Weather Watch

A New Way To Detect Storms On The Sun

(NAPSA)—An ancient method of exploration may soon have a new life in deep space.

Nearly 400 years ago, scientists proposed the possibility of using sails to explore space. It was believed solar winds could propel spacecraft the way winds move ships on the oceans.

While the idea has since been disproved, scientists have discovered that sunlight has the potential—even at great distances—to exert enough energy to move objects.

Researchers estimate that at the distance from the sun to Earth, roughly 93 million miles, sunlight can produce just less than one pound of force over an area of one square mile. Eventually, it's believed, the continuous force of the sunlight on a solar sail could propel a spacecraft to speeds up to five times faster than that of traditional rockets.

In an attempt to take advantage of this source of energy, NASA has been experimenting with technologies that may lead to giant solar sails that could be pushed through space by the pressure of light.

The research has focused on ultrathin, ultralightweight materials—about a seventh of the weight of a sheet of copier paper—that could be used to build a sail. Early plans have been made to develop a prototype that is nearly half a kilometer wide that would be unfurled in space.

Once unfurled, the solar sail would act as a giant mirror reflecting the sunlight. Sunlight would hit this reflective solar sail, moving the craft forward.

A down-to-earth benefit of this type of technology is the Geostorm Warning Mission, which would provide real-time monitoring of solar activity and increase the warning time for geomagnetic storms. This mission is designed to be stabilized in orbit using solar sails.

New NASA technology will use the sun's energy to propel spacecraft across the cosmos.

Geomagnetic storms induce currents in power transmission lines that can lead to switchgear and transformer failures. In 1988, an estimated six million people in Quebec, Canada, lost their electrical power due to such a storm.

Solar sails may also be able to make future space missions less costly and more successful.

Today, a large fraction of a satellite's mass is often the fuel needed to power the spacecraft from near the vicinity of the Earth outward to its final location. Saving the cost of fuel, perhaps by using solar sailing, will allow more scientific instruments or other capabilities to be included.

To learn more about solar sail technology, visit the Web site at www.nasa.gov.