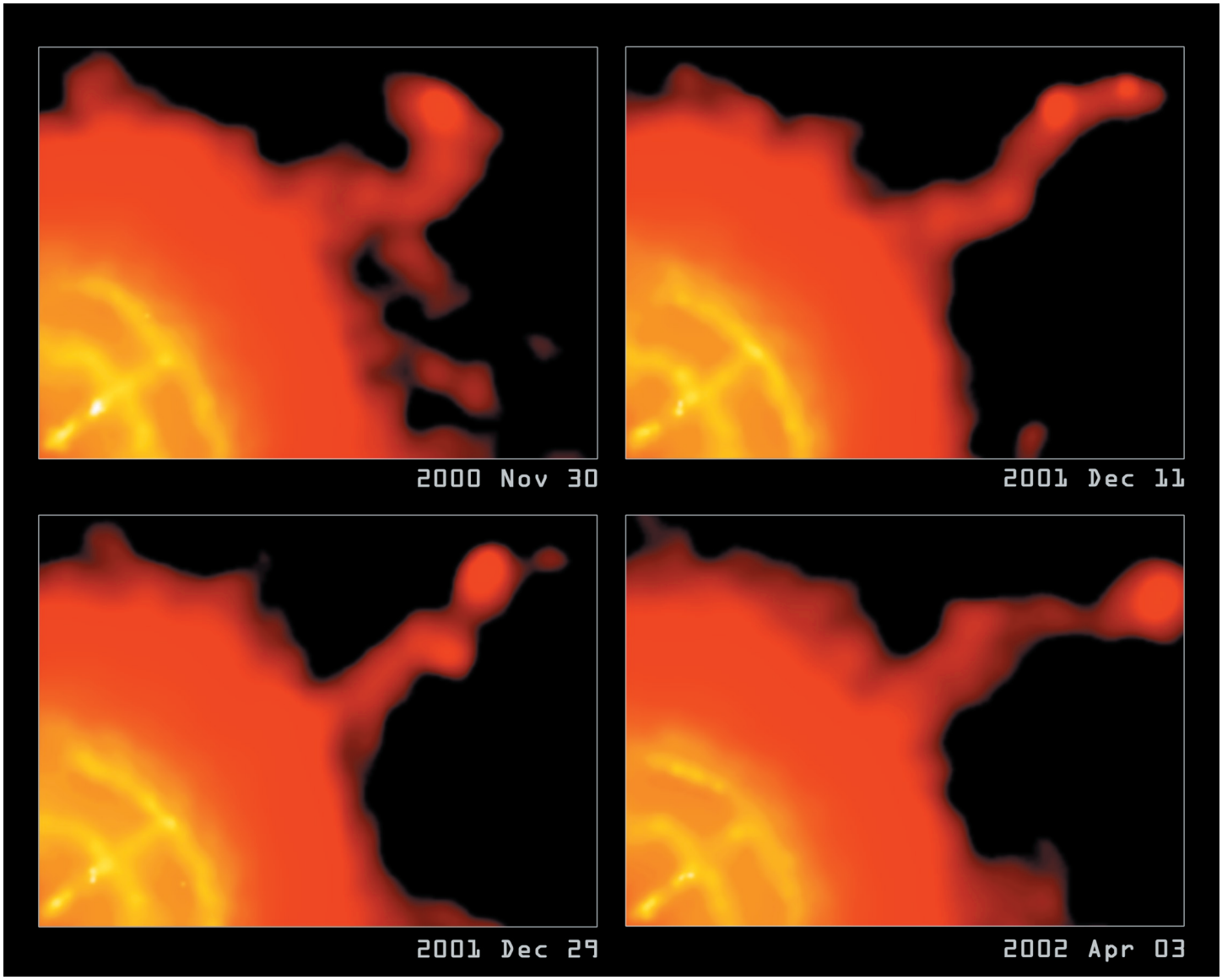

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Vela Pulsar Jet: A jet of high-energy particles associated with the Vela pulsar, a rapidly rotating neutron star about 1000 light years from Earth in the constellation Vela.
Credit: NASA/CXC/PSU/G.Pavlov et al.

The combined action of the intense magnetic field and fast rotation of the Vela pulsar has produced a jet of high-energy charged particles that shoots out 3 trillion miles in front of the moving pulsar. As the Chandra images in this montage show, the jet whips about erratically at half the speed of light. The Vela jet resembles a cosmic firehose made of magnetic fields, which confine the charged particles. When the hose bends, it kinks rapidly due to increased pressure at the bends in the hose. The bright blobs in the jet are thought to be a manifestation of the increased magnetic field and particle pressure at the kinks in the jet. The activity of the Vela pulsar jet could also help to understand the nature of the enormous jets coming from super-massive black holes.

Scale: Each image is 1.6 x 1.2 arcmin.
Chandra X-ray Observatory ACIS/HRC Image