Megamovie project: *the science case*

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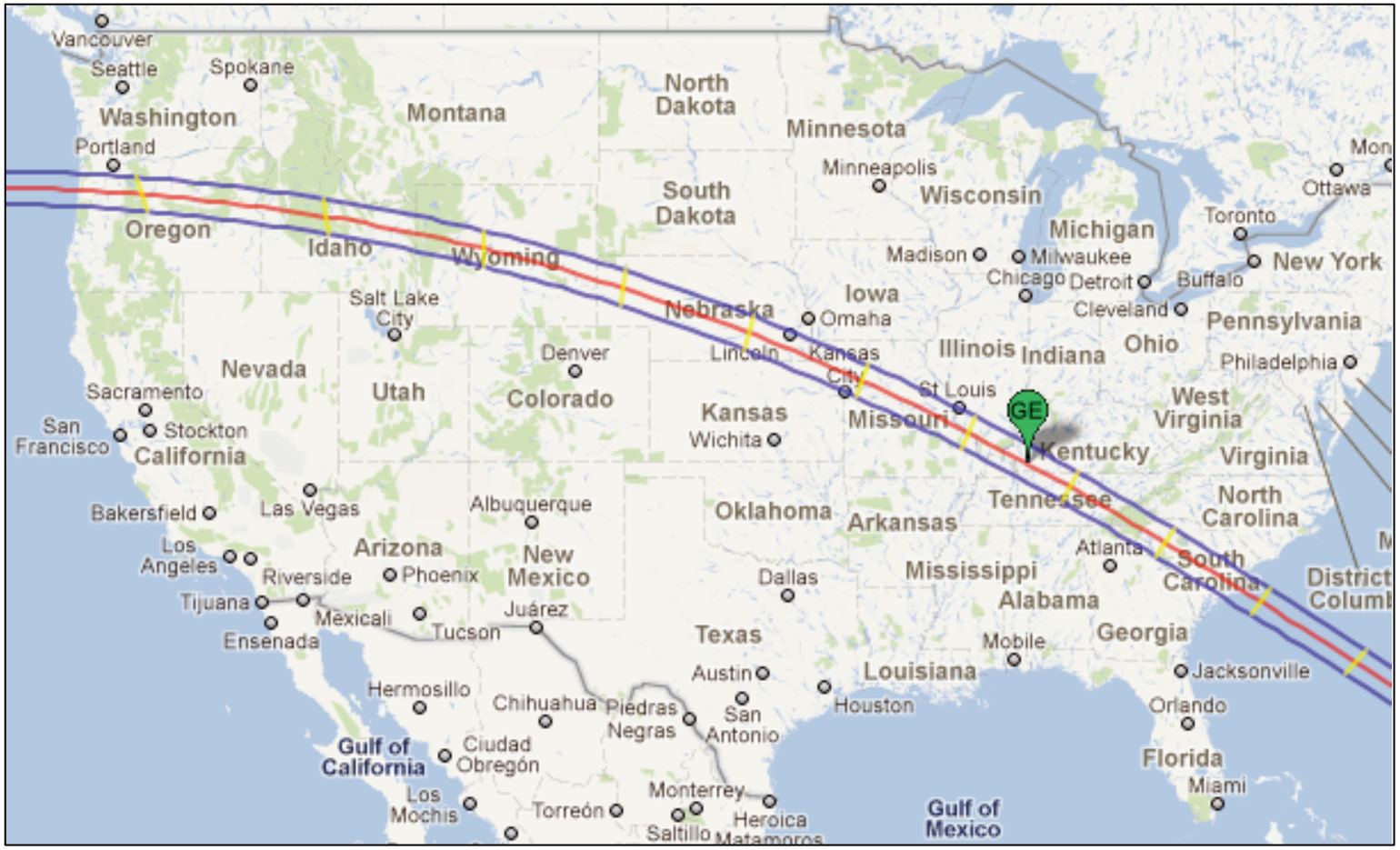
The primary goal of the Megamovie project is the public outreach, but – especially if we get lucky – there will be substantial scientific output as a result of the crowdsourcing

2017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Ciudad Obregón
Florida
Monterrey
Miami
Los Mochis
Torreón
Heroica Matamoros
Saltillo
Gulf of Mexico

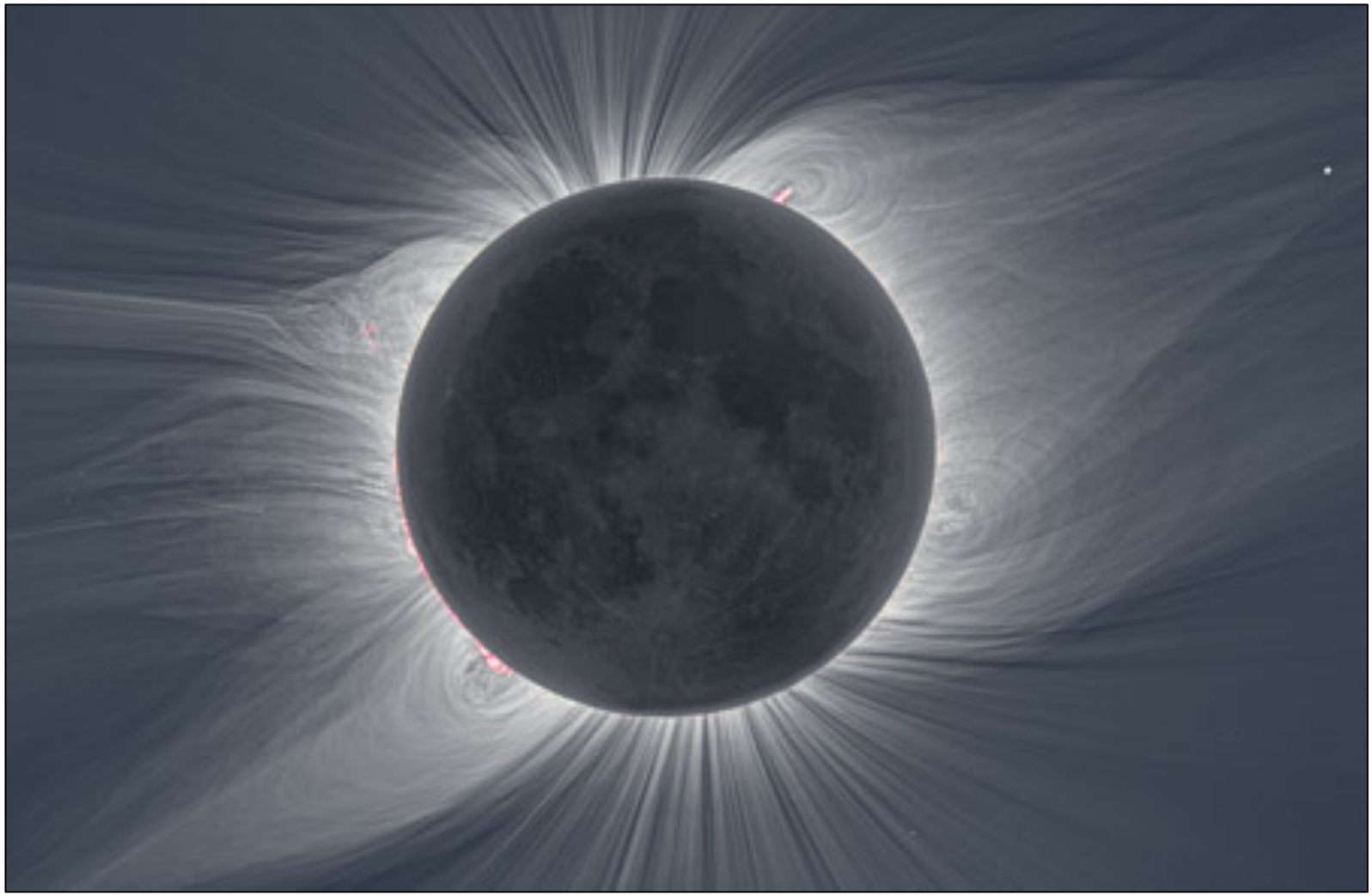
2017 and 2024

Such opportunities are very rare

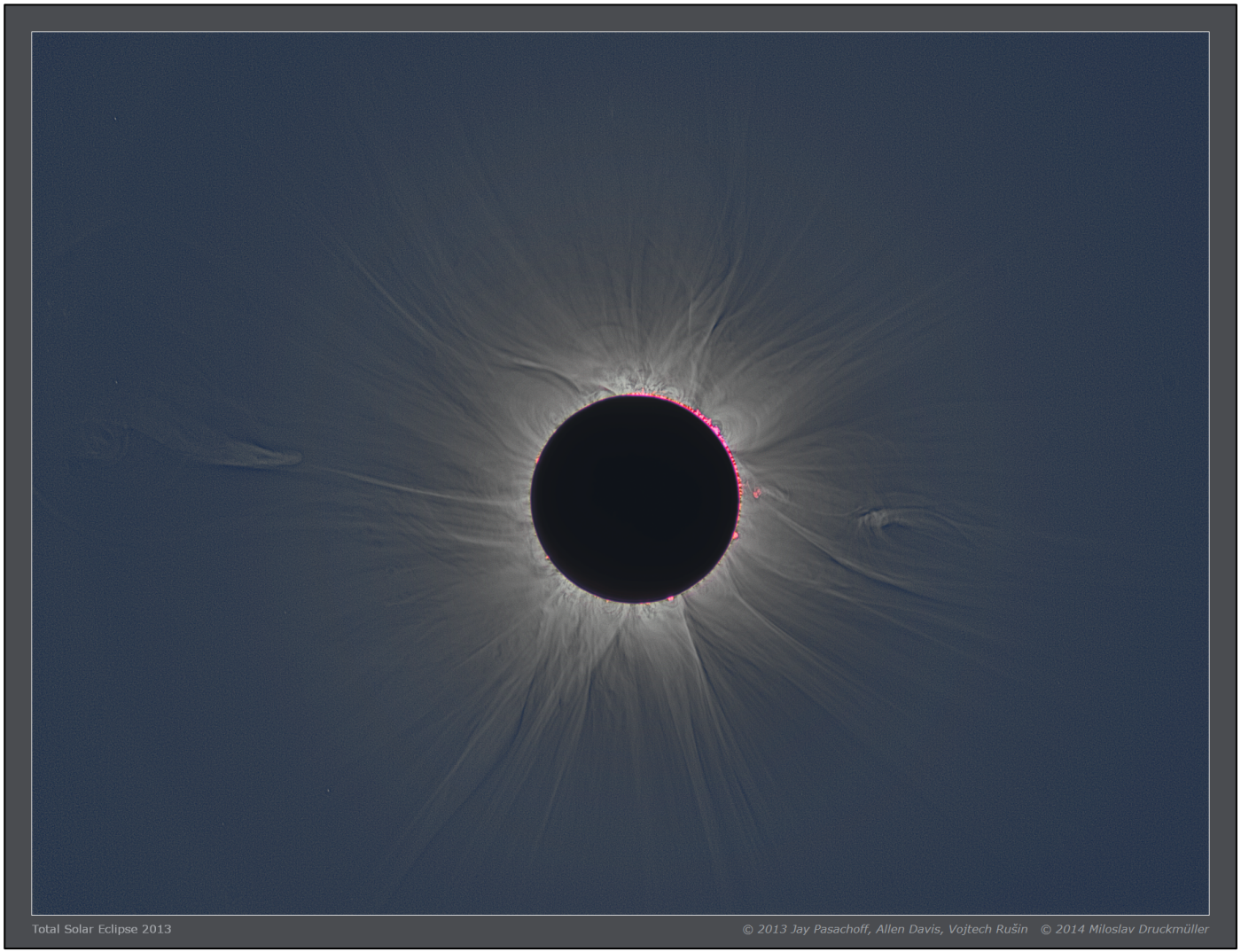
Long views of the low corona

- Normal coronagraph images are restricted to the middle and upper corona (> 1.2 R) because of the glare
- What's below that has decisive importance for several problem areas, because of the strong magnetic field
- Eclipses let us see it all
- The Megamovie will give unprecedented sampling
  - Many, many images => high time resolution
  - Miscellaneous provenance

Druckmüller images



Pasachoff image, with CMEs



Druckmüller's art

- These are snapshots, typically involving many images from several cameras. The art includes

  - image registration

  - enhancement and sharpening

  - adjustment of dynamic range

- The Megamovie will produce lower quality, but much better sampling

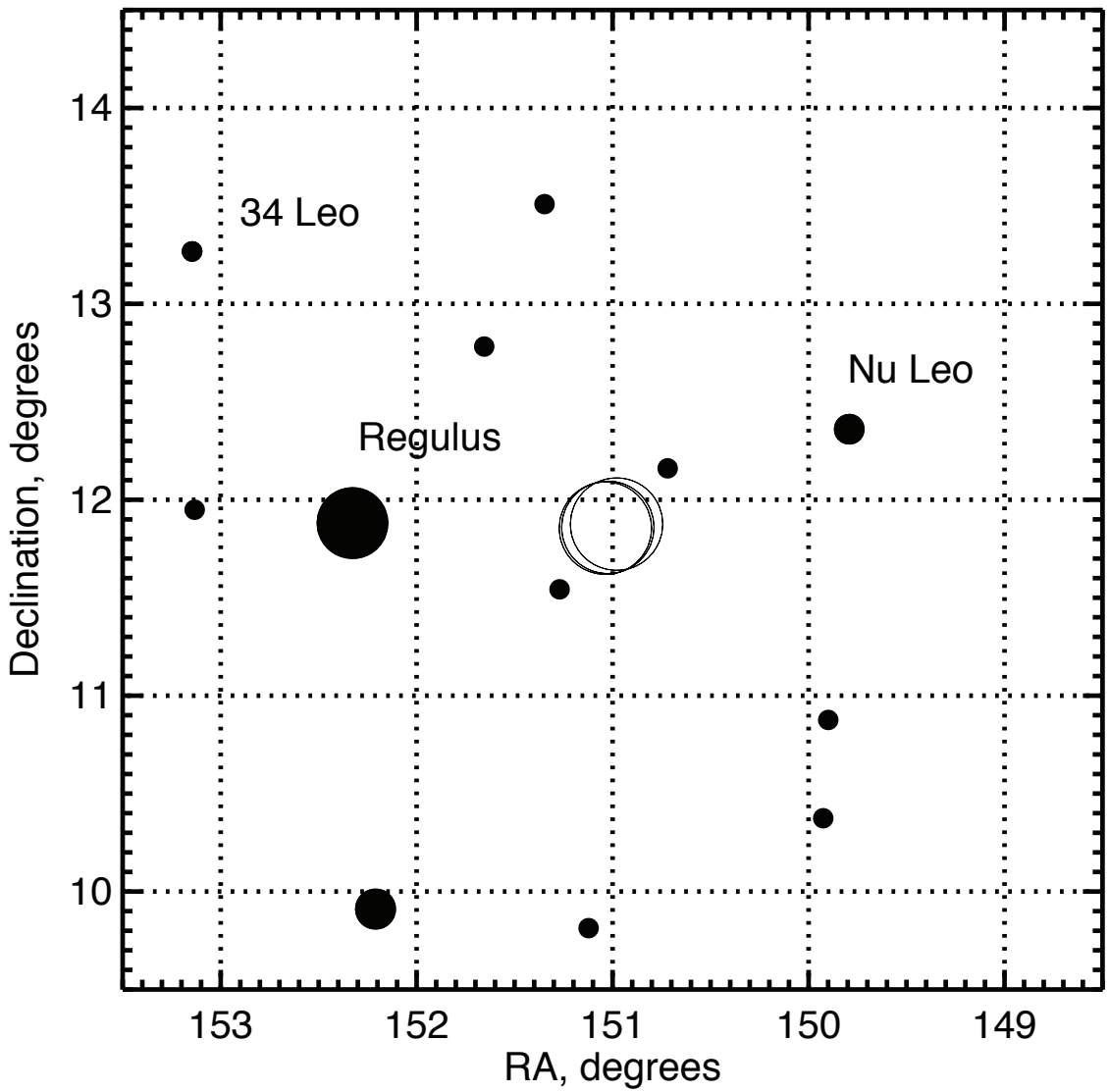
  - there's important science (dynamics) even at lower resolution

  - the compositing art may not be needed for some scientific problems

Image dynamic range

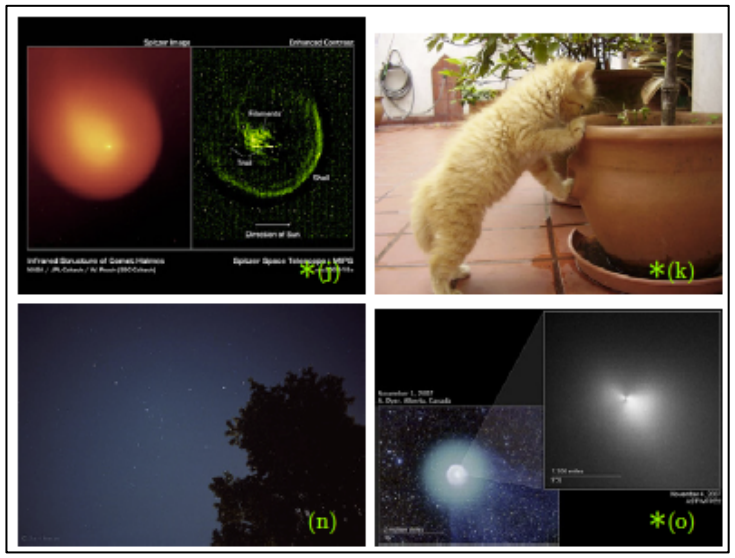
- The intensity of the corona has a huge dynamic range: must combine images with different exposure times
- In the best images, stars will be visible can provide fiducial references

The stars in 2017

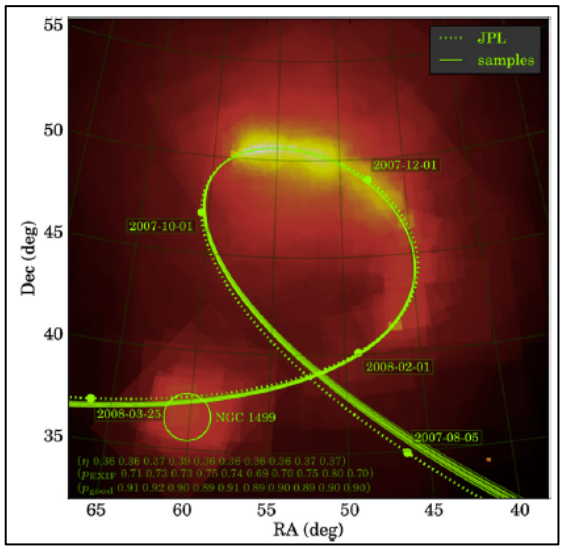


Crowdsourced astronomy

- SETI@home and its many followers
- astrometry.net
- Precise orbit of a comet derived from random images taken from FLICKR (Lang & Hogg, AJ 144, 46, 2012)



Some raw data



Comparison with JPL

What might we see?

- Coronal mass ejections
- Jets associated with radio phenomena
- Solar-wind flow patterns
- Flow patterns within the closed-field loops
- Magnetic restructuring

How will we see it?

- Movies and other excerpts from the massive database
- Open community access to data and tools (preferred)
- Coordination with NASA, NOAA, and other professional datasources