

## Activity in Emerging Flux Region NOAA 8844

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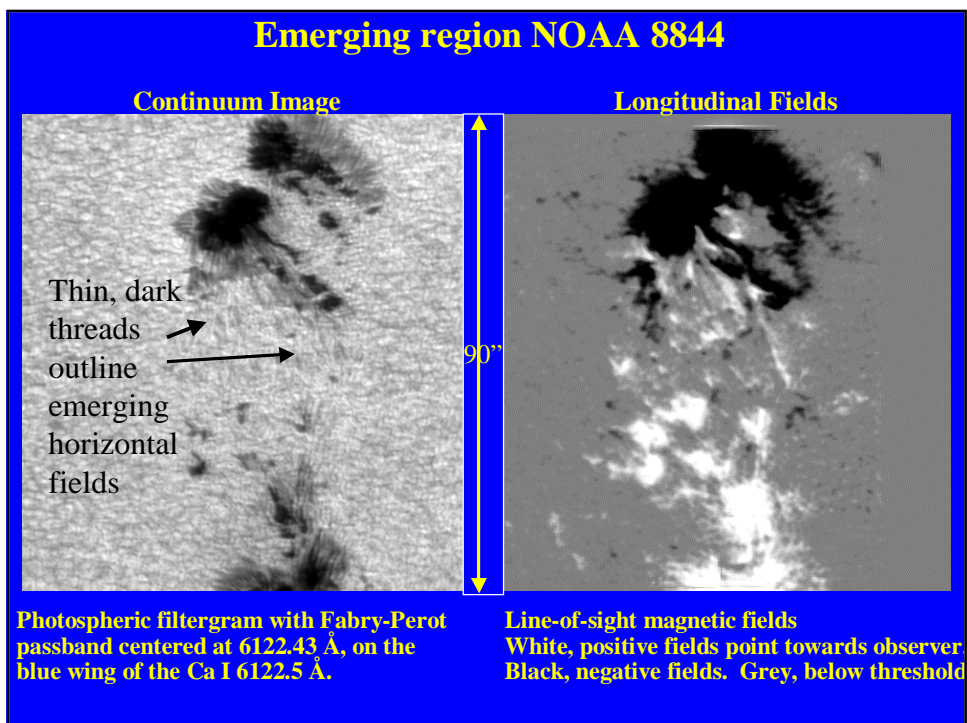
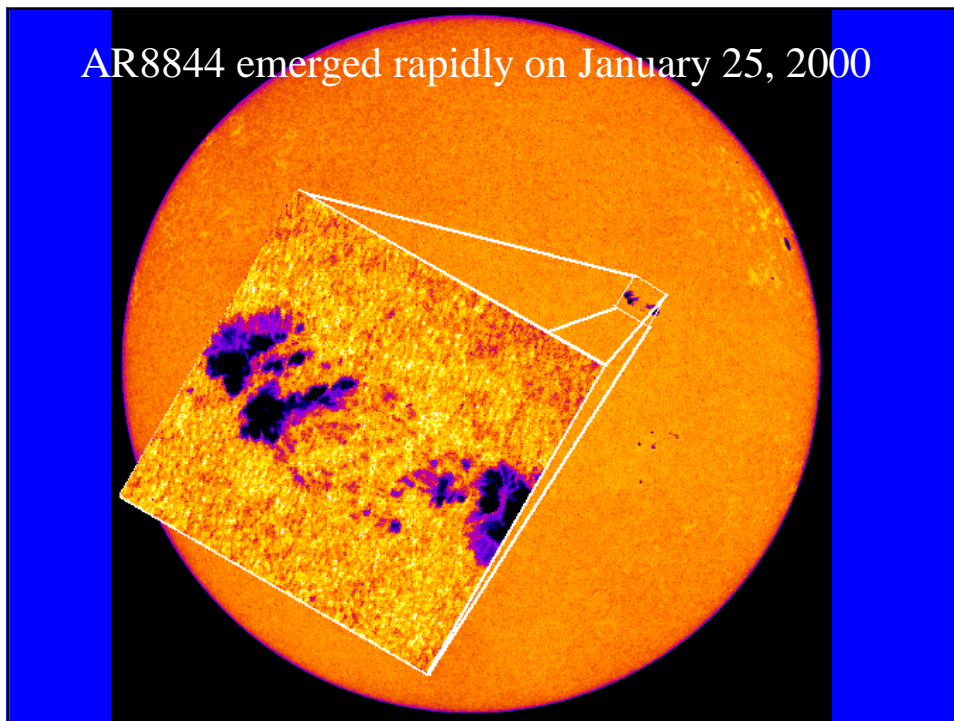
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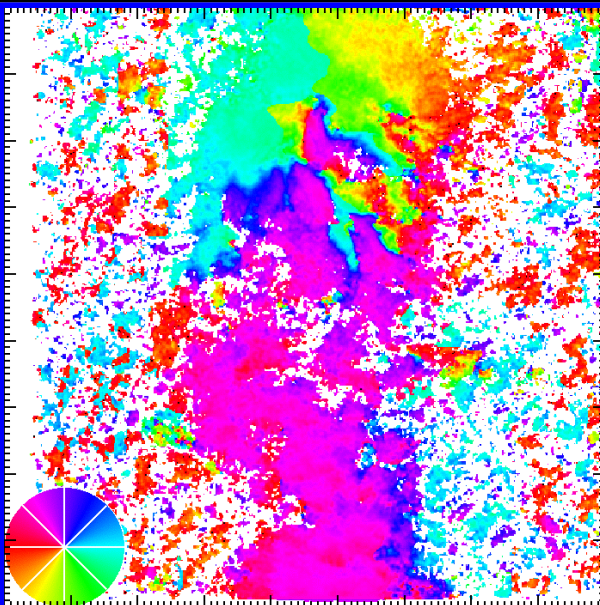
## Flare Genesis Experiment Flight Summary



- 17 days of nearly continuous solar observations
- Vector magnetograms, Dopplergrams
- Ca I (6122 Å) and H $\alpha$  (6563 Å) images
- 0.5" resolution, no distortion by 'seeing'
- Supported by international observing campaign

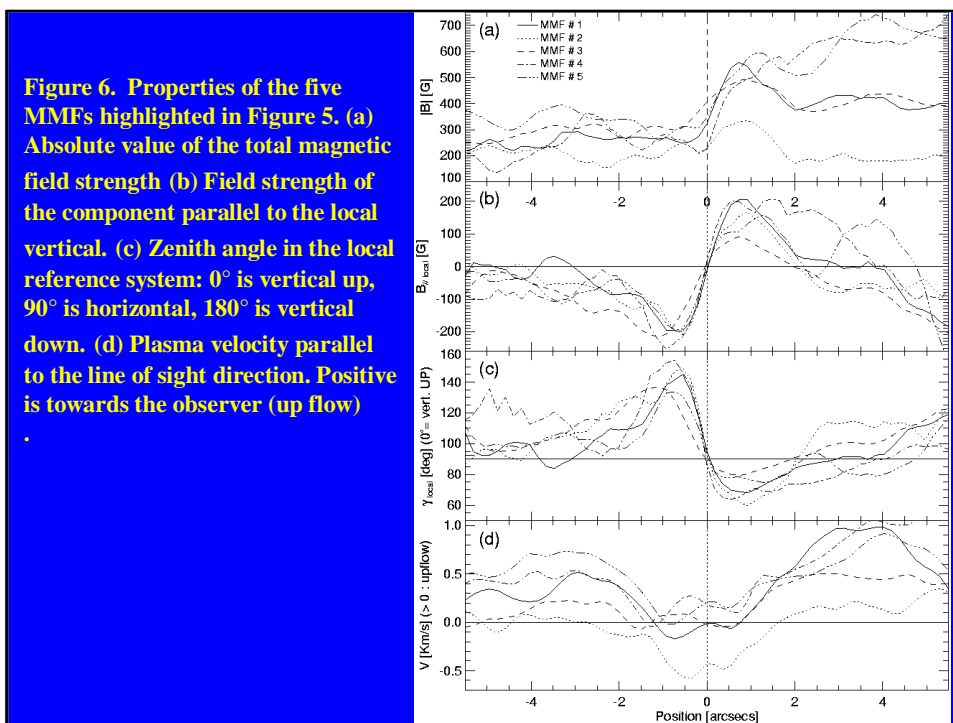
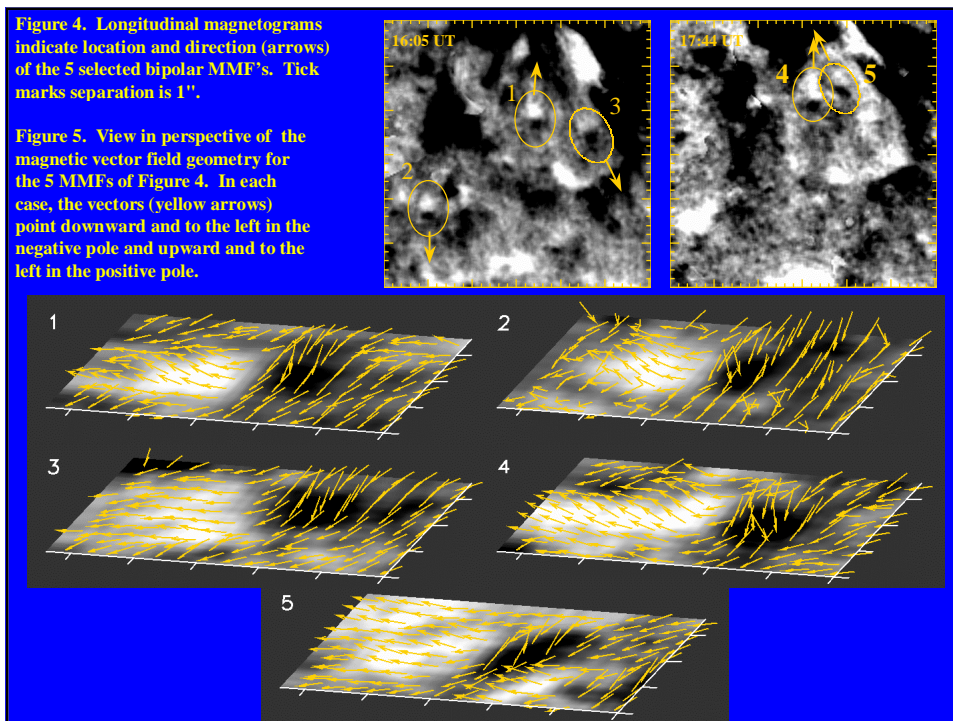


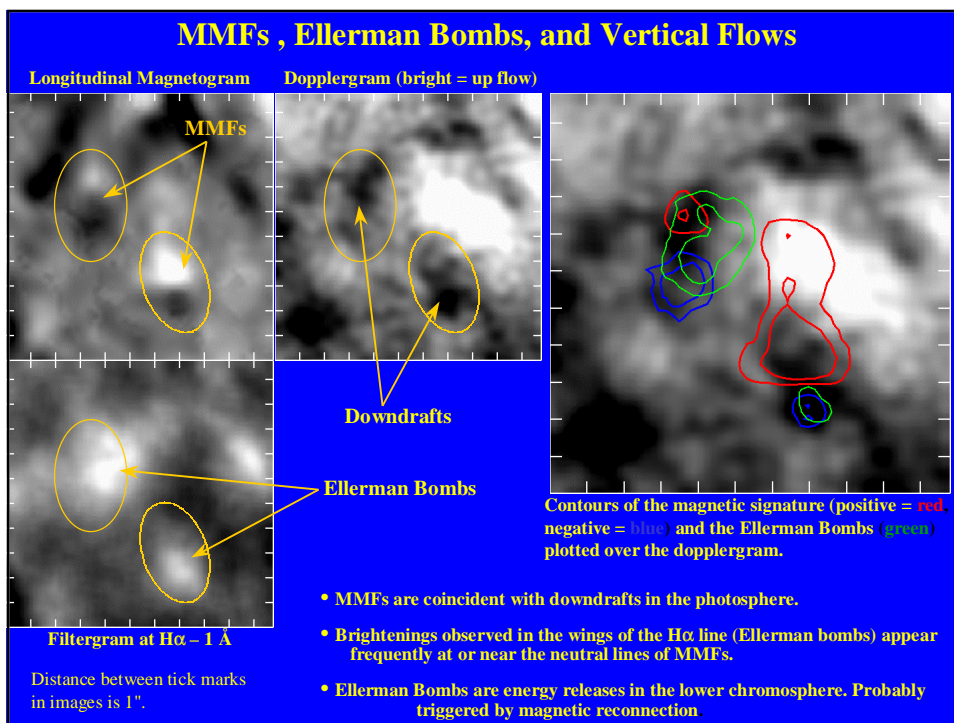
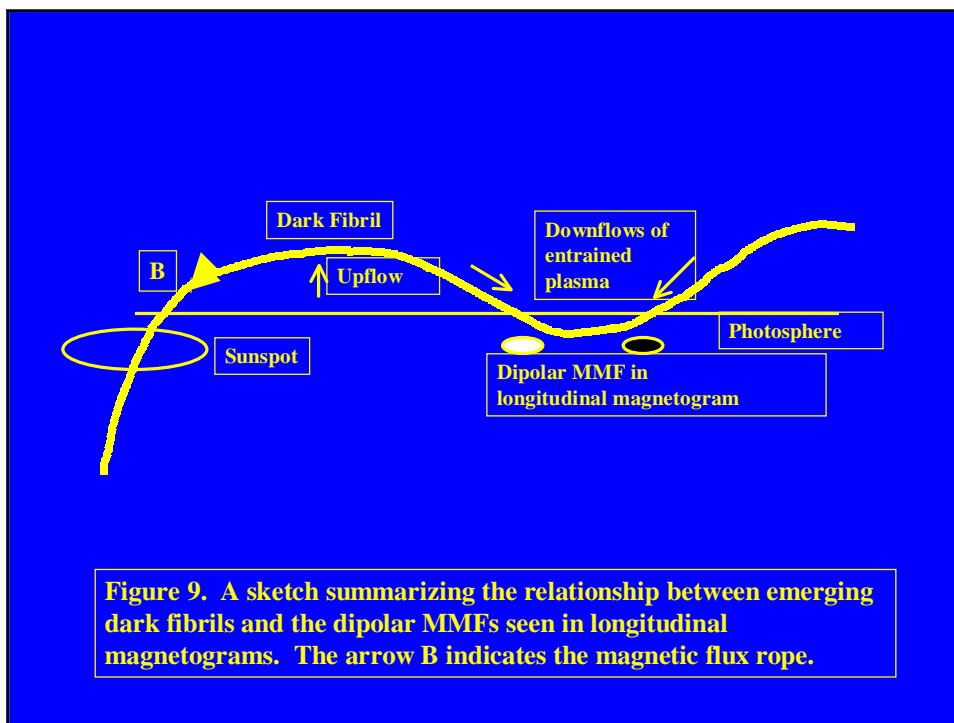
See movies at <http://sd-www.jhuapl.edu/FlareGenesis>



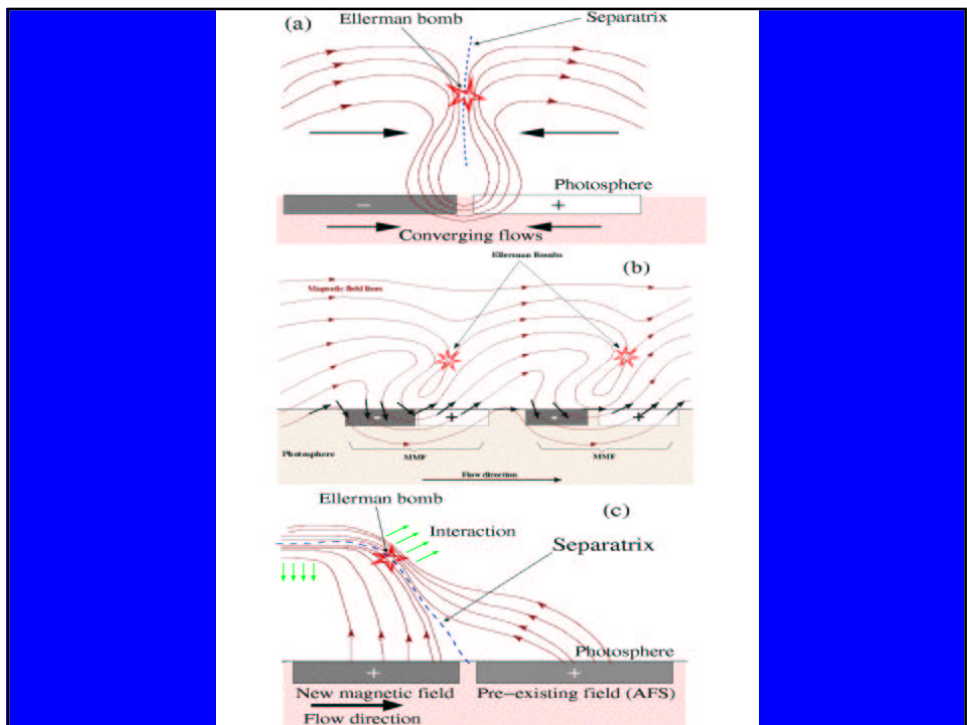
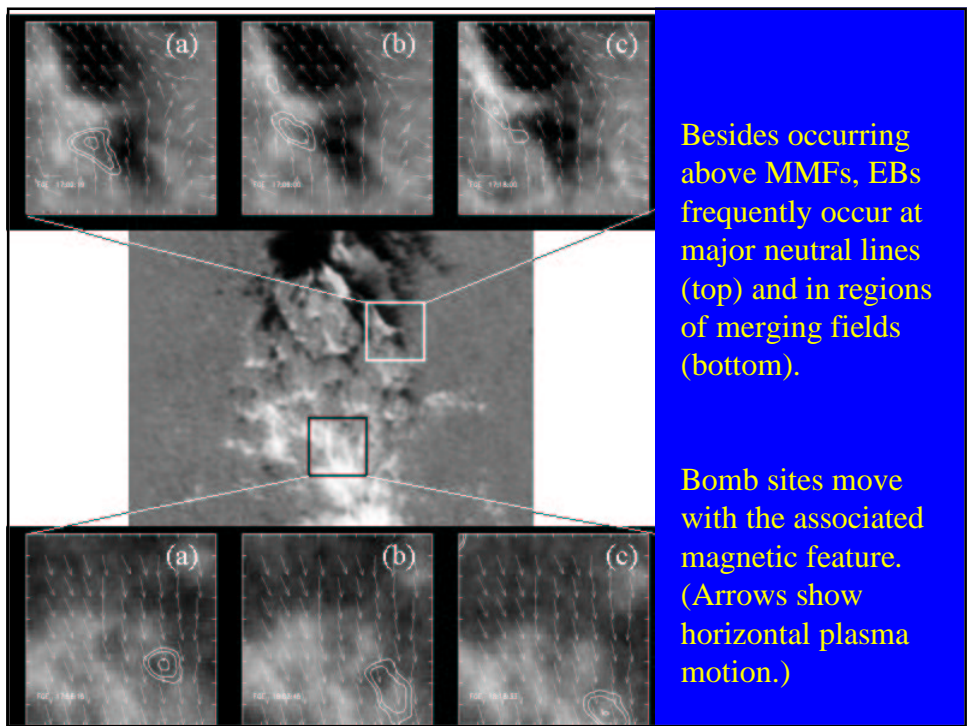
Direction of magnetic fields transverse to the line of sight. Direction corresponds to color wheel. Note that most of the fields point  $20^\circ$  to  $60^\circ$  counterclockwise relative to the main axis of the sunspot region.

# Magnetic measurements of flux emergence

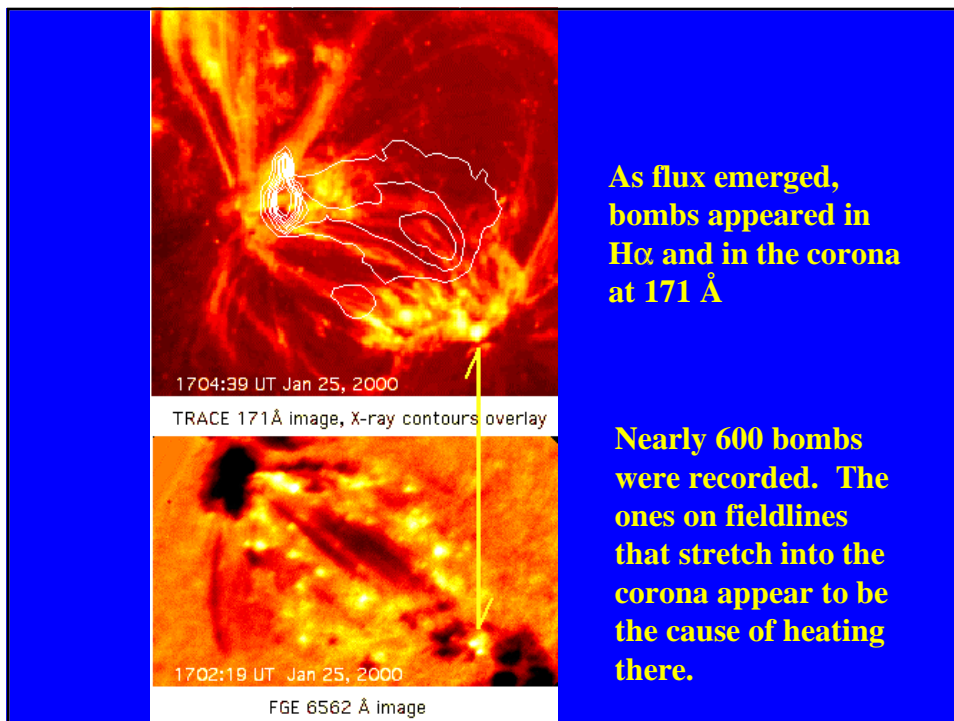
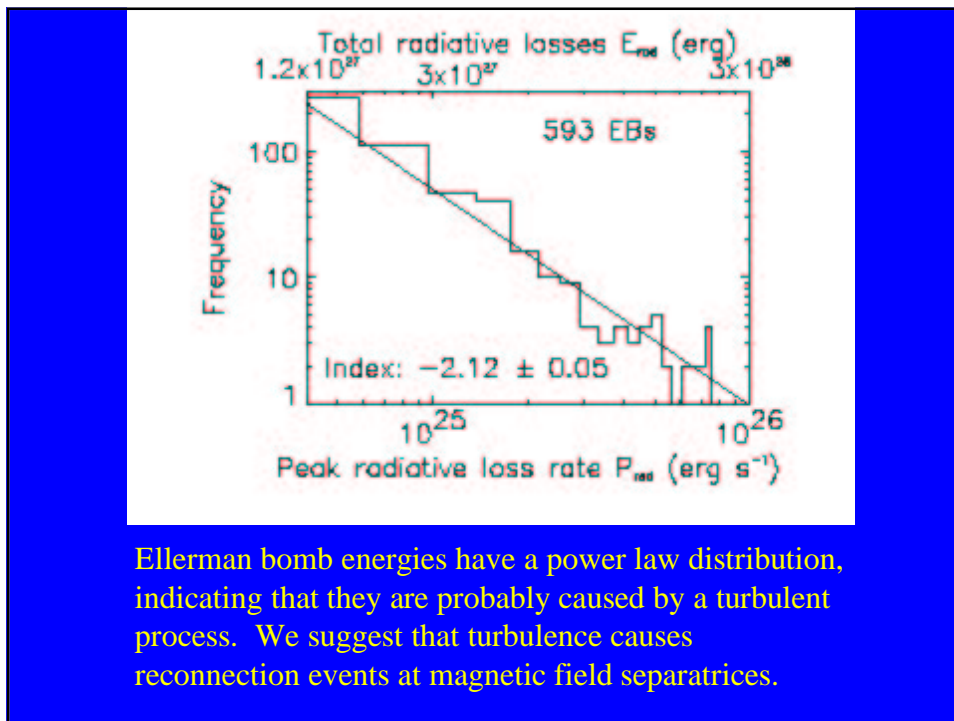




# Magnetic measurements of flux emergence



## Magnetic measurements of flux emergence



## Conclusions

- Magnetic fields emerged as horizontal flux ropes that developed dipolar Moving Magnetic Features (MMFs).
- MMFs streamed toward sunspots and supergranule boundaries.
- Persistent downdrafts drained mass into the MMFs.
- MMFs are U-loops, i.e., where horizontal fields are stitched to the photosphere.
- Ellerman bombs (EBs) occur above MMFs.
- EB energies obey power law distribution (exp -2.1) and have a fractal index of 1.4.
- A broad spectrum of EB-like events could have heated the coronal loops in the emerging flux region.