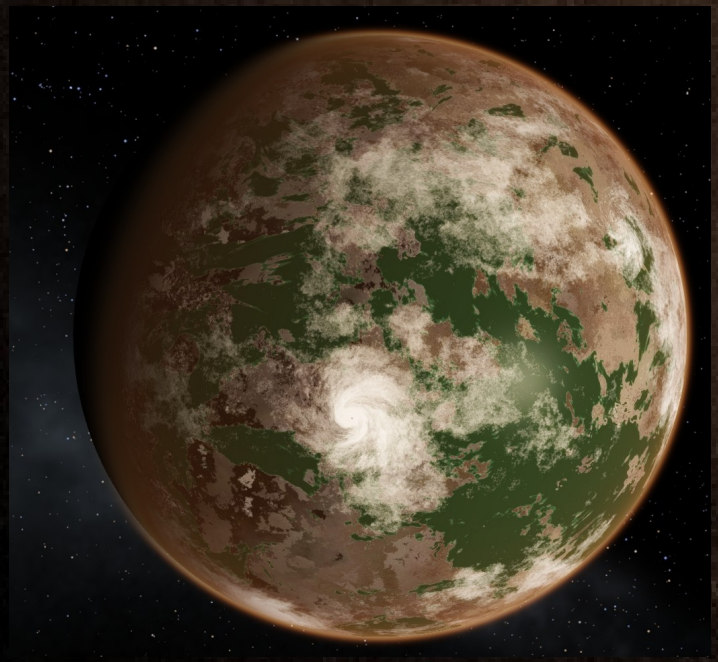
So this should be a time where no idea or suggestion is too crazy.

And a time to get the broader view of our combined work, to provide direction.

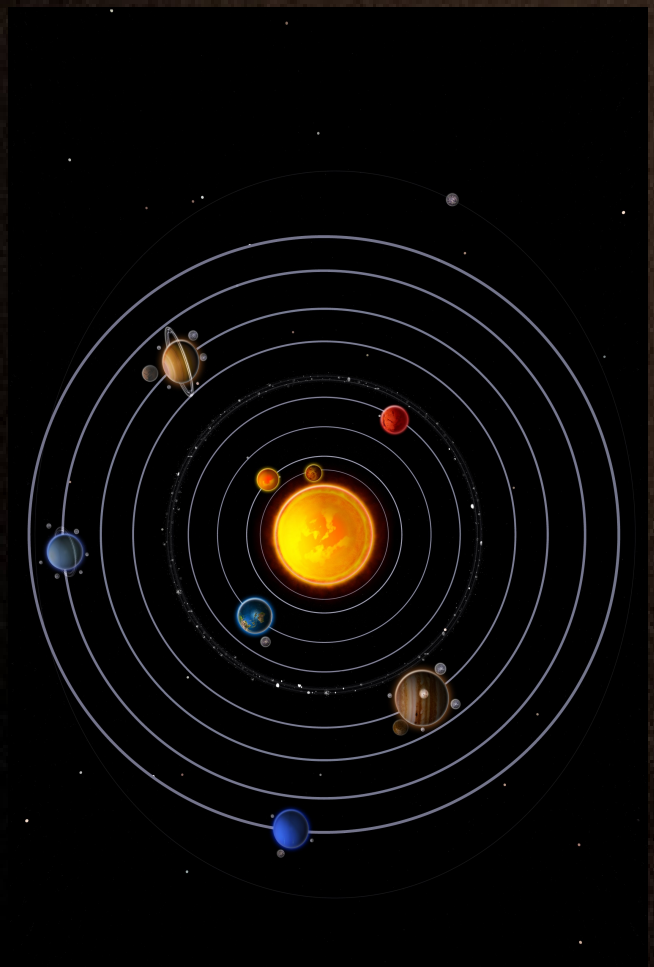
I intend to get educated and inspired this week, but also to relax, enjoy the discussion, the fecund environment, the company and to hear what everyone has been and will be doing.

Part 2:
Objectives and Goals of our project

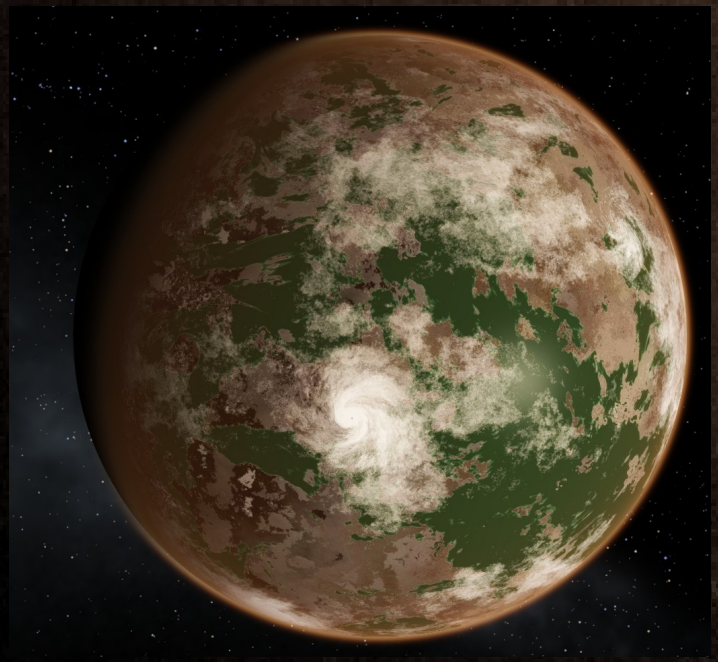
In a nutshell- To understand the atmospheres of hot planets and use their chemical tracers to backtrack to their formation.



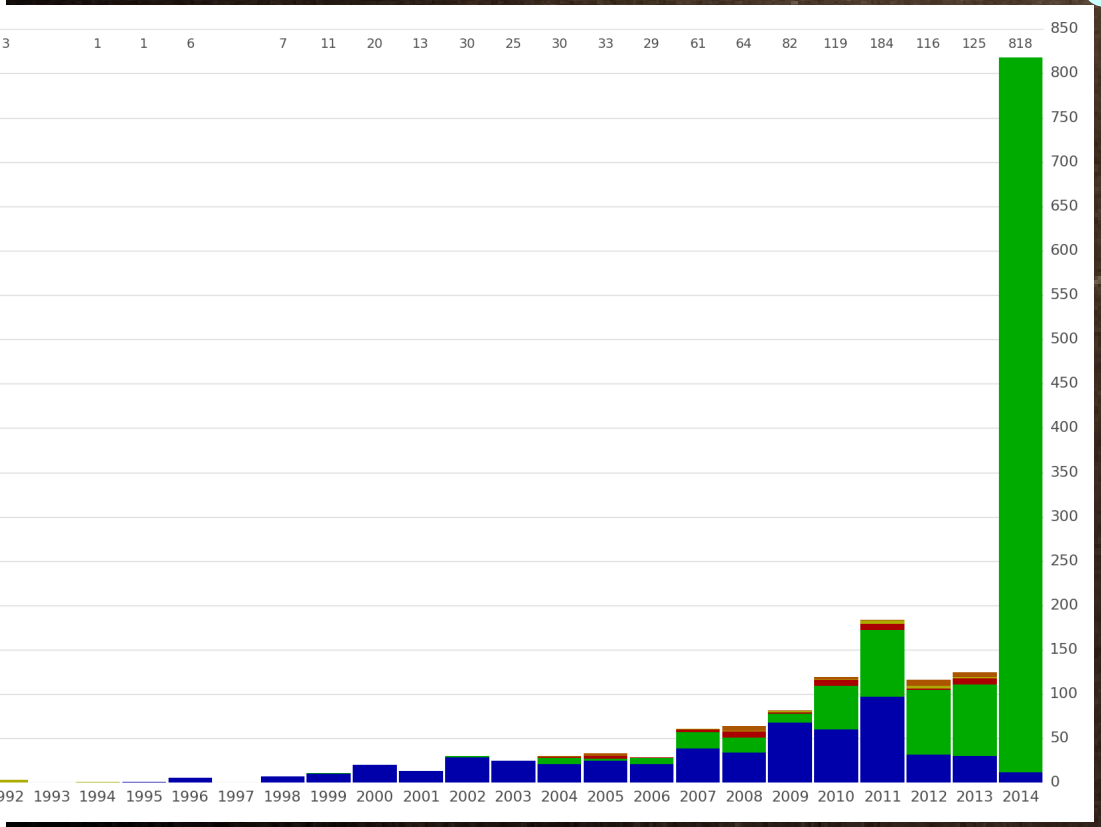
Through this process, we can determine if how our solar system formed is unique or common.



And therefore how common solar-like systems are, and the prospects for extraterrestrial life.



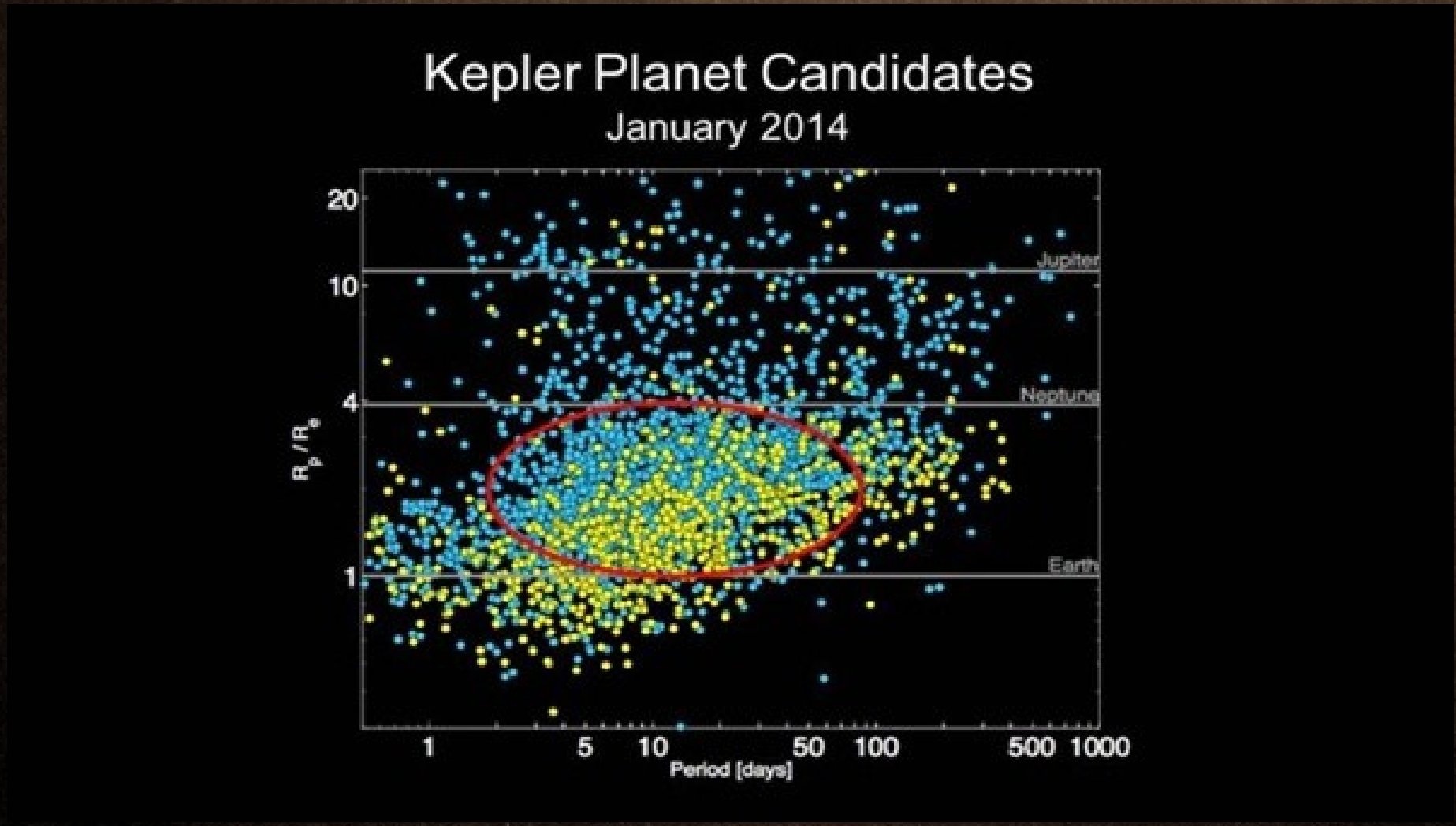
But we (scientists in general) are *just* at the beginning.



Kepler has discovered thousands of exoplanets, which was the beginning.

Reminder: It found planets like we never imagined would have existed! (The genesis of our proposal.)

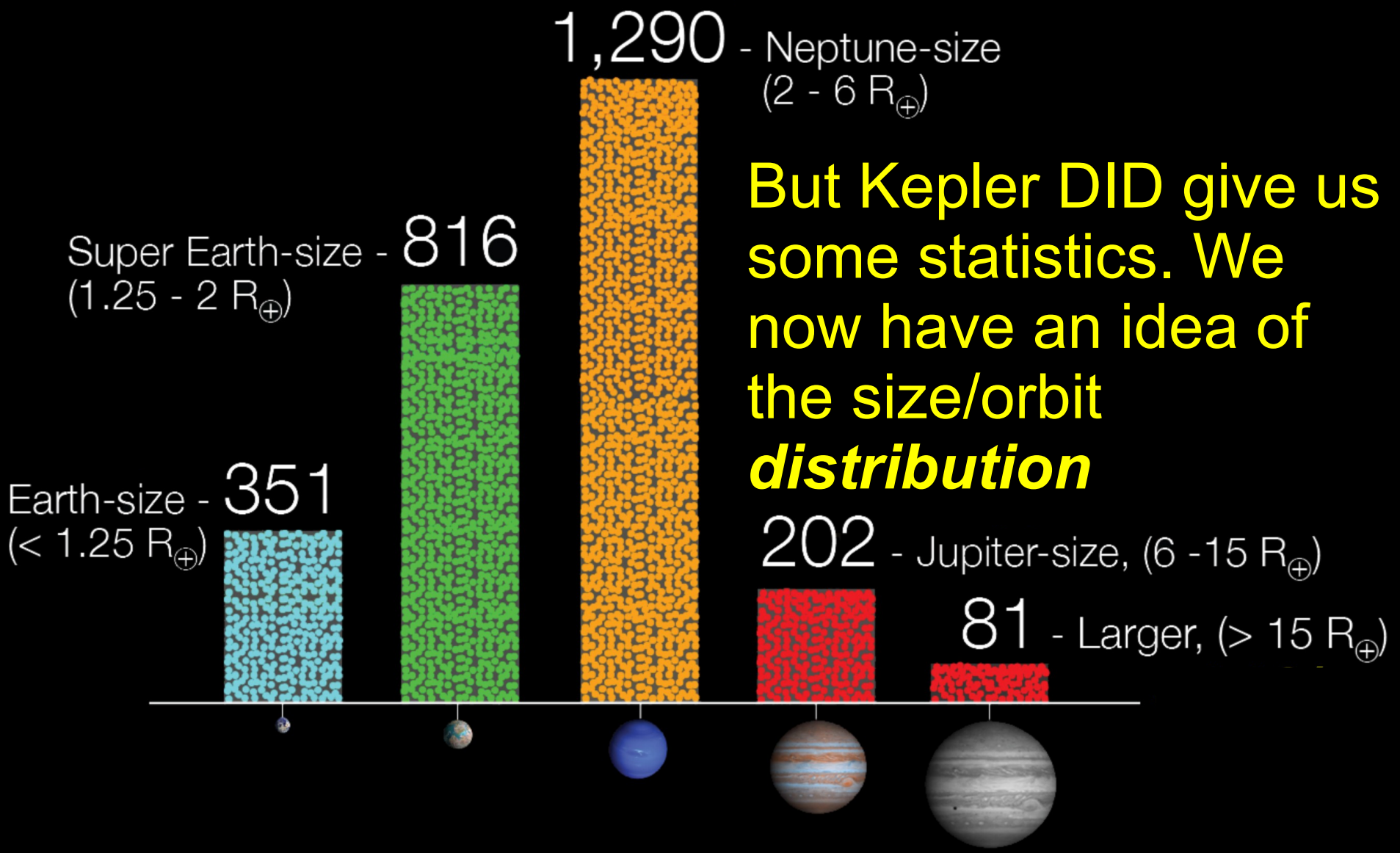
But Kepler only measured (relative) radius and orbital period.



(and mass if there were TTVs)

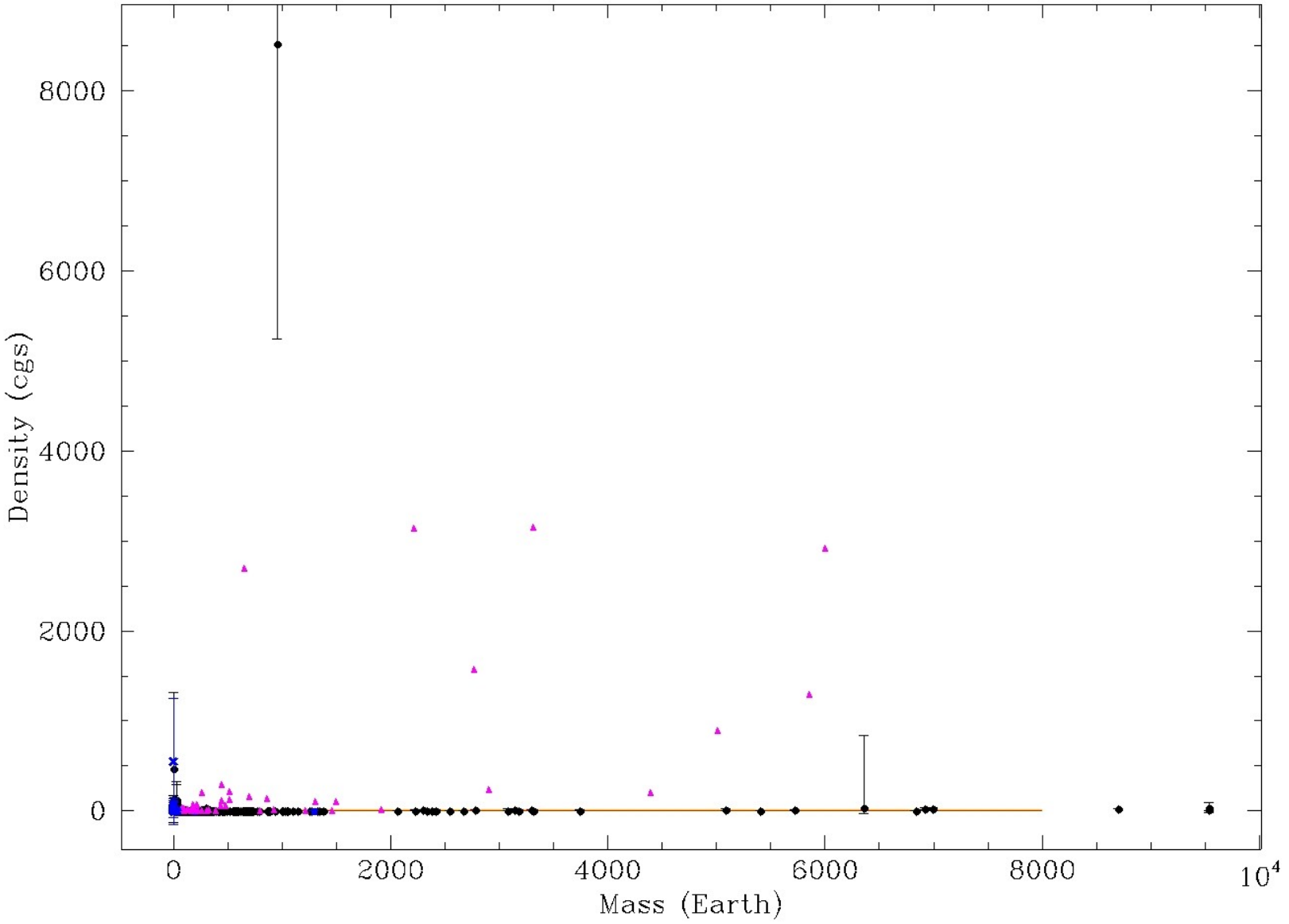
Sizes of Planet Candidates

As of January 7, 2013

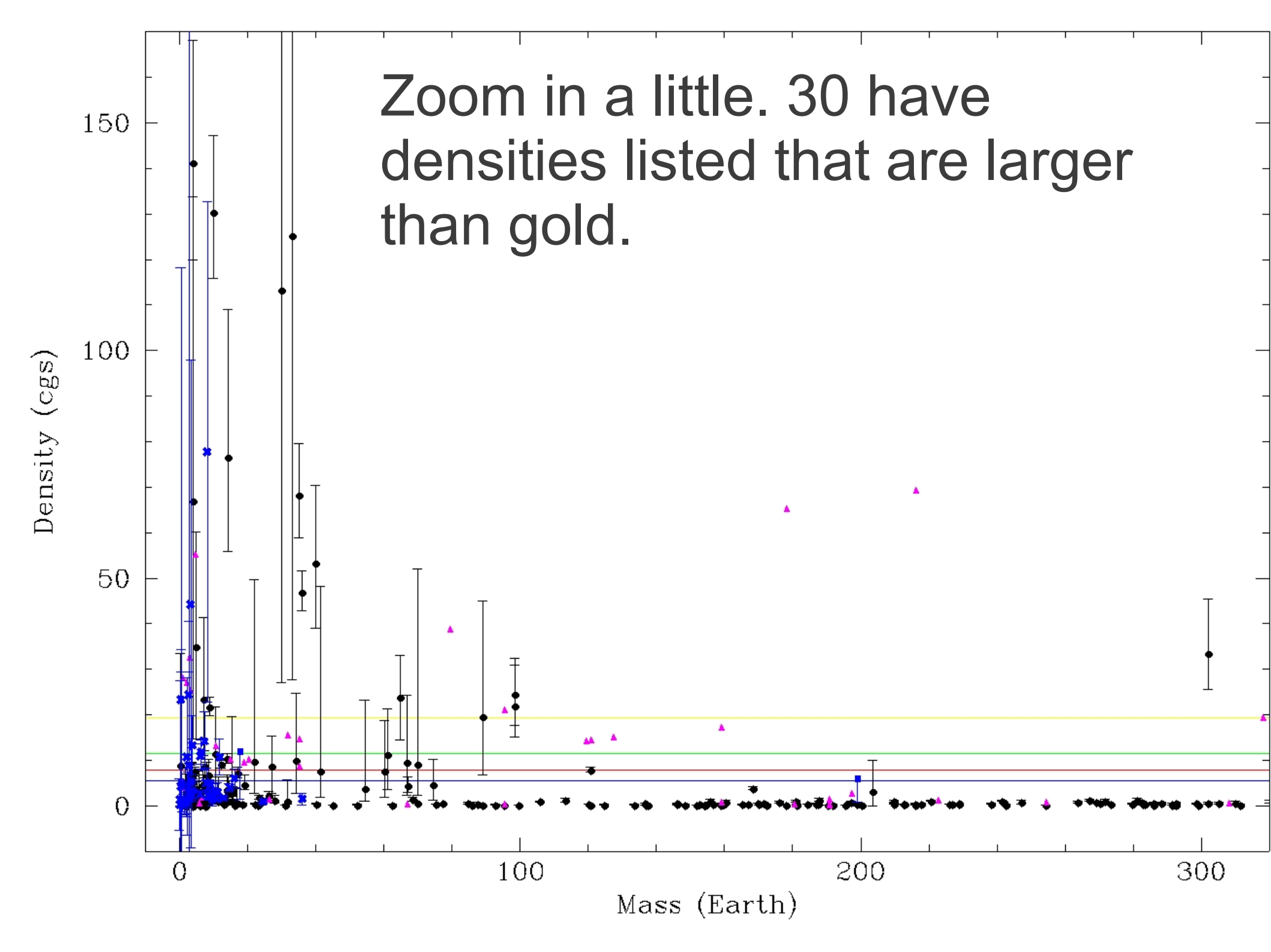


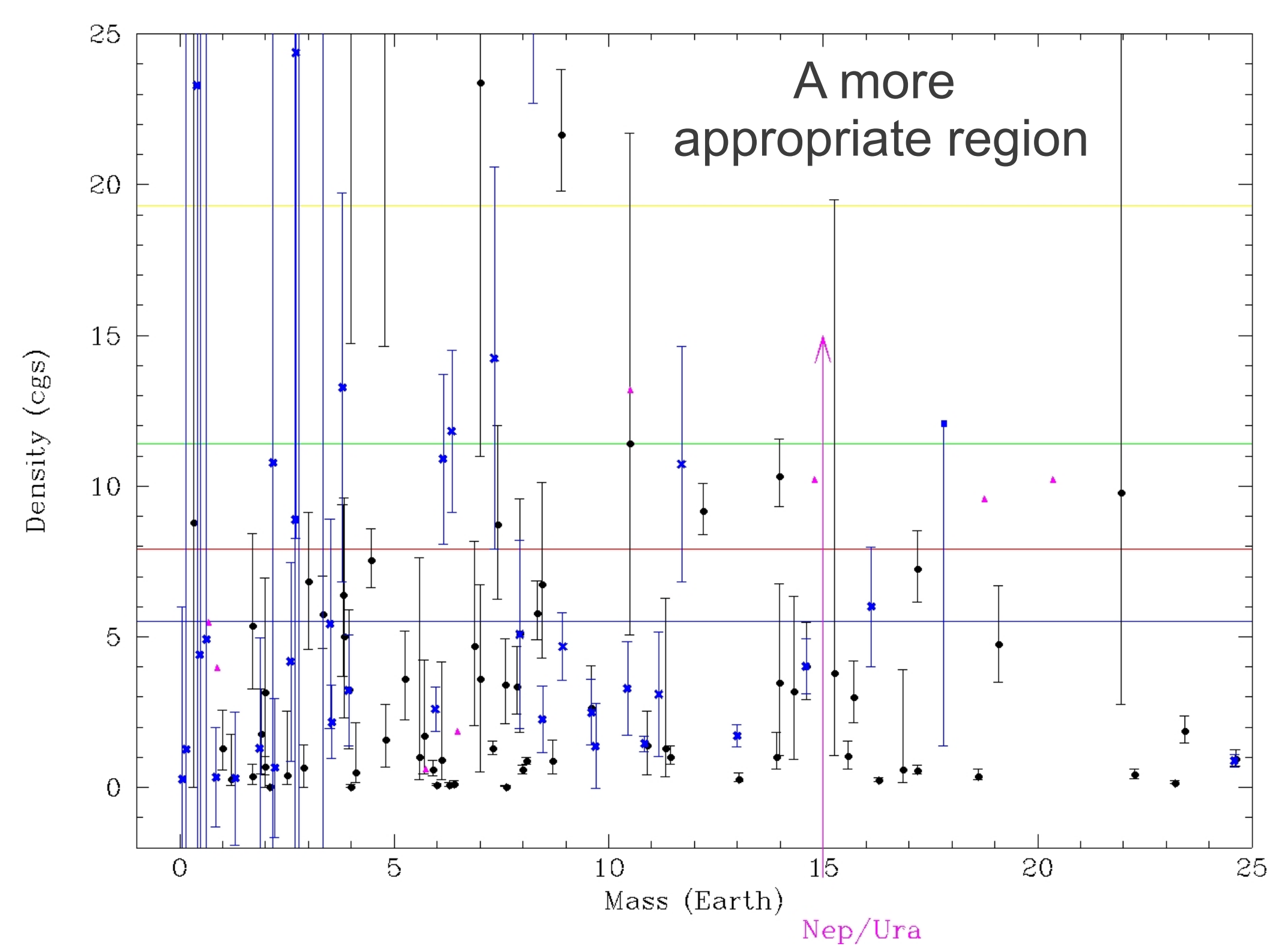
But Kepler DID give us some statistics. We now have an idea of the size/orbit ***distribution***

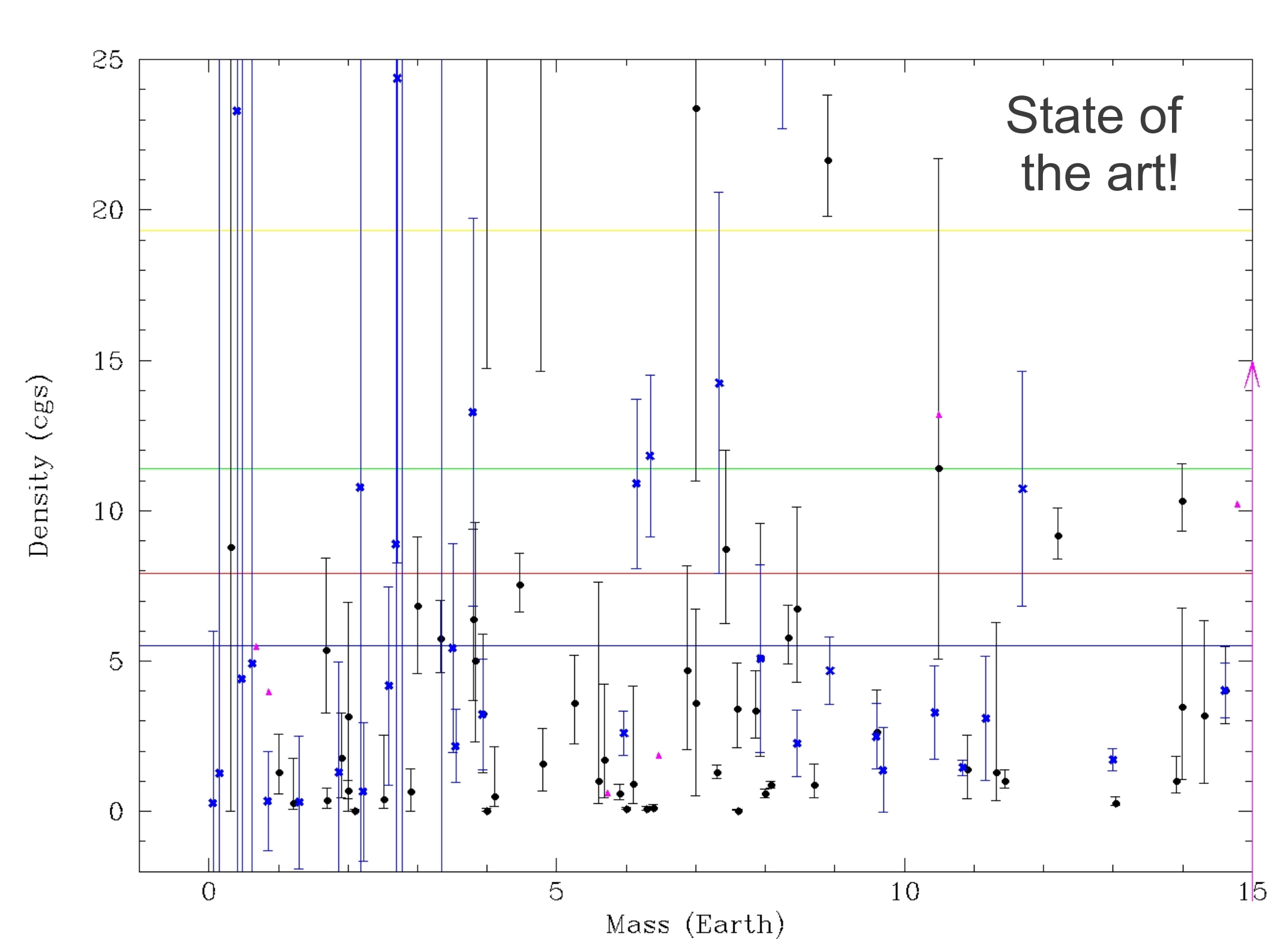
With mass (via Doppler shifts or TTVs) we get density- the easiest thing to know.



exoplanet.eu lists 1811 planets.
394 have both mass and radius listed.
327 of these have errors listed.
Marcy just published 38 more


Zoom in a little. 30 have densities listed that are larger than gold.
Density (cgs)
150
100
50
0
0
100
200
300
Mass (Earth)


A more appropriate region
Density (cgs)
Mass (Earth)
Nep/Ura
0
5
10
15
20
25

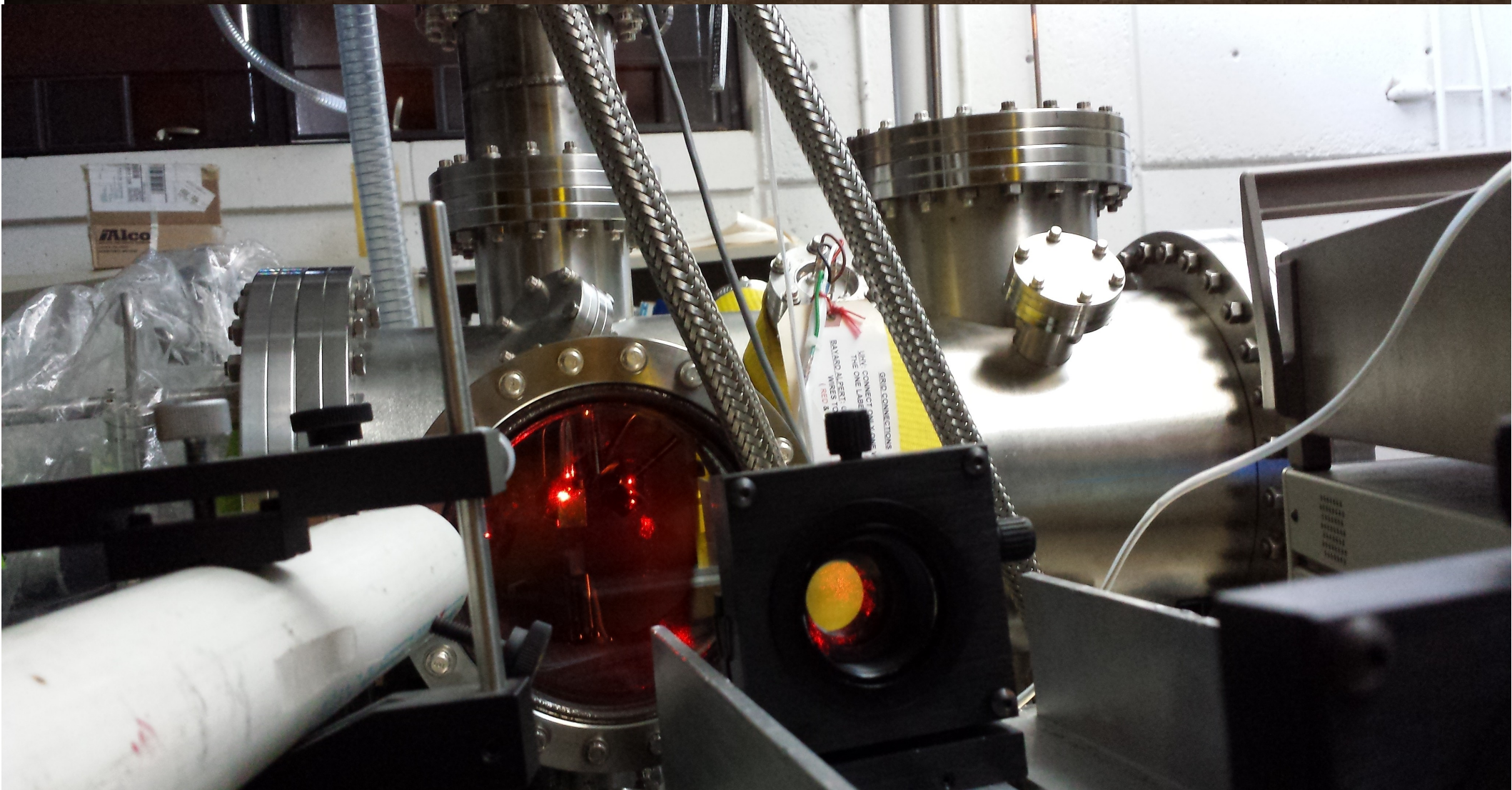

State of the art!
Density (cgs)
Mass (Earth)
25
20
15
10
5
0
0
5
10
15

My point? *Almost nothing* is known about exoplanets, observationally. They have yet to be characterized, which is the next step (and what we wish to do).

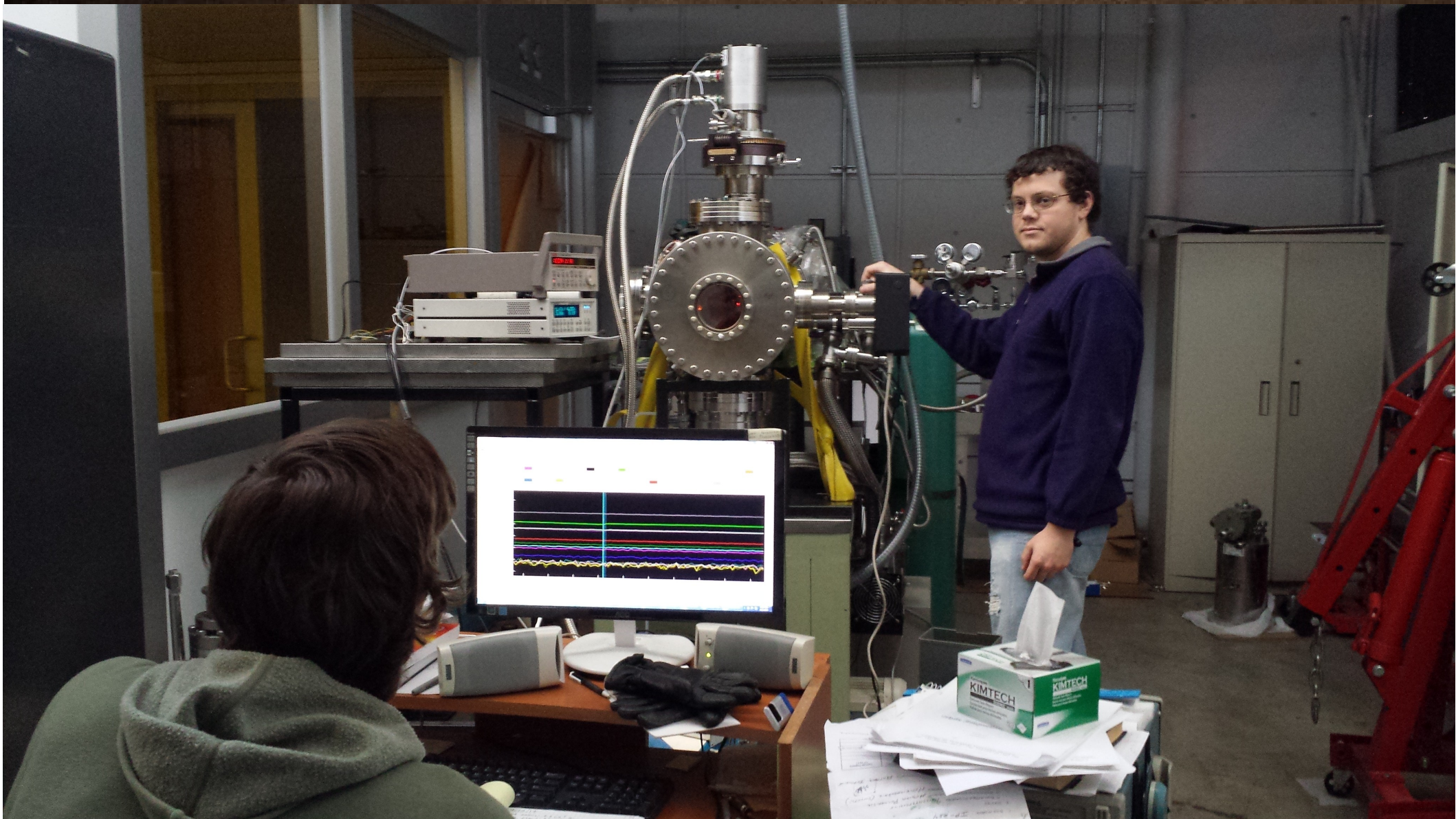
2 years since we proposed for this grant and virtually nothing has changed, as far as observational constraints.

But this project is about more than characterizing planets (at least for me, and likely for Dave).

It's also about building a new lab (and extra capabilities for Nate?) so we're well-placed for characterizing exoplanets as new observations are obtained (TESS).



and developing students




And for building collaborations,
especially between NASA partners
and MSU/WashU.
TOSHIBA
SUMMER LEAGUE
DELL

Halfway through.

I'm ready to learn.