

Hot Science Cool Talks

UT Environmental Science Institute

87

Curiosity's First Year of Exploration on Mars

Dr. John Grotzinger

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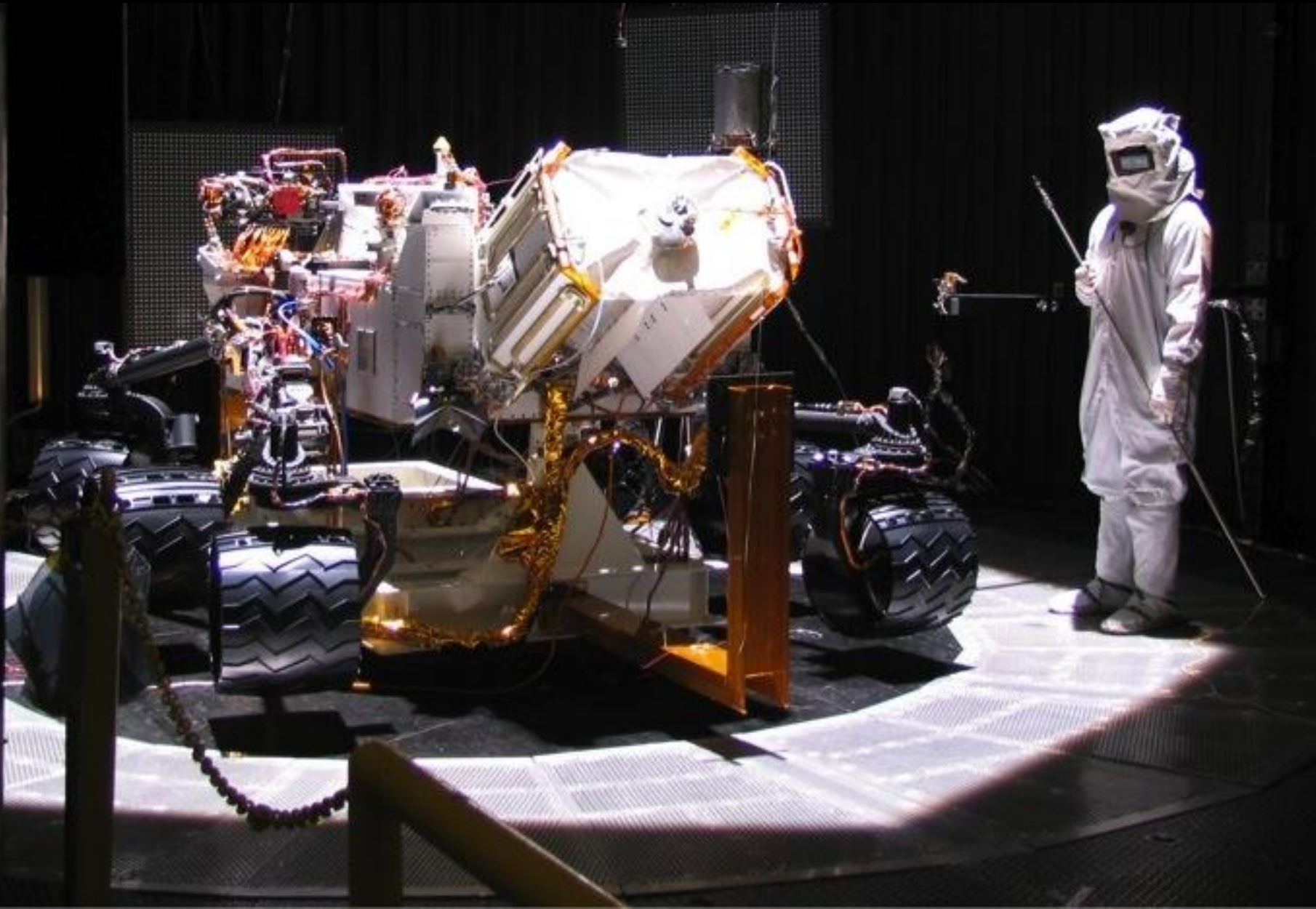
Curiosity's First Year of Exploration on Mars

John Grotzinger On behalf of
Mars Science Laboratory Mission Team

Heritage Counts



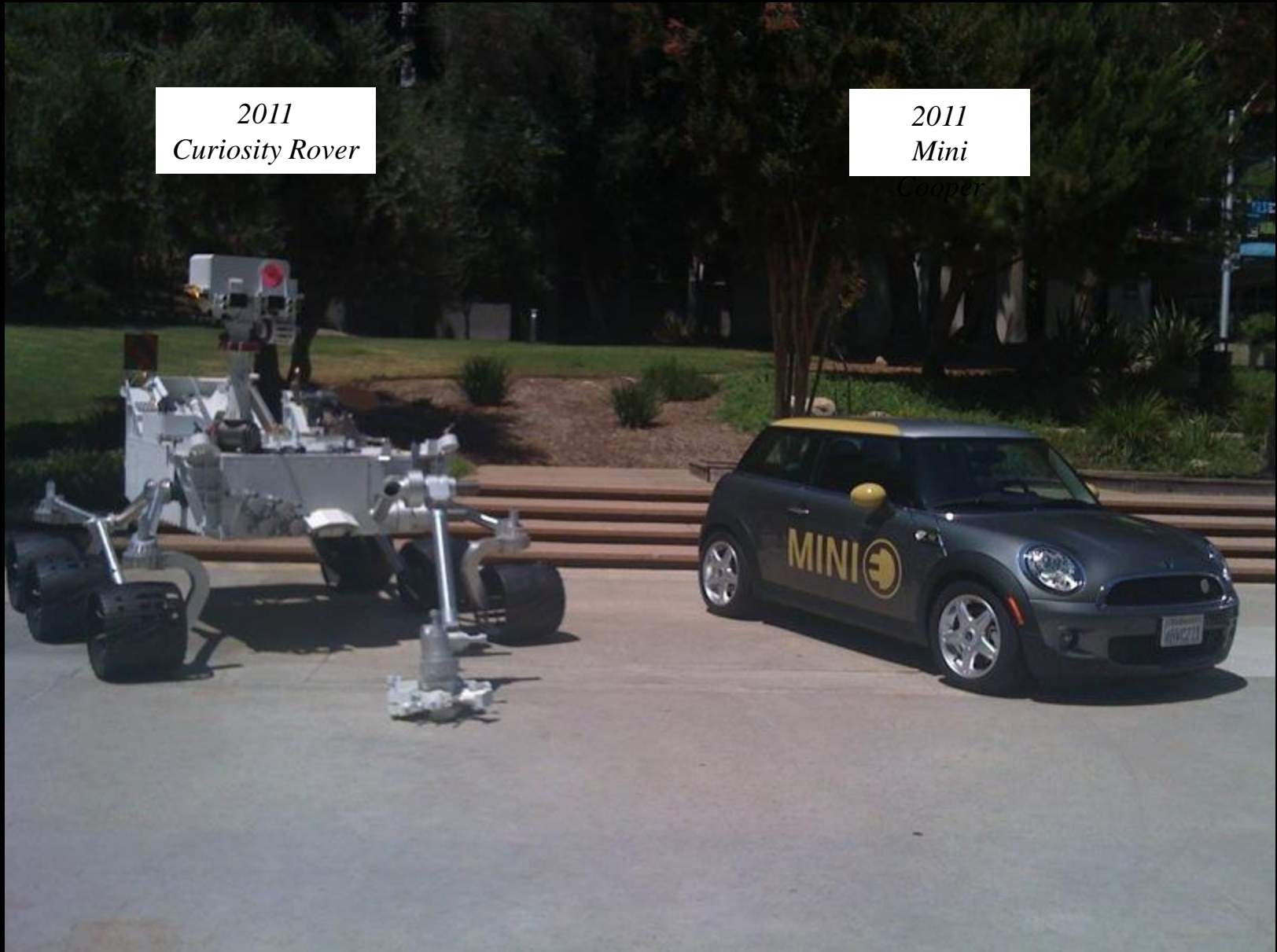
Test as you fly, fly as you test



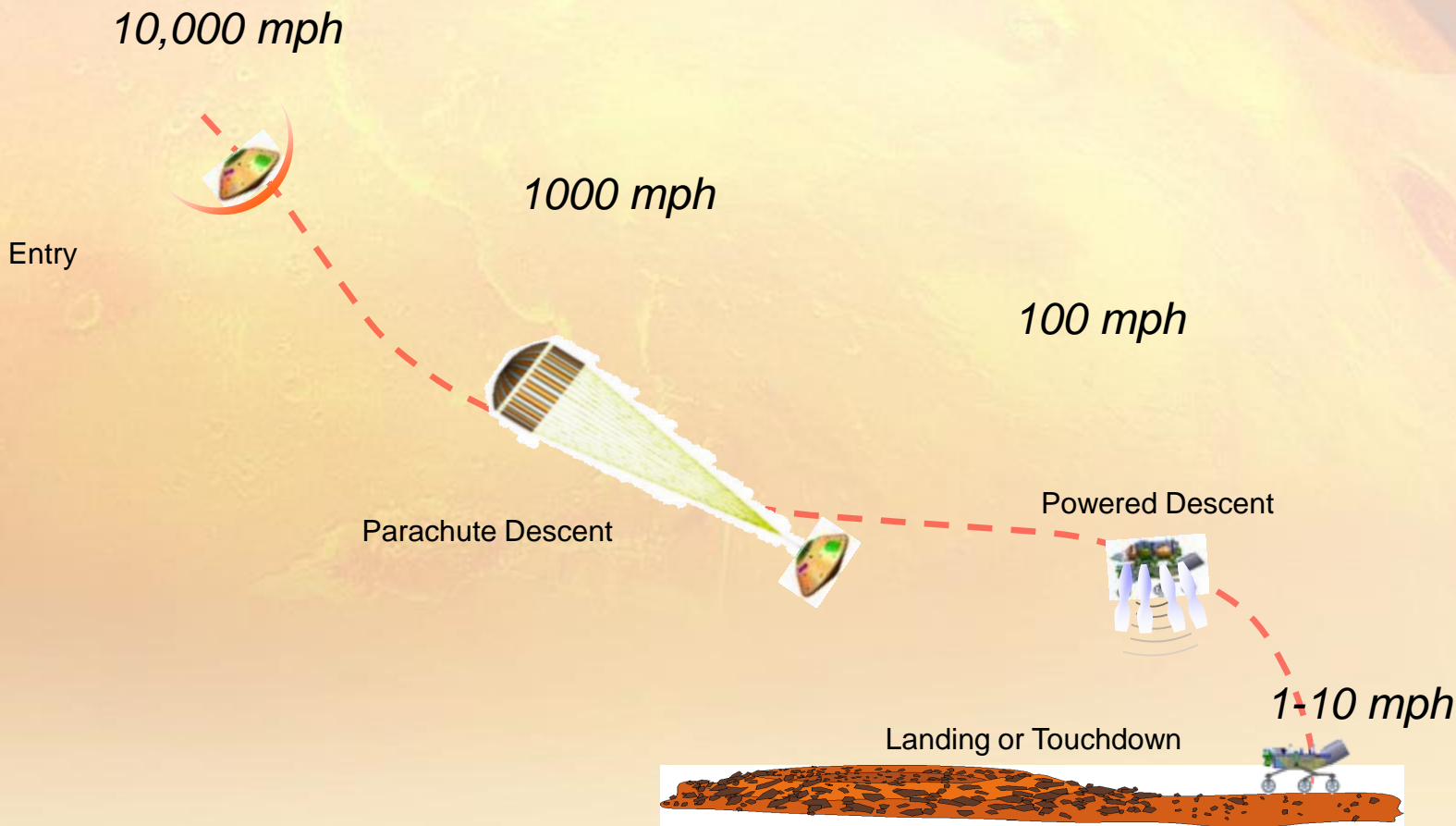
Grand Challenge – Land a car on Mars

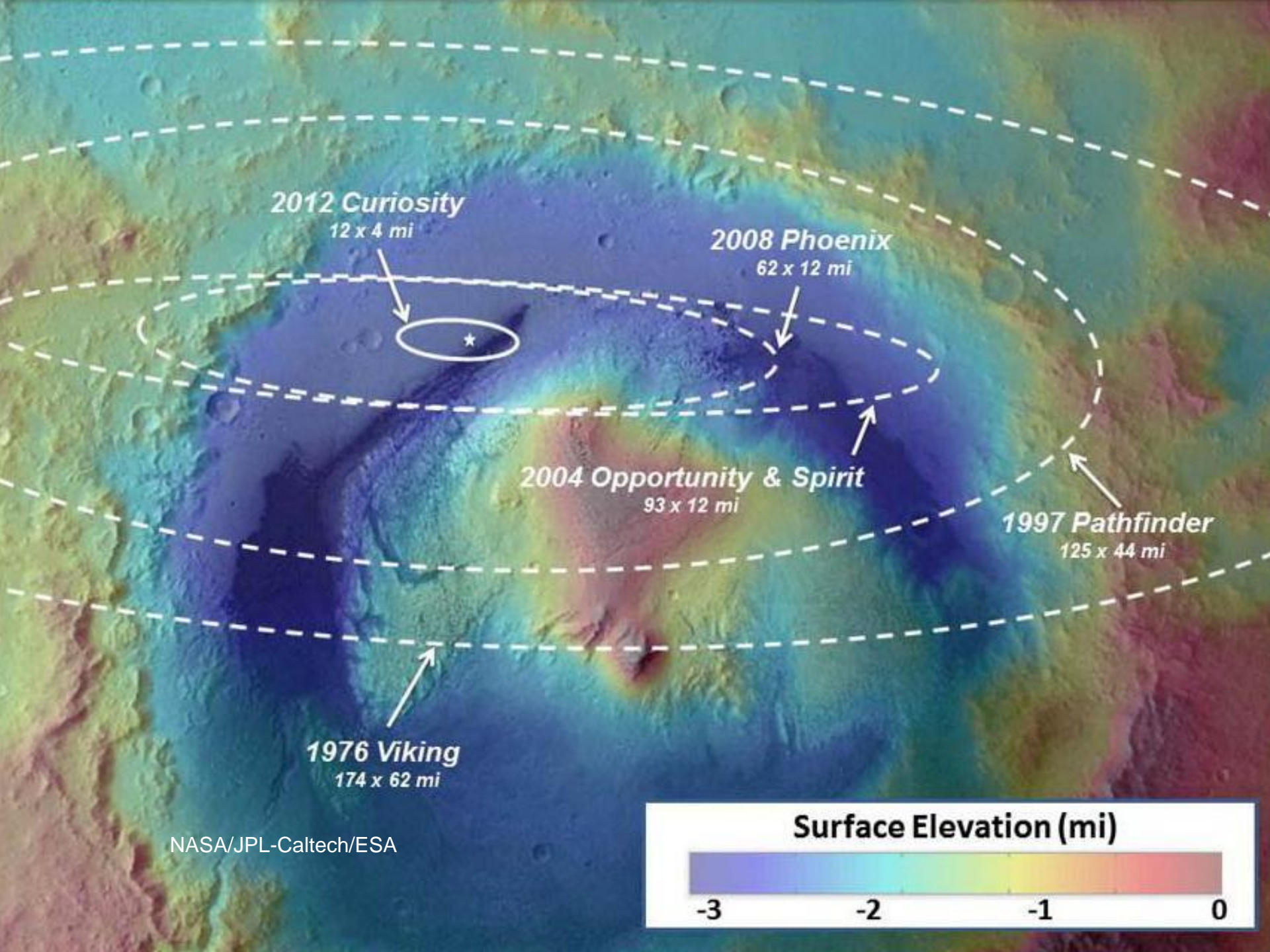
2011
Curiosity Rover

2011
*Mini
Cooper*



Pushing Limits to Meet the Grand Challenge





2012 Curiosity

12 x 4 mi

2008 Phoenix

62 x 12 mi

2004 Opportunity & Spirit

93 x 12 mi

1997 Pathfinder

125 x 44 mi

1976 Viking

174 x 62 mi

NASA/JPL-Caltech/ESA

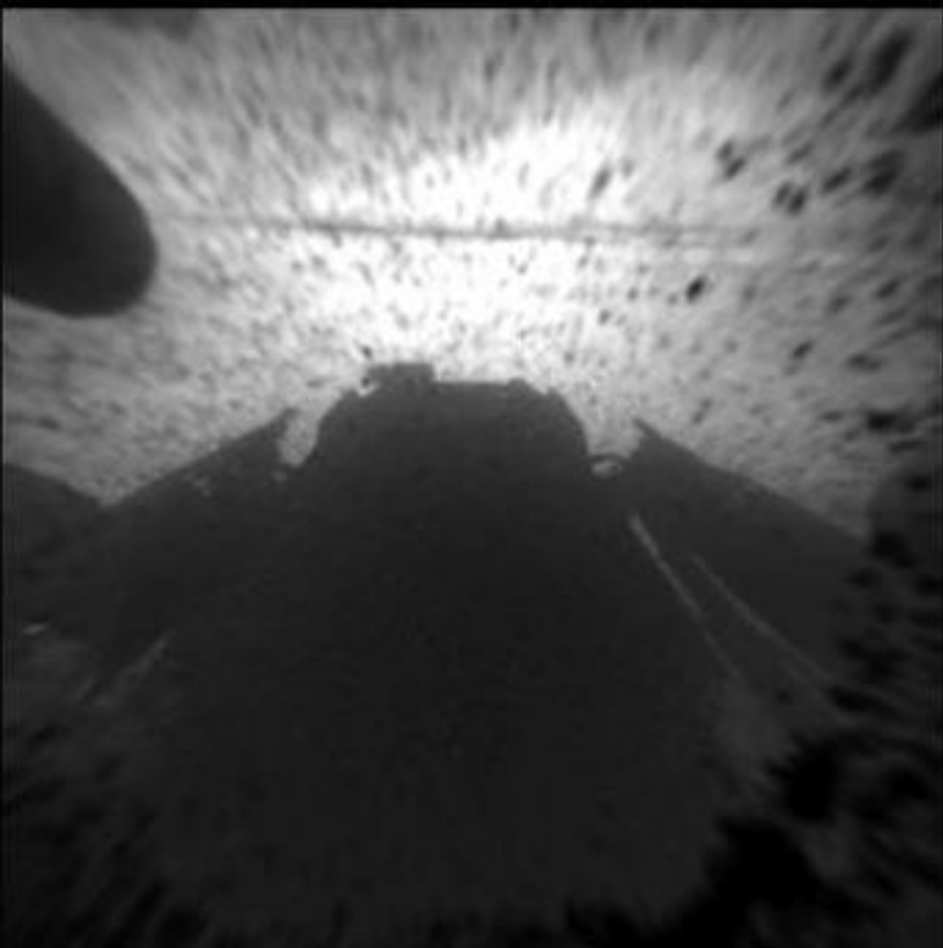
Surface Elevation (mi)

-3

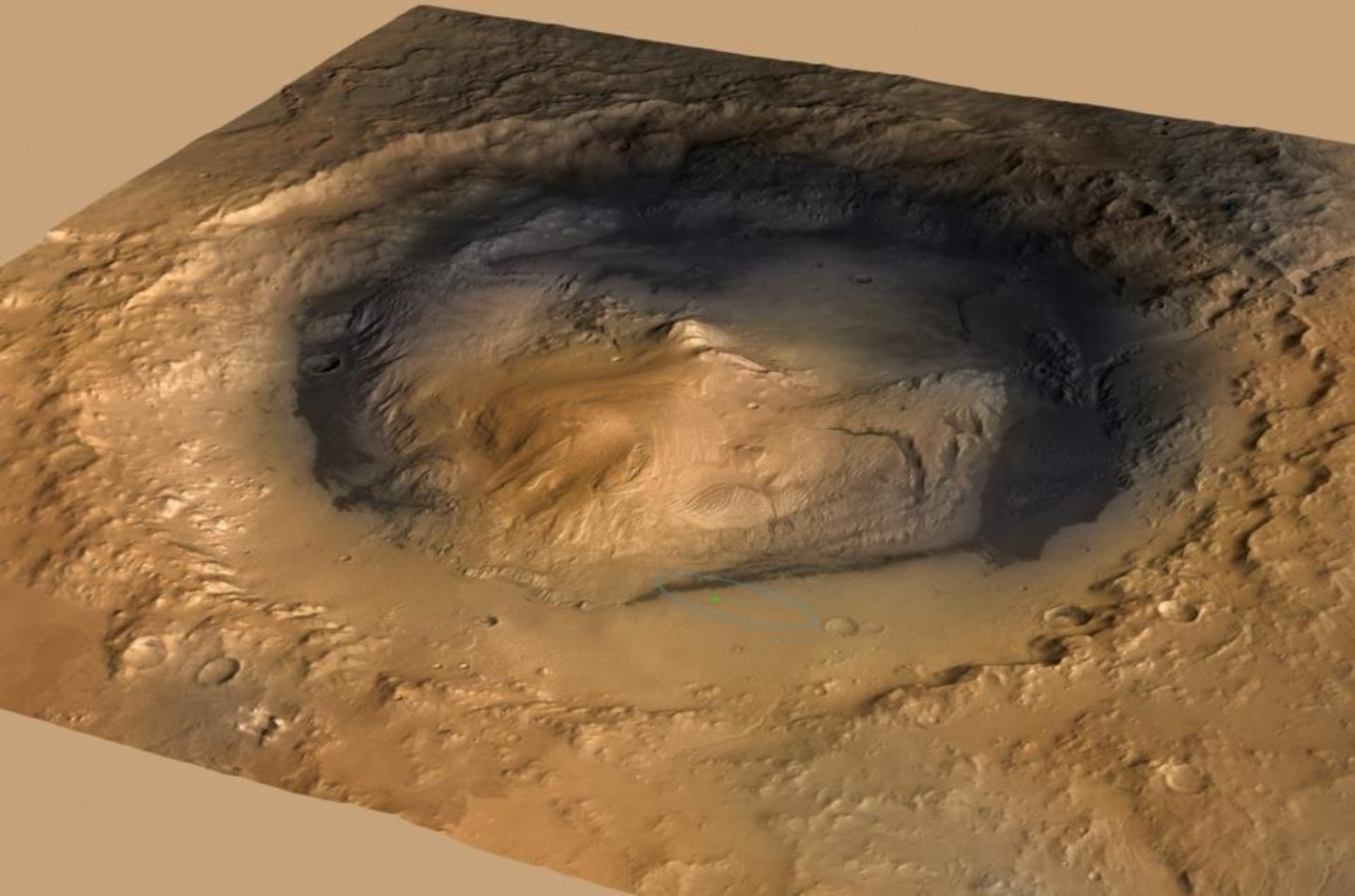
-2

-1

0



Gale Crater and Mt. Sharp



Looking North to Crater Rim



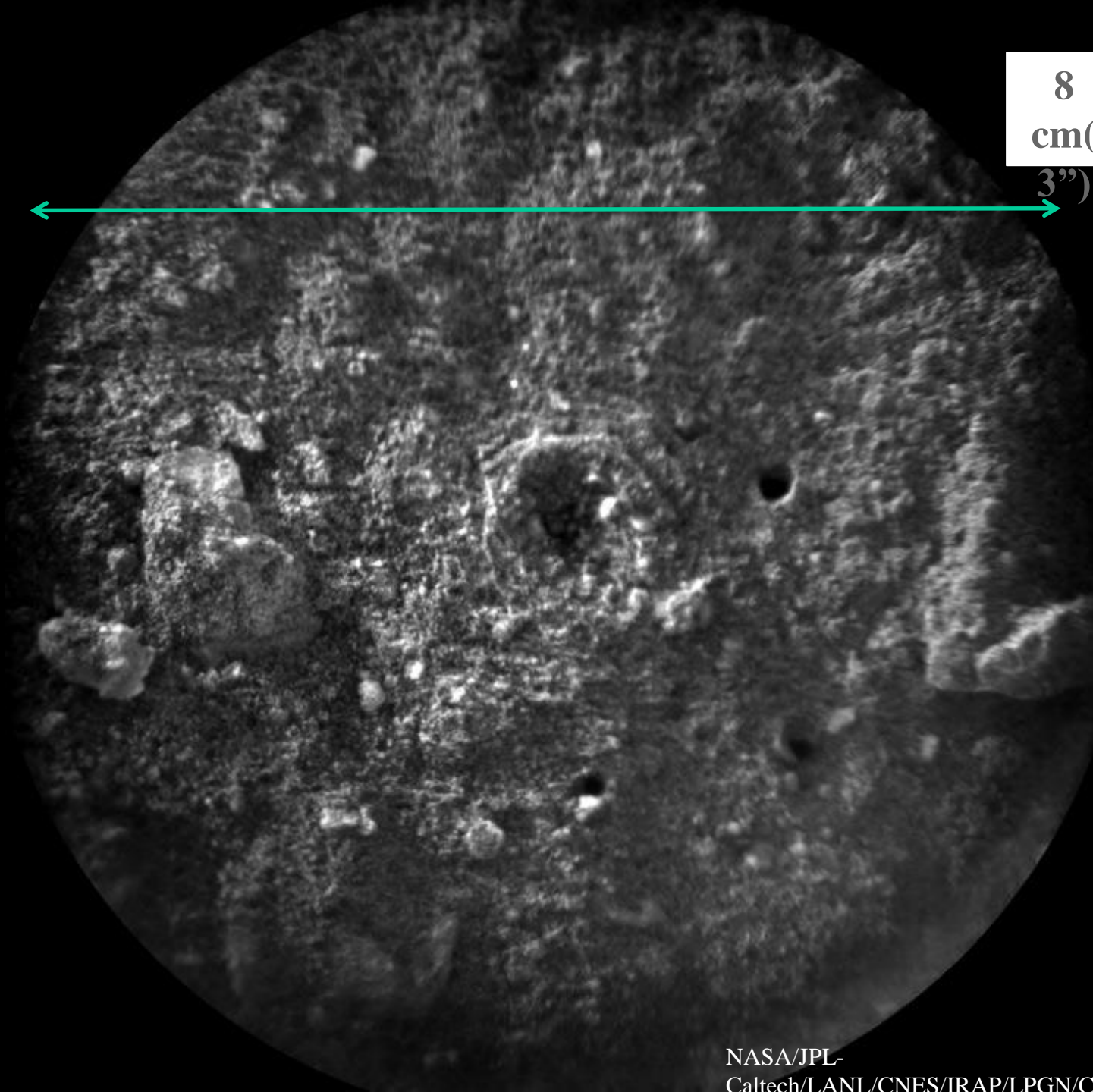
Looking South to Mount Sharp



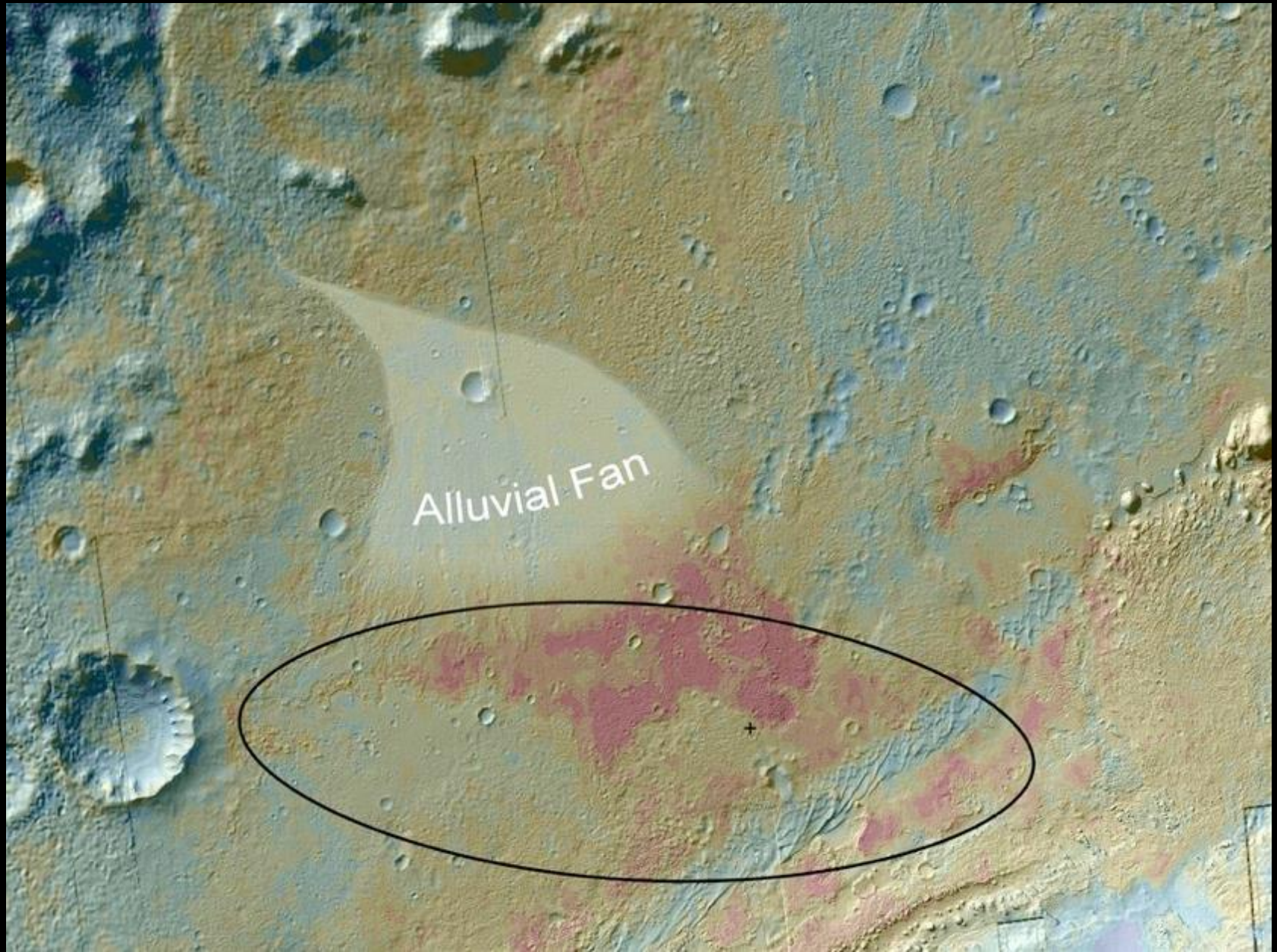
“Coronation” Laser Target



8
cm(
3")



Planning is everything, but...



An aerial photograph of a large, circular crater on the surface of Mars. The crater floor is a mix of reddish-brown soil and darker, rocky terrain. The rim is visible as a dark, irregular line. A green double-headed arrow is drawn across the width of the crater, with the text "5 Football Fields" centered above it. The text is in a white, serif font.

5 Football Fields







MAHLI “Selfie”

Rocknest Sampling Campaign

Scoop 1 – Sol 61 – 07 Oct 2012

Scoop 2 – Sol 66 – 12 Oct 2012

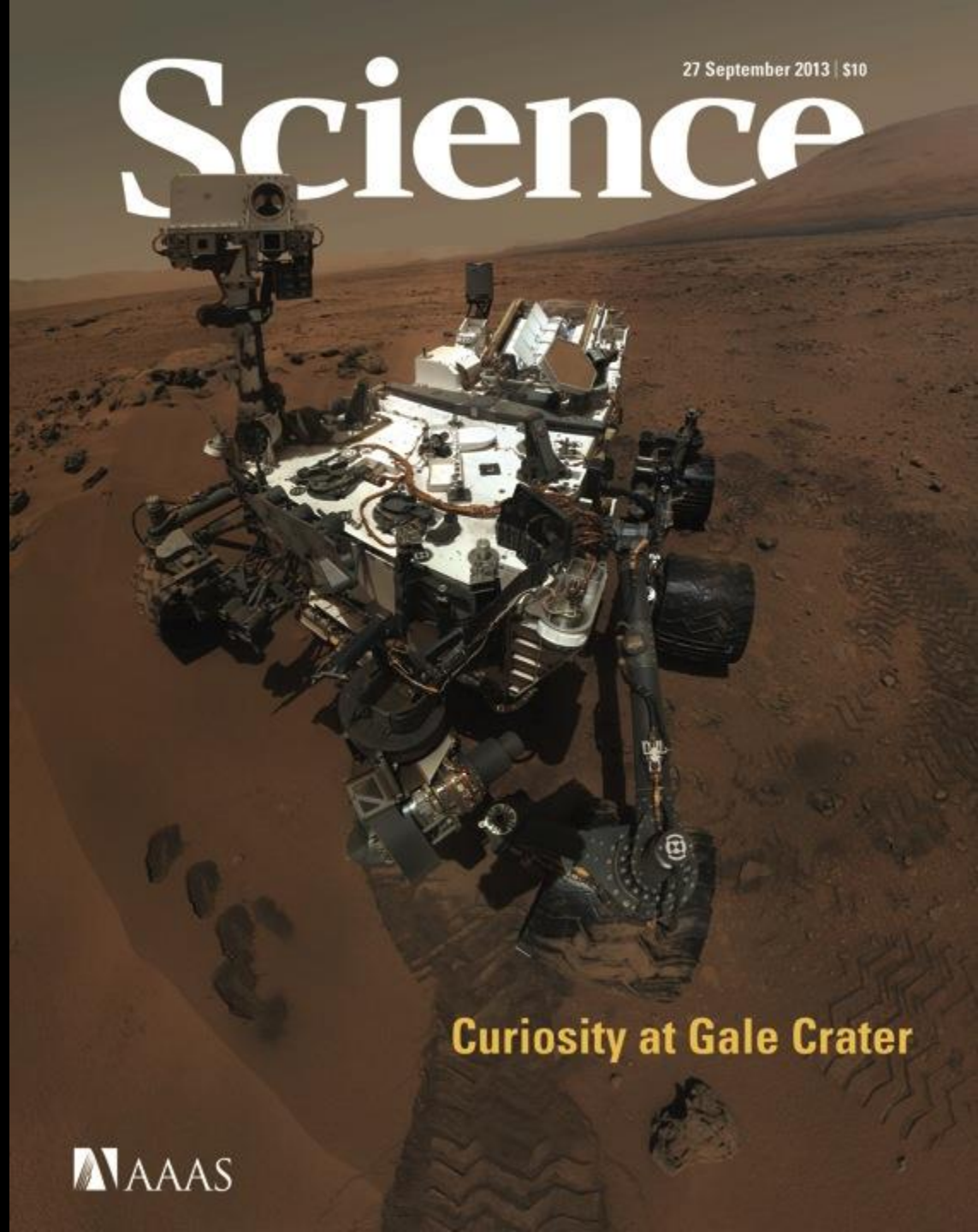
Scoop 3 – Sol 69 – 16 Oct 2012

Scoop 4 – Sol 74 – 21 Oct 2012

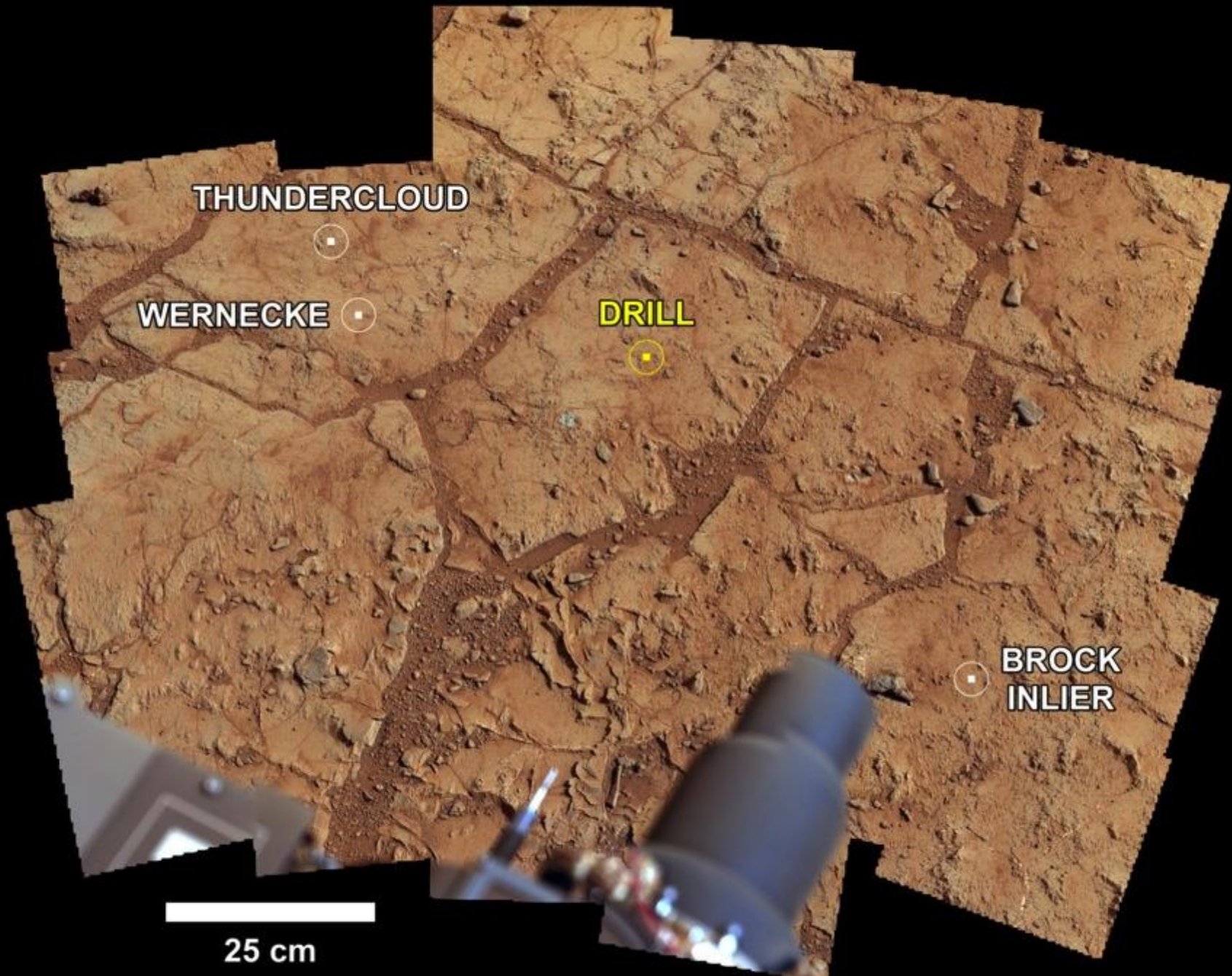
Scoop 5 – Sol 93 – 09 Nov 2012

Science

27 September 2013 | \$10



Curiosity at Gale Crater



THUNDERCLOUD

WERNECKE

DRILL

BROCK
INLIER



25 cm



Red Mars

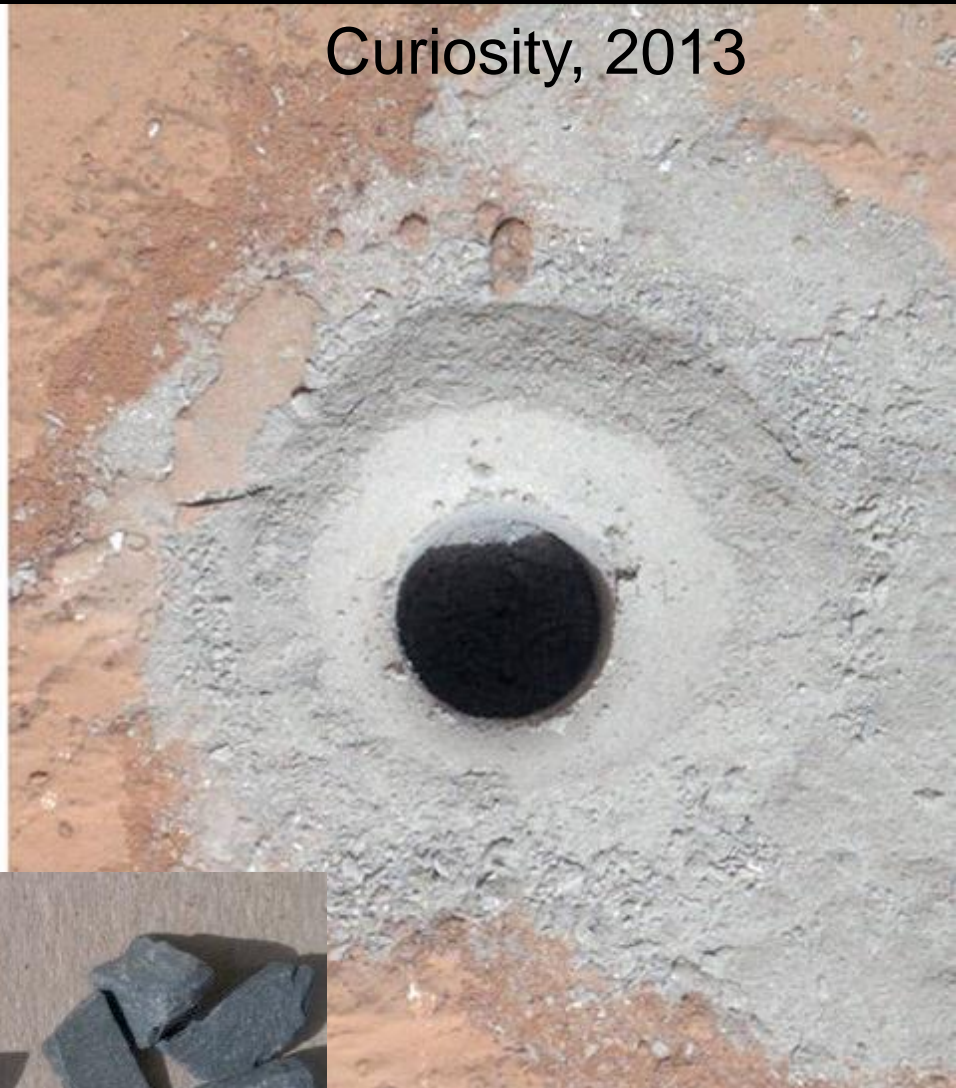
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Gray Mars

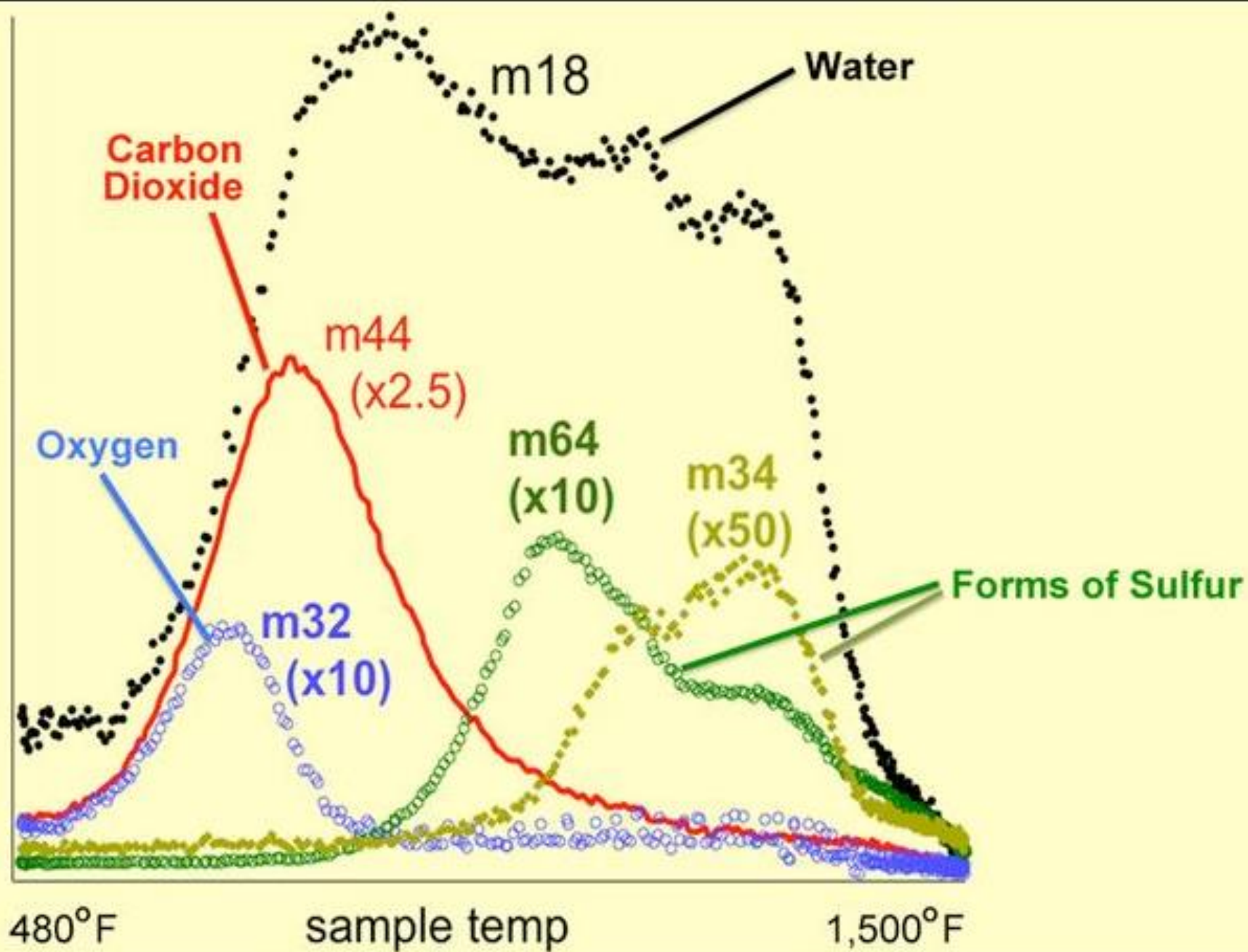
Opportunity, 2004



Curiosity, 2013



QMS signal









Foothills of Mt. Sharp is next







Dr. John Grotzinger



Dr. John Grotzinger is a field geologist, and he is interested in the evolution of Earth's surficial environments and biosphere. His research addresses the chemical development of the early oceans and atmosphere, the environmental context of early animal evolution, and the geologic factors that regulate sedimentary basins. In his studies, Dr. Grotzinger tries to create the basic geological framework for sedimentary basins and orogenic belts in northwest Canada, northern Siberia, southern Africa, Oman, and the western United States. These field mapping studies are the starting point for more topical laboratory-based studies involving geochemical, paleontological, and geochronological techniques.