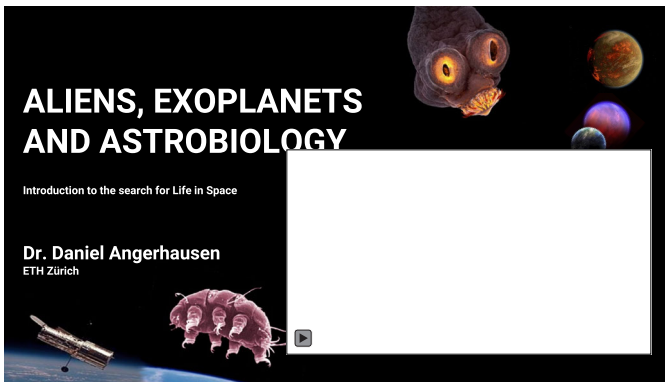
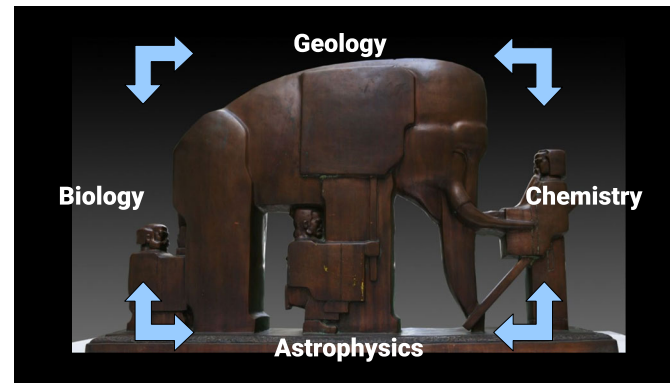


ALIENS, EXOPLANETS AND ASTROBIOLOGY

Introduction to the search for Life in Space

Dr. Daniel Angerhausen
ETH Zürich

Who am I?



u^b

explainables

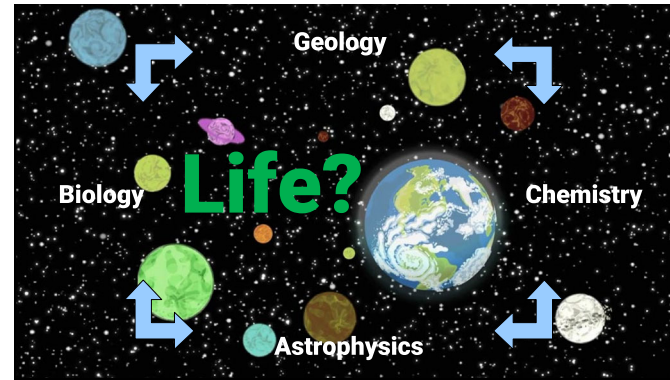
Planet S

Google Cloud

NASA

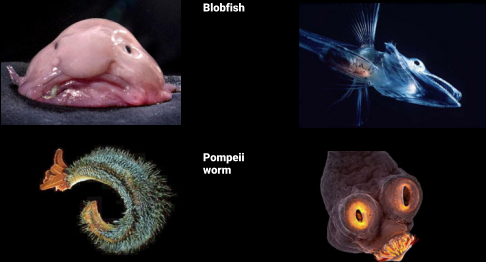
FRONTIER DEVELOPMENT LAB

Mast
Homo neanderthalensis
A female Neanderthal
Lived about 40,000 years ago. She may have
a large brain and advanced tool-making skills.
Only 4% of our DNA differs from hers in total.



Astrobiology

Extremophiles



Blobfish

Icefish

Pompeii worm

Taenia solium




A miniature Astronaut

This is the tardigrade.

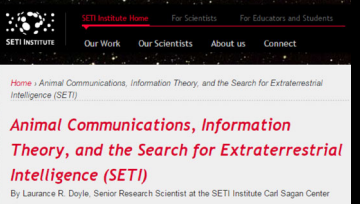


If it can withstand gamma radiation, a lack of oxygen and the intense blast of solar winds. They can also go without food or water for over ten years.

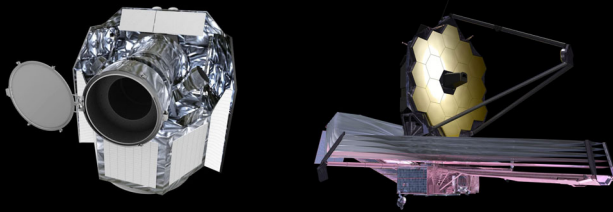
So long,



And thanks for



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 Home » Animal Communications, Information Theory, and the Search for Extraterrestrial Intelligence (SETI)
 Animal Communications, Information Theory, and the Search for Extraterrestrial Intelligence (SETI)
 By Laurance R. Doyle, Senior Research Scientist at the SETI Institute Carl Sagan Center



CHEOPS
CHARACTERISING EXOPLANET SATELLITE

JWST
NASA • ESA • CSA


But what is your actual work about?



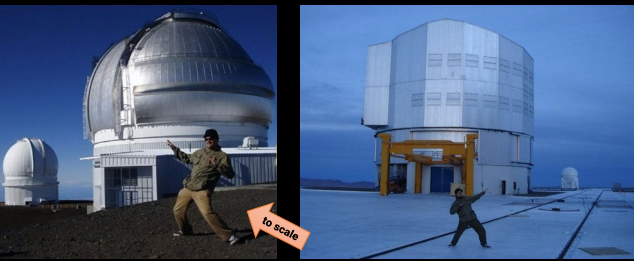
CHEOPS
CHARACTERISING EXOPLANET SATELLITE

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I am an Astronomer and I like to climb high

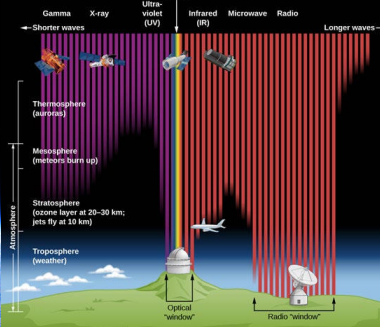


JWST
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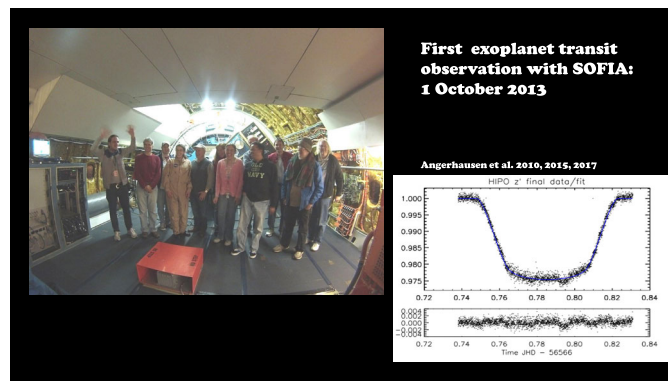
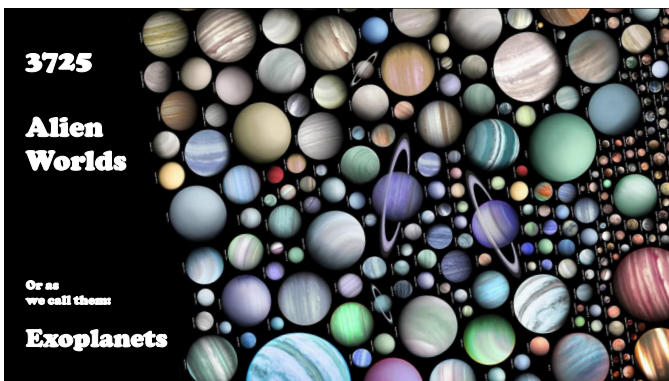
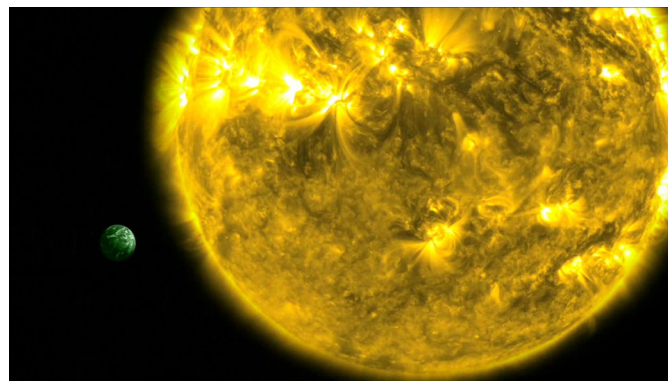
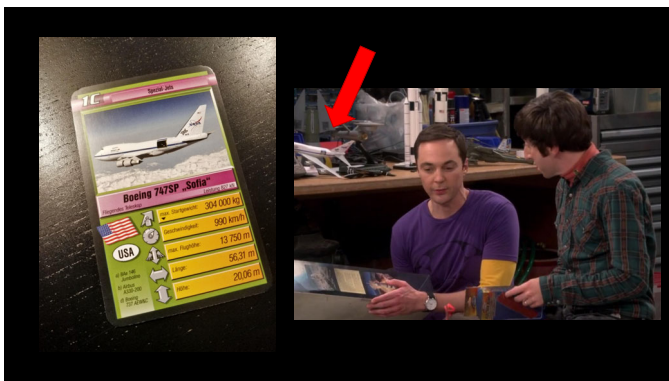
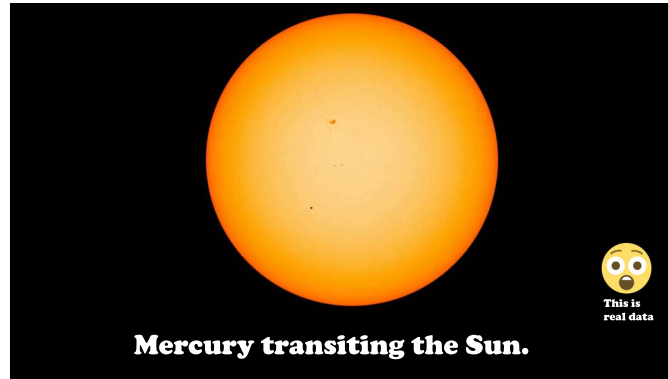
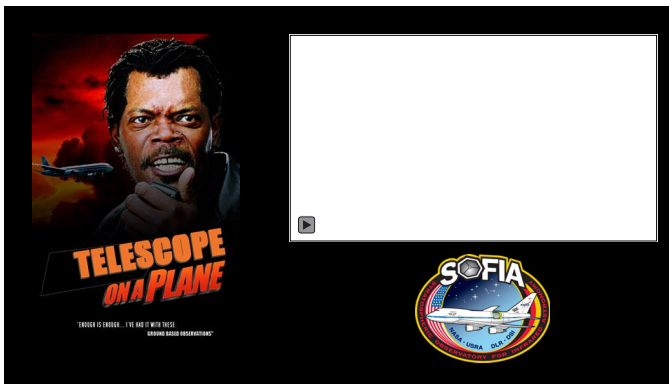


Hawaii **Chile**

Why getting high?



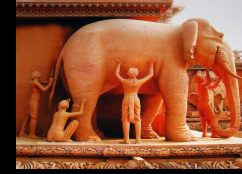
Gamma X-ray Ultra-violet (UV) Visible Infrared (IR) Microwave Radio Longer waves →
 → Shorter waves
 Thermosphere (auroras)
 Mesosphere (meteors burn up)
 Stratosphere (ozone layer at 20-30 km; jets fly at 10 km)
 Troposphere (weather)
 Optical "window" Radio "window"



Daniel Angerhausen @dan_anger · 13 Oct 2015
Spent the night on a billion dollar @NASA plane chasing an alien planet 930 lightyears away. What did you do? @SOFIAtelescope #exoplanets



The big Question: *Biosignatures*



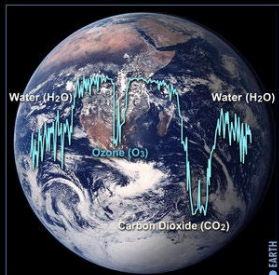
Hot Jupiters



Super Earths vs. Mini Neptunes



The big Question: *Biosignatures*



Most promising:
Oxygen and
methane

....like grad students and pizza



That's here.
That's home.
That's us.



On it everyone you love, everyone you know, everyone you ever heard of,
every human being who ever was, lived out their lives. *Carl Sagan*