This project was evaluated using the point scale of 0-1-2-3. The project was evaluated based on the visible information in the project photograph; some more information may have been on the additional sheets.

A. Title
Title: The effect of longitude on temperature.
Score: 3 – *The title correctly states the independent variable and the dependent variable and is NOT worded as a QUESTION.*
Comments: This title states both the independent variable (Longitude) and the dependent variable (Temperature). The student incorrectly uses the term "longitude" when the background research they provide describes latitude but they indicate it is longitude. The student is using the correct science concept and just uses the wrong word for it. The dependent variable is just indicated as "temperature." The project title could be improved by using the corrected word, latitude, for their independent variable and by using a more specific dependent variable (Average Daily Air Temperature).

B. Question
Question: How does the places' longitude affect a place's temperature?
Score: 3 – *The question states the independent variable and the dependent variable, and is testable.*
Comments: This question correctly states the independent and dependent variable. In addition, the dependent variable is measurable, though could be more specific as there are many ways to measure temperature. Longitude is used in place of latitude.

C. Hypothesis
Hypothesis: If the longitude of Myrtle Beach and Miami is closer to 0°N", then the temperature will rise because of solar radiation. If a city is closer to the equator, then it will receive more direct sunlight and that will heat up the locations' climate. This is because the land and water will absorb the head and will reradiate it back into the Earth's atmosphere. This will affect the city's temperature which then leads to the city because warmer. This all is affected by solar angle and solar radiation.
Score: 2 – *The hypothesis (1) predicts the effect that changing the independent variable will have on the dependent variable, AND (2) explains the reason for the prediction using scientific concepts ("because…") but is incomplete or weak.*
Comments: The hypothesis does give an acceptable scientific reasoning. However, instead of saying, "If the longitude of Myrtle Beach and Miami is closer to 0°N", the students can just state that they predict that "Miami will have a higher temperature than Myrtle Beach because it is closer to the equator, 0°N".

D. Background Research (found throughout the project especially within the hypothesis and discussion/conclusion sections)
Score: 2 – *Background research is accurate, containing SOME relevant, well-chosen facts, definitions, concrete details, quotations, scientific concepts, or other information and examples that (1) provide information on the IV & DV AND (2) attempts to support the "because" portion of the hypothesis OR (3) attempts to support the "scientific reasoning" of the discussion/conclusion.*
Comments: The students correctly describe what temperature is and how it is measured. This section could be improved by containing more detailed information about latitude and how it connects to sunlight, for example, why do areas at higher latitudes get less sunlight. This is the section where the students should have proofread to determine the correct usage of the terms "latitude" and "longitude".

E. Investigation Design (ID)
Score: 2 – *Four of the 5 components of the ID are stated correctly, OR more than one IV is changing at a time or there are not multiple trials.*
Comments: The "constants" listed in this particular investigation are actually what is changing between the different locations. As the location changes the angle of the incident light changes and this the total amount of solar radiation received. What is constant, and perhaps what the student intended, is the amount of light being put out by the sun during the time period looked at for each location (same data range for all locations).

F. Procedure
Score: 1 – *The Procedure accurately and completely satisfies one of the above. (The procedure is (1) a step-by-step description of how the investigation was done AND (2) uses precise language and scientific vocabulary to describe both the sequence of actions taken and materials used AND (3) is sufficiently detailed to enable the reader to replicate the investigation AND (4) is consistent with the Investigation Design Diagram (IDD) and is an appropriate test of the hypothesis.)*
Comments: The procedure contains general details about all the steps of completing a science investigation, including the investigation itself. However, they are not a step by step description of how to perform the investigation. A more detailed procedure that focuses on the investigation itself, uses scientific vocabulary, and allows the reader to replicate the investigation would bring this project up to a level 3.

G. Data/Results
Score: 2 – *Most parts of the data graphs and tables are present, complete and accurate. Data analysis is attempted but may not be accurate.*
Comments: Because the student used a website that created the graphs they are complete and accurate. While the data represented in the graphs is consistent with data that can answer their original question, it isn't the data they indicated they would use in their investigation design (October to December versus January to March). The students do provide a caption for each graph and a table that summarizes their findings and relate it back to their main question.

Ha. Discussion/Conclusion: Scientific Explanation
Score: 2 – *Three or four parts of the Scientific Explanation are complete and accurate. ((1) makes an overall claim addressing the original investigation question AND (2) supports the claim with evidence and relevant, accurate data from the investigation AND (3) contains relevant scientific concepts AND (4) uses words, phrases, and clauses that clarify and connect the relationship between the claim, evidence and science concepts AND (5) demonstrates an understanding of the topic.)*
Comments: The discussion section would be improved by some final proofreading, as the student accidentally states that high longitude (latitude) leads to higher temperature, this is later corrected in the scientific explanation section. It would be brought up to a score of 3 if the student "supports the claim with evidence and relevant, accurate data from the investigation". Only data on the IV was included in this section, and did not include any of the data from the data analysis (average temperatures).

Hb. Discussion/Conclusion: Reflection
Score: 3 – *Conclusion contains thoughtful, relevant, and reasonable reflections including (1) states whether the hypothesis was or was not supported AND (2) a description of possible sources of error AND (3) suggested solutions to these sources of error AND (4) "Next Steps" determined as a result of this investigation.*
Comments: This section could be improved by mentioning sources of error beyond "mistakes." Could more data have been used? What other locations could you add to the investigation to strengthen the results? Is anything different about the 3 locations chosen besides their latitude?

I. Literature Cited
Score: 2 – *Most parts of the Literature Cited are complete and accurate. Bibliography is present, but references are not cited in the text of the investigation.*

Comments: While the student lists good resources, they are not cited throughout the investigation.

Project Section	Score (0-3)	Weight	Weighted Score
A. Title	3	x 1	= 3
B. Question	3	x 1	= 3
C. Hypothesis	2	x 2	= 4
D. Background Research	2	x 2	= 4
E. Investigation Design (ID)	2	x 2	= 4
F. Procedure	1	x 2	= 2
G. Data/Results	2	x 3	= 6
Ha. Discussion/Conclusion: Scientific Explanation	2	x 2	= 4
Hb. Discussion/Conclusion: Reflections	3	x 1	= 3
I. Literature Cited	2	x 2	= 4
		Total weighted score	= 37 (54 max)
	Final Score (%) =	=Total weighted score/54 x 100	= 69%