

Those who saw the successful first space flight of an X-Prize contender June 22 (and this author was among them) were struck by an unusual feature of the smoke trail. Unlike launchings towards orbit, which arc over towards the east to build maximum horizontal speed, this white line across the sun-dazzled desert sky was practically straight up, reaching directly towards space.

It posed an obvious question. Besides carrying a pilot and perhaps paying tourists up across the official boundary of space (100 km, or 62 miles), could such vehicles carry research instruments, and at a price competitive with throw-away rockets?

Astronomy and other sciences have benefited from short up-down rocket hops for more than half a century, and still do. What contribution can this new generation of piloted, reusable rockets make?

NASA's project scientist for sounding rockets, Dr. Robert Pfaff, told 'Astronomy' that there were problems with this idea.

"I don't see any advantages of the human-tendered sub-orbital flights for science missions, at least in space science," he says. Other scientists explain that their instruments needed to go a lot higher, and dwell in zero-G a lot longer, than SpaceShipOne and its brethren can do.

"There might be some unique material science experiment where a human presence is helpful," Pfaff suggested, "but most micro-gravity experiments flown in NASA's sounding rocket program prefer not to have humans on board to minimize vibrations."

He also points out that "NASA typically flies surplus military sounding rockets to altitudes of 60-80 miles -- for which there is no cost to NASA for the motor hardware."

However, any mission still requires funding for the range, operations, and payload costs including all support personnel. In other words, even if the vehicles themselves were free, the human-tendered sub-orbital rockets would have no cost advantage.

But several rocket builders have their own ideas about revolutionizing the sounding rocket world. Aleta Jackson, a spokesman for XCOR, which is designing its own non-X-Prize vehicle called Xerus, says that the company expects their vehicle could fly at a price perhaps 40 times less than the million-dollar-plus sounding rockets.

"Add to this the greater likelihood of getting the payload back undamaged, the greater selection of on-board services (such as regulated electrical power), plus the potential to reflly within 24 hours, and you have a marketable vehicle," she says.

Furthermore, she continues, such a new tool is expected to attract new users "The customers who have shown the most interest in this capability are generally not users of the current sounding

rocket flights. Therefore, we think this is more a case of bringing in a new group of customers than attracting them from existing missions."

How many of these new applications will be in astronomy remains to be seen.