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Chance of a lifetime

If we don't go now, Pluto will remain a mystery for generations

THE time has come to go to Pluto. With our planet teetering on the edge of war, it may seem a strange time to be thinking about space exploration, but the ticking of celestial clocks is impervious to terrestrial strife. The US Congress has an urgent decision to make in the new year. So too does NASA's administrator, Sean O'Keefe.

Pluto, the most distant of the Sun's known planets, is the only one not to have been visited by a probe from Earth. A mission there would not only tell us much about the tiny world, but also help to answer a raft of questions about the origins of the Solar System and even of life itself (see page 30). The probe could go on to explore the uncharted Kuiper belt beyond Pluto, a wild place inhabited by a myriad icy objects, Quaoar and perhaps Planet X.

But any such mission has been blocked by O'Keefe ever since NASA did its sums on the cost of the International Space Station and came up short. Pluto Fast Flyby and Pluto-Kuiper Express were early casualties, but from their ashes grew a cheaper craft, New Horizons, which would use Jupiter's gravity as a slingshot to reach the outer planet in about nine years. Trouble was that this still did not match O'Keefe's vision of crossing interplanetary space in high-speed, nuclear-powered probes. If such a craft were to emerge in the next few years, it could take off years after New Horizons and still beat it to its goal.

But arguments against this strategy are many. NASA has an abysmal record for delivering new craft on time. The shuttle replacement that was supposed to be flying now, for example, was canned in 2001 after five years of development work worth \$1.3 billion. If a nuclear probe did arrive, NASA would still need plenty of time to convince a sceptical public that it is safe to launch a nuclear reactor over Florida. And even if it got off the ground, critics point out that the probe would fly past Pluto so quickly that its observing time would be too short to be worthwhile.

While this debate raged inside NASA, there was plenty of activity outside. Congress voted NASA \$30 million more than O'Keefe had requested, just to keep New Horizons alive in 2002. For the 2003 budget, which is still on its way through Congress, the influential appropriations committees of both the Senate and House of Representatives unanimously approved \$105 million to keep the project on

track. With such strong support, Congress is likely to agree the addition. That will leave President Bush, but mostly his space lieutenant O'Keefe, in the hot seat.

One of NASA's chief reasons for blocking Pluto missions was a lack of a documented consensus among astronomers. But that reason vanished in July when the National Research Council decided that NASA should make Pluto its priority for a mission within the Solar System. In November, members of the Planetary Society added their voice with a petition to Congress signed by 10,000 space exploration enthusiasts urging support for New Horizons.

With such strong public, political and scientific support, where's the sense in fighting? Agreeing to New Horizons would make O'Keefe valuable friends, which he will need in the bigger battles he will no doubt face. The word from inside NASA is that the high command has indeed had a change of heart and will embrace the mission.

That leaves one final decision: when to fly?

Those working on the mission fear that any delay could be fatal. Their preferred launch date is 2006, which is the latest that Jupiter's help can be relied on. But over the past few years the weight of New Horizons has been reduced to make possible a launch in 2007 that would avoid Jupiter entirely. The journey to Pluto would then take about 12 years.

And delay is to be avoided. Pluto does not move simply around the Sun. It has an eccentric orbit and is now heading off into colder space. One reason for visiting Pluto is to study its atmosphere, but as the temperature drops that atmosphere is expected to freeze to the ground. Worse, the planet's axis is shifting. Today, Pluto faces the Sun like a chicken on a spit faces the fire: we see most of the planet as it turns. But by 2040, the axis will be end-on to the Sun and half of it will be in darkness – obscured from New Horizons.

So if we delay even a few years, it will be several generations before we get another chance to see Pluto in all its glory. Let's not wait. Let's go now. ●