Team Number: SJCHS168

School Name: San Juan College High School

Area of Science: Environmental Science

Project Title: O_2 as time flies

Problem Definition:

What will happen if the O_2 runs out? When will it run out? Our project will determine when and if the oxygen gas will run out in the real world. The atmosphere is slowly but surely degrading, and we want to know how long the human race has to live.

Problem Solution:

A real world simulation to determine when the oxygen gas will run out. We will base the stimulation off of real world data. We used real world data of carbon dioxide emissions, amount of oxygen gas in the world, and how much plants take out of the world.

Expected Results:

The program should tell us when or if the O_2 will run out in the foreseeable future or if it will be here forever. Our team does not expect that CO_2 will not be a HUGE factor due to its insignificant size compared to other gasses. We expect our graphs to show oxygen gas lasting for a long time.

Conclusion:

The graphs showed carbon dioxide growing exponential which caused an exponential decline and an extinction of oxygen in about 66 years. These results are extreme and are unlikely to happen. The program came to this result because when making the equations for the graph we ran an exponential regression to get the equation for the graph (Multiple, n.d.). If you look at the

graph we used to pull are data from the value look as if it was growing exponentially, but if you look at the more recent years the emissions seemed to be slowing down and would turn into a logarithmic equation in which the emissions would get closer and closer to a certain value causing the oxygen gas to run out a lot slower (Multiple, n.d.). The simulation shows a warning to the world that if we do not lower are emissions we will run out of oxygen gas.

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Sponsoring Teachers: Dana Burgert, Geizi Llanes/Dejka.

Sources:

Canadell, P. (2014, October 14). Plants absorb more CO2 than we thought, but …. Retrieved April 4, 2018, from The Conversation website: https://theconversation.com/plants-absorb-more-co2-than-we-thought-but-32945

Dabberdt, W. F., Lenschow, D. H., Horst, T. W., Zimmerman, P. R., Oncley, S. P., & Delany, A. C. (1993). Atmosphere-surface exchange measurements. *Science*, *260*(5113), 1472-1479. Retrieved from JSTOR database.

EIA, How much Carbon Dioxide is Produced per Kilowatt-hour when Generating Electricity with Fossil Fuels?, H.R. Rep. (2017). Retrieved from https://www.eia.gov/tools/faqs/faq.php?id=74&t=11

Lide, D. (1996). *Handbook of Chemistry and Physics*.

Multiple. (n.d.). Earth's atmosphere: Composition, climate & weather. Retrieved February 14, 2018, from Space.com website: https://www.space.com/17683-earth-atmosphere.html

Multiple. (n.d.). Global carbon dioxide emissions 1980-2016. Retrieved February 14, 2018, from International Energy Agency website:

https://www.iea.org/newsroom/energysnapshots/global-carbon-dioxide-emissions-1980-2016.html

Reich, P. B. (2010). The Carbon Dioxide Exchange. *Sceince*, *329*, 774-775. https://doi.org/10.1126/science.1194353

Stolper, D. A., Bender, M. L., Dreyfus, G. B., Yan, Y., & Higgins, J. A. (2016). A Pleistocene ice core record of atmospheric O2 concentrations. *Science*, *353*(6306), 1427-1430. https://doi.org/10.1126/science.aaf5445

[Tells about decreasing O2]. (n.d.). Retrieved October 28, 2017, from Scripps O2 Program website: http://scrippso2.ucsd.edu/index