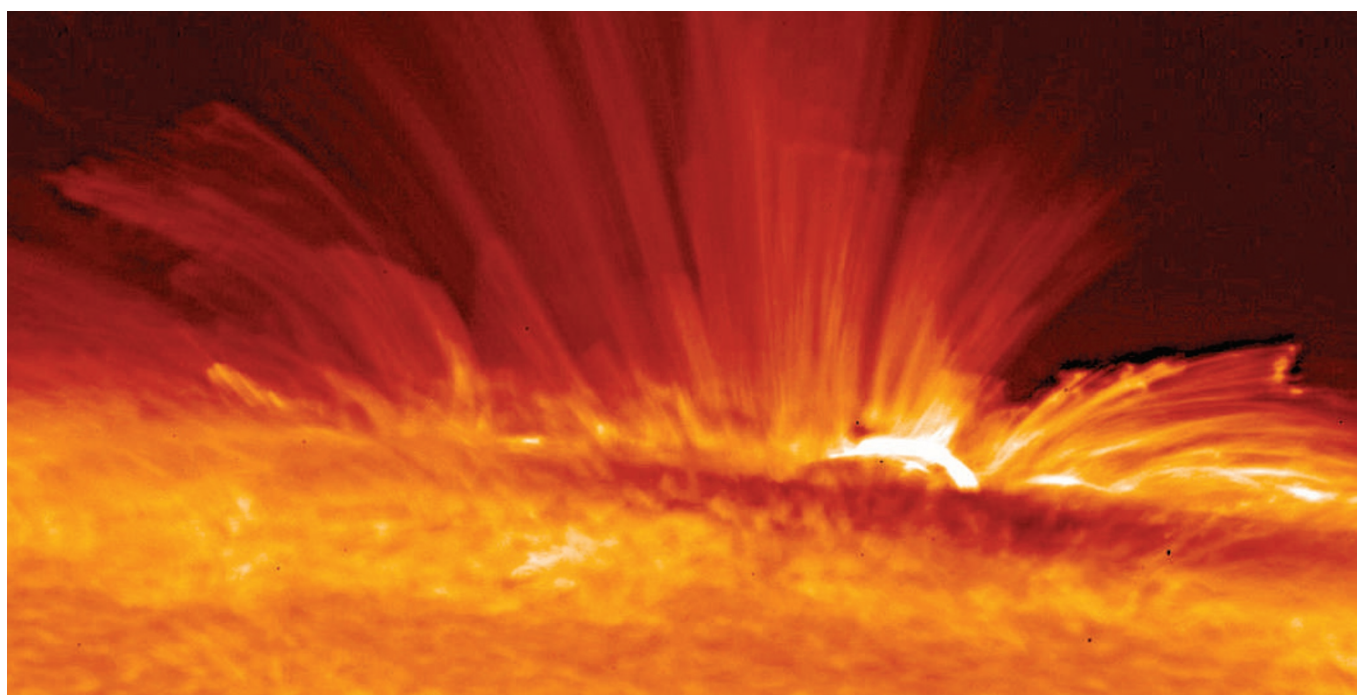



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H.JAXA/NASA


SNAPSHOT

The best images of the Sun yet obtained are now streaming in — and they are both illuminating and baffling for scientists.

The Hinode spacecraft, an international mission led by the Japanese space agency JAXA, was launched in September 2006, and is now circling Earth in an orbit that gives it a good view of the Sun. The latest data to be sent back from its three main instruments show our star as a dynamic, turbulent, mysterious hothouse of magnetic activity.

Researchers have long been puzzled by the observation

that the Sun's corona — the atmosphere of gas that extends out from the Sun at a temperature of millions of degrees Celsius — is about 100 times hotter than its surface. One possible explanation is that magnetic fields projecting from the Sun twist about in the turbulent environment until they eventually snap, releasing energy as heat. The data being returned by Hinode's X-Ray Telescope add weight to this theory.

"We can see the corona structures twisting and shearing," says Leon Golub of the Harvard-Smithsonian Center

for Astrophysics in Cambridge, Massachusetts. "There are things that look exactly as predicted," he says.

But some of the observations are proving more confusing. Astrophysicists have been stunned by a video image of a magnetic arc collapsing in on itself. "We are used to seeing magnetic fields emerging outwards," says Golub. But this one went in the other direction. "Nobody can explain how this happens," Golub says.

Golub expects that this, too, may be related to the corona's high temperature, but says

that as yet there is no theory to predict this kind of activity.

"Processes that we see on the Sun are not intuitive and not easily explained," says Alan Title of the Lockheed Martin Advanced Technology Center in Palo Alto, California. Title works on Hinode's third instrument, the Solar Optical Telescope.

And Hinode is likely to provide yet more surprises. "Almost every day we see data coming down and we don't know what they mean," says Golub. ■

♦ To see the video, go to www.nature.com/news/2007/070319/full/070319-11.html

trials with fetal Schwann cells, fetal olfactory cells and a combination of the two, which he says have a strong scientific basis. But his critics remain sceptical. Huang has "had a thousand or so chances so far to acquire scientific data", says James Guest, a neuroscientist with the Miami Project, a huge spinal-cord-injury research centre at the University of Miami in Florida, referring to the number of patients Huang has treated.

Guest says he hopes that Young's network will "standardize spinal-cord injury care within China", adding that "a success of this venture could do a lot to establish China as a credible place to do multicentre trials".

Young's reputation, including his work with one of the first successful treatments for spinal-cord injury, methylprednisolone, should set the project in good stead. "There is no doubt that he can run a clinical trial," says John Steeves, director of the International Collaboration On Repair Discoveries at the University of British Columbia in Vancouver.

But there are concerns that the procedure and follow-up must be high level and consistent across the trial. "Having a lot of patients does not necessarily mean you can test them all in a controlled, valid manner," says Steeves. And Guest worries whether a cultural aversion to admitting problems might hamper data

sharing: "Will the adverse events really be disclosed?" he asks. Some spinal-cord clinicians also suggest that more animal data should be collected for lithium and umbilical cells before moving to humans.

Young says he knows that the difficulty will now be in the trial's execution. But he argues that even establishing a network in a country where harsh competition makes researchers and doctors hesitant to collaborate is a huge achievement: "They used to say, 'no way, I'm not letting Dr so-and-so come into my hospital'. But now they are pooling resources and setting up joint teams." ■

David Cyranoski