Advanced Physics Laboratory – Peer Review Form	
	Summary of the paper and your overall impression Overall, the author has submitted a extremely well written and well structured report. The background theory is approachable and provides good context regarding the theory behind the experiment as well as the real world implications of the results. However, there are a few areas which should be addressed. This primarily includes restructuring the abstract and the methodology section which could be improved by providing more detail on how the data was processed. Additionally, the presentation of data could be improved by tabulating results.
Major Strength(s)	Identification: Results section (which also includes analysis and discussion) is extensive and provides extremely good commentary on the results. Any data related is always cited in text providing supporting evidence for the claims made.
	Evidence/ Justification: The author consistently comments on the real world implications of their results. This keeps the reader engaged and helps to contextualize the results and their importance to a typical PHY42* reader. The author also consistently provides evidence for their claims (either through their own data analysis or consistent citation of other works). This is a key component of a scientific paper and is well executed in this draft.
Major	Identification: - The abstract is generally well written, but it lacks some key components. - Presentation of data is somwehat unclear. Consider tabulating results and/or fit parameters. Additionally, include these fit parameters (and any goodness-of-fit analysis) in the caption of figures (if applicable). - Methodology section would benifit from additional detail.

	Additional Comments
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Minor Strengths (Examples)	• Uncertainties and units present with relevant results. • Bibliography is complete and extensive. Formatting in the bibliography seems to be consistent. • Figures are generally well presented easy to understand bar a few examples listed in the next section. • Background is quite extensive and is written very well providing an easy introduction for a PHY42* student. This makes the report quite approachable and enjoyable to read. • Report, overall, has good formatting. Figures are well placed and are not too small. Text does not seem cluttered.
Weakness(es)	Evidence/ Justification: - The author may improve their abstract by changing the structure to focus on the key results and the implications of the experiment rather than the background behind the experiment. In the draft, no conclusions are presented (numerical or otherwise). This is a key proponent of an abstract and should be included. - The author should consider adding a table to present the data in a more clear and concise manner. Currently, fit parameters are presented in numbered equations (12) through (17). Additionally, tthe author should consider including a goodness-of-fit analysis is not included for this data (nor are any residuals, though this may not be applicable). - Currently, the methodology section provides good background on how the data was collected (from external sources). However, the author does not go into detail on how the data was processed. Currently, the author only mentions that the data was processed using "... using Python and the necessary libraries". The author should go into how the data was processed. For example, how the trends were fit, how the sub-annual cycles were analyzed, how uncertainties were calculated, etc.

Minor Weaknesses (Examples)	• The title of the report while somewhat intriguing, should be more precise. Consider changing the title to something more descriptive of the experiment and relevant results. • Some citations included in areas where they are not needed. – Citations in abstract (e.g. ... XIXth century). – Citations in headings (e.g. Mauna Loa and South Pole Observations). • Minor formatting critiques. – Figure 5 and Figure 6 may be aligned side by side to save space. – Equations somewhat difficult to read, some equations are numbered on the right and some on the left. – Equation (9) not numbered. • General capitalization, punctuation, and typesetting needs to be improved in certain areas. – Some paragraphs have inconsistent spacing. – Overall there are general formatting inconsistencies which may be improved by using a LATEX. • A few sentences don't flow very well. Consider rephrasing or removing the following – Combine the sentence ... are provided by Friedlingstein et al. 2024. The data provided by Friedlingstein et al. 2024 is a cummulation of other sources... into one sentence. – ... cummulation of other sources which are described as such: could be rephrased to "cummulation of the • The title of the report while somewhat intriguing, should be more precise. Consider changing the title to something more descriptive of the experiment and relevant results. • Some citations included in areas where they are not needed. – Citations in abstract (e.g. ... XIXth century). – Citations in headings (e.g. Mauna Loa and South Pole Observations). • Minor formatting critiques. – Figure 5 and Figure 6 may be aligned side by side to save space. – Equations somewhat difficult to read, some equations are numbered on the right and some on the left. – Equation (9) not numbered. • General capitalization, punctuation, and typesetting needs to be improved in certain areas. – Some paragraphs have inconsistent spacing. – Overall there are general formatting inconsistencies which may be improved by using a LATEX. • A few sentences don't flow very well. Consider rephrasing or removing the following – Combine the sentence ... are provided by Friedlingstein et al. 2024. The data provided by Friedlingstein et al. 2024 is a cummulation of other sources... into one sentence. – ... cummulation of other sources which are described as such: could be rephrased to "cummulation of the following sources." • Potentially include a footnote the definition of what GtCO2 means (unit in Figure 2). Figure 2 axes generally quite unclear. Which axis corresponds to which lines? It is not immediately obvious. • Numbered equation in results section (equations (12), (13), (14), (15), (16), and (17) do not need to be numbered). • Try to incorporate a 'story' into your conclusion. Currently, the conclusion represents more of what should be an abstract while the abstract has good elements to start and end the conclusion section. Consider switching thetwo around. • Consider adding an acknowledgements section and/or adding 'private communications' to the bibliography. These will help give credit to the supervising professor and supervising teaching assistant.