

CME assignment zero (in-class workshop FRIDAY 6/10/2016, complete by Monday)

For the CMEs listed below, follow the CME analysis procedure described in the lesson and also submit answers to the following questions for each CME:

HW#0 CMEs starting at

- 1) 2014-05-12T12:18Z
- 2) 2012-10-05T03:24Z
- 3) 2012-07-12T16:54Z
- 4) 2013-02-26T14:06Z

Resources & iSWA layouts

- * StereoCAT: <http://ccmc.gsfc.nasa.gov/analysis/stereo/>
- * 40 Frame coronagraph and EUV movies <http://go.nasa.gov/16bTvzK>
- * Where is STEREO? http://stereo-ssc.nascom.nasa.gov/cgi-bin/make_where.gif
- * <http://cdaw.gsfc.nasa.gov/movie/>
- * Solar Images with grid overlays <http://www.solarmonitor.org/>

Fill out the forms linked from: <http://ccmc.gsfc.nasa.gov/support/SWREDI/tutorials.php#assign>

- a) What is the source location for this CME? (list the location e.g. N15E20, instrument/wavelength, and time of the observation).
- b) Describe the EUV lower coronal signature for this CME (e.g. flare, post eruption arcade/loops, rising loops, dimming, filament eruption).
- c) Is the CME a halo in any of the coronagraphs? If so, is it moving away from or towards the observer?
- d) Which coronagraph instrument first observed the CME at the start time?
- e) What are your final **CME parameters** (radial speed, half width, longitude, latitude, and time at 21.5 Rs (solar radii)).
- f) Compare your EUV source location obtained in (a) with the parameters obtained in (e). Discuss why they might be different.
- g) Submit your "Save URL" of your measurements.

CME assignment one (MONDAY 6/13, complete by Wednesday)

For the CMEs listed below, follow the CME analysis procedure described in the lesson and also submit answers to the following questions for each CME:

HW#1 CMEs starting at

- 1) 2013-10-22T04:36Z
- 2) 2013-11-07T00:00Z
- 3) 2013-11-07T10:39Z
- 4) 2012-07-17T14:25Z
- 5) 2013-01-13T07:24Z

Resources & iSWA layouts

- * StereoCAT: <http://ccmc.gsfc.nasa.gov/analysis/stereo/>
- * 40 Frame coronagraph and EUV movies <http://go.nasa.gov/16bTvzK>
- * Where is STEREO? http://stereo-ssc.nascom.nasa.gov/cgi-bin/make_where_gif
- * <http://cdaw.gsfc.nasa.gov/movie/>
- * Solar Images with grid overlays <http://www.solarmonitor.org/>

Fill out the forms linked from: <http://ccmc.gsfc.nasa.gov/support/SWREDI/tutorials.php#assign>

- a) What is the source location for this CME? (list the location e.g. N15E20, instrument/wavelength, and time of the observation).
- b) Describe the EUV lower coronal signature for this CME (e.g. flare, post eruption arcade/loops, rising loops, dimming, filament eruption).
- c) Is the CME a halo in any of the coronagraphs? If so, is it moving away from or towards the observer?
- d) Which coronagraph instrument first observed the CME at the start time?
- e) What are your final **CME parameters** (radial speed, half width, longitude, latitude, and time at 21.5 Rs (solar radii)).
- f) Compare your EUV source location obtained in (a) with the parameters obtained in (e). Discuss why they might be different.
- g) Submit your "Save URL" of your measurements.

CME assignment two (MONDAY 6/14, complete by Wednesday)

For the CMEs listed below, follow the CME analysis procedure described in the lesson and also submit answers to the following questions for each CME. (Fill out the forms linked from: <http://ccmc.gsfc.nasa.gov/support/SWREDI/tutorials.php#assign>)

HW#2 CMEs starting at

- 1) 2013-03-15T06:54Z
- 2) 2013-04-11T07:36Z
- 3) 2012-09-28T00:12Z
- 4) 2012-09-28T10:54Z
- 5) 2013-01-21T08:00Z

(two CMEs)

Resources & iSWA layouts

- * StereoCAT: <http://ccmc.gsfc.nasa.gov/analysis/stereo/>
- * 40 Frame coronagraph and EUV movies <http://go.nasa.gov/16bTvzK>
- * Where is STEREO? http://stereo-ssc.nascom.nasa.gov/cgi-bin/make_where_gif
- * <http://cdaw.gsfc.nasa.gov/movie/>
- * Solar Images with grid overlays <http://www.solarmonitor.org/>

- Part 1:**
- a) What is the source location for this CME? (list the location e.g. N15E20, instrument/wavelength, and time of the observation).
 - b) Describe the EUV lower coronal signature for this CME (e.g. flare, post eruption arcade/loops, rising loops, dimming, filament eruption).
 - c) Is the CME a halo in any of the coronagraphs? If so, is it moving away from or towards the observer?
 - d) Which coronagraph instrument first observed the CME at the start time?
 - e) What are your final **CME parameters** (radial speed, half width, longitude, latitude, and time at 21.5 Rs (solar radii)).
 - f) Compare your EUV source location obtained in (a) with the parameters obtained in (e). Discuss why they might be different.
 - g) Submit your "Save URL" of your measurements.

Part 2: Reanalyze the CMEs above using single spacecraft mode and the CME Projection Graph:

- h) Single Spacecraft mode: for both spacecraft chosen in Part 1 use your longitude derived in (e) to determine the "angle from plane of the sky" for each measurement. Use this in single spacecraft mode to get the 3D speed.
- i) Now use the CME projection graph with your width and your 3D longitude from (e) to derive two estimates of the 3D speed for each spacecraft viewpoint.
- j) Now do the same (j), only using the source longitude from (a) instead of the longitude from (e).
- k) You now have determined the 3D speed with several different methods. How much do they match? Why are there differences?

CME assignment three (TUESDAY 6/14, complete by Thursday)

For the CMEs listed below, follow the SWPC_CAT CME analysis procedure described in the lesson and also submit answers to the following questions for each CME:

HW#3 CMEs starting at

- 1) 2014-06-24T06:12Z
- 2) 2014-07-01T12:39Z
- 3) 2013-04-11T07:36Z
- 4) 2015-03-15T02:00Z

Resources & iSWA layouts

- * 40 Frame coronagraph and EUV movies <http://go.nasa.gov/16bTvzK>
- * Where is STEREO? http://stereo-ssc.nascom.nasa.gov/cgi-bin/make_where.gif
- * <http://cdaw.gsfc.nasa.gov/movie/>
- * Solar Images with grid overlays <http://www.solarmonitor.org/>

Fill out the form: <http://ccmc.gsfc.nasa.gov/support/SWREDI/tutorials.php#assign>

- a) What is the source location for this CME? (list the location e.g. N15E20, instrument/wavelength, and time of the observation).
- b) Describe the EUV lower coronal signature for this CME (e.g. flare, post eruption arcade/loops, rising loops, dimming, filament eruption).
- c) Is the CME a halo in any of the coronagraphs? If so, is it moving away from or towards the observer?
- d) Which coronagraph instrument first observed the CME at the start time?
- e) What are your final **CME parameters** (radial speed, half width, longitude, latitude, and time at 21.5 Rs (solar radii)).
- f) Compare your EUV source location obtained in (a) with the parameters obtained in (e). Discuss why they might be different.
- g) Export your measurements from SWPC_CAT

For forecaster interns only

Summary of CME Assignments

CME Assignment Instructions:

For the CMEs listed below, follow the CME analysis procedure described in the lesson and also submit answers to the following questions for each CME (fill out the forms):

- a) What is the source location for this CME? (list the location e.g. N15E20, instrument/wavelength, and time of the observation).
- b) Describe the EUV lower coronal signature for this CME (e.g. flare, post eruption arcade/loops, rising loops, dimming, filament eruption).
- c) Is the CME a halo in any of the coronagraphs? If so, is it moving away from or towards the observer?
- d) Which coronagraph instrument first observed the CME at the start time?
- e) What are your final CME parameters (radial speed, half width, longitude, latitude, and time at 21.5 Rs (solar radii)).
- f) Submit your "Save URL" of your measurements.

Note: HW#2 has extra steps, HW#3 is for forecaster interns only.

Resources & iSWA layouts

- * StereoCAT: <http://ccmc.gsfc.nasa.gov/analysis/stereo/>
- * 40 Frame coronagraph and EUV movies <http://go.nasa.gov/16bTvzK>
- * Where is STEREO? http://stereo-ssc.nascom.nasa.gov/cgi-bin/make_where_gif
- * <http://cdaw.gsfc.nasa.gov/movie/>
- * Solar Images with grid overlays <http://www.solarmonitor.org/>

Assignment forms:
<http://ccmc.gsfc.nasa.gov/support/SWREDI/tutorials.php#assign>

Due Thursday afternoon

HW#3 CMEs starting at

- 1) 2014-06-24T06:12Z
- 2) 2014-07-01T12:39Z
- 3) 2013-04-11T07:36Z
- 4) 2015-03-15T02:00Z

HW#3 is optional, except for forecaster interns

Due Mon afternoon

HW#0 CMEs starting at

- 1) 2014-05-12T12:18Z
- 2) 2012-10-05T03:24Z
- 3) 2012-07-12T16:54Z
- 4) 2013-02-26T14:06Z

Due Wednesday afternoon

HW#1 CMEs starting at

- 1) 2013-10-22T04:36Z
- 2) 2013-11-07T00:00Z
- 3) 2013-11-07T10:39Z
- 4) 2012-07-17T14:25Z
- 5) 2013-01-13T07:24Z

Due Wednesday afternoon

HW#2 CMEs starting at

- 1) 2013-03-15T06:54Z
- 2) 2013-04-11T07:36Z
- 3) 2012-09-28T00:12Z
- 4) 2012-09-28T10:54Z
- 5) 2013-01-21T08:00Z

(two CMEs)

HW#2 is optional, except forecaster interns