Training Schedule

Time: (June 3 – 6, 2014 and June 9 – 13, 2014)

Week 1 (June 3 - 6, 2014)

June 3, 2014 Tuesday

9:00 -9:20 Welcome and introduction (Masha)

9:20 – 10:20 Introduction of space weather (overview) – learning main concepts (flares, CMEs, etc), involved domains, types of storms and their main drivers (Yihua)

10:20 -10:35 break

10:35 – 11:05 Quick start of iSWA (Marlo)

11:05 – 11:20 Daily tag-up (DK and Yari)

11:20 – 12:05 Sun and its activity (Sandro)

12:05 – 1:10 Lunch break

1:10 – 2:20 Flares and CMEs in more details (Sandro)

2:20 -- 3:20 SEPs (Yihua)

3:20 – 3:35 break

3:35 – 6:00 Daily self-review (finish homework assignments)/group discussion/Q&A (DK and Yari)

June 4, 2014 Wed.

9:00 – 09:40 Intro of WSA+ENLIL (Sandro)

09:40 – 09:50 break
09:50 – 11:15 Part 1: CME analysis with StereoCAT for space weather (Leila)
11:15 – 11:30 Daily Space Weather Tag-up
11:30 – 12:00 StereoCAT hands on workshop (CME assignment zero)

12:00 – 1:00 Lunch

1:00 -2:00 Coronal holes and high speed solar wind streams (Leila)

2:00 – 2:15 break

2:15 – 3:15 Fast-track WSA+ENLIL+Cone simulation (Sandro + Anna)

3:30 – 6:00 Practice fast-track simulation and completing homework assignments (DK and Yari)

June 5, 2014 Thursday

9:00 – 10:00 Space weather in the Earth's magnetosphere – Part I (Masha)

10:15 – 11:15 Recap and space weather in the Earth's magnetosphere – Part II (Yihua)

11:15 – 11:30 Daily Space Weather Tag-up

11:30 – 1:00 Lunch

1:00 - 2:00 Space weather in ionosphere-thermosphere I (Yihua)

2:00 – 2:20 break

2:20 – 4:00 Space weather in ionosphere-thermosphere II (satellite drag, equatorial space weather, etc.) (Yihua)

4:00 – 6:00 Daily review/finish homework assignments, etc (DK &Yari).

June 6, 2014 Friday

9:00 – 10:00 Part 2: CME analysis with StereoCAT for space weather: Limitations (Leila + Barbara)
10:00 – 10:15 break
10:30 – 11:15 StereoCAT hands on workshop (CME assignment one)
11:15 – 11:30 Daily Space Weather Tag-up
11:30 – 12:00 StereoCAT hands on workshop continued

12:00 - 1:00 Lunch

1:00 – 2:00 iSWA (integrated space weather analysis) tool (Marlo)

2:00 – 2:20 break

2:20 – 6:00 Daily discussion/questions for mentors/completing homework (DK& Yari)

Week 2 (June 9-13, 2014)

June 9, 2014 Monday

9:00-11:00 iSWA layout for SWx tag-up (Yihua)

11:00 -12:00 Self-study (include the 11:15am tagup)

12:00 – 1:00 Lunch Break

1:00-2:30 Forecasting capability/limitations (Yihua)

2:30 – 2:50 Break

2:50 – 4:20 Space weather impacts (Yihua)

4:20 – 5:30 Daily review, etc (DK and Yari)

June 10, 2014 Tuesday

9-11:00 Lesson 15/16 – Decision dashboard for forecasters (Antti)

11:00 – 11:15 break

11:15 – 12:00 Review/practice (DK and Yari)

12:00 – 1:30 Lunch

1:30 – 3:30 Space Weather forecasting with DONKI (Leila&Chiu)

3:30 – 6:00 Daily review/practice (DK and Yari)

June 11, 2014 Wed.

9:00 – 11:00 DONKI Forecasting Checklist and Logs (Leila/Chiu)

11:00 - 11:15 Daily tagup

11:15 – 12:00 Q&A (DK and Yari)

12:00 – 1:00 Lunch

01:00 – 4:00 Notification homework assigned by Leila (Leila, plus DK and Yari)

04:00 – 06:00 Daily review/homework completion

June 12, 2014 Thursday

9:00 – 10:30 Telltale signs of a CME from EUV images (and others) and some basics on filament eruptions? (Karin)

10:30 – 12:00 Review/Q&A/daily tagup at 11:15 (DK and Yari)

12:00 – 01:00 Lunch

1:00 – 4:00 pm Notification homework (continued) (Leila and Chiu)

June 13, 2014 Friday

9:00 – 11:15 StereoCAT hands on workshop (CME assignment two)
11:15 – 11:30 Daily Space Weather Tag-up
11:30 – 12:00 StereoCAT hands on workshop continued
12:00 – 1:30 Lunch
1:30 – 5:00 Finish homework assignments

Supplementary Materials

Books:

Clark, S., The Sun Kings: The Unexpected Tragedy of Richard Carrington and the Tale of How Modern Astronomy Began, Princeton University Press, 2007.(light read)

"An Introduction to Space Weather", 2008, by Mark Moldwin, Cambridge (ISBN-13 978-0521711128) -- lower undergraduate level, non-science major

"Understanding Space Weather and the Physics Behind it", 2011, by Delores Knipp, McGraw Hill Company (ISBN-13: 978-0073408903) -- upper undergraduate level

Online:

http://ccmc.gsfc.nasa.gov/support/SWREDI/swredi.php (assignments are posted here)

iSWA
http://iswa.gsfc.nasa.gov
iSWA Cygnet Glossary
http://iswa3.ccmc.gsfc.nasa.gov/wiki/index.php/Full_iSWA_Cygnet_List
iSWA Space Weather Glossary
http://iswa3.ccmc.gsfc.nasa.gov/wiki/index.php/Glossary
StereoCAT: http://ccmc.gsfc.nasa.gov/analysis/stereo/

DONKI: http://kauai.ccmc.gsfc.nasa.gov/DONKI/

http://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html

http://www.exploratorium.edu/spaceweather/

http://www.spaceweathercenter.org/

http://rbsp.jhuapl.edu/science/spaceWeather.php

http://www.swpc.noaa.gov/primer/primer.html

http://www.esa-spaceweather.net/spweather/BACKGROUND/PHYS_PROC/physics.html

NASA Space Weather Research Center

http://swrc.gsfc.nasa.gov

CUA Space Weather Academy:

www.youtube.com/user/CUASpaceWeather

Useful reading material:

1. Sun Primer: Why NASA Scientists Observe Sun in Different Wavelengths

http://www.nasa.gov/mission_pages/sunearth/news/light-wavelengths.html

2. Something New Under the Sun

http://www.smithsonianmag.com/science-nature/something-new-under-the-sun-937411/

3. Carrington-class CME Narrowly Misses Earth

http://science.nasa.gov/science-news/science-at-nasa/2014/02may_superstorm/

http://www.nasa.gov/mission_pages/stereo/news/fast-cme.html - related.

4. The effects of space weather on aviation

http://science.nasa.gov/science-news/science-at-nasa/2013/25oct_aviationswx/

5.Cancer and spaceflight

http://www.aerospaceamerica.org/Documents/AerospaceAmerica%20PDFs%20-%202014/May%202014/Feature1_AA_May2014.pdf