

GLOBE INTERNATIONAL SCIENCE FAIR—JUDGING RUBRIC AND BADGES FOR HS SCIENCE PROJECTS

Level Element	Superior - 4	Good – 3	Progressing – 2	Basic – 1	Score
1. Abstract	<p>A <b>well-written, complete</b> abstract that summarizes the report is present that includes all of the components required at level 3.</p>	<p>A <b>complete</b> abstract that summarizes the report is present. The abstract includes:</p> <ul style="list-style-type: none"> <li>• The problem,</li> <li>• Questions asked,</li> <li>• Objectives set,</li> <li>• Conclusions made, and</li> <li>• Recommendations for a way forward.</li> </ul> <p>Abstract follows designated format and does not exceed 200 words.</p>	<p>A <b>partially complete</b> abstract is present.</p>	<p>An abstract is present.</p>	
2. Research question(s) (required for acceptance)	<p><b>Clear, creative</b>, and student-led research question(s) include all of the components at level 3, and:</p> <ul style="list-style-type: none"> <li>• Include a well-written description of background information,</li> <li>• Provide significant insight into both the topic of investigation and the research process, and</li> <li>• Answering them requires an advanced understanding of the subject matter.</li> </ul>	<p><b>Original</b>, student-led research question(s) include all of the components at level 2, and:</p> <ul style="list-style-type: none"> <li>• Include why they are important,</li> <li>• Require a thoughtful research plan, and</li> <li>• Are of scientific interest.</li> </ul>	<p>Student-led research question(s) are asked, <b>explained</b>, and:</p> <ul style="list-style-type: none"> <li>• Concern some aspect of Earth’s environment,</li> <li>• Include a brief description of background information, and</li> <li>• Are answerable through scientific research appropriate to the scope of the report.</li> </ul>	<p>Student-led research question(s) are <b>asked</b>; questions may be simple enough to answer without research or are beyond the scope of a GLOBE project report.</p>	

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3. Hypothesis	A <b>well-written</b> hypothesis is present, that includes all of the components at level 3, and: Clearly defines how it is both testable and measurable.	A <b>testable and measurable</b> hypothesis is present that: <ul style="list-style-type: none"> <li>Proposes a possible explanation to a phenomenon or problem, and</li> <li>Defines how it is testable.</li> </ul>	A <b>testable and measurable</b> hypothesis is present.	A hypothesis is present.	
4. Student-led investigation plan	A <b>clear and complete</b> investigation plan is present that includes the components at level 3, and: <ul style="list-style-type: none"> <li>Clearly outlines the steps to complete project, and</li> <li>Describes the collaboration process.</li> </ul>	A <b>complete</b> investigation plan is present that: <ul style="list-style-type: none"> <li>Describes a student-led research process, and</li> <li>Lists the steps to complete project.</li> </ul>	A <b>partially complete</b> investigation plan is present that describes a student-led research process.	An investigation plan is present.	
5. Research methods: Extent to which GLOBE protocols are incorporated (required for acceptance)	<b>Full advantage</b> is taken of a <b>combination of GLOBE protocols</b> , and: <ul style="list-style-type: none"> <li>There is a direct link provided between the datasets and research question(s), and</li> <li>The scope of research is fully detailed, including how the data were analyzed (e.g. time period, geographic area, or specific sites involved).</li> </ul>	A <b>combination of GLOBE protocols</b> is used, and: The data presented are sufficient to answer at least one research question.	<b>GLOBE protocols</b> are used, and: The data presented partially address at least one research question.	The investigation includes use of at least one <b>GLOBE protocol</b> .	

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6. GLOBE data and data entry (required for acceptance)	GLOBE data use includes all of the components at level 3, and: All sources of data not collected by submitting group are cited.	GLOBE data use includes all of the components at level 2, and: GLOBE data are entered into the GLOBE database.	GLOBE data were collected, and: Data from other GLOBE school(s) are included in the project ( <i>if appropriate for the research question</i> ).	GLOBE data were collected for the project.	
7. Data summary: Use of tables and/or graphics for data display (required for acceptance) <i>Other images are not scored for this element.</i>	Tables and graphics are present that include the components at level 3, and <ul style="list-style-type: none"> <li>• Are of high quality,</li> <li>• Are well presented, and</li> <li>• Enable the reader to easily grasp the key points of the paper.</li> </ul>	Tables and/or graphics are present that include the components at level 2, and: <ul style="list-style-type: none"> <li>• Display enough of the data to support the conclusion, and</li> <li>• Are orderly, well labeled, and easy to interpret.</li> </ul>	Tables and/or graphics are present that include the components at level 1, and: <ul style="list-style-type: none"> <li>• Provide comparisons between data, and</li> <li>• Display data that supports the conclusion.</li> </ul>	Tables and/or graphical representations of data are present, including: <ul style="list-style-type: none"> <li>• Maps,</li> <li>• Time series plots, or</li> <li>• Other visualizations of the data.</li> </ul>	
8. Data analysis: Depth and quality	An <b>insightful and meticulous</b> analysis of the data is performed, that includes the components at level 3, and: <ul style="list-style-type: none"> <li>• Is scientifically valid,</li> <li>• Completely addresses the question(s) posed to the extent possible for the grade level, and</li> <li>• Clearly discusses any uncertainties or limitations present in the dataset.</li> </ul>	A <b>complete</b> analysis of the data is performed, that: <ul style="list-style-type: none"> <li>• Is clearly explained,</li> <li>• Is relevant to the research question(s),</li> <li>• Presents sufficient mathematics and equations to clearly define the analysis, and</li> <li>• Briefly mentions any uncertainties or limitations present in the dataset.</li> </ul>	A <b>partial</b> analysis of the data is performed that is appropriate to the research topic.	A <b>simple</b> data analysis is performed.	

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9. Conclusion: Strength of conclusion (required for acceptance)	A <b>thoughtful</b> conclusion is present that includes the components at level 3 and: <ul style="list-style-type: none"> <li>• Gives a thorough and insightful explanation as to how the conclusion was reached, and</li> <li>• Recommends future research.</li> </ul>	A conclusion is present, <b>supported</b> by the data, and: <ul style="list-style-type: none"> <li>• Gives a partial explanation of how the conclusion was reached, and</li> <li>• Describes how the data support the conclusion.</li> </ul>	A conclusion is present and <b>supported</b> by the data.	A conclusion is present and <b>relevant</b> to the report.	
10. Discussion of measurement limitations including possible sources of error	A <b>clear, complete and insightful</b> discussion of the limitations of the methods used is present and a description is provided explaining the <b>significance</b> of these analyses.	A <b>clear and complete</b> discussion of the limitations of the methods used is presented.	A <b>partial</b> discussion of the limitations of the methods used is presented.	Some discussion of the limitations of the methods used is presented.	
11. Bibliography /Citations	Materials used are cited <b>completely and correctly</b> , including any graphics, tables, or figures not created by students.	<b>Most</b> materials used are cited correctly, including graphics, tables, or figures not created by students.	<b>Some</b> materials used are cited correctly.	A <b>few</b> of the materials used include partial citations.	
12. Response to judges' comments	<b>All</b> comments are addressed by making <b>clear</b> connections between the report, revisions and comments. Responses clearly indicate <b>additional insight</b> gained by addressing the comments.	<b>Most</b> of the comments are addressed by making <b>clear</b> connections between the report, revisions and the comments.	<b>Most</b> of the comments are addressed by responses make connections to the report, with some indication of ways to improve.	A <b>few</b> brief responses are included that partially describe how the report addresses the comments.	
Total score					

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GLOBE INTERNATIONAL SCIENCE FAIR BADGE (ALL PROJECTS—OVERALL REPORT)

★★★★	★★★	★★	★
<p>Report contains <b>all 12</b> of the elements listed above, is well organized, neat and well presented.  <b>All</b> of the elements are scored at the 3-point level or above. Most are scored at the 4-point level.                      The writing is <b>clear and concise</b></p>	<p>Report contains <b>all 12</b> of the elements listed above, is organized and well presented.  <b>Most</b> of the elements are scored at the 3-point level or above.                      Most of the writing is <b>clear</b>.</p>	<p>Report contains <b>most</b> of the elements listed, and is organized and well - presented.</p>	<p>Report contains the <b>five</b> elements required for acceptance, clearly labeled. (2, 5, 6, 7 &amp; 9)</p>

ADDITIONAL BADGES (UP TO 5—OPTIONAL)

Level Badge	★★★★	★★★	★★	★
B1. Collaboration	All team members are listed, along with <b>clearly</b> defined roles, how these roles support one another, and descriptions of each student’s contribution. The descriptions <b>clearly</b> indicate the advantages of the collaboration.	All team members are listed, along with <b>clearly</b> defined roles, how these roles support one another, and descriptions of each student’s contribution.	All team members are listed, along with a <b>clear</b> description of each student’s contribution and <b>some</b> indication of how students supported one another.	All team members are listed, along with some examples of contributions from each.
B2. Community impact	The report clearly describes how a local issue <b>led</b> to the research questions and <b>makes connections</b> between local and global impacts.	The report describes how a local or global issue <b>led</b> to the research questions, and describes <b>possible</b> impacts of the results for addressing the issue.	The report describes how a local or global issue <b>motivated</b> the research.	The report includes a description of a local or global issue and how it is <b>related</b> to the research.

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B3. Connection to local or network scientist	The report clearly describes collaboration with a scientist that <b>enhanced</b> the research methods, <b>contributed</b> to improved precision, and <b>supported</b> more sophisticated analyses and interpretations of results.	The report describes collaboration with a scientist that <b>enhanced</b> the research methods and <b>extended</b> students’ understanding of the results.	The report describes how input from a scientist <b>extended</b> students’ understanding of the project.	The report includes a description of input from a scientist.
B4. Interscholastic connection	The report describes a <b>carefully planned</b> interscholastic or international collaboration that describes <b>rationales</b> for data collection in different regions and the <b>advantages</b> of comparing results.	The report describes an interscholastic or international collaboration, including <b>planning</b> for data collection and comparing results.	The report <b>includes</b> GLOBE data from at least two different schools, regions or countries, and describes efforts to <b>coordinate</b> data collection. Data from the student expedition to Mt. Kilimanjaro may be included as part of this badge.	The report <b>includes</b> GLOBE data from at least two different schools.
B5. Engineering solution	The report includes all of the components for level 3, and: <ul style="list-style-type: none"> <li>• Describes the relative priority of the criteria for solving the problem, and</li> <li>• Describes tradeoffs considered in designing the solution.</li> </ul>	The report includes all of the components for level 2, and: <ul style="list-style-type: none"> <li>• Applies scientific ideas to the design cycle,</li> <li>• Describes how the design meets criteria defined in the context of the problem, and</li> <li>• Describes how constraints limit the design.</li> </ul>	The report includes all of the components for level 1, and: Describes the potential impact of the solution on the environment.	The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence.