Image: The abstract science of the dynamic Sun

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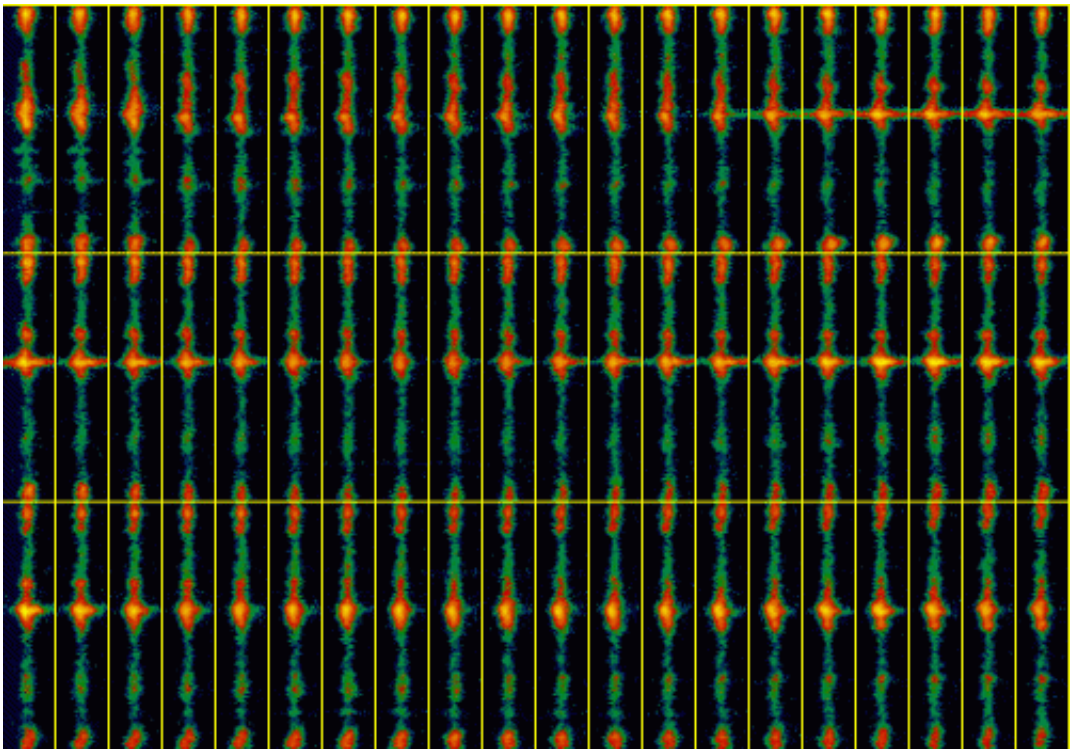

Credit: ESA/NASA/SOHO/The SUMER team, Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany

The placid appearance of the Sun's surface belies a hot fireball of plasma in constant turmoil. A granular network invisible to the naked eye pervades the solar disc, with cells of hotter and colder plasma popping up, merging and disappearing within only a few hours.

The boundaries between these constantly moving cells are hectic places. Powerful jets of plasma are often launched along the separation lines whenever the cell pattern changes, which may happen as a result of variations in the configuration of the magnetic field – known as 'magnetic reconnection'.

To learn more about these reconnection jets and the energetic events that cause them, scientists observe the Sun at different wavelengths using a variety of techniques.

This image, which could be mistaken for a piece of abstract art, shows a series of observations performed with the ESA/NASA Solar and Heliospheric Observatory (SOHO) to study the evolution of reconnection jets on a small patch of the Sun's surface.

The image shows 60 frames taken with the ultraviolet spectrometer SUMER on SOHO over 10 minutes. The individual frames were taken every 10 seconds, so each row of snapshots corresponds to almost three and a half minutes of observations.

Each frame shows a spectrum of the light coming from a small patch on the solar disc: the height of each frame measures 84 000 km, which is about a sixteenth of the Sun's diameter.

The bright red and yellow regions in each frame correspond to boundaries between different cells in the granular pattern of the Sun. In the first few frames of the series, the shape of the central bright region is roughly vertical, a sign that the underlying boundary was in a quiet state.

After only a couple of minutes, however, the situation changed dramatically: towards the end of the first row and at the beginning of the second row, the shape of the bright region appears stretched towards the right. This shift is characteristic of a jet of plasma that is receding from

the observed boundary at a speed of about 100 km/s.

The following snapshots report how the same boundary went back to a quiescent state, then underwent the launch of a new jet and became quiet once again. These rapid changes, and the powerful events causing them, indicate the highly dynamic nature of the Sun's atmosphere.

The data shown in this image were collected on 28 March 1996 and this image was featured in the series of images "The Sun as Art" published on the SOHO website.

Provided by European Space Agency