SETI -
Search for Extra-terrestrial Intelligence -
Perspectives of an Earth Scientist

Donna M. Jurdy
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Mars • Global Dust Storm

June 26, 2001

Hubble Space Telescope • WFPC2

September 4, 2001
PERCIVAL LOWELL at his 24” Refractor, Flagstaff, Arizona observing Mars during the favorable perihelic opposition, 1894.

Below, a globe constructed from his sketches.
Viking composite of Mars

mid 1970’s
ALH84001 thin section – Martian fossils?
from: Raup & Sepkowski, "Periodicity of extinctions in the geologic past"
Figure 15.3. The variety of life is much too great to be captured in a single diagram, but this abbreviated one arranges and illustrates at least these groups that have a role in this and following chapters.
The Miller-Urey Experiment


Left: Stanley L. Miller (1930-2007) with a reproduction of the experimental setup he first used in the 1950's to study pathways to the origin of life.
Pole-to-Equator Temperature Difference on Other Planets

- ~ 0 K
- ~ 4 K
- a few 10 K
- a few (more) 10 K

Life in the Solar System?
Needed for Habitability?
Solid surface
Atmosphere
Liquid on surface:
   Need not be water

PHI – Planetary Habitability Index:
Schulze-Makuch et al., 2011
Habitability Index

Earth = 0.96
Titan = 0.64
Mars = 0.59
Gliese 581d = 0.43
Early View of Venus
Landed January 14, 2005 at 10.2S, 192.4W

Discovered small “rocks”, possibly made of water ice, at the landing site.

Fluvial activity (methane?)

Images taken during descent showed no open areas of liquid, but indicated liquid had once flowed.

Image Credit: NASA
The Drake Equation

How many civilizations are out there?
CONTACT

JODIE FOSTER
MATTHEW MCCONAUGHEY

A message from deep space
Who will be the first to go?
A journey to the heart of the universe.
Arecibo Message

Broadcast on November 16th 1974 from the Arecibo radio telescope.

Aimed toward globular star cluster M13.

M13 is 25,000 light years away.
Albertine

OOGH = Gogma

OOGH = Deby - hose

NGC = Aogone

OOGH = Aogone

OOGH = Aogone

OOGH = Gogma

OOGH = Deby - hose

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<th>10 bits per sec = 3 d.m</th>
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<th>23 x 23 (both primes)</th>
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Question: Is anyone out there?
2 sets of base pairs
While all human genome.

\[
\begin{align*}
C_5H_7O & - C_5H_7N_2O_2 \\ & \quad - C_5H_7N_2O & - C_2H_2O
\end{align*}
\]
The greatest danger

facing our world

has been the planet’s

best kept secret...

until now.

THE ARRIVAL
Launch of the Kepler Spacecraft

Videos:
- 31 Mb AVI (best for PCs)
- 2.5 Mb MPEG4 (best for fast download)
- 17 Mb QuickTime (best for Mac)

SUCCESSFUL LAUNCH: 2009 March 6 at 10:49 pm EST.

Media from Kennedy Space Center (KSC)
- Press Conference
- Media Resources
- Full Press Kit (3 Mb pdf)

Mission Manager’s Updates
- NASA Kepler webcasts

Photo below by Brian Cooper, originally posted at http://pod.nasa.gov/podtag/090309.html
Life Around Other Stars
Imagined View from Planet Kepler-10b (Artist's Depiction)
Credit: NASA/Kepler Mission/Dana Berry
Diagrams: scatter plot

Status ▼ Detection ▼ "confirmed" in planet_status

X axis
- Planetary Mass ▼
- show error bars
- log scale
- min
- max

Y axis
- Planetary Radius ▼
- show error bars
- log scale
- min
- max

Color □

Size □
- Set grid
- Manual Pan/Zoom
- Set labels
- Selection mode
In Disasters, Panic Is Rare; Altruism Dominates

ScienceDaily (Aug. 8, 2002) — WASHINGTON, DC
-- Group panic and irrational behavior did not occur at the World Trade Center on September 11, 2001. Instead the event created a sense of "we-ness" among those threatened, says Rutgers University sociology professor Lee Clarke. In his article, "Panic: Myth or Reality?", in the fall 2002 edition of Contexts magazine, he explains that 50 years of evidence on disasters and extreme situations shows that panic is rare, even when people feel "excessive fear."

Rarity of Panic

Because this combination of conditions is so uncommon in disasters, panic is also quite rare. (6, 7) When panic does occur, it usually involves few persons, is short-lived, and is not contagious. (21) In studies of more than 500 events, the University of Delaware’s Disaster Research Center found that panic was of very little practical or operational importance. (21, 22) A number of systematic studies of human behavior in disasters have failed to support news accounts of widespread panic. (5, 8, 23–26)