

I. Title of Project

Satellites: NASA Resources are *out of this world!*

II. Curriculum Topics, School Name, Number of Educators, Grade Level(s)

My Professional Development Workshop focused on enhancing interdisciplinary learning opportunities and, to that aim, increasing teacher awareness of NASA resources. Connections were made across all content areas, discussing not only satellites themselves as content matter, but also the information gathered by satellites, highlighting mathematics practices and skills, such as creating and interpreting graphs.

Randolph High School, in central Morris County in New Jersey, serves approximately 1600 students in grades 9-12, 77% of whom are Caucasian although minority populations - 11% Hispanic, 8% Asian, & 2% Black - have been growing in the community. Only 8% of the population qualifies for free/reduced lunch, which takes place for the entire building at the same time and when many student clubs meet, as athletics dominate the afternoon schedule; courses meet on a rotating block schedule and, while there are many computer labs and laptop resources available, the District operates on a "Bring Your Own Device" policy. Traditional core courses are offered, though the school has been recognized for their excellent dance and music programs, and electives in business, the arts & sciences, and an "Option II Program" for senior internships and other non-traditional ventures.

Thirteen participants from Randolph High School consisted of our school's four Instructional Coaches, who helped advertise the PD workshop, three English teachers (grades 9, 10, and 12), two World Language teachers (grades 9-12), one history teacher (grades 10 & 11), one Fashion/Child Development teacher (grades 9-12), and two STEM teachers - 9th grade biology and a fellow 11th/12th grade physics teacher.

Unfortunately, a field trip and grant-proposal meeting kept a number of math and science teachers from attending, as well as my STEM supervisor. I wish some math teachers had been able to attend, since the focus of the PD was incorporating interdisciplinary math practices, yet the teachers who did attend from other disciplines made some exciting insights to how maths could be intertwined with their subject area.

III. Standards Addressed

As the focus of my professional development was creating interdisciplinary learning opportunities, I focused on incorporating math skills into other courses and, therefore, focused on Common Core State Standards for Mathematics; a full list of standards and NGSS practices is listed in Appendix A.

IV. Summary of Project

My primary goal of the PD Workshop was to incorporate interdisciplinary resources into existing curricula, as I have seen much improved student learning in my Physics classroom that supports outstanding research that interdisciplinary teaching increases student learning (Repko, 2009; Kavaloski, 1979; Newell, 1990). The resources provided during my workshop were applicable to multiple content areas, and incorporated basic mathematics skills in graphing to better understand the overall data set. After completing the activity, participants were also provided access to NASA's robust library of interdisciplinary resources, where I selected a few to explore briefly in the time allotted.

V. Pre-Questions Survey List (Refer to Appendix B for participants' responses)

- How interested are you in using interdisciplinary resources in your classroom?
- How often do you incorporate interdisciplinary resources in your classroom?
- How much time do you have to research interdisciplinary resources for use in your classroom?
- How do you most often find resources for use in your classroom?
- How aware are you of interdisciplinary resources developed and/or shared by NASA?
- How often are your students actively engaged in hands-on learning?

VI. Brief Description of the Actual Professional Development Training

My professional development workshop was held during our 45-minute lunch block on Tuesday, April 9 in our Instructional Coaches' room; after exploring various venues and times with the Coaches and admin, this was the only approved opportunity. As participants entered the room, the slideshow was already running with a NASA simulation of low-orbit satellites and a QR-code to access the Pre-Survey; hard copies were also available to those teachers who did not bring their own devices (our school technology is not currently available, as it is being updated for NJSLA testing later this month). After completing the Pre-Survey, a brief discussion regarding satellites as subject matter made connections between orbital mechanics in Math and Physics alongside historical & social impacts and literature in English and History, as well as other content areas, to begin forming an interdisciplinary approach focused on satellites. However, satellites also gather a plethora of information that can also be used to create interdisciplinary lessons, with much broader applications and access for different content areas.

To show this, participants were divided into pairs and given graphs plotting the average height of ocean surface around the world - Global Mean Sea Level (GMSL) - in increments of six years from 1880 to 2010. After finding trends within their short time period, a full time-line was created by taping sections next to each other on the wall and observing the overall 130-year trend. Participants initially discussed what may have affected short-term trends, but soon realized that the overall trend was a significant rise in sea level since 1880, when the Industrial Revolution marked the rise of CO₂ emissions; interdisciplinary connections were easily made here among nearly every teacher present.

The final part of my workshop was meant to provide a library of interdisciplinary resources from NASA that could be easily found and implemented in classrooms. Focusing on NASA's Educator Resources, I modelled how to search for lesson plans, posters, or quick activities that included interacting with EOSDIS and the satellite imagery before & after the Camp Fire in November 2018, a Planetary Geology unit that could be scaffolded for students from 5th grade up to college-level students, and finished with a "Browse by Subject" page with specific activities for each core content area.

The last five minutes of the workshop were devoted to the Post-Survey, again available via QR-code or hard copy, before teachers left. Some teachers expressed interest in follow-up sessions or meeting to plan joint ventures between classes, but those meetings have not yet taken place due to our Spring Break.

VII. Brief Outline of the Activities in the Pick-Up Unit

The pick-up unit encompassed nearly half of my workshop time-allocation, where teachers were actively engaged with their data plots and identifying trends - initially short term, and then long term - before discussing the data, which naturally evolved into discovering interdisciplinary connections. Resources were gathered from the Jet Propulsion Lab's Educator Outreach site, which I used often during my Astronomy & Space Science course in Fall 2018. Refer to Appendix C for my lesson plan outline, PowerPoint used, and pictures of teachers completing the activity.

VIII. What NASA Data did you include?

A good number of NASA resources were included in my Workshop, as one of my goals was to raise teachers' awareness; the activity focused on JPL's "Graphing Sea Level Trends" Activity, although the opening slide of my PowerPoint included a simulation of low-earth-orbit satellites from NASA's Scientific Visualization Studio, and I also ended my workshop by sharing and exploring a few NASA resources; all NASA resources are organized with links in Appendix D.

IX. Follow-up Activities & Post-Questions Survey List

After completing the hands-on "Graphing Sea Level Trends" activity, I wanted to provide participants exposure to other NASA resources, centering around their Education Resources library. I began by making connections between a "Planetary Geology" lesson plan for five Units that could be differentiated for students in grade 5 all the way up to college-level students and the interactive "EOSDIS Worldview" portal that showed the layer of tectonic plates overlaid upon volcanic activity along the California coast; I then switched the layer to forest fires, viewing the Camp Fire in November 2018 and the before/after imagery. Participants commented on how fast the imagery was made available, now only a few months after the fires, and with supporting material as well! When switching layers, some participants remarked just how many layers there were to choose from, and the interdisciplinary connections made possible by using EOSDIS. I concluded the PD Workshop by modelling how to use the NASA Resources search function and exploring the "NASA Resources by Subject" page with connections to calculus, physics, chemistry, biology, statistics, history, and human geography; these resources really underscored the potential for interdisciplinary teaching and application of NASA resources. Refer to Appendix D for links to each follow-up activity.

Post-Questions Survey List (Refer to Appendix B for participants' responses)

- How likely are you to incorporate interdisciplinary resources in your classroom in the future?
- How likely are you to incorporate interdisciplinary resources *from NASA* in your classroom in the future?
- Did today's professional development increase your awareness of NASA resources?
- Do you think that NASA's library of resources could increase your time-efficiency of researching interdisciplinary resources?
- After today's actively-engaging, hands-on professional development, how often would you incorporate similar hands-on learning activities for your students?
- How would you rate the effectiveness of the format of today's PD session?
 - Please support your previous answer with a short explanation.

X. Outcomes: Final Data Collection & Analysis

Survey questions were answered on a 1-5 scale with 1 being the most negative response and 5 being the most positive. While this section summarizes the outcomes, complete results are included in Appendix B.

a. Survey Results/Comment on the content included in the project

Participants entered the professional development workshop voluntarily, and with an overall ranking of 4.61 out of 5 regarding their interest in learning about interdisciplinary resources, although participants seem to come from two camps - six teachers who already incorporate interdisciplinary resources in their classrooms quite often, and seven teachers who recognize that they hardly do so. After the PD, all teachers indicated a higher likelihood (4.69/5) of incorporating interdisciplinary resources in their classrooms in the future although, while they unanimously answered a 5 out of 5 increased awareness of NASA resources, there was a bit less enthusiastic response for using NASA's resources - only an average 4.38/5.

These results indicate that teachers were receptive to the content included in the workshop, and met my goal of advocating for interdisciplinary resources. One of the participants who already used interdisciplinary resources in their classroom commented that the workshop helped expand their library of resources available for their use. In the Pre-Survey, teachers indicated (2.38/5) that they did not have enough time available to properly research and prepare interdisciplinary resources for their classroom, which the group gathered from a variety of individual sources as well as larger libraries of resources - participants responses were evenly distributed throughout the range of responses. In the Post-Survey, teachers overwhelmingly felt that NASA's library of resources (see Appendix D) would help increase the time-efficiency of their research.

b. Survey Results/Comment on the pedagogy in the project

I organized my workshop to include an engaging, hands-on activity that could be easily used in the classroom with students as part of an active-learning pedagogy, which the participating teachers seem to support based on their Post-Survey responses. In addition to the improved time-efficiency of researching and planning lessons, the actively-engaged, hands-on learning style that I used to present content in the workshop was well-received, as participants initially answered that their students participated in hands-on activities occasionally (an average answer of 3.15/5) yet indicated an increased likelihood of implementing the approach in their own classrooms after the workshop, with an average of 4.38/5 and a 4.77/5 rating on the effectiveness of the overall professional development workshop. One participant reflected on the experience as “very interactive, and useful resources! Dynamic presentation!”

c. Was your professional development successful? Why or why not?

I believe that my professional development workshop was quite successful, based on the answers received in my Pre- and Post-Surveys. There was an increased interest and confidence in implementing interdisciplinary resources among the group, and the unanimous response of increased awareness of NASA resources is evidence that I addressed a need in the community and met it successfully. Teachers also responded that using NASA's library of resources would increase their time-efficiency of searching for interdisciplinary resources, which could lead to further exposure and application of NASA materials. Post-Survey responses indicated a positive reception to the workshop (4.77/5) and its format, and some participants even asked to follow-up to further discuss interdisciplinary resources, and even implement a cross-curricular activity for students; I would certainly say my professional development was successful!

d. How did this project relate to the readings? Cite two examples.

As I reflect upon my professional development workshop experience, I resonated with Lustick's 2011 article about the perceptions of effective professional development, where he supports DeSimone's 2007 paper asserting a *Reform Model* of effective professional development that includes four main factors:

- 1) Focus on subject-matter content and how students learn that content;
 - 2) Be ongoing and sustained throughout the year;
 - 3) Be consistent with other activities;
 - 4) Provide opportunities for teachers to actively interact around issues of curriculum & instruction.
- (Lustick, 2011)

My workshop's focus was to raise awareness of NASA's resources as a means to teach subject-matter content, presented in such a fashion that teachers actively engaged with the activity and library of resources. I also recognize that my workshop lacked duration to be sustained throughout the year, especially as I presented in early April - after Documentation Logs and PD-Hours are submitted, and many teachers

already receiving their summative scores - there is less motivation to attend PD, regardless of topic. If I had taken this course in the fall semester, there may have been a better opportunity to continue throughout the school year, and even meet with the Instructional Coaches or Administration to make connections between other workshops or in-service topics, as DeSimone stated in her 2007 paper that consistency among activities is important, and Lustick refers to Ingvarson's 1998 claim that reform and traditional PD "should be complementary to each other, like two pillars holding up the same building" (Lustick, 2011). Lustick goes on to say that effective PD is likely to have characteristics of both reform & traditional models, yet be more dependent upon individual context & characteristics, like the type of activity teachers participate in. DeSimone's 2011 reading from the course supports that the model of professional development carries much less weight than how teachers are engaged, where she argues that Core Features of effective PD are Content Focus, Active Learning, Coherence, Duration, and Collective Participation (DeSimone, 2011). I believe that my workshop did a fair job including these Core Features, with the aforementioned weakness in duration. DeSimone also focused on how professional development should be evaluated, and I did change some of the Pre- and Post-Survey Questions, but still feel as though I could have gotten more concrete results with better questioning and less bias in their wording.

Overall, I do think that my professional development workshop was reasonably successful, and feel that I increased my capacity as a science teacher leader according to Luft, whose definition of such is one who

"takes more responsibility for decision-making and activities that involve science within their classroom, their schools, and their districts. In addition, they work to improve various organizational processes, and they work with other leaders to build scientifically literate citizens. Science teacher leaders tackle obstacles and impediments at all levels, and they build community broadly." (Luft, 2016)

e. Will the teacher do these activities again?

It is quite possible that the resources provided in my professional development workshop will be used by participating teachers in the future, especially given the interest in follow-up questions. I was a bit disappointed that no math teachers were able to attend, as many of the resources centered around its application, yet teachers of other disciplines seemed willing to incorporate maths skills in activities related to their content area, which was one of the major goals of the workshop. All resources presented during the workshop have been made available via the Instructional Coaches and a SharePoint folder for all staff.

f. Reflection

The process of creating a professional development workshop was overwhelming at first, but once I buckled down and began working on it, I realized that I could model my short workshop after the structure of our Endeavor courses. By creating an actively-engaging, hands-on approach throughout each semester. As I facilitated the flow of the workshop, it was not unlike a normal classroom experience, except reflection questions were focused on pedagogy in the workshop, whereas students would focus more on content objectives. I found myself appreciating the Endeavor Program and the plethora of resources I have gained from my courses, and was surprised to find that satellites actually *do* provide a central theme to my experience! Looking back at readings from the course, I wish I had more time to provide duration to the professional development and follow up with participants and their efforts to implement NASA resources, but will hopefully do so after the writing of this paper; I also realize that some of my Pre- and Post-Survey questions were biased and suggested certain answers, which was made apparent

by two Post-Survey responses of all fives; while that answer may have been accurate, I may have been able to gain a deeper insight by asking differently worded questions, or in a different format with short-answers.

Appendices

- A. Standards Addressed
- B. Pre- and Post-Survey Links & Results
- C. Electronic Portfolio: Link to PowerPoint used for PD Workshop, pictures of PD activity
- D. Resource Links used in PD Workshop
- E. Teacher Contacts

Works Cited

- Desimone, L. M. (2011). A Primer on Effective Professional Development. *Phi Delta Kappan*, 92(6), 68. Retrieved from <https://doi.org/10.1177/003172171109200616>
- Graphing Sea-Level Trends Activity. (2018, November 30). Retrieved from <https://www.jpl.nasa.gov/edu/teach/activity/graphing-sea-level-trends/>
- Luft, J. A. 1. jaluft@uga. ed., Dubois, S. L. ., Kaufmann, J., & Plank, L. (2016). Science Teacher Leadership: Learning from a Three-year Leadership Program. *Science Educator*, 25(1), 1–9. Retrieved from <https://adams.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=117365972&site=eds-live&scope=site>
- Lustick, D. S. 1. david_lustick@uml. ed. (2011). Experienced secondary science teachers' perceptions of effective professional development while pursuing National Board certification. *Teacher Development*, 15(2), 219–239. <https://doi-org.adams.idm.oclc.org/10.1080/13664530.2011.571511>
- Marrero, M. (2019). Signals of Spring - ACES. Sponsored by NASA & NOAA. Retrieved March 14, 2019, from <http://www.signalsofspring.net/ACES/>
- May, S. (2016, July 01). Search Educational Resources. Retrieved from <https://www.nasa.gov/education/resources>
- NASA's EOSDIS Worldview: Explore Your Dynamic Planet. (n.d.). Retrieved from [https://worldview.earthdata.nasa.gov/?p=geographic&l=VIIRS_SNPP_CorrectedReflectance_TrueColor\(hidden\),MODIS_Aqua_CorrectedReflectance_TrueColor\(hidden\),MODIS_Terra_CorrectedReflectance_TrueColor,Reference_Labels\(hidden\),Reference_Features\(hidden\),Coastlines&t=2018-11-08-T00:00:00Z&z=3&v=-131.33077459543065,34.151401521848335,-113.86678567576305,42.360385896848335&tr=camp_fire_november_2018](https://worldview.earthdata.nasa.gov/?p=geographic&l=VIIRS_SNPP_CorrectedReflectance_TrueColor(hidden),MODIS_Aqua_CorrectedReflectance_TrueColor(hidden),MODIS_Terra_CorrectedReflectance_TrueColor,Reference_Labels(hidden),Reference_Features(hidden),Coastlines&t=2018-11-08-T00:00:00Z&z=3&v=-131.33077459543065,34.151401521848335,-113.86678567576305,42.360385896848335&tr=camp_fire_november_2018)
- NASA's Scientific Visualization Studio. Shirah, G., & Wright, E. (2017, April 17). NASA's Earth Observing Fleet: March 2017. Retrieved from <https://svs.gsfc.nasa.gov/4558>
- Sea Level Rise Infographic. (n.d.). Retrieved from <https://www.jpl.nasa.gov/infographics/infographic.view.php?id=11298>

Appendix A: Standards Addressed

Common Core State Standards for Mathematics

5.G.A.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

8.SP.A.2: Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

HSS.ID.B.6.C: Fit a linear function for a scatter plot that suggests a linear association.

HSS.ID.C.8: Compute (using technology) and interpret the correlation coefficient of a linear fit.

HSS.IC.B.6: Evaluate reports based on data.

Common Core State Standards for ELA/Literacy

WHST.9-12.7: Conduct short as well as more sustained research projects to answer a question or solve a problem; narrow or broaden the inquiry when appropriate.

Next Generation Science Standards (NGSS)

5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

HS-ESS2-2: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

HS-ESS3-5: Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.

Appendix B: Pre- and Post-Surveys & Results

Pre-Survey

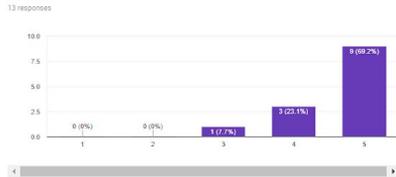
- How interested are you in using interdisciplinary resources in your classroom?
- How often do you incorporate interdisciplinary resources in your classroom?
- How much time do you have to research interdisciplinary resources for use in your classroom?
- How do you most often find resources for use in your classroom?
- How aware are you of interdisciplinary resources developed and/or shared by NASA?
- How often are your students actively engaged in hands-on learning?

Post-Survey

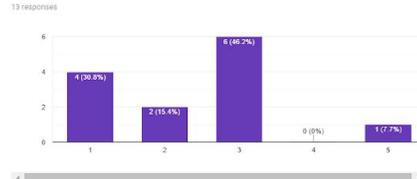
- How likely are you to incorporate interdisciplinary resources in your classroom in the future?
- How likely are you to incorporate interdisciplinary resources *from NASA* in your classroom in the future?
- Did today's professional development increase your awareness of NASA resources?
- Do you think that NASA's library of resources could increase your time-efficiency of researching interdisciplinary resources?
- After today's actively-engaging, hands-on professional development, how often would you incorporate similar hands-on learning activities for your students?
- How would you rate the effectiveness of the format of today's PD session?
 - Please support your previous answer with a short explanation.

Pre-Survey Results

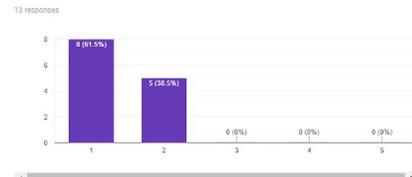
How interested are you in using interdisciplinary resources in your classroom?
13 responses



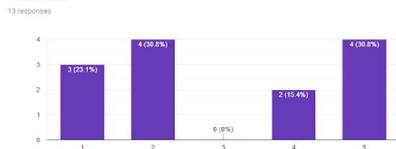
How much time do you have to research interdisciplinary resources for use in your classroom?
13 responses



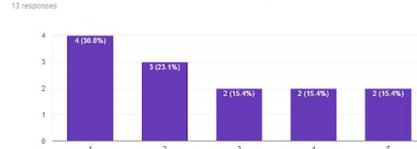
How aware are you of interdisciplinary resources developed and/or shared by NASA?
13 responses



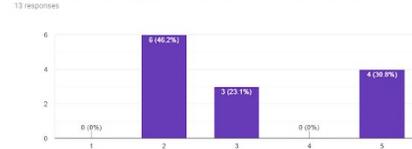
How often do you incorporate interdisciplinary resources in your classroom?
13 responses



How do you most often find resources for use in your classroom?
13 responses

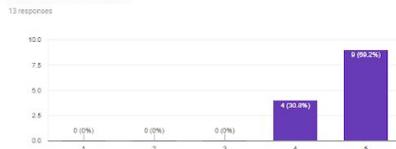


How often are your students actively engaged in hands-on learning?
13 responses

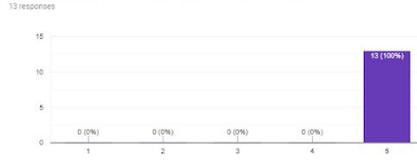


Post-Survey Results

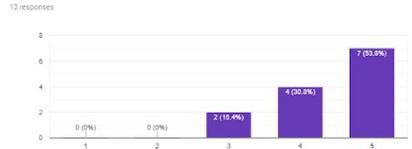
How likely are you to incorporate interdisciplinary resources in your classroom in the future?
13 responses



Did today's PD increase your awareness of NASA resources?
13 responses



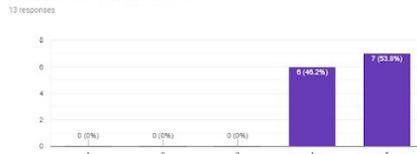
After today's actively-engaging, hands-on PD session, how often would you incorporate similar hands-on learning activities for your students?
13 responses



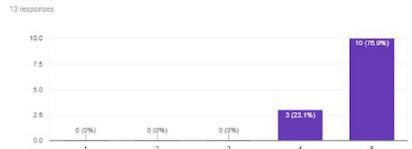
How likely are you to incorporate interdisciplinary resources from NASA in your classroom in the future?
13 responses



Do you think that NASA's library of resources could increase your time-efficiency of researching resources?
13 responses



How would you rate the effectiveness of the format of today's PD session?
13 responses



Participant Comments regarding Professional Development Workshop:

“Very interactive and useful resources! Dynamic presentation.” “Great presentation; thanks!!” “I liked being active during PD, rather than just sitting and listening to a presentation.” “Cramming a 2-hour activity into less than 30-minutes was a bit rushed...it went well, but a bit rushed...are there other, shorter activities from NASA?” “I already have my students actively-engaging with content quite often, but it's good to gain new resources and new activities.”

Appendix C: Electronic Portfolio

Soon after submitting my final proposal for my Professional Development Workshop, I began formulating an outline for the time allotted, and met with my building's Instructional Coaches on March 6, 2019 to schedule when that would be; unfortunately, the timeline for March was already filled with other presenters and our Quarter 3 Benchmark Assessments. I scheduled my workshop early in April, before Spring Break, and met again with one of the iCoaches, Kristin Mongelli, on March 18 to discuss details regarding materials, advertising, and helpful tips for hosting a successful workshop.

The following resources exhibit my successful implementation of a professional development workshop and their use in addressing the Course Objectives of SCED 545 that I have incorporated evolving professional standards, applicable public policies, and academic research to enhance my own practice and serve as a role model to colleagues, and also supporting other educators in accessing resources available for conducting STEM activities with students.

[Outline of Professional Development Workshop for facilitator reference](#)

[Link to PowerPoint used for PD Workshop](#)

Linked resources in PowerPoint are also available in Appendix D

[JPL "Graphing Sea Level Trends" Activity](#)

[Data-compiled graphs](#) distributed to participants to save time during workshop

Pictures of PD activity



Andrew Palmer presenting NASA resources from his Endeavor courses (Astronomy & Space Science - Fall 2018, and Life & Marine Science - Spring 2019)



Participants creating best-fit trendlines for multiple 6.5-year data sets, which were then compiled into a 130-year timeline

Appendix D: NASA Resources

NASA Resources listed in order of appearance in the [workshop PowerPoint](#):

[Animation of NASA's Earth-Observing Fleet](#)

NASA's Scientific Visualization Studio. Shirah, G., & Wright, E. (2017, April 17). NASA's Earth Observing Fleet: March 2017. Retrieved March 02, 2019, from <https://svs.gsfc.nasa.gov/4558>

Image of Transit Method to Identify Exoplanets, taken from class notes in Endeavor's Astronomy & Space Science, taught by Dr. Brandon Rodriguez; adapted from

[Exoplanet Transit Animations](#)

NASA's Jet Propulsion Laboratory. Wiessinger, S. (2018, August 6). Exoplanet Transit Animations. Retrieved November 06, 2018 from <https://svs.gsfc.nasa.gov/13022>

Images of Animal Tracking Data, Phytoplankton, Sea Surface Temperature, and Bathymetry from Endeavor's Life & Marine Science, taught by Dr. Meghan Marrero

Marrero, M. (2019). Signals of Spring - ACES. Sponsored by NASA & NOAA. Retrieved March 14, 2019, from <http://www.signalsofspring.net/ACES/>

[“Graphing Sea Level Trends” Activity](#) used in Professional Development Workshop

NASA's Jet Propulsion Laboratory. Graphing Sea-Level Trends Activity. (2018, November 30).

Retrieved from <https://www.jpl.nasa.gov/edu/teach/activity/graphing-sea-level-trends/>

[Data-Compiled Graphs](#) from JPL Activity, prepared by Andrew Palmer for time-efficient use in PD

[Student-Analysis Worksheet](#) from JPL Activity, distributed to PD Workshop Participants

[Sea Level Rise Infographic](#) from JPL, discussed in PD Workshop

Jelly. Sea Level Rise Infographic. (n.d.). Retrieved from

<https://www.jpl.nasa.gov/infographics/infographic.view.php?id=11298>

May, S. (2016, July 01). Search Educational Resources. NASA for Educators. Retrieved from

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NASA's EOSDIS Worldview: Explore Your Dynamic Planet. (n.d.). Retrieved from

[https://worldview.earthdata.nasa.gov/?p=geographic&l=VIIRS_SNPP_CorrectedReflectance_TrueColor\(hidden\),MODIS_Aqua_CorrectedReflectance_TrueColor\(hidden\),MODIS_Terra_CorrectedReflectance_TrueColor,Reference_Labels\(hidden\),Reference_Features\(hidden\),Coastlines&t=2018-11-08-T00:00:00Z&z=3&v=-131.33077459543065,34.151401521848335,-113.86678567576305,42.360385896848335&tr=camp_fire_november_2018](https://worldview.earthdata.nasa.gov/?p=geographic&l=VIIRS_SNPP_CorrectedReflectance_TrueColor(hidden),MODIS_Aqua_CorrectedReflectance_TrueColor(hidden),MODIS_Terra_CorrectedReflectance_TrueColor,Reference_Labels(hidden),Reference_Features(hidden),Coastlines&t=2018-11-08-T00:00:00Z&z=3&v=-131.33077459543065,34.151401521848335,-113.86678567576305,42.360385896848335&tr=camp_fire_november_2018)

Appendix E: Participant Teacher Contacts

Mrs. Kristin Mongelli - Instructional Coach

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