

Jet Propulsion Laboratory
California Institute of Technology

Mars Exploration Program

Fuk Li

Jet Propulsion Laboratory,
California Institute of Technology

Mars Exploration Program Science Goals



Life



Climate



Geology & Geophysics



Prepare for Human Exploration



Mars Exploration Program Missions

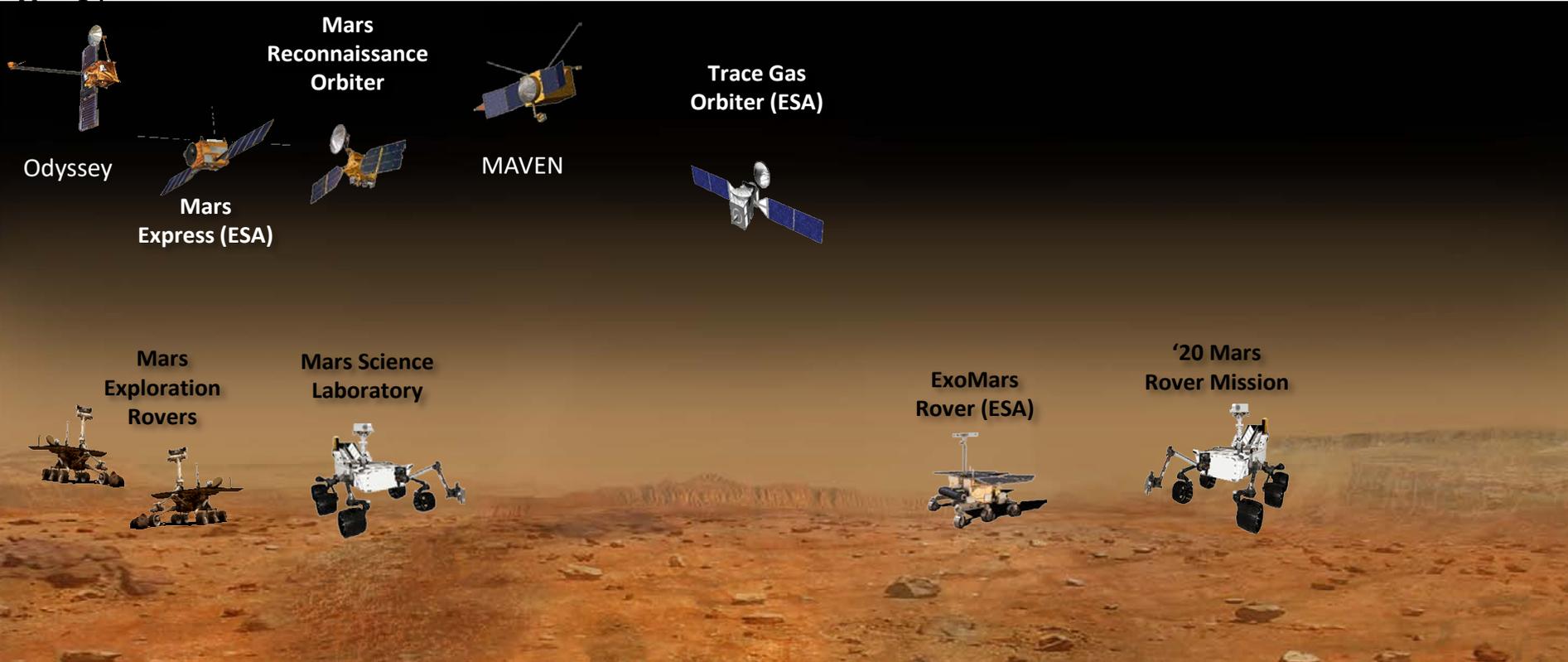
2001 - 2015

2016

2018

2020

Future Mars
Missions



Integrated Campaign for Mars in the 2020's

Mars 2020



ISRU
Prototype

EDL
Instruments

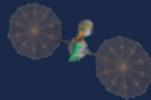
Sample
Acquisition

In Situ
Science

Habitable
Conditions

Ancient
Life

Mars Orbiter
2022



Resource
Survey

Landing Site
Selection

Optical
Comm/Relay

SEP

Rendezvous

Remote
Sensing
Instruments

Round-Trip
Surface to
Surface



Dust Toxicity

EDL
Evolution/
Instruments

Mars Ascent

Surface
Navigation

Returned
Sample
Analysis

Exploration
Precursors



ISRU
Production

Surface
Power for
ISRU

Rad/ECLSS
Validation

Increased
EDL
Mass &
Precision

Science
Instruments

Robotic precursors fulfilling the Mars Sample Return objective intrinsically inform strategic exploration planning by providing invaluable flight experience

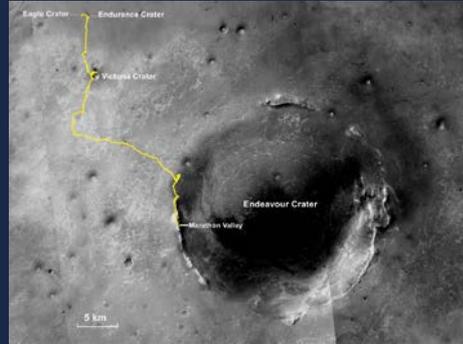
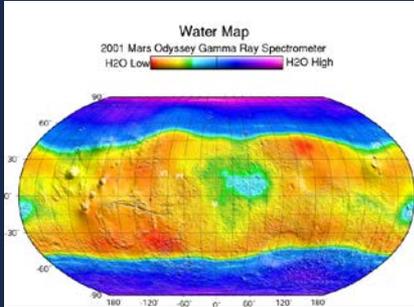
Mars Exploration Program Milestones

Odyssey: 60,000 orbits

Opportunity: Roved > 26 miles

MRO: 10th year since MOI

Curiosity: >3 years since landing



Mars Exploration Program Highlights

RSL Press Conference

MAVEN Press Conference

'The Martian' Movie

Gale Crater Press Coverage



Credits: Twentieth Century Fox

Mars pebbles 'most compelling evidence' red planet had long periods of liquid water

Mars Pebbles Carried for Miles by Rivers

Pebbles on Mars Shaped by Ancient Long-Gone Rivers Dozens of Miles Long

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