

# Gale before Curiosity: What we knew and what the rover may reveal

September 26 2012

---

The first comprehensive analysis of what we knew about the Gale crater on Mars before the recent landing of space rover Curiosity has been published by the *International Journal of Astrobiology (IJA)*.

In a paper commissioned by the journal, which is published by Cambridge University Press, James Wray from the School of Earth and Atmospheric Sciences at Georgia Tech, and a collaborator on the Curiosity Science Team, explores what we already know, or hypothesize, and looks at the questions we hope Curiosity can answer.

Existing studies of Gale have tended to concentrate on a specific type of data (e.g. features revealed by high-resolution images) and/or a specific feature of the crater (e.g. its sand dunes). Wray takes findings from all available studies to create the first complete overview of the crater's history prior to Curiosity's investigations.

The Mars rover Curiosity landed safely on August 6th in Gale crater, a 150 km-wide impact scar near the [Martian equator](#). Rising up from this crater's floor is a mountain of [sedimentary rocks](#) 5 km high (Aeolis Mons or [Mount Sharp](#)), which has intrigued scientists for decades.

As well as reviewing information based on orbital remote sensing prior to the landing, Wray outlines how Curiosity's exploration can answer our most pressing questions: was Gale ever filled by a lake, or were all its sediments laid down in dry environments? When water did flow, what was its temperature and chemistry, and what do these imply about the

[habitability](#) of Gale 3.5 billion years ago?

The orbital observations reviewed by Wray suggest that both dry and wet environments are recorded in Gale's thick [sedimentary record](#). They provide a vital broader context for Curiosity's explorations, which will cover only a small fraction of Gale crater throughout the rover's life.

James Wray said: "From the stunning images and first-of-its-kind [science data](#) already coming back from Curiosity, we know that Gale crater will astound and perplex us for years to come. As we explore our new geologic playground, our roving will be guided by the orbital observations and key questions that led us there."

Provided by Cambridge University Press

Citation: Gale before Curiosity: What we knew and what the rover may reveal (2012, September 26) retrieved 21 June 2024 from <https://phys.org/news/2012-09-gale-curiosity-knew-rover-reveal.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.