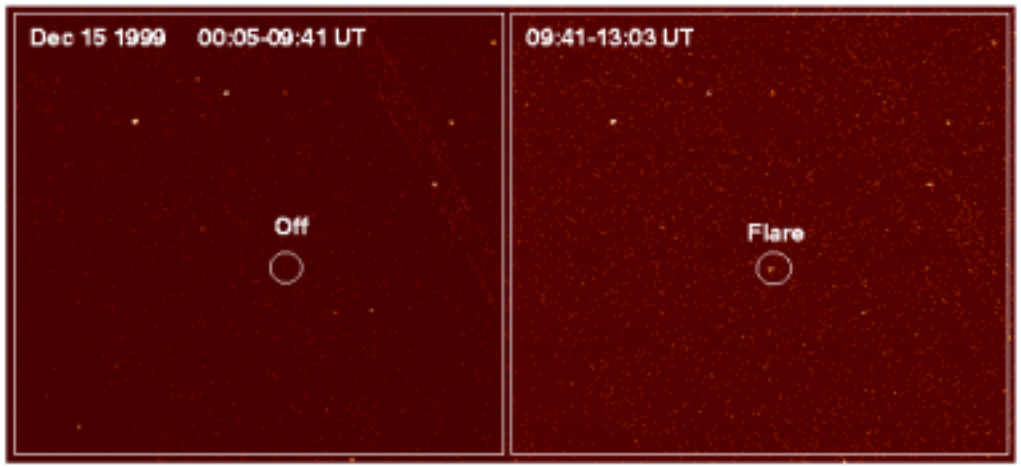
Chandra Science Highlights

X-RAY IMAGE OF FLARE FROM BROWN DWARF LP944-20



Scale: The image is 3.5 arcmin square (1 armin corresponds to 30 kpc)..

For the first 9 hr 36 min of Chandra's observation, no x-rays were detected from the brown dwarf LP944-20. (left panel). Then the brown dwarf turned on with a bright x-ray flare (right panel) that gradually diminished over the last few hours of the observation. The grainy appearance of the image on the right is due to a shorter exposure time. The bright dots in the background are other x-ray sources, 7 of which have been identified as stars.

Credit: NASA/UCB/Caltech/R.Rutledge et al.

Ref.: R. Rutledge et al. Ap.J.Letters (20 July 00, in press)

- First flare detected at any wavelength from a brown dwarf star.
- Duration of Flare: 1-2 hours
- Energy emitted in flare and peak x-ray luminosity: $E=2\times10^{29}$ergs; $L=1.2\times10^{26}$ erg/sec.
- Limit on quiescent x-ray emission: $L<1\times10^{24}$erg/sec.
- Facts about LP944-20: Mass ~0.06 solar masses; T_{surf} ~2500 K, Radius ~0.1 solar radii, Rotation period <5 hours, Distance ~5pc.

July 2000