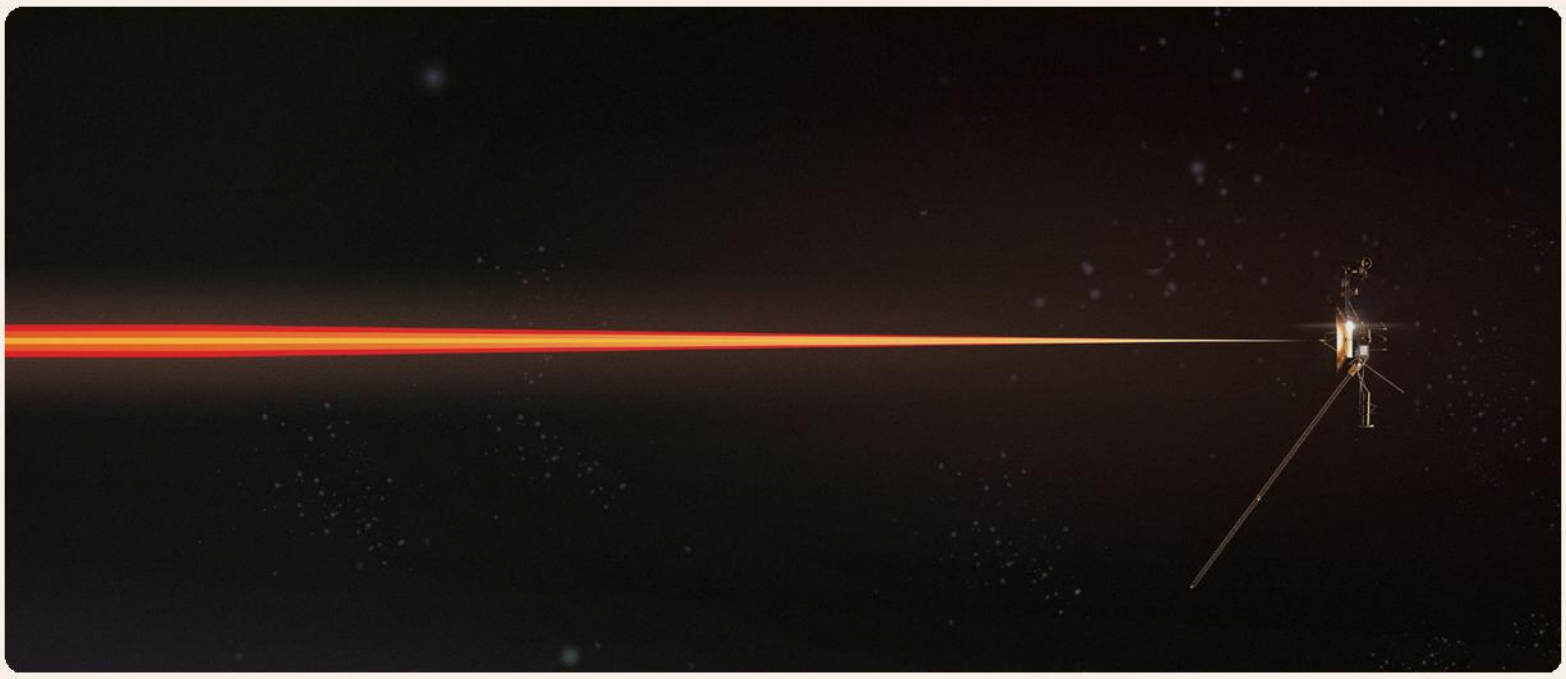
NASA NEWS · SCIENCE

NASA's Voyager 1 Makes History Reaching One Light-Day From Earth

旅行者1号抵达距地球一光日，刷新深空航行纪录



图：艺术家笔下的旅行者1号于2026年11月18日抵达距地球一光日处。 (NASA/JPL-Caltech)

今日导读

旅行者1号在发射近50年后，于11月18日抵达距地球“一光日”的位置——无线电信号以光速飞回来，也要整整24小时。这篇NASA稿把抽象的深空距离写成了可感的时间尺度，并回顾了这对探测器如何改写人类对太阳系和星际空间的理解。对雅思考生来说，这是典型的科技与探索类文本：既有清晰的定义和数据，也有 stands as a testament to、transforming our understanding 这类可直接用于大作文的评价性表达。

约 493 词（原文节选） · 适合雅思阅读 / 大作文科技与探索类话题 · 2026年11月19日刊发

ANNOTATED TEXT

NASA's Voyager 1 probe, humanity's farthest-flying spacecraft[1], has reached one light-day[2] from Earth, after more than 49 years of constant travel. A light-day is the distance light travels in 24 hours, equaling about 16.1 billion miles (25.9 billion kilometers). The spacecraft achieved the milestone[3] at 2:16 a.m. PST (5:16 a.m. EST) Nov. 18.

Voyager team members at NASA's Jet Propulsion Laboratory in Southern California, managed by Caltech, heard from the probe 24 hours later, the time it took for the spacecraft's radio signal traveling at the speed of light to reach Earth, early Thursday.

“Traveling a light-day is a singular feat[4] for a spacecraft, but Voyager is so much more than a distant traveler. The Voyager mission would be remarkable just for what it contributed to[5] planetary science with the Grand Tour of the outer planets,” said Joe Westlake, director, Heliophysics Division at NASA Headquarters in Washington.

Scientists use light to measure the vast distances of space. Light travels at about 186,000 miles (299,000 kilometers) a second in a vacuum[6]. A ray of sunlight passing Earth takes about 1.3 seconds to reach the Moon, about four hours to reach Neptune, and another 20 hours to reach Voyager 1. For comparison, a light-year is 5.88 trillion miles (9.46 trillion kilometers).

Even though the team has not received science and engineering data from Voyager 1 since Nov. 14, the spacecraft is sending what is called a carrier signal[7], which typically conveys that data to Earth. Mission engineers used the carrier signal and trajectory calculations[8] to confirm the light-day milestone.

Humanity’s only probes in interstellar space[9], Voyager 1 and its twin, Voyager 2, launched in 1977 to take advantage of[10] a rare planetary alignment[11]. Managed by JPL, they were only the third and fourth spacecraft to visit Jupiter and Saturn, and the first to return high-resolution imagery, transforming our understanding of[12] these worlds and their moons.

“Voyager 1 crossing the light-day threshold[13] is yet another historic feat on an extraordinary voyage of discovery,” said Dave Gallagher, JPL director. “Above all, this milestone stands as a testament to[14] the exceptional teams who built, programmed, and fly these spacecraft today, and who have overcome countless challenges to keep them connected to Earth across the vastness of space.”

In addition to their suite of scientific instruments, the Voyager probes carry a Golden Record, a gold-plated copper phonograph compiling images and sounds from Earth, as a message to any advanced civilization that might one day find it.

Traveling about 38,000 mph (61,155 kph), Voyager 1 in 2012 became the first spacecraft to leave the heliosphere[15], the bubble of particles and magnetic fields created by the Sun that deflects cosmic radiation, and enter interstellar space. “The Voyagers are revolutionizing our understanding of interstellar space, a previously unexplored region outside the heliosphere,” said Linda Spilker, Voyager project scientist at JPL. “One big surprise is the extent to which[16] our Sun continues to affect interstellar space, all the way out to Voyager 1.”

VOCABULARY NOTES • 词汇注解

1 **farthest-flying spacecraft**
飞得最远的航天器。farthest-flying 是复合形容词，放在名词前，外刊常用这种简洁写法。

2 **light-day**
光日：光在24小时内走过的距离。科学文本常把巨大距离换成“光要走多久”，读起来更有体感。

3 **milestone**
里程碑。achieved the milestone 表示“达成这一里程碑”，比 reached a goal 更正式。

4 **a singular feat**
非凡的成就。这里的 singular 不是“单数”，而是“非凡、独一无二的”。

5 **contributed to**
为……作出贡献。后面常接学科或领域：contributed to planetary science。

6 **in a vacuum**
在真空中。物理语境下的固定搭配；也可引申为“在与外界隔绝的情况下”。

7 **carrier signal**
载波信号。探测器即使暂时无法传回完整科学数据，仍可能发出表明“还在工作”的载波。

8 **trajectory calculations**
轨道（或轨迹）计算。与 carrier signal 并用，说明这次里程碑是靠信号加推算确认的。

9 **interstellar space**
星际空间，指恒星与恒星之间的区域；文中与 heliosphere（日球层）相对。

10 **take advantage of**
利用（某个机会）。这里指利用罕见的行星排列窗口发射。语气中性，不等于“占便宜”。

11 **planetary alignment**
行星排列（常说的行星连珠）。rare planetary alignment 即“罕见的行星排列”。

12 **transforming our understanding of**
彻底改变了我们对……的认识。现在分词作结果状语，写作里很好用。

13 **crossing the threshold**
跨越门槛或临界点。the light-day threshold 即“一光日”这一临界距离。

14 **stands as a testament to**
本身就是对……的有力证明。高分评价性表达，适合总结句。

15 **heliosphere**
日球层：太阳风粒子和磁场形成的“泡”，可以偏转宇宙辐射。

16 the extent to which
……的程度。后面接从句，是议论文里写“影响有多大”的地道结构。

长难句拆解

Traveling about 38,000 mph (61,155 kph), Voyager 1 in 2012 became the first spacecraft to leave the heliosphere, the bubble of particles and magnetic fields created by the Sun that deflects cosmic radiation, and enter interstellar space.

句首 Traveling… 是现在分词作伴随状语，补充旅行者1号的速度。主干是 Voyager 1 became the first spacecraft to leave… and enter…：两个不定式 leave 与 enter 并列，共同说明它“第一个做到了什么”。中间插入同位语 the bubble…，解释 heliosphere 是什么；其中 that deflects cosmic radiation 是定语从句，修饰 bubble。

Humanity's only probes in interstellar space, Voyager 1 and its twin, Voyager 2, launched in 1977 to take advantage of a rare planetary alignment.

Humanity's only probes in interstellar space 是主语 Voyager 1 and its twin, Voyager 2 的同位语，先点明它们的独特身份，再给出名字。谓语 launched in 1977 之后，用 to take advantage of… 表示发射目的：为了利用一次罕见的行星排列窗口。这种“身份同位语 + 目的状语”的写法，很适合用在雅思写作的背景句里。

表达积累 · 可直接用于雅思写作

- **humanity's farthest-flying spacecraft**
  人类飞得最远的航天器
- **a singular feat**
  一项非凡的成就
- **so much more than**
  远远不止是……
- **contributed to**
  为……作出贡献
- **take advantage of a rare opportunity**
  利用一个罕见的机会
- **transforming our understanding of**
  彻底改变了我们对……的认识
- **stands as a testament to**
  本身就是对……的有力证明
- **a previously unexplored region**
  一个此前未被探索的区域
- **the extent to which**
  ……的程度（后接从句）