



DANCING UP a SOLAR STORM

ACTIVITY DESCRIPTION

The [Dancing Up a Solar Storm \(DUSS\) video](#) (15 min) invites participants of all ages to learn in a kinesthetic, creative, and experiential way that deepens appreciation for the nature and beauty of phenomena related to the Sun and solar storms.

The DUSS video weaves together leading-edge professionalism in science, education, and the art of dance. The development team includes members of the NASA PUNCH Science and Outreach teams in addition to professional dancer/choreographer [Alexandra Lockhart](#) who is featured in the video.



The 15-minute DUSS video has **five components**:

1. Ms. Lockhart's voice-over introducing and inviting participants to the DUSS activity
2. A few minutes of Sun-inspired dance by Alexandra filmed in the Rocky Mountains
3. A visual and verbal introduction to the Sun and to several easy movement tasks using dancing scarves. The sequence of tasks tells a story that flows from the Sun to Earth.

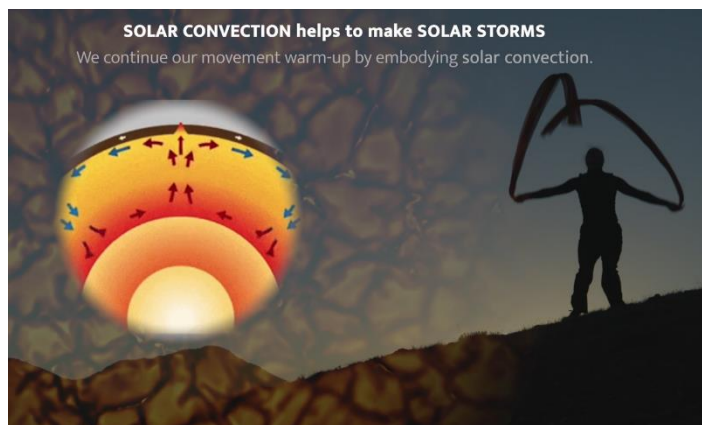
Each movement task...

- represents something important about how solar storms are made and released from the Sun
- is accompanied by photography and/or scientific visualizations of the solar phenomena
- is accompanied by words [titles, subtitles, and short sentences] that help to re-enforce association between a movement task and the corresponding solar phenomenon

4. An invitation to combine the movement tasks to Dance Up a Solar Storm in your own way. Please note that...

- participants do not have to emulate the movement tasks in an exact manner, thereby leaving space for individual creative expression and exploration.
- participants can work individually on creating a dance, but collaborating with other learners may help stimulate use of new vocabulary and promote deeper understanding.

5. Film Credits, including all the artists, scientists, and educators who worked to develop this film.





EQUIPMENT & PROPS

- Access to the DUSS video (either via [download](#) or playing directly from [YouTube](#) on the Internet)
- Video player and screen (large enough for all to see and read text from the movement space)
- Speakers (optional, but preferred depending on venue and capacity to make audio heard)
- Two scarves for each participant (Google “dancing scarves for kids” – lightweight, flowy chiffon)
- Image or globe of Earth (optional for a place to represent where a solar storm causes aurora)

SET-UP

The DUSS video-guided activity can be conducted wherever a video can be played with space for participants to move and dance while viewing the screen. Possible venues for the DUSS video activity include home, classrooms, public outreach events, auditoriums, and planetariums.

The video is designed to be used with or without sound so long as participants can see the words on screen. Use of audio is preferred for younger learners who may not be able to read as quickly and can simply follow the dancer’s oral instructions.

LEARNING OBJECTIVES

Learners...

1. ... know that the Sun is not a featureless ball but a complex and dynamic star
2. ... know the Sun’s layers turn (rotation) and churn (convection)
3. ... can demonstrate and name at least five movement tasks related to the Sun and solar storms
4. ... can recognize sunspots and know they are places where solar storms are more likely to occur
5. ... can recognize magnetic loops and veils as structures on the Sun
6. ... know that the Sun emits both light and particles and both can be parts of solar storms
7. ... know that a solar storm called a CME (Coronal Mass Ejection) can lead to aurora on Earth
8. ... are aware that simulations and visualizations help scientists understand the Sun

ADDITIONAL INFORMATION

A. Solar Phenomena Inspiring the Movement Tasks

1. Solar Convection (churning)
2. Solar Rotation (turning)
3. Solar Wind & the Parker Spiral (spiraling)
4. Sunspots and Solar Cycles (bundling)
5. Coronal Loops and Veils (arching)
6. Magnetic Reconnection (tangling)
7. Solar Storms: Solar flares (high-energy light waves) & Coronal Mass Ejections (cloud of particles)
8. Auroral Lights (dancing)

B. List of Links used in this Facilitator Guide:

NAME of Link	URL
Dancing Up a Solar Storm (DUSS) YouTube video	https://www.youtube.com/watch?v=T9OtP_pxibk
Alexandra Lockhart (dancer/choreographer)	https://aellockhart.com/
Dancing Up a Solar Storm Description & Downloads	https://punch.space.swri.edu/punch_outreach_dancing-up-a-solar-storm.php