

During the weeks of studying in the Eye on the Earth class we took a look at space and earth exploration. We have explored and examined the purpose of NASA missions and how the satellites helped us to understand how the data gathered can provided an enriched science content for students. We have learned about the earth's lithosphere, hydrosphere, atmosphere and biosphere. The real time data has been used to help to improve the quality of life around the world. The satellites give scientist a starting point of where to investigate issues. Collecting data daily and then comparing the data on the ground helps scientists to focus and plan on what areas to work on to help solve the climate problems which may have some diverse effects on populations.

The data helps to predict weather and weather patterns, earthquakes, storms, conservations strategies, global warming and the impacts humans have in causing climate change to happen. For my final class project, I have chosen to prepare a current event paper utilizing the three different articles using the data provided from the NASA satellites. The articles were all written in 2020. The articles discuss the effects on the hydrosphere, atmosphere, lithospheres and biosphere.

My first article entitled, *The NASA Hydrological Forecast Systems for Food and Water Security Applications written by Kristi Arsenault*. takes a look at data provided from NASA satellites to helps provide warnings for storms to prevent drought which will affect food supplies in both Africa and the Middle East. The data is providing lifesaving warnings to the region which effects millions of people. The NASA multimode measures precipitation, soil moisture and water storage.

The data is capture is using surface observations from the NASA Goddard Space flight center and the Geological Survey to forecast for areas in Africa and the Middle East. In Addition

to the NASA satellites collecting data, the NOAA substation collects operational drought forecasts to include subseasonal to seasonal metrological forecast (Arsenault, 2020). This article is collecting data from the atmosphere and the biosphere. The use of the data helps to make predictions on the weather. This article highlights the class discussions that took place on November 24, 2020 where we discussed the effects of the satellites to capture data from the Grace satellite. The satellite took data from the watersheds, land basins. The water captures in these locations can cause flooding to the local areas.

The second article entitled, *Climate change on fisheries: Challenges and opportunities written by Golam Mathbor*. The author discussed the impact of climate change on the warming ocean which has a direct impact on fish both in fresh and salt water. The Earth surface is $\frac{3}{4}$ water, yet areas are experiencing drought, rising sea level and blending of salt water into fresh water. The article takes a look at the effects on all of the hydrosphere, astrosphere, cryosphere. The earth climate interacts with all of the systems which is being affected by climate changes. The changes have been noticed over time by the data collected from the NASA Aqua satellite which carries instruments designed to study water cycle.

The water cycle has a direct influence on climate (Mathbor, 2020). The changing of the water temperatures causes the oxygen level to change which causes the fish to move to water temperature more suitable for living. The ocean plants don't have the opportunity to move and therefore they die which causes the sea life like plankton, seaweed, molluse, seagrass beds and molluscs to die too (Mathbor, 2020). The live hood of an industry will lose jobs and effect the food chains. The article focused on an area in Bangladesh. Providing humans with scientific data will help people to understand their role in global warming. Over the years, the pH level continues to rise to level containing high acid levels. This article ties into the class that introduce

the atmosphere and the hydrosphere. This article ties into my 2nd lesson plan which was designed to help middle school students to understand the effects of CO₂ on the environment and what role humans play in causing this problem and why it is important to work on making changes to the pH to prevent the death of plants and sea life on the food chains and the economy.

The third article entitled, *Using Satellites To Track Indicators Of Global Air Pollutions And Climate Change Impacts: Lesson Learned From A NASA- Supported Science-Stakeholder Collaborative* written by Susan Anenberg, takes a look at the effects of climate change and its impact on the air quality. The article tracked fires, pollen count dust storms and the increase in nitrogen dioxide causing asthma and death due to poor air quality. The team of 20 scientists worked a collaborative project to collect data from the Goddard Space Flight Center. Pollution data is important to improving the quality of life. The advantage of using the Goddard Space Flight Center provides consistent data from around the world. The use of ground monitoring was the original way to collect data however it was inconsistent due to the lack of equipment placed in very remote areas (Anenberg, 2020).

The Tiger Team is a group of researchers put in place to have a more permanent group of scientists to work the collection of data. The data is used to help improve the air quality around the world. The scientist helps each other to improve techniques to collect the data that must be reviewed. They use the data from the satellites as a quick consistent way to keep track of a growing problem with air quality, however the need to have ground collection of the data will demonstrate the long-term effects of the air pollution.

The data collected from the biosphere and the atmosphere on the planet. The two spheres working together to collect the information for the satellites around the world to show with evidence the changing of the air quality over a documented period of time. The information can

be used by scientist to show proof of the long-lasting effects on a national level of the poor air quality. When I read this article, I keep reflecting on the forest fires in the north west of the USA. The climate changing, and lack of moisture keeps the areas very dry. The increase in allergies around the country are at an all-time increase due to the drier air conditions. Both the fires and the allergy seasons are lasting longer and causing more dangerous exposure to areas and humans. We have discussed and read articles in class that discussed the Goddard Space Flight center satellite collecting data on earthquakes. Allowing scientists to have this data will help to provide concrete examples about why we should take steps to change our role in creating a safer, cleaner environment for everyone.

The articles I have selected are yet another example of information I have learned in class. The use of real time data to teach science to students help them understand how to use research, do experiments and learn why it is important to consider how climate changes has a direct impact on all of us. The students will have the opportunity to use the NASA to learn about the use of the satellites and answer questions they may have about why weather patterns, storms, ocean changes, temperature is changing. Having the real data which is collected daily helps students and teachers to have enlighten conversation's and want to learn and understand more about our world. I have learned so much about space and earth science. I was able to use the data tools to create lesson plans for students while learning myself about the fact available at my fingertips.

Works Cited

- Anenberg, S. C. (2020, June 5). Using Satellites to Track Indicators of Global Air Pollution and Climate Change Impacts: Lessons Learned From a NASA-Supported Science- Stakeholder Collaborative. *GeoHealth*.
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