### PHOENIX Mars Lander\_journey to the martian arctic

### Why Send Phoenix to Mars?

NASA's missions to Mars are seeking habitats, places where past or present microbial life might be possible. In 2002, the Mars Odyssey Orbiter found large amounts of subsurface water-ice in the arctic plains. Water is key to life as we know it. But does this area also have complex organic mole-cules, the necessary building blocks for life? Phoenix will dig into the Martian permafrost to find out.

### What will Phoenix do?

Phoenix will use its robotic arm to dig into an ice-rich polar region located about 68 degrees north. In addition to looking for organics, it will study how ground layers have been changed by thawing and freezing water-ice over time. That record will help scientists understand the history of the Martian climate. So will Phoenix's measurements of weather patterns during summer in the north polar region.

8.8.





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## Where to Land...





A. Notice the texture of the ground at the landing site. It resembles permafrost terrain on earth, where cycles of thawing and freezing cause cracking into polygon shapes. That's a good sign that water-ice is present.

**B.** In choosing a safe landing site, engineers like to see smooth terrain like this 27-kilometer-wide (17-mile) space within the planned landing area.

**C.** Showing the highs (red) and lows (blue) of Mars, this global elevation map reveals the low, smooth plains of the Martian arctic, and X marks the spot for Phoenix's landing site.

### Learn more about Phoenix at: http://www.nasa.gov/phoenix



Entry Prep

Entry state initialization —Entry minus 10 minutes



**Cruise stage separation** —Entry minus 7 minutes

Entry turn starts —Entry minus 6.5 minutes

Landing site

## Parachute

Terminal Descent

## Lander Prep

# Journey to the Surface



### Heat shield jettison —198 seconds to landing



## Flying from Earth to Mars



Launch +6 days

Launch +60 days

Leg deployments —188 seconds to landing



Lander Separation -43 seconds to landing

![](_page_2_Picture_23.jpeg)