



# Progress Report: Week 4

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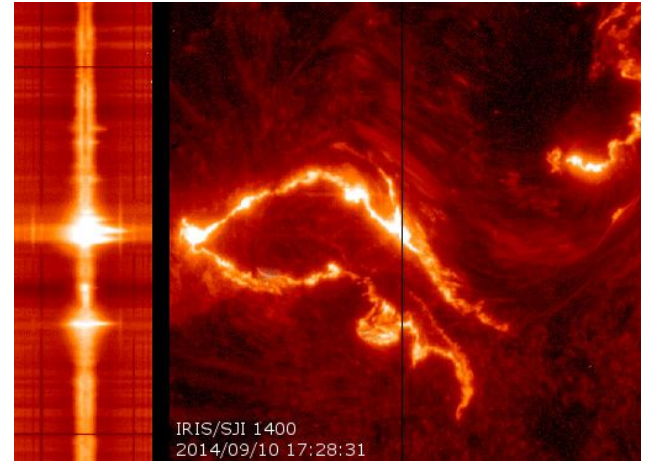
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# Background

Goal: To find the energy partition of the CME and the flare

Work:

- **Calculating the flare energy**
- Calculating the CME energy
- Comparing the energies



# Basic Steps for Calculating Flare Energies

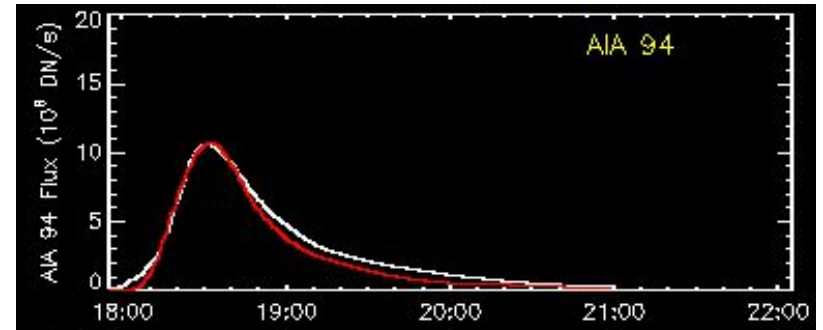
Step 0: Data preparation

Step 1: Finding flare ribbons

- Look for bright pixels

Step 2: Finding heating rate / magnetic field line lengths

- Apply Gaussian fitting to the light curves
- Determining the feet of the field lines





# Basic Steps for Calculating Flare Energies

Step 3: Calculating temperature and density

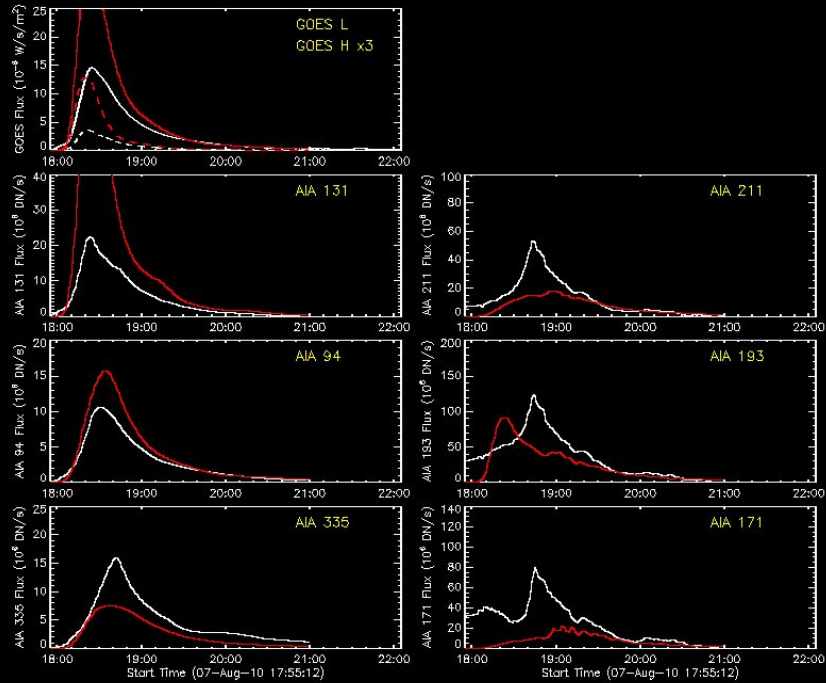
- Try different test values for unknown factors

Step 4: Generating synthetic emission curves

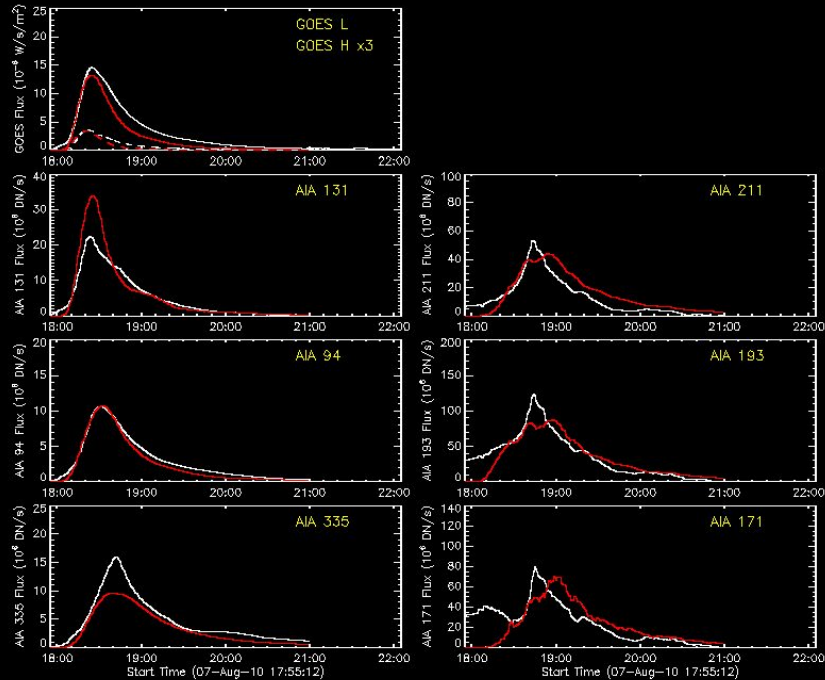
Step 5: Compare synthetic emission curves with observed light curves

- Determine what test values give the best emission curves

# Plots



# Plots





## What's Next

- Determining the best 3 values for the scaling factors in more precision
- Energy revolution of the flares
- Long run: calculate CME energies and compare with flare energies



# Image Sources

<https://scitechdaily.com/nasas-iris-satellite-observes-large-solar-flare/>