the first extraterrestrial marathon

presented by science at NASA with all

the fanfare about Mars rover Curiosity

landing on the Red Planet in August 2012

it's easy to forget that there's already

a rover on Mars an older smaller cousin

set to accomplish a feat unprecedented

in the history of solar system

exploration Mars rover Opportunity is on

track to complete the first

extraterrestrial marathon a marathon is

26.2 miles

when opportunity landed on Mars in 2004

NASA's goal was to have the rover travel
a meager 600 meters however no one knew

what kind of runner opportunity would turn out to be as of July 2012

opportunity has traveled almost 22 miles

only 4.2 short of a full marathon runner

author Hal Higden once said the marathon never ceases to be a race of joy a race of wonder that goes double for a marathon on another world where every mile promises a new discovery

opportunity's prime mission is to search for signs of ancient water today the Red Planet is a bone-dry desert with breathtakingly thin atmosphere
conditions deadly to almost every known form of life on Earth billions of years ago however things might have been different many researchers believe that Mars was warmer wetter and friendlier to Martian life opportunities job is to search for clues to that ancient time just getting to the starting line was epic this particular marathoner had to fly about 283 million miles across space before being unceremoniously dropped bounced on the Martian surface says ray Arvidsson mars exploration rover mission
like many long-distance runners
Opportunity likes to take it slow
on a typical Drive day the rover travels
only 50 to 100 meters this gives the
rover time to pause and look for the
unknown and take some photos along the
way recently Opportunity sent home its
100,000th image a stunning panorama of
the Mars scale
opportunity first uncovered signs of
water in deposits near the landing site
in Eagle crater there were rocks that
seemed to have formed in an ancient
shallow lake over the next four years
opportunities scavenged ever larger and
deep craters finding more evidence of
wet periods indications were however
that the ancient lake water might have
been too acidic for life
the metallic marathoner soon set its
sights on endeavor crater an enormous
pit 14 miles wide and hundreds of meters
deep endeavours depth would offer a look
farther back into the history of Mars to
a time when the water was possibly less
acidic the marathon route crossing Mars
Meridiani plane to Endeavour was a
daring Trek with no aid stations
anywhere raging dust storms reduced the rover's solar power so much that opportunity almost entered the sleep of death soft sandy windblown ripples trapped the rover's wheels and there was an injury a failure and opportunities right front steering actuator made running forward tricky ever-resourceful the rover ran part of its race backwards the course took opportunity over sedimentary bedrock made of magnesium iron and calcium sulfate minerals further indication of water billions of years ago says Arvidsson
when the marathoner reached endeavour crater in August 2011 things got interesting. endeavour is surrounded by fractured sedimentary rock and the cracks are filled with gypsum. gypsum forms when groundwater comes up and fills cracks in the ground depositing hydrated calcium sulfate. this is the best evidence we've ever found for liquid water on Mars. the gypsum veins were likely formed in conditions more ph-neutral and possibly more hospitable to life. jackpot. but this marathoner isn't done.
opportunity is doing so well that 26.2 miles might not be the finish line after all we have no plans to stop running says Arvidsson Extra Terrestrial ultra marathon anyone for more news about other NASA missions going the extra mile visit science.nasa.gov