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# Introduction to the Kepler Mission

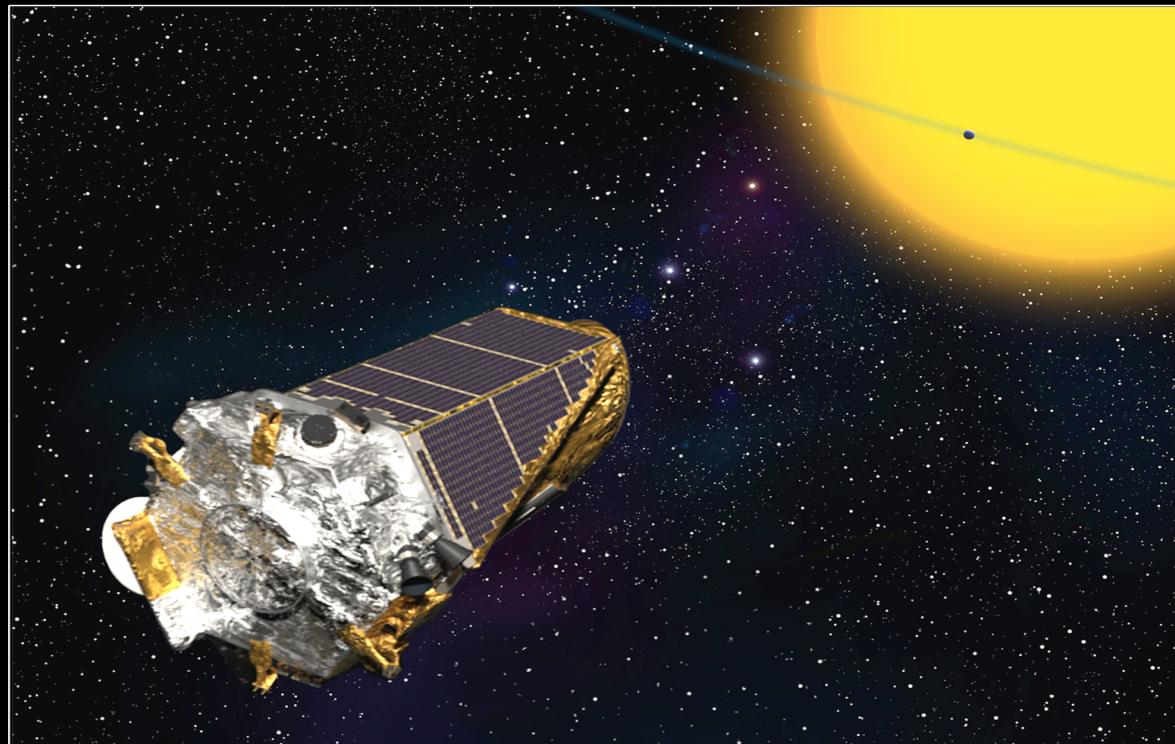
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CHRISTOFFER KAROFF

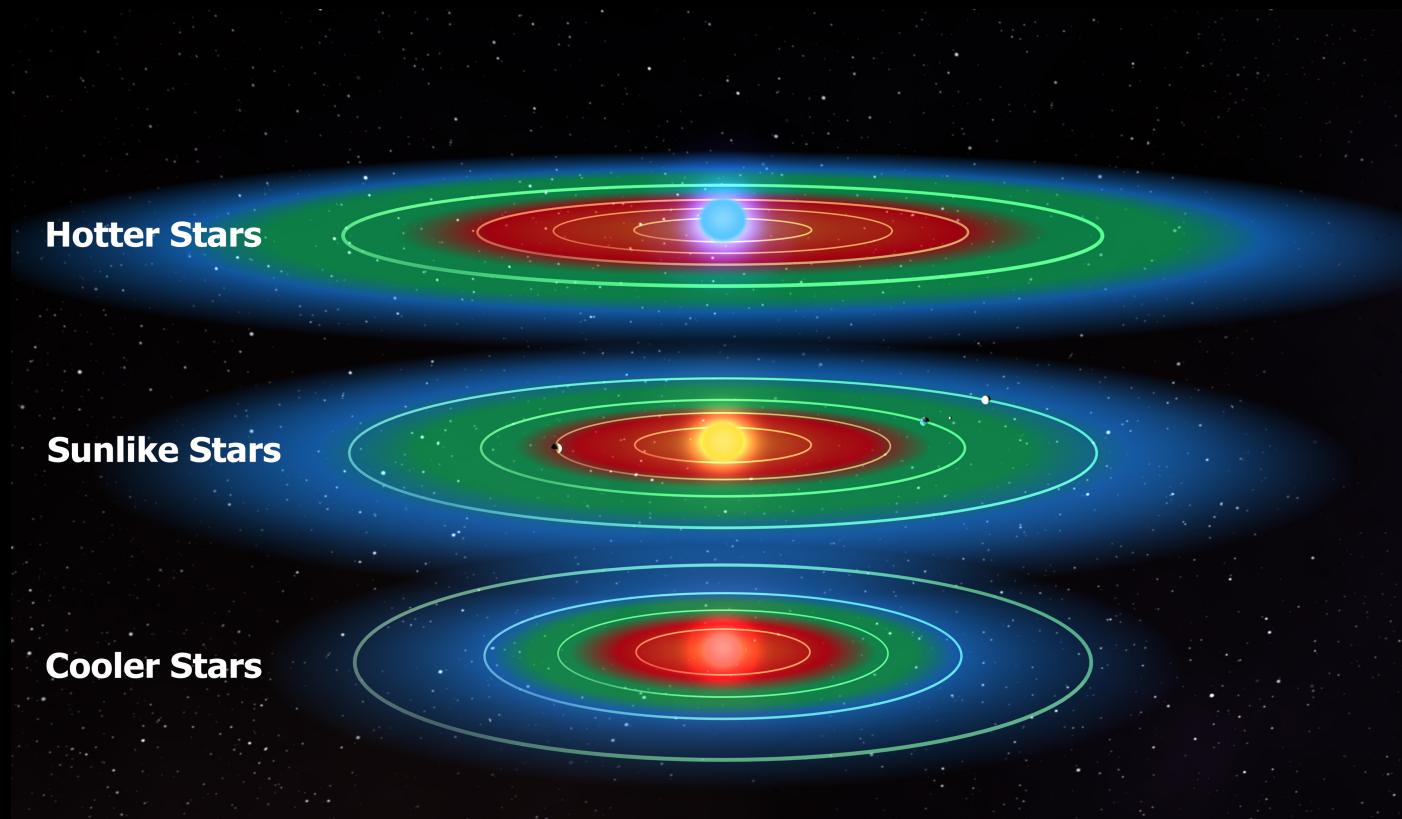
VERSITET

# WHAT FRACTION OF STARS IN OUR GALAXY HARBOR POTENTIALLY HABITABLE, EARTH-SIZE PLANETS?

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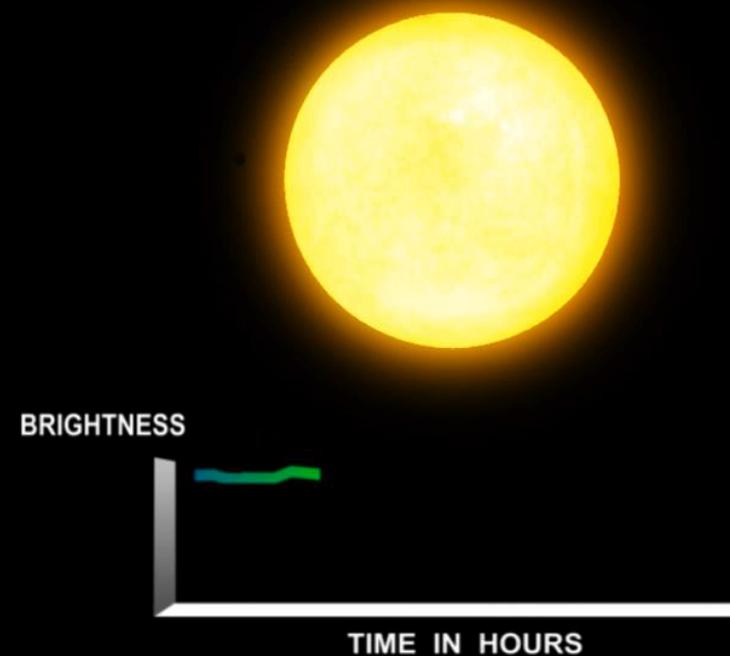


# THE HABITABLE ZONE



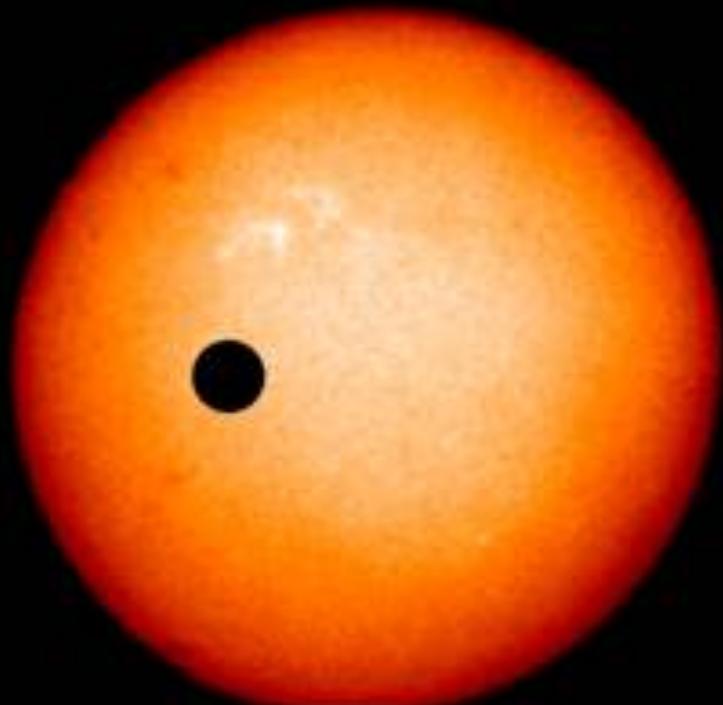
# TRANSIT PHOTOMETRY

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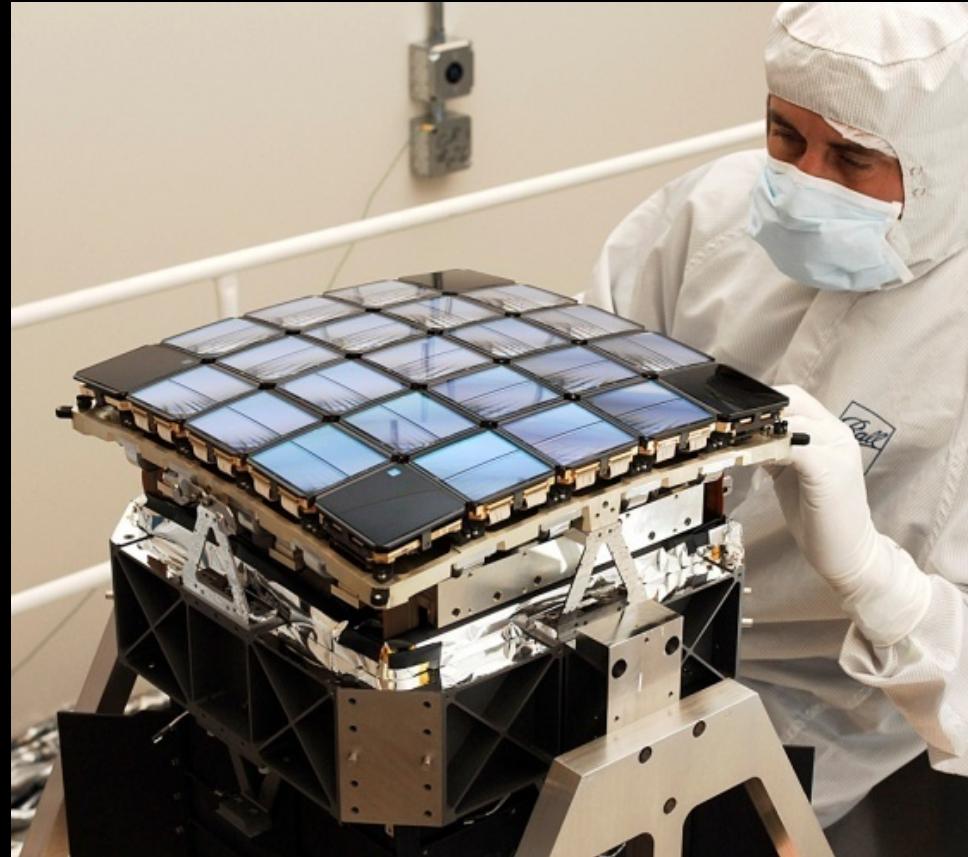




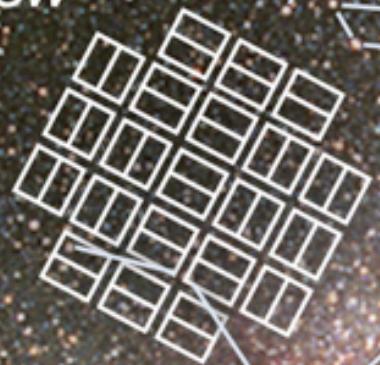
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# THE CAMERA



*Kepler*  
Field of  
View



Vega

LYRA

M57

M56

Albireo

M27

AQUILA

Altair

SAGITTIA

DELPHINUS

Deneb

CYGNUS

M29

North  
American  
Nebula

M39

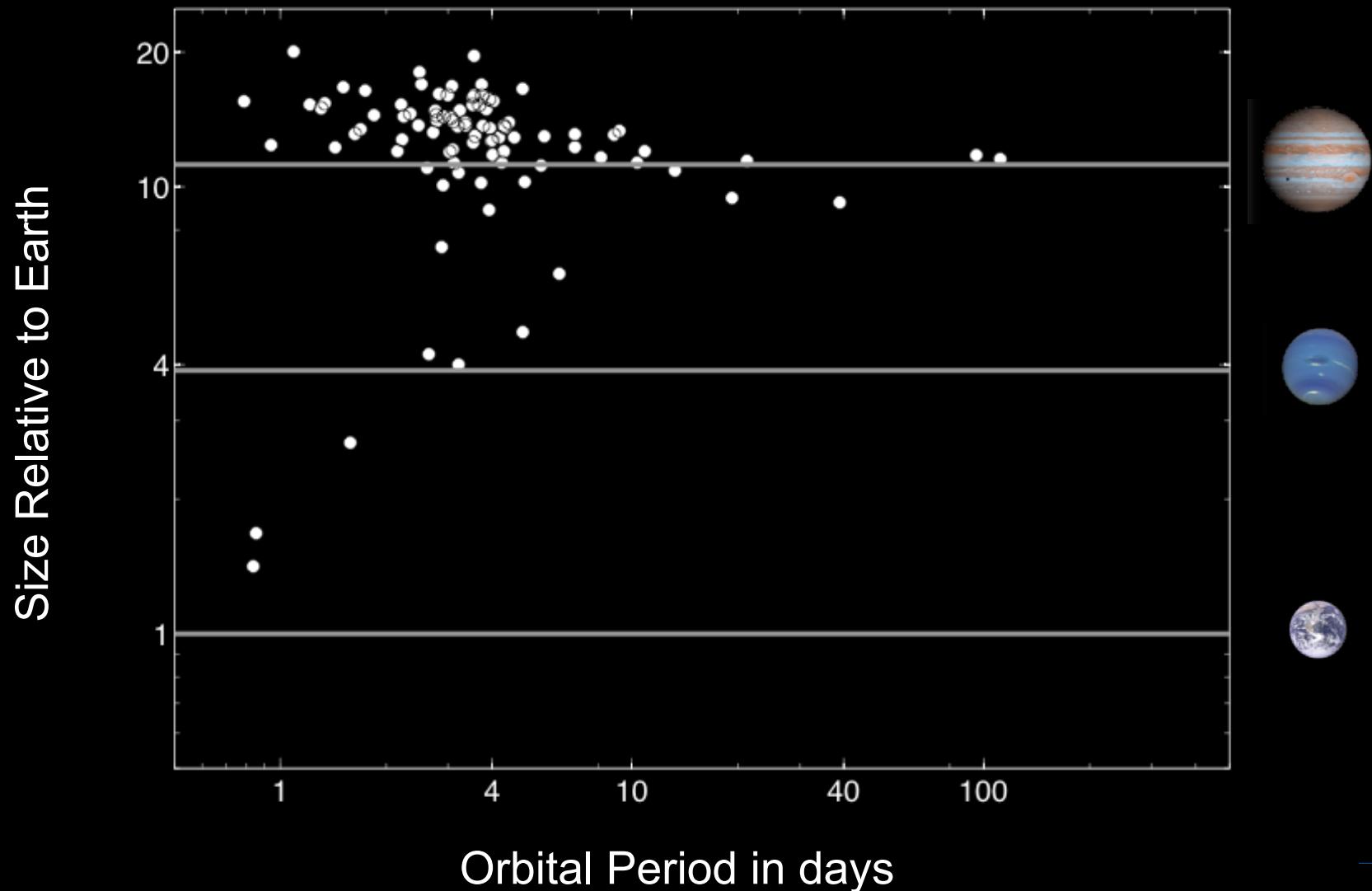


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# MARCH 6, 2009

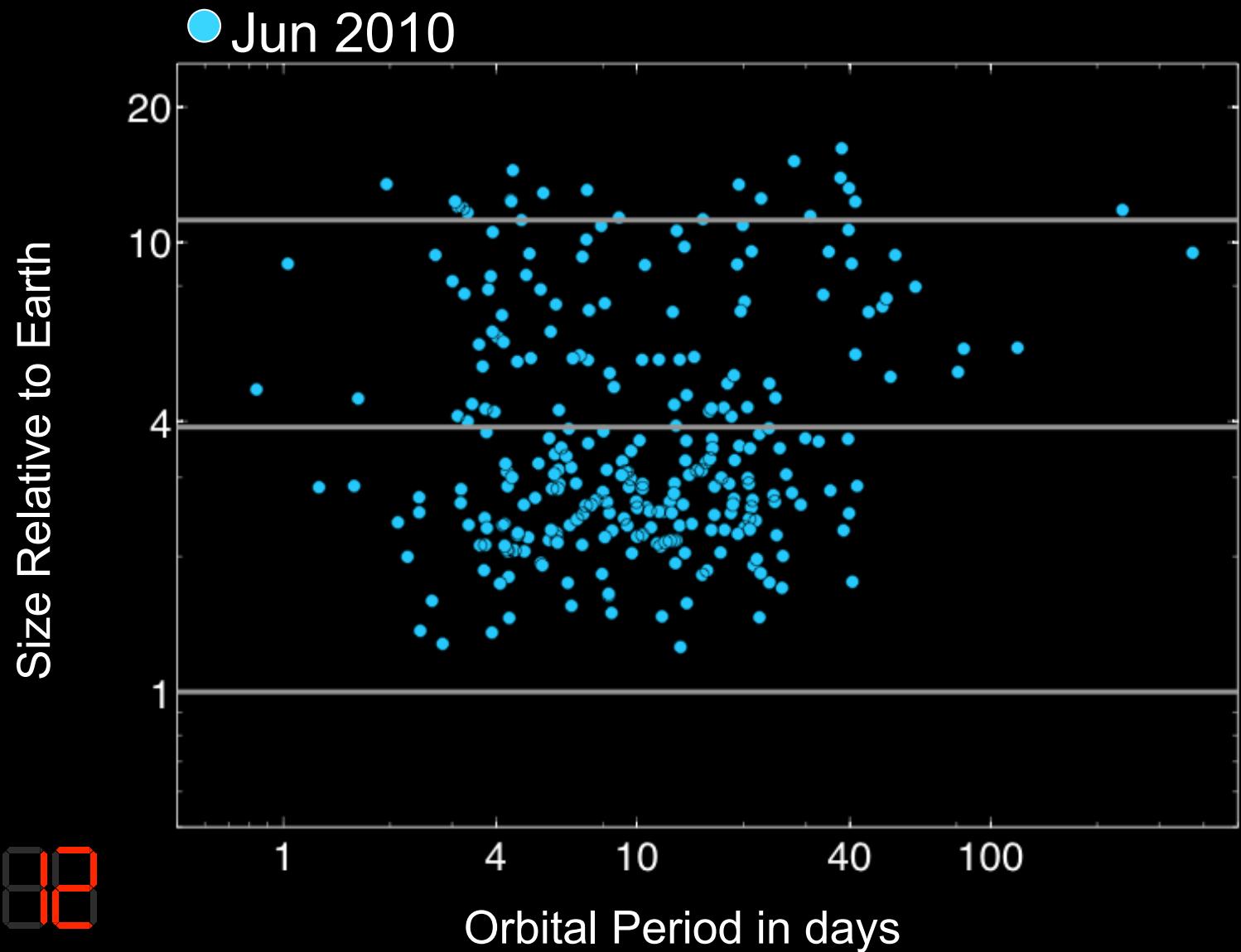
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# Transiting Planets pre-Kepler



# Candidates as of June 2010

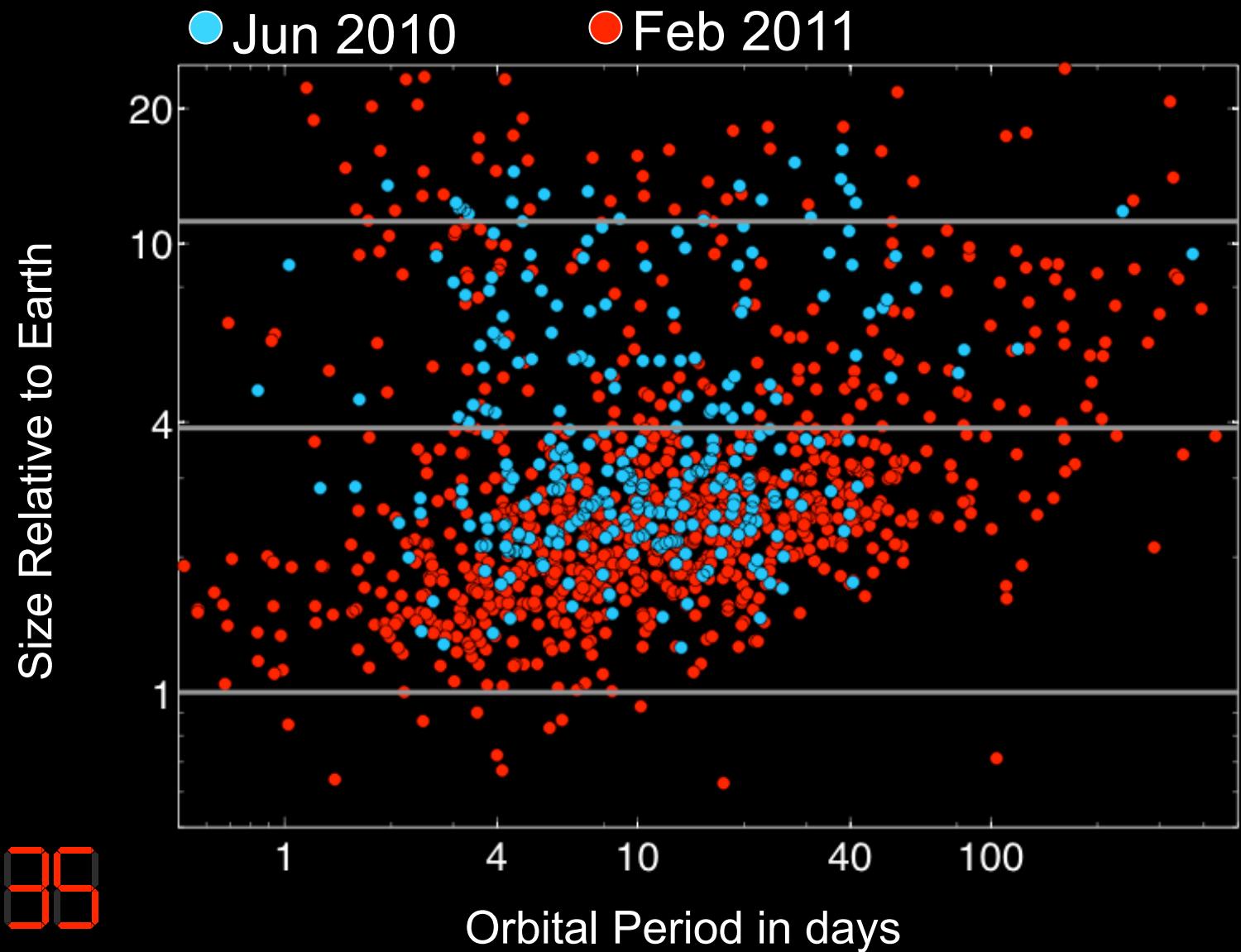
Data: May-Sep 2009



8888

# Candidates as of Feb 2011

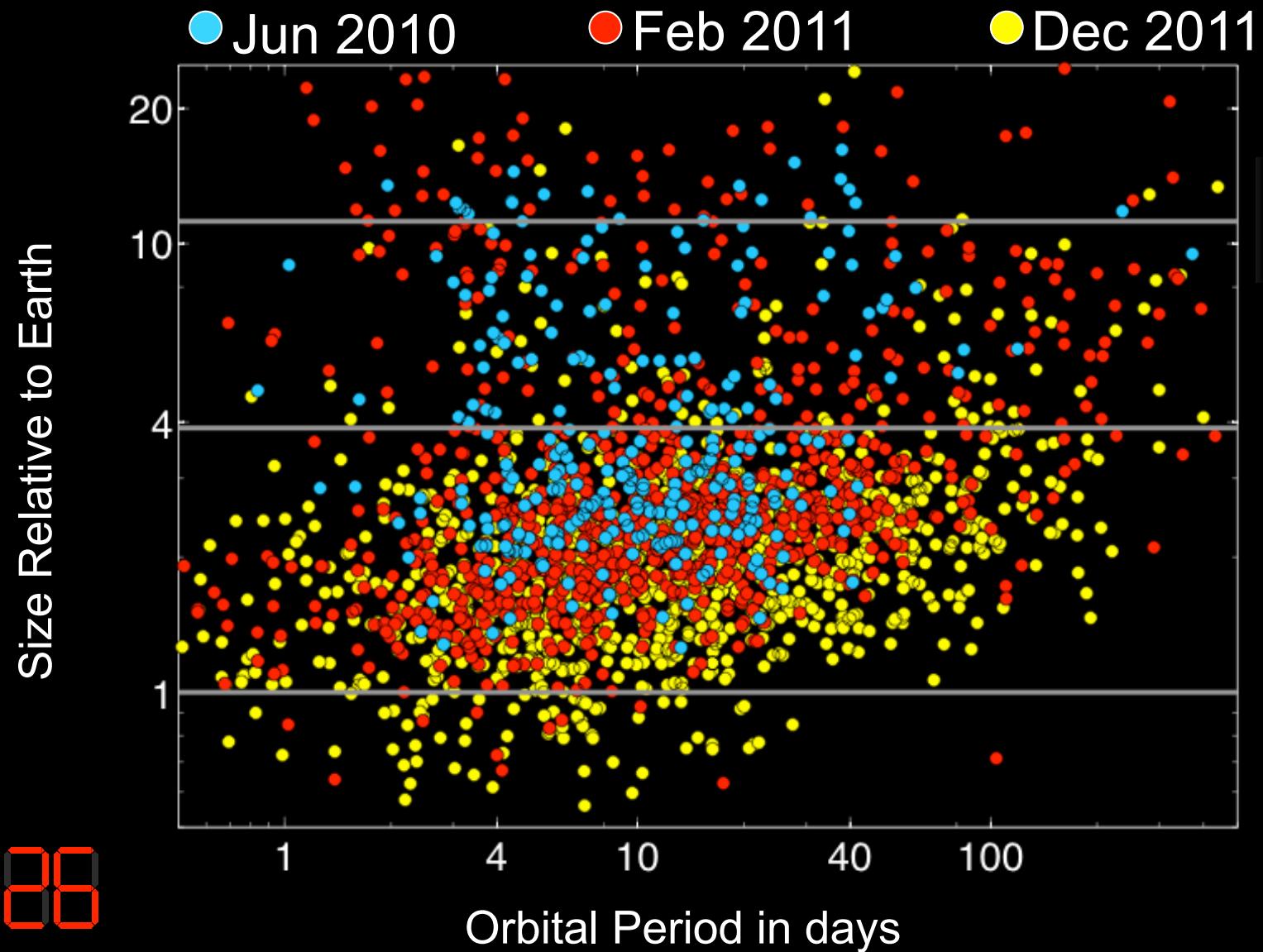
Q0-Q5: May 2009 - Jun 2010



8286

# Candidates as of Dec 2011

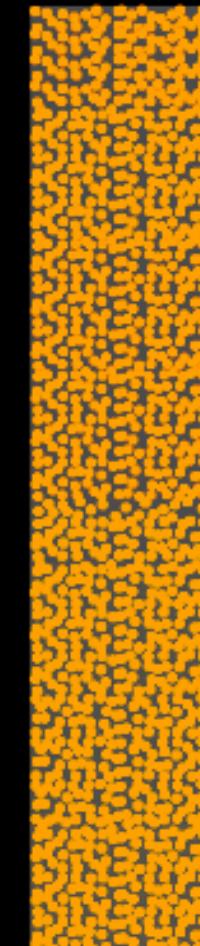
Q0-Q6: May 2009 - Sep 2010



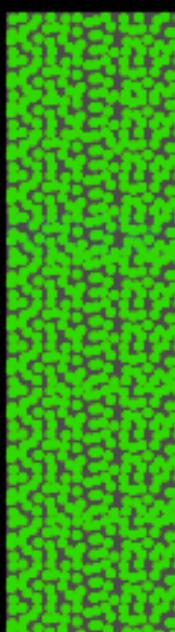
2888

## Sizes of Planet Candidates

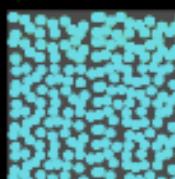
1181 – Neptune-size  
(+78%)



Super Earth-size – 680  
(+136%)

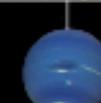


Earth-size – 207  
(+204%)



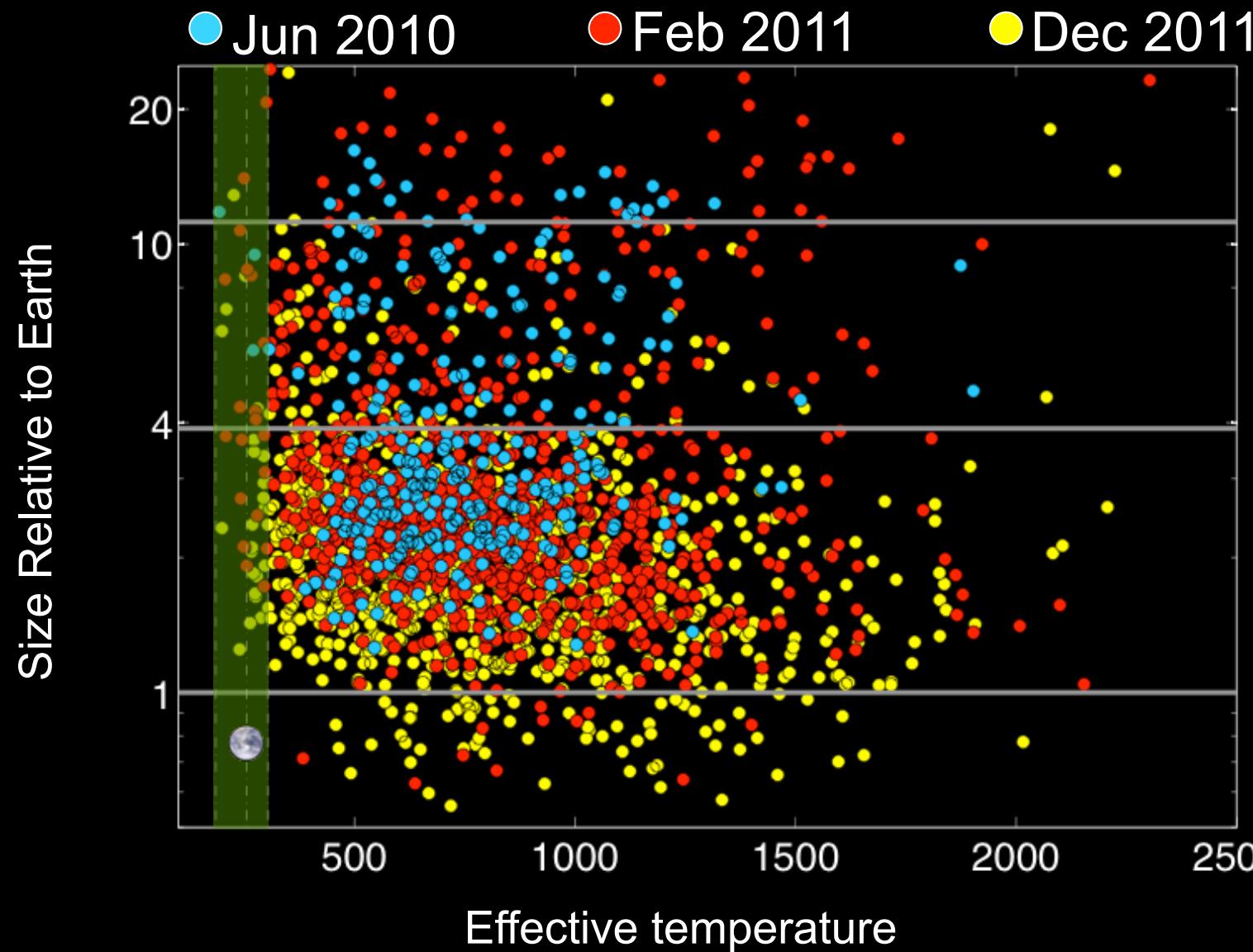
203 – Jupiter-size  
(+42%)

27 – larger  
(+23%)

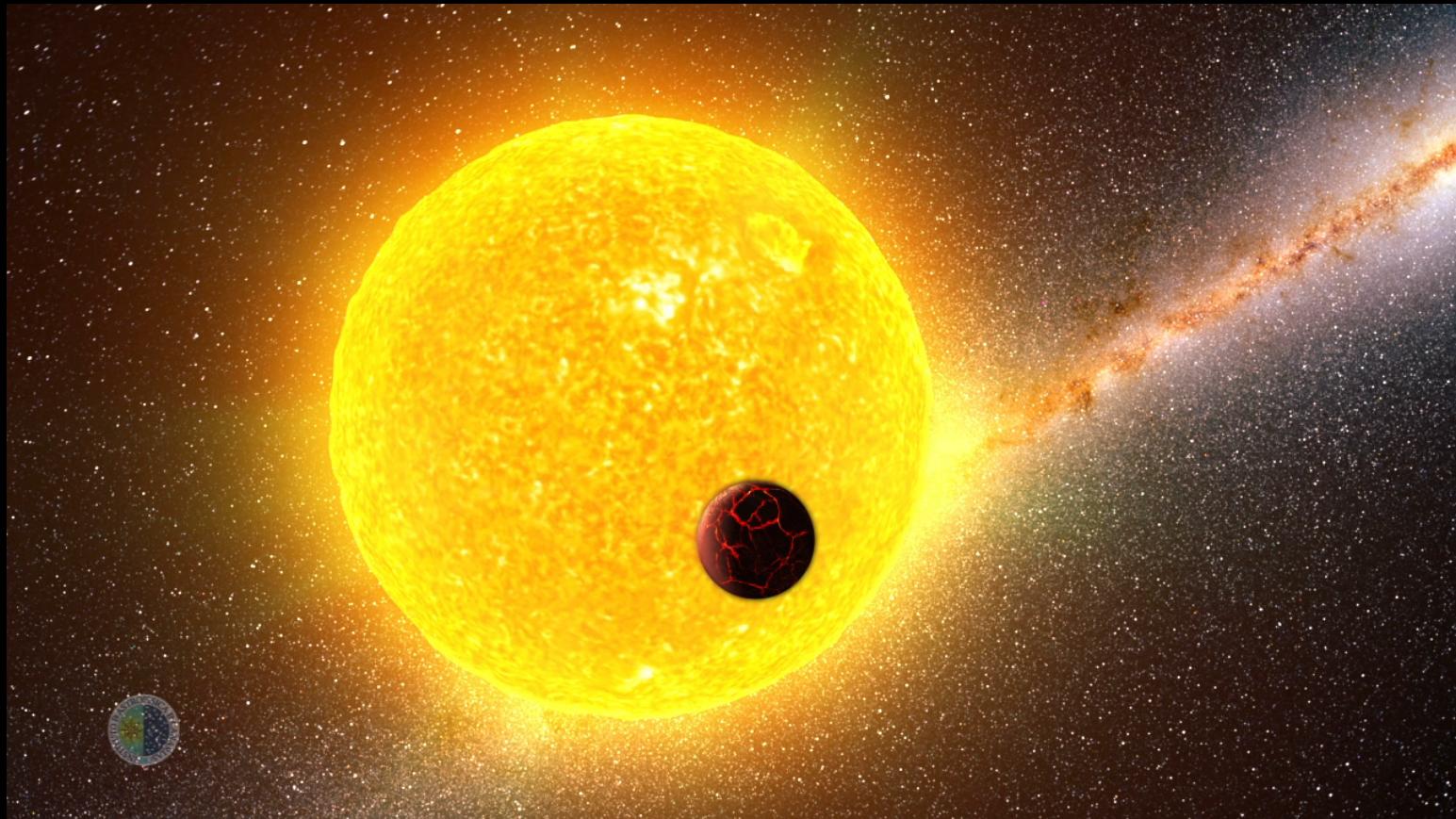


## Candidates in Habitable Zone

185 K - 303 K



# ASTEROSEISMOLOGY





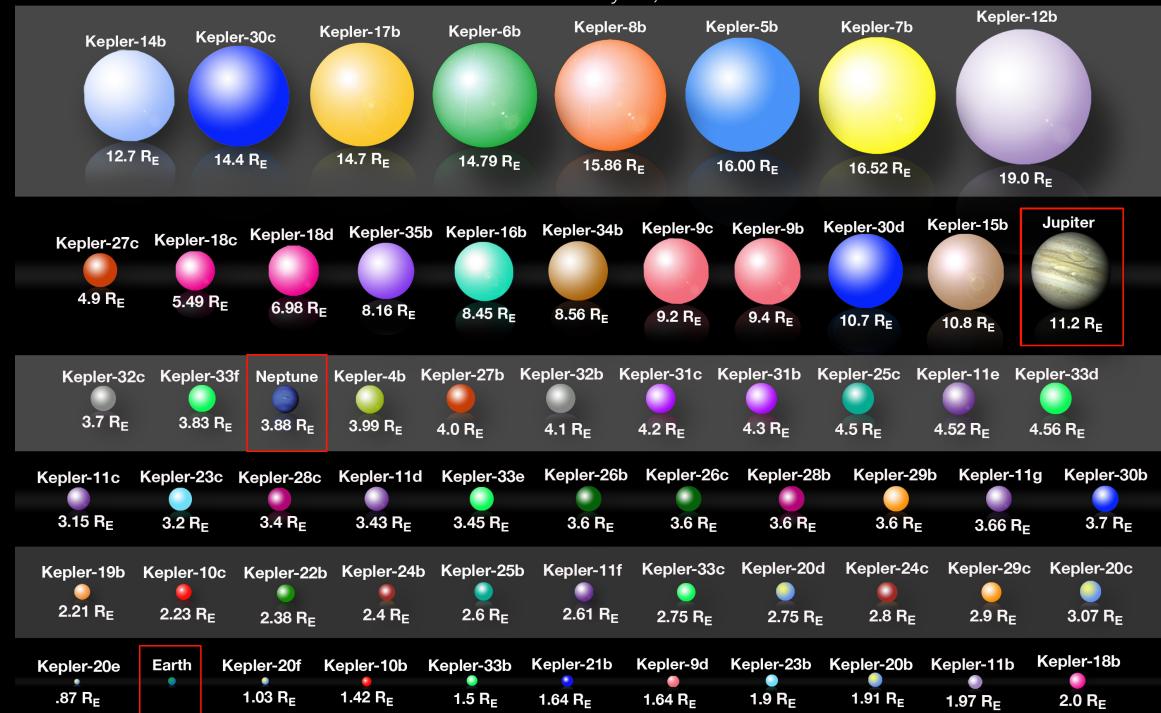
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# TRANSIT TIMING VARIATIONS

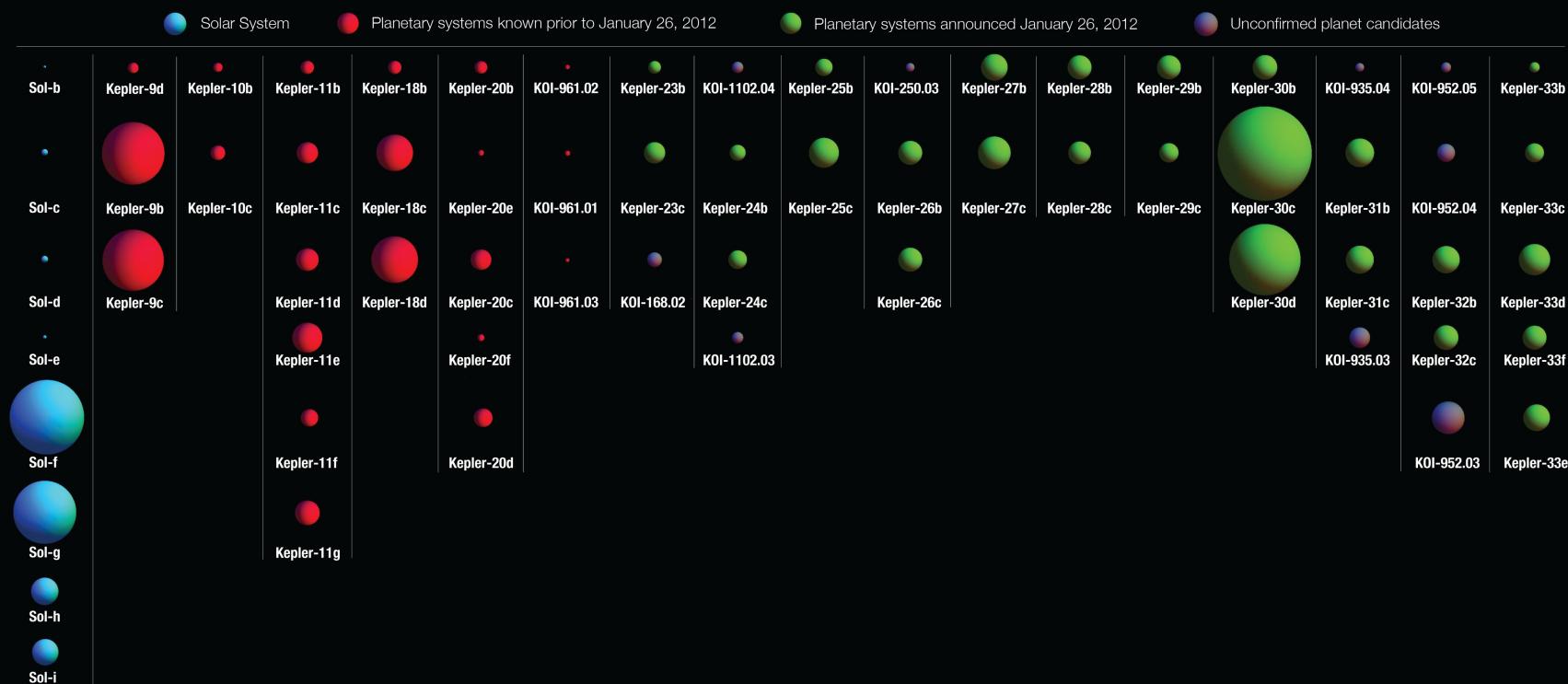
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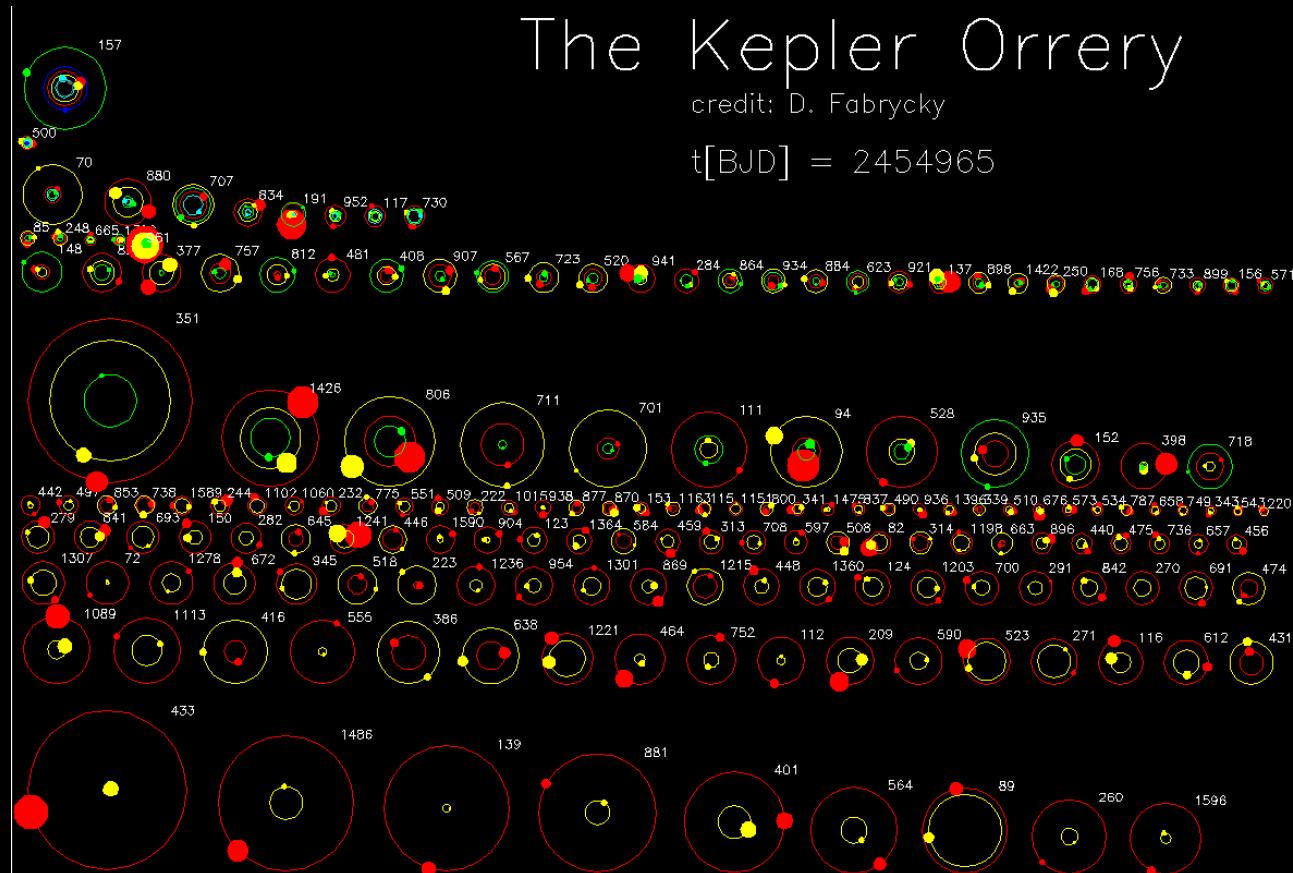
## Kepler Planets

As of February 27, 2012



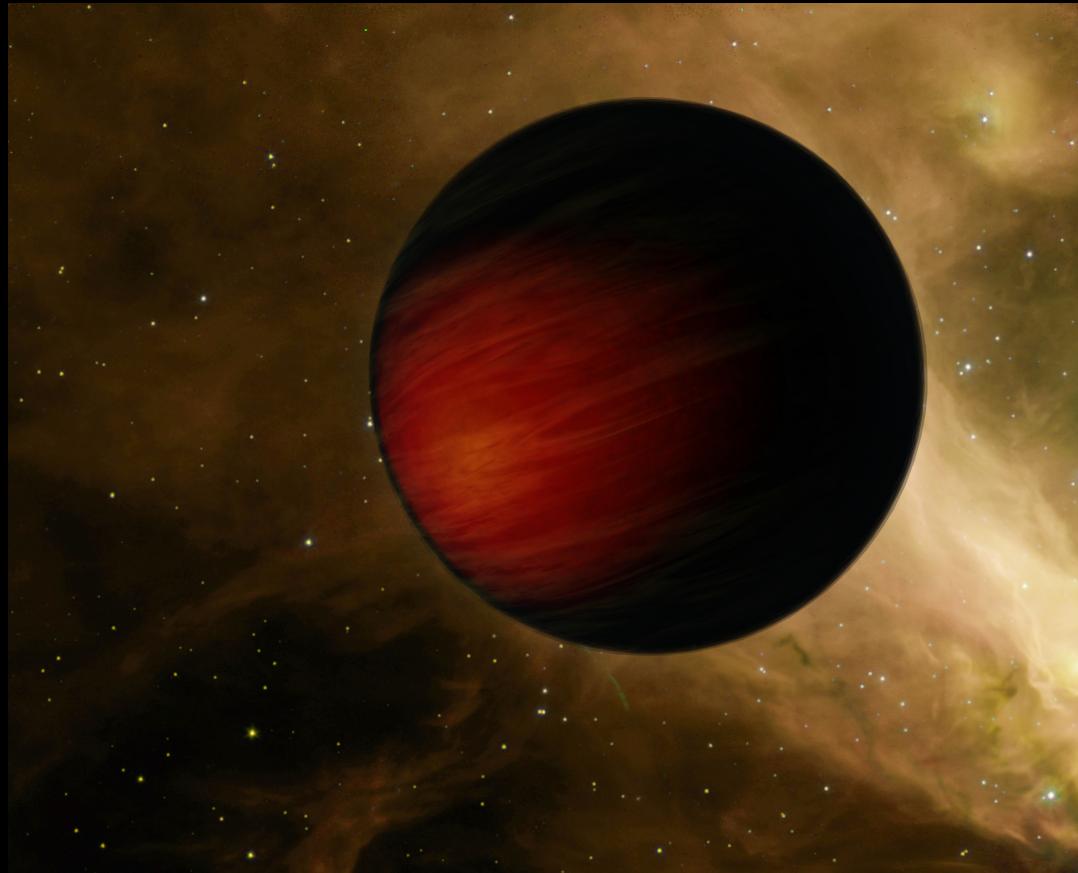
## Kepler's Transiting Planet Systems





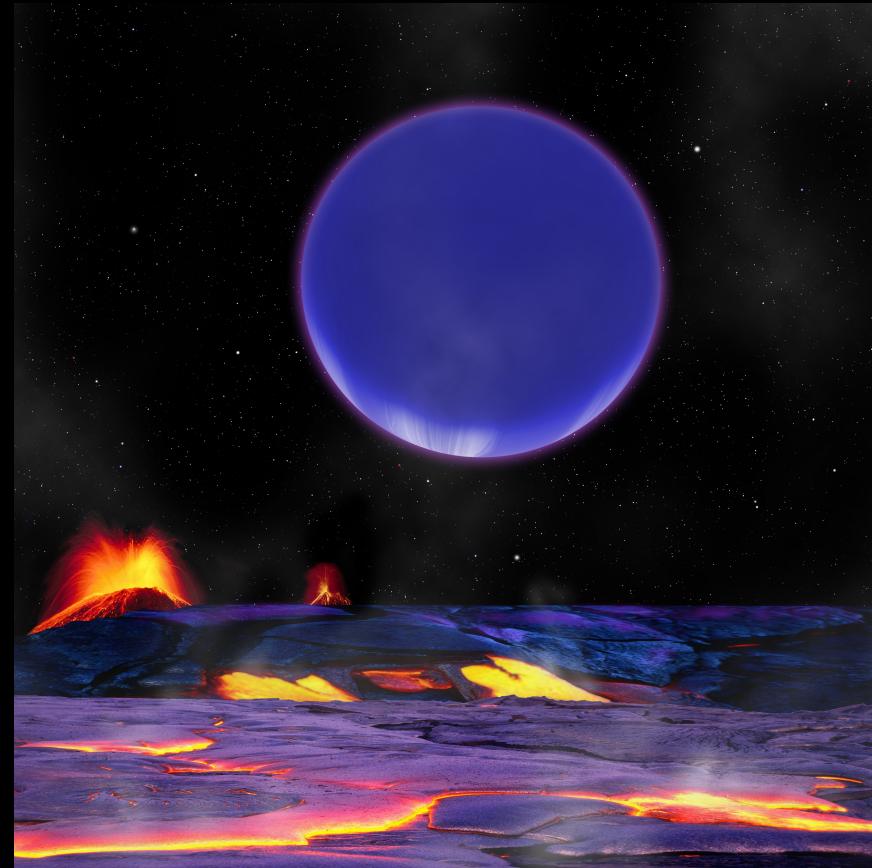
# HD 149026B – BLACKER THAN BLACK

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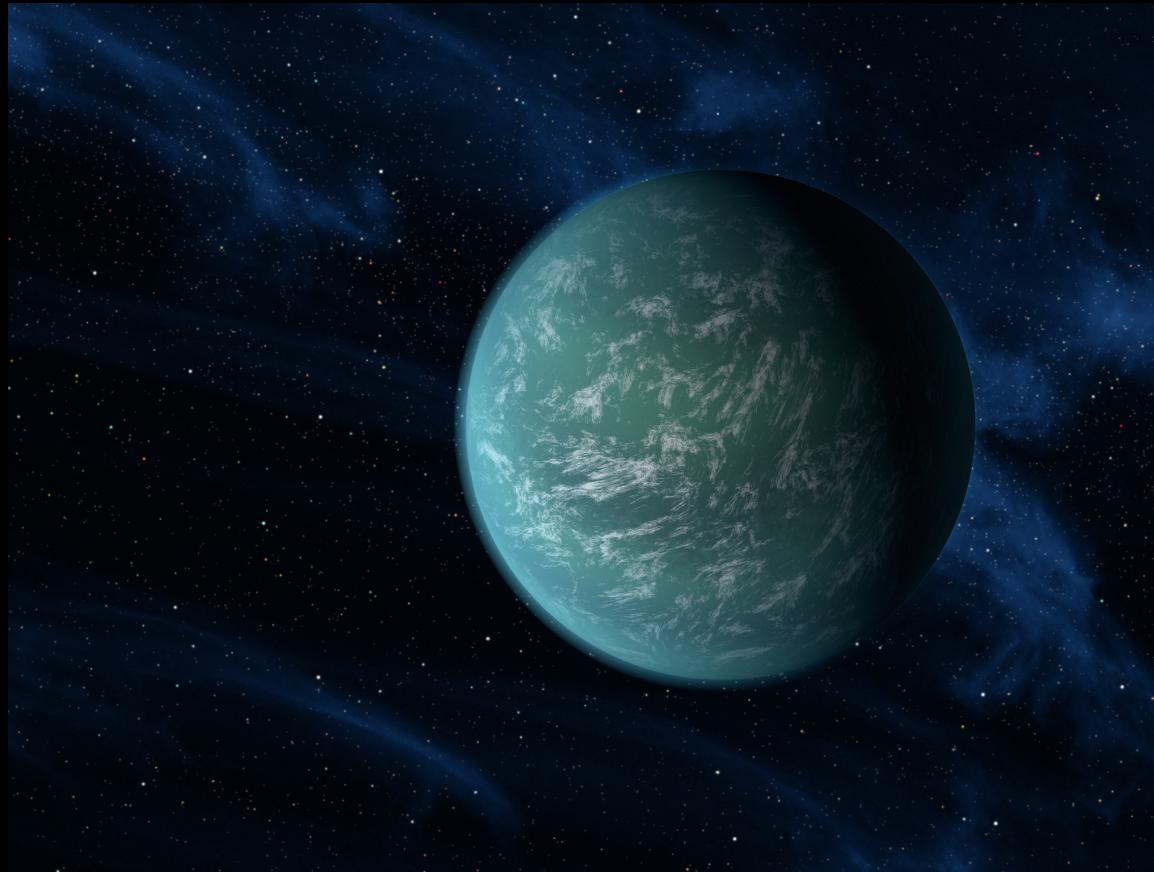
# KEPLER-36, WITH A PUZZLING PAIR OF PLANETS

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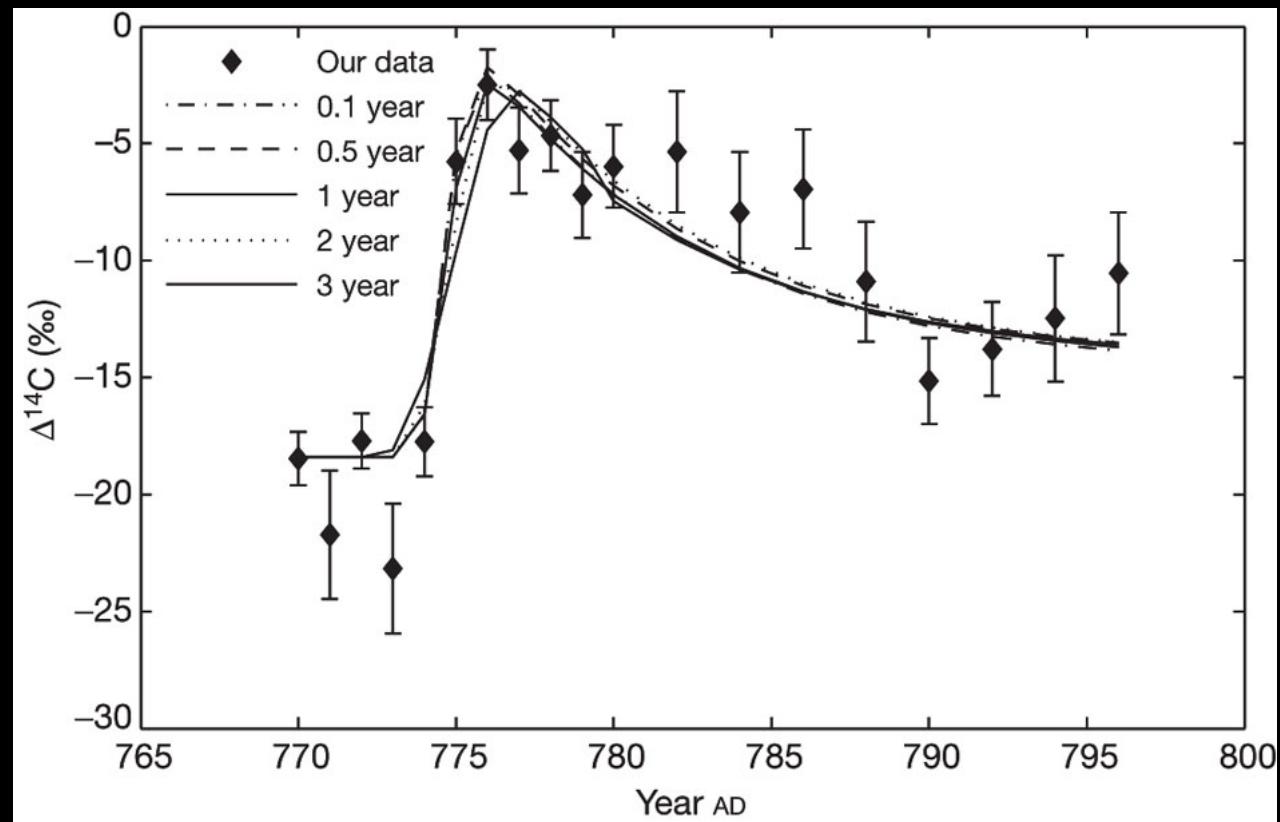


# KEPLER-22B, CLOSER TO FINDING AN EARTH

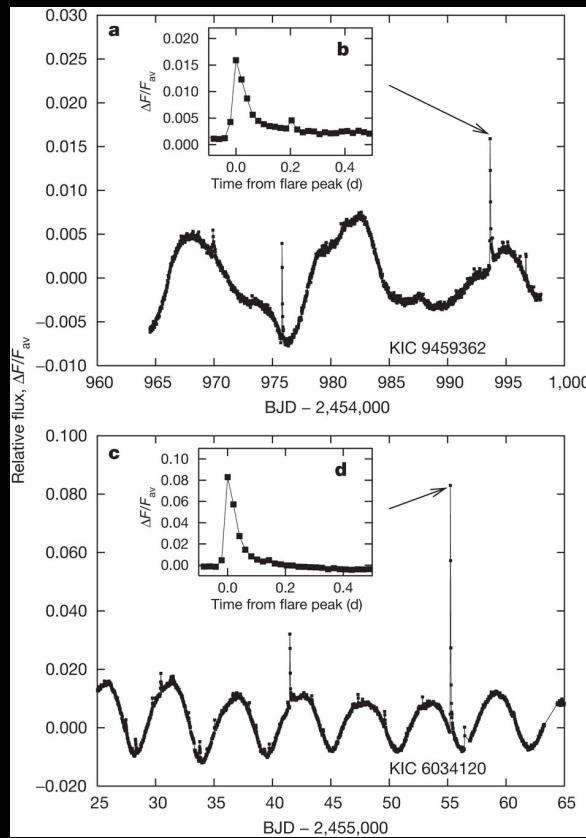
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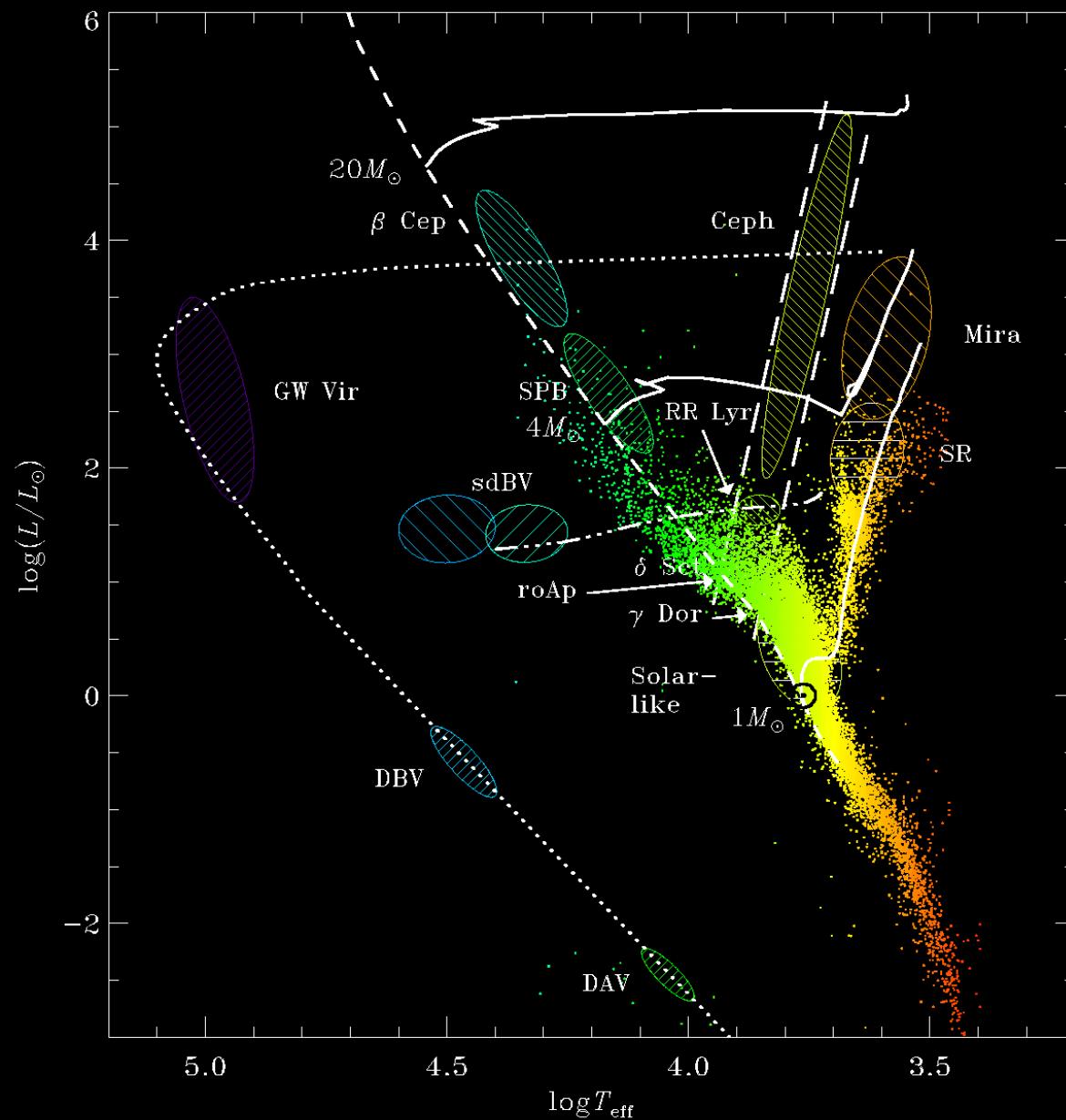


# COSMIC-RAY INCREASE IN AD 774-775



# SUPERFLARES ON SOLAR-TYPE STARS





# STELLAR ACTIVITY IN SUN-LIKE STARS

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