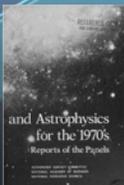


ASTROPHYSICS

Decadal Survey Missions

1990



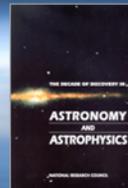
1972
Decadal Survey
Hubble

1999



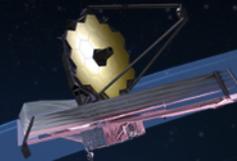
1982
Decadal Survey
Chandra

2003



1991
Decadal Survey
Spitzer, SOFIA

LRD: 2018



2001
Decadal Survey
JWST

LRD: 2020s



2010
Decadal Survey
WFIRST



WFIRST-AFTA Science



BARYON ACOUSTIC OSCILLATIONS

SUPERNOVAE

GRAVITATIONAL LENSING

LEGACY SCIENCE WITH SURVEYS

A large graphic with a starry background. It contains four text boxes: "BARYON ACOUSTIC OSCILLATIONS" (top left), "SUPERNOVAE" (bottom left), "GRAVITATIONAL LENSING" (center right), and "LEGACY SCIENCE WITH SURVEYS" (vertical text on the far right). The background of the graphic shows a field of stars and a galaxy.

MICROLENSING CENSUS

A graphic with a dark background and a glowing orange ring. The text "MICROLENSING CENSUS" is centered in white.

exoplanet beta pictoris b

beta pictoris

CORONAGRAPHY

6 AU

A graphic with a blue background showing a coronagraph. The text "exoplanet beta pictoris b" and "beta pictoris" are at the top. "CORONAGRAPHY" is in the center, and "6 AU" is at the bottom left.

GUEST OBSERVER PROGRAM

A graphic showing a satellite in space. The text "GUEST OBSERVER PROGRAM" is centered in white.



Dark Energy Science



Wide & Deep Infrared Survey

Supernova Survey

Galaxy Redshift Survey

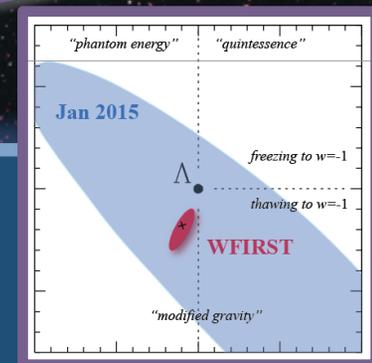
Weak Lensing Survey

Standard Candle
Distance measured to ~0.2% precision

Standard Ruler
Distance measured to 0.5% precision,
expansion rate to <1%

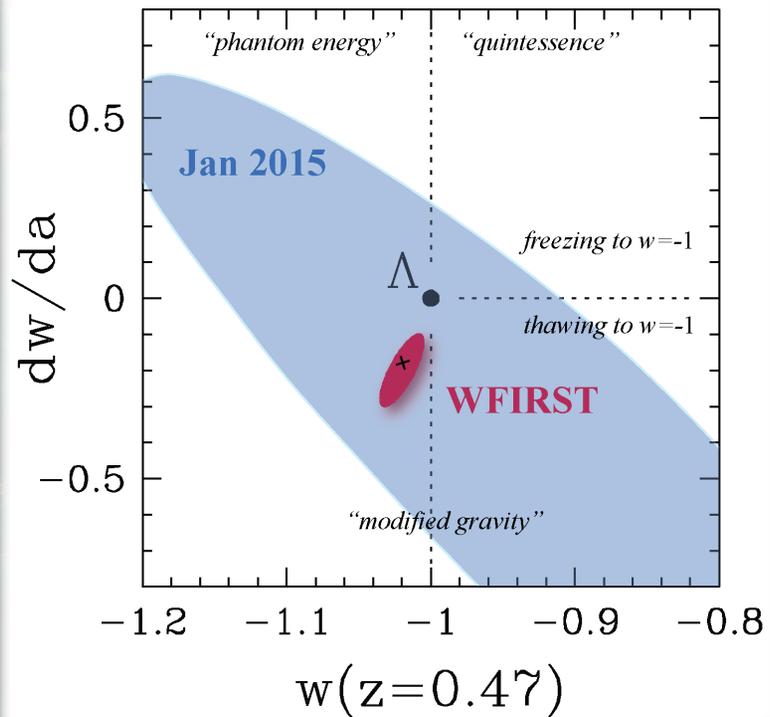
Dark Matter Clustering
Weak lensing to 0.2%
Galaxy Clusters to 0.3%
Galaxy Infall to 1.2%

Definitive Measurements of:
dark energy physics,
growth of structure over cosmic time,
general relativity





WFIRST and Dark Energy

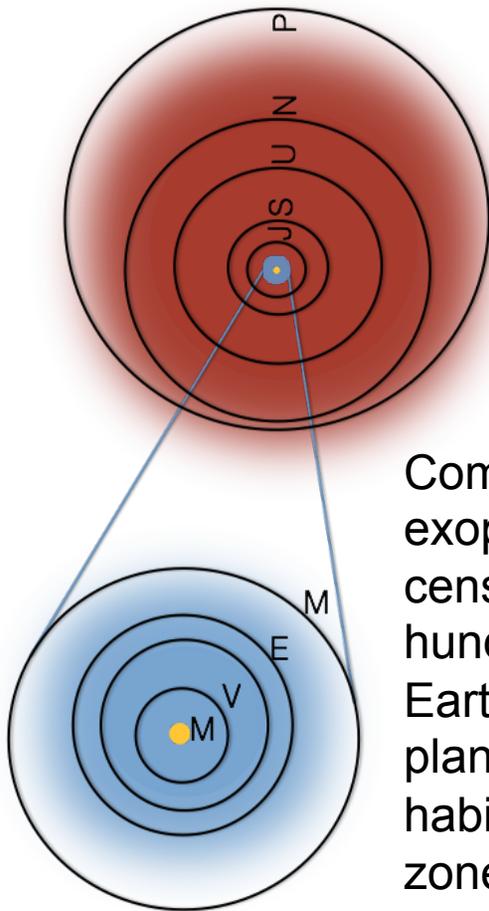




Exoplanet Science

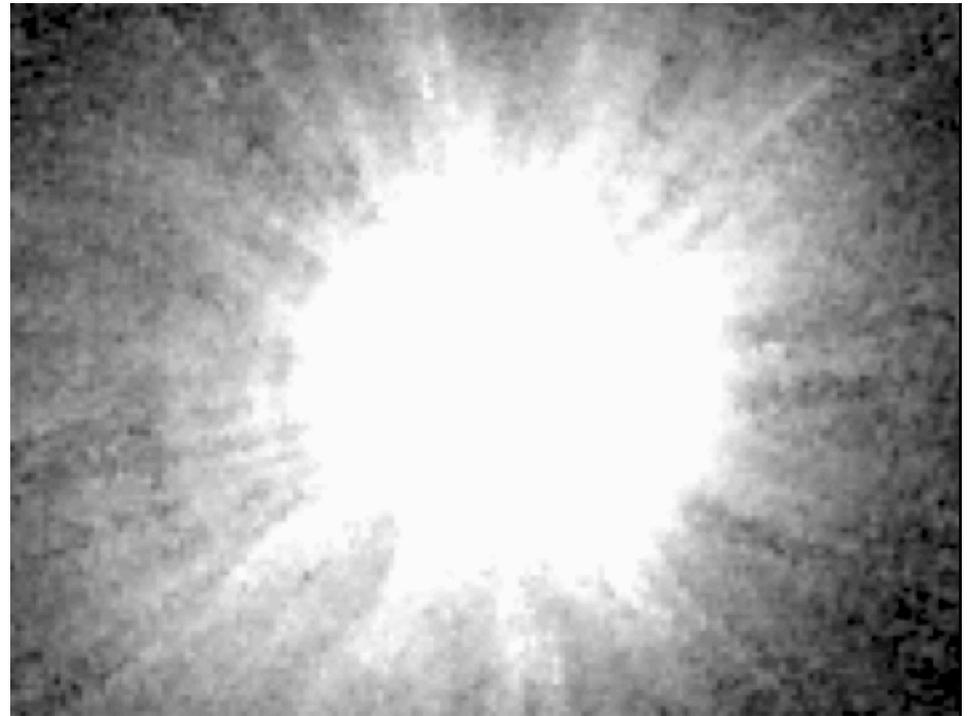


WFIRST Search Area



Complete the exoplanet census: find hundreds of Earth-mass planets in the habitable zone!

Kepler Search Area



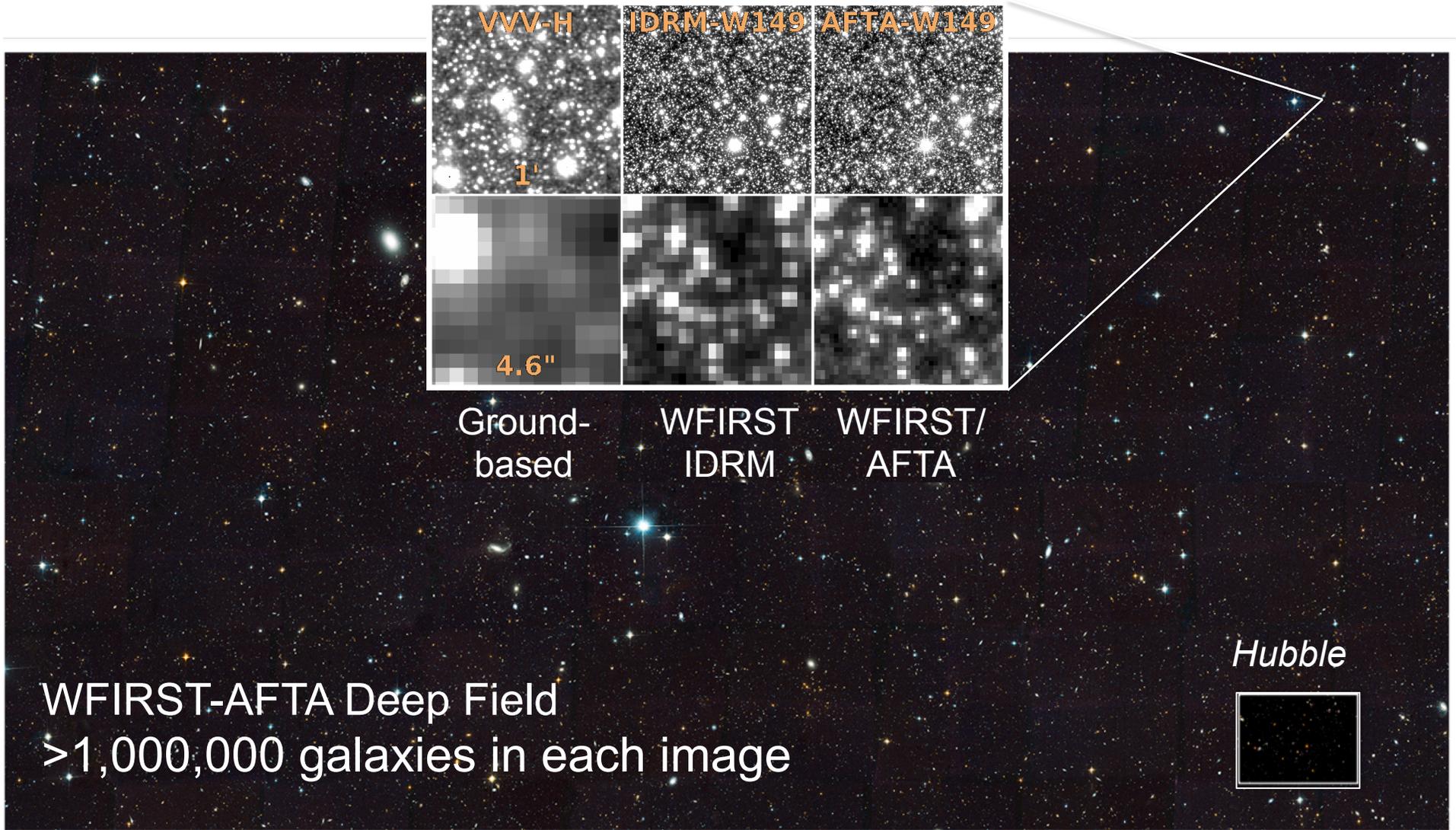
Direct imaging & spectroscopy via coronagraph: characterize exoplanets to study the variety of atmospheres and understand environment & habitability



WFIRST/AFTA Comparison



#BTH





WFIRST/AFTA = Coronagraph



- NRC Committee: *“The 2.4-m WFIRST/AFTA telescope provides an opportunity to include a coronagraph with compelling capabilities that the WFIRST/IDRM 1.3-m does not.”*

