Goggle Boxes
Hours spent...

200 billion hours
a year spent watching TV by US adults

100 million hours
to create Wikipedia

16 years
16 years

Every Day
Tuesday, 6 August 13
37 papers
Help explore the ocean floor
View details
Nature

Hear Whales communicate
You can help marine researchers understand what whales are saying.

Help explore the ocean floor
The HabCam team and the Woods Hole Oceanographic Institution need your help!

You're hot on the trail of bats!
Help scientists characterise bat calls recorded by citizen scientists.

Go wild in the Serengeti!
We need your help to classify all the different animals caught in millions of camera trap images.

Biology

Analyse real life cancer data.
You can help scientists from the world's largest cancer research institution find cures for cancer.
Planet Hunters: find and mark planets

<table>
<thead>
<tr>
<th>200,000 volunteers</th>
</tr>
</thead>
<tbody>
<tr>
<td>classifications</td>
</tr>
<tr>
<td>17m</td>
</tr>
</tbody>
</table>

planethunters.org

Tuesday, 6 August 13
The Milky Way Project: measure and map our galaxy in infrared
milkywayproject.org

40,000
volunteers
drawings
3,000,000
The Andromeda Project: Explore high-resolution Hubble data to find star clusters in M31, and galaxies beyond it.

andromedaproject.org
Old Weather: transcribe the logs of WW1 vessels as they travel the globe, collecting valuable climate data

Tuesday, 6 August 13
Whale FM: Listen to whale calls to decode their language

whale.fm
Snapshot Serengeti: identify and describe animals in Serengeti National Park

20,000 volunteers
7,000,000 classifications

snapshotserengeti.org
<table>
<thead>
<tr>
<th>volunteers</th>
<th>classifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>75,000</td>
<td>3,800,000</td>
</tr>
</tbody>
</table>

Planet Four: locate seasonal ‘fans’ on the surface of the red planet.

planetfour.org
Space Warps: hunting out gravitational lenses in the Universe

20,000 volunteers

5,500,000 classifications

spacewarps.org
Galaxy Zoo: help astronomers classify galaxies
galaxyzoo.org
SHAPE
Is the galaxy simply smooth and rounded, with no sign of a disk?

- Smooth
- Features or disk
- Star or artifact
Future of Citizen Science
Keeping it real and raising the bar
Once you have a CSV file with 2 columns, Time and Flux, it's very easy to fold this light curve. The secret is just one formula:

\[ \text{MOD}(((A2\text{-start})/\text{period}),1) \]

Open the CSV file in Excel (or some other spreadsheet if you have ideological differences with Microsoft).

Insert a column in between Time and Flux and call it Phase.

Copy the 1st value of Time (in cell A2) and paste it in cell E1. You can also name this cell, 'start'. In cell F1, paste the period you want to refine. If you used the NEA service, the Plavchan approximation for the period is 15.255. Name this cell, 'period'.

In cell B2, the first cell of the Phase column, enter the formula, \( \text{MOD}(((A2-E1)/(F1),1) \). Now select this entire column from B2 right to the end and fill down, populating the entire column with this formula.

Now select the Phase and Flux columns and Insert a chart (marked scatter) with Phase in the X column and Flux in the Y column. Then duplicate this chart twice, and change the scales so that these two charts focus on the primary and secondary eclipses. This screen shot is what you should have.
Welcome to Letters

Letters is a new tool from Zooniverse for communicating your research results to the wider community.
A Brief Overview of PyKE & Kepler Target Pixel Files

Summary

This letter offers a basic overview of several Pyke bundle tasks that may be used for pixel by pixel examination of Kepler light curves, and assumes first the user has obtained and correctly installed the software as described at Kepler Guest Observer Home. http://keplergo.arc.nasa.gov/ContributedSoftwarePyKEP.shtml

Many areas of the Kepler FOV contain crowded fields of faint stars and are thus prone to light curves that possess blended flux and aperture confusion. When this leads to questions about the true intrinsic nature of individual KIC targets, basic analysis using the PyKE data reduction tools can address these conflicts and identify background sources. This is especially beneficial to Planet Hunters efforts to identify new exoplanets and false positives.

PyKE is based on Python, a freeware scripting language available in several iterations for Unix, Linux, Mac OS and Windows platforms. Python modules IRAF and PyRAF are mandatory prerequisites.
Dashboard is a place for volunteers to observe, collect, and analyze data from Zooniverse citizen science projects.
Intelligent Websites
Rise of the machines!
Whale FM

Teaching computers to hear whale voices

Tuesday, 6 August 13
Volunteers

850k worldwide

Tuesday, 6 August 13
850k worldwide

15 projects
Conclusions

• There is brain power out there

• People want to contribute to science

• Crowd and machines should together

• Public exploration leads to discovery

• The sky’s the limit!