Using NASA Data to Build NYSSLS Aligned Assessments

I selected the option to create a professional development experience for my science colleagues at the school I teach at. This includes approximately 35 teachers, including the special education teachers within our department, who teach grades 6-12. We have a wide variety of courses in our science department, including the traditional core science classes, college level electives such as EMT, Anatomy and Physiology, Forensics, Science Research, and interest electives that span the life and physical sciences.   Teacher student load varies based on their schedule, but can span from approximately to 70-150 students per teacher. My leadership project will focus mainly on incorporating math (data analysis) with science content in the creation of NYSSLS aligned assessments. My outcome goal is to increase the capacity of teachers in their inclusion of the crosscutting concepts and science and engineering practices. Since teachers have been somewhat resistant to embrace the new standards, my plan is to use the goal of creating a 3-dimensional assessment task with NASA data as a method to have them interact with the standards and become more comfortable with teaching within the 3 dimensions of the new standards. As department chair, I have monthly meetings with teachers. After the professional development session, teachers will continue to work on their assessments and then share them at the following meeting.

Plan:

1. Brief introduction, with timeline of standards implementation presented, focusing on the new assessment timeline.
2. Provide teachers with sample assessment tasks in their content area. Teachers will review them individually, and record what parts are similar to their current assessments, what parts are different?
3. Whip around:
    a. How comfortable are you with 3D assessments?
    b. What do you need to focus on to be able to create them?
    c. Where do you think your students may struggle with 3D assessments?
4. Teachers review the BSCS Guide to NGSS practices, highlighting where their instruction typically falls on the continuum.
5. Introduce the concept of a Driving Question Board as a way to record questions about a phenomenon
    a. Teachers are given post-its to record questions about assessment timeline post on board
    b. Facilitator uses the language of ***patterns*** and works with teachers to group questions
6. Facilitator introduces NASA resource: https://www.noaa.gov/education/resource-collections/data/classroom-ready

7. Teachers identify one mini-lesson that they could use to create a 3D assessment question, using the data provided by NASA
8. Using question stems, teachers create an assessment question series using their selected NASA data to assess one upcoming standard. The sequence of questions should include the DCI, CCC and SEP associated with the selected standard.
9. Teachers share their assessment with a colleague. Colleague attempts to answer their question(s), creating an anticipated student response.   Teachers provide and receive feedback on the assessment.
10. Teachers modify assessment based on colleague feedback and administer it as a formative assessment in class. Student samples will be brought back to follow up meeting.

11. At end of session, we revisit the driving question board and see what understandings we now know, moving those post-its to “done”. Teachers reflect on remaining questions and choose a personal focus to work on developing.

https://mare.lawrencehallofscience.org/curriculum/climate-data-aclipse-activities