



THE GLOBE PROGRAM

Putting It All Together - the Science Fair Poster

Dr. Elizabeth Burakowski

National Center for Atmospheric Research
Boulder, CO

Globe Professional Development Webinar
February 11, 2016



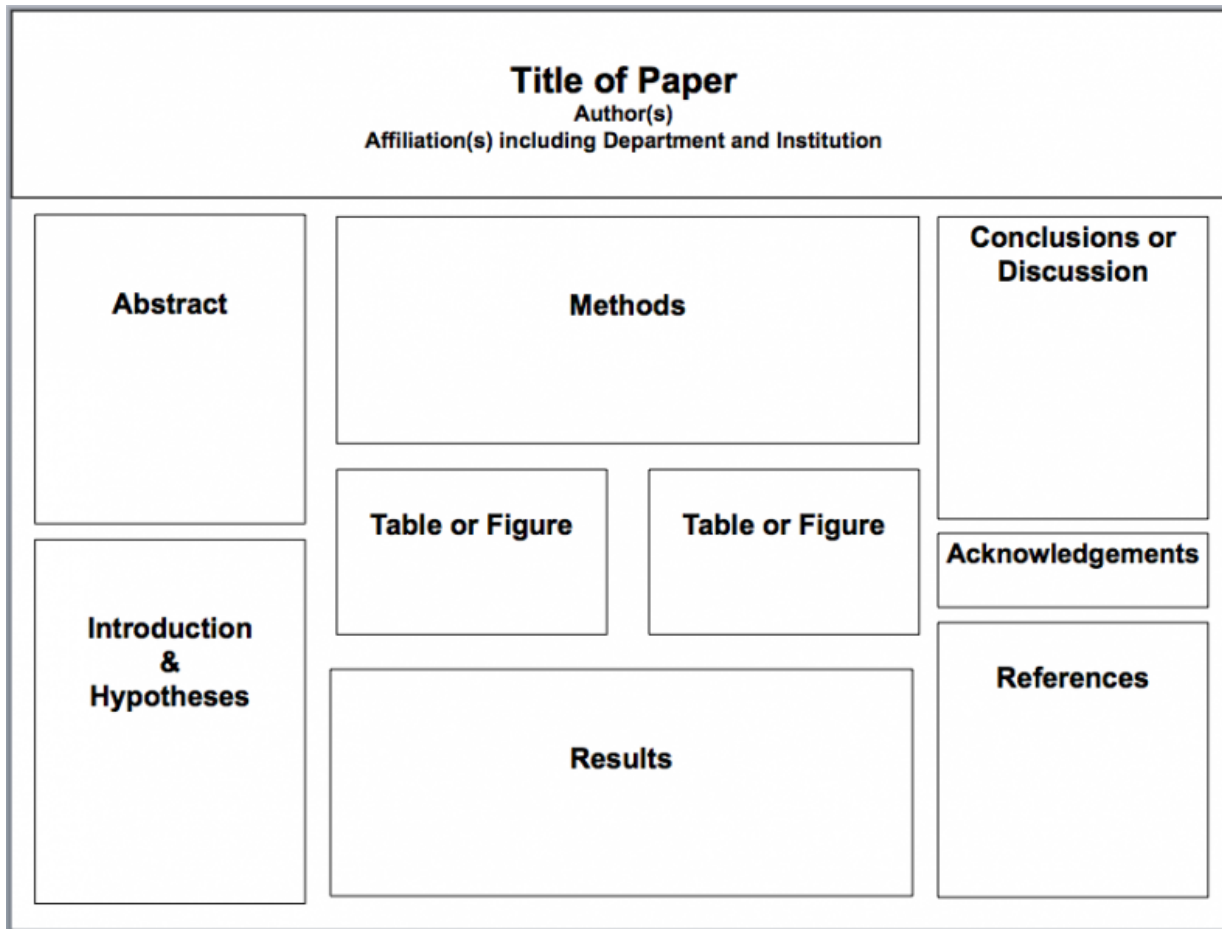
THE GLOBE PROGRAM

- Components of a Science Poster
- Fonts
- Colors
- Graphics
- The Presentation
- PowerPoint Basics
- Other tips and tricks



THE GLOBE PROGRAM

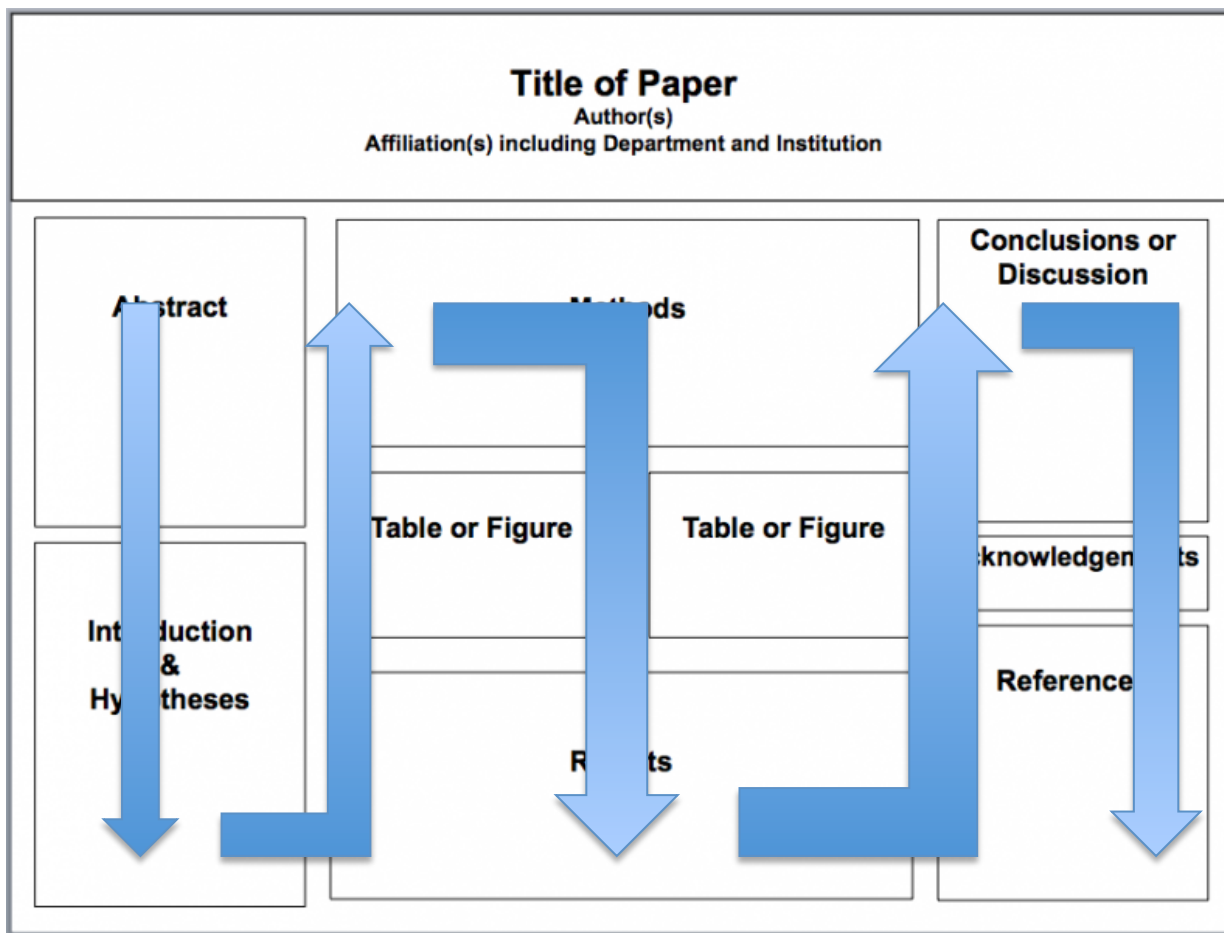
Anatomy of a Poster





THE GLOBE PROGRAM

Anatomy of a Poster





THE GLOBE PROGRAM

Components of a Poster

- Title
- Abstract
- Research Question(s)
- Hypothesis
- Data and Methods
- Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Components of a Poster

- Title
- Abstract
- Research Question(s)
- Hypothesis
- Data and Methods
- Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Title

Bad Example:

Trends and variability in wintertime snowfall, snow cover, minimum, maximum, and mean temperature in the Northeastern United States 1965-2005:
Implications for future climate change [24 words]



THE GLOBE PROGRAM

Title

- Less than 15 words
- Catchy, not jargony. Think HEADLINE!
- Captures your main finding

Better Example:

**Winters Warmer & Less Snowy in the Northeastern
United States: 1965-2005**



THE GLOBE PROGRAM

Components of a Poster

- ✓ Title
- Abstract
- Research Question(s)
- Hypothesis
- Data and Methods
- Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

ABSTRACT

- Less than 200 words
- Describes the problem
- Questions asked
- Objectives
- Conclusions
- Recommendations, future work



THE GLOBE PROGRAM

ABSTRACT - Example

- Describes the problem:

In the northeastern US (NE-US), climate change threatens the maple syrup industry, hydrology, travel safety, and the multi-billion dollar winter tourism and recreation industry. [24 words]



THE GLOBE PROGRAM

ABSTRACT - Example

- Question(s) asked:

We ask, how has winter climate changed in the past 40 years? [12 words]



THE GLOBE PROGRAM

ABSTRACT - Example

- Objectives

In this study, winter (December through March) trends in snowfall, snow covered days, and temperature are investigated using quality-controlled US Historical Climatology Network and Cooperative Network observational data over the period 1965-2005. [36 words]



THE GLOBE PROGRAM

ABSTRACT - Example

- Conclusions

Our results indicate:

- Winter maximum temperatures ($+0.43^{\circ}\text{C}/\text{decade}$) warmed faster than minimum ($+0.37^{\circ}\text{C}/\text{decade}$) temperatures.
- Winter snowfall decreased by -6.4 cm/decade, with the greatest in December (-5.8 cm/decade).
- A reduction in winter snow-covered days (-3.9 days/decade) is likely tied to increases in winter maximum temperature.



THE GLOBE PROGRAM

ABSTRACT

- Recommendations

We recommend acting on climate change now to prevent additional warming of 2-6°C by 2100⁶. [15 words]



THE GLOBE PROGRAM

Components of a Poster

- ✓ Abstract
- Research Question(s)
- Hypothesis
- Data and Methods
- Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Research Questions

- Background of problem
- Relevant to Earth's environment
- Of scientific interest
- Original
- Must be *answerable*



THE GLOBE PROGRAM

Research Questions - Example

1. Can we apply quality assurance and quality control techniques to improve trend analysis of long-term climate variables in the NE-US?
2. Using high quality climate data, how have snowfall, snow cover, and temperature changes over the past 40 years?



THE GLOBE PROGRAM

Components of a Poster

- ✓ Abstract
- ✓ Research Question(s)
- Hypothesis
- Data and Methods
- Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Hypothesis

- Testable
- Measurable
- Proposes a possible explanation

Example:

We expect that high-quality climate records will demonstrate consistent warming trends in the NE-US.



THE GLOBE PROGRAM

Components of a Poster

- ✓ Abstract
- ✓ Research Question(s)
- ✓ Hypothesis
- Data and Methods
- Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Data and Methods

- Data sources (e.g., website, dates collected)
- Variables (e.g., temperature, snowfall)
- GLOBE protocols and steps taken to complete the project, in sequence
- Collaboration (if applicable)



THE GLOBE PROGRAM

Components of a Poster

- ✓ Abstract
- ✓ Research Question(s)
- ✓ Hypothesis
- ✓ Data and Methods
- Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Results

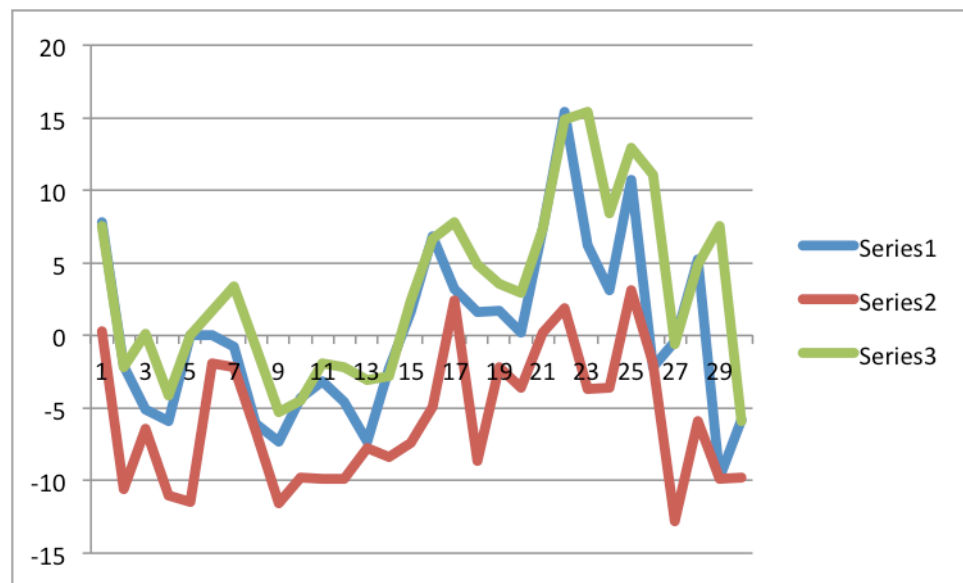
- Graphs guide audience to conclusions
- Clear axis labels
- Easy to interpret
- Be careful with tables, would a plot be better?



THE GLOBE PROGRAM

Graphs – Bad Example

- No axis labels
- No legend labels
- X-axis unreadable
- Small font
- No figure caption





THE GLOBE PROGRAM

Graphs – Better Example

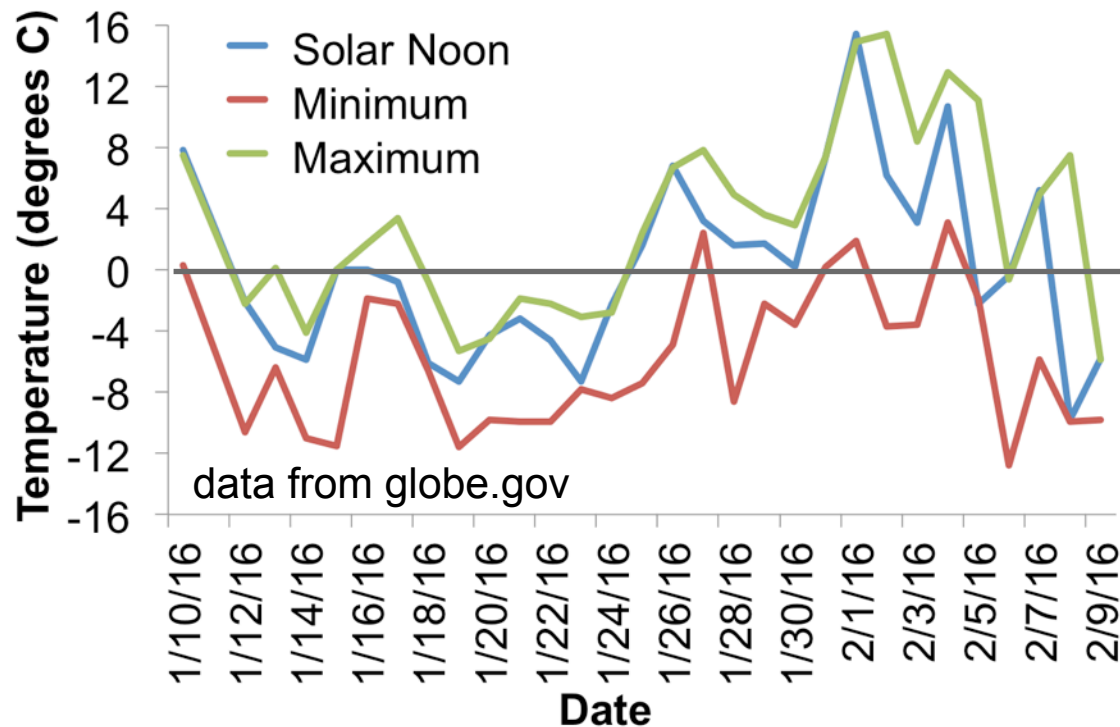


Figure 1. Temperature measurements at Littleton, MA, USA, January 10, 2016 through February 9, 2016.



THE GLOBE PROGRAM

Tables – Bad Example

	Rain	Snow	Temperature
1	1.2	4	-28.345
2	2	2.24	-4
3	3.36	3.1	1.2

- Font is too small
- What is the first column listing?
- What are the units of rain, snow, and temp?
- Values aren't using the same significant digits
- Table caption?



THE GLOBE PROGRAM

Tables– Better Example

Table 1. Total rain, snow, and average daily temperature in January 2016.

Classroom	Rain (mm)	Snow (cm)	Temperature (°C)
Barrow, AK	1.2	4.00	-28.3
Littleton, MA	2.0	2.24	-4.0
Portland, OR	3.4	3.10	1.2



THE GLOBE PROGRAM

Components of a Poster

- ✓ Abstract
- ✓ Research Question(s)
- ✓ Hypothesis
- ✓ Data and Methods
- ✓ Results
- Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Conclusions and Future Work

- Supported by the data
- Thorough explanation of how it was reached
- Describes the next steps



THE GLOBE PROGRAM

Components of a Poster

- ✓ Abstract
- ✓ Research Question(s)
- ✓ Hypothesis
- ✓ Data and Methods
- ✓ Results
- ✓ Conclusions and Future Work
- Bibliography



THE GLOBE PROGRAM

Bibliography and Sources

- List all sources used in research. Websites should include date accessed.
- If images are used from the internet, show the source. [blah.com](#) is fine, don't need to list entire link (http://www.blah.com/images/thermometers/celsiusfahrenheit/mercury.html)



THE GLOBE PROGRAM

- ✓ Components of a Science Poster
 - Fonts
 - Colors
 - Graphics
 - The Presentation
 - PowerPoint Basics
 - Other tips and tricks



THE GLOBE PROGRAM

Use Sans-Serif Fonts

Uneven line thickness **Serif** Serifs No Serifs

The word "Serif" is written in a black serif font. Red circles are drawn around the top and bottom of the 'S', the top and bottom of the 'e', and the top and bottom of the 'f'. Red lines connect these circles to form a triangle, illustrating the uneven line thickness and the presence of serifs. The word "Serifs" is written above the 'f' and "No Serifs" is written to the right of the word.

Even line thickness **Sans-Serif**

The words "Sans-Serif" are written in a black sans-serif font. Red circles are drawn around the top and bottom of the 'S', the top and bottom of the 'e', and the top and bottom of the 'f'. Red lines connect these circles to form a triangle, illustrating the even line thickness and the absence of serifs. The word "Even line thickness" is written to the left of the word.



THE GLOBE PROGRAM

Examples of Sans-Serif Fonts

Lantinghei SC

Arial

Franklin Gothic

Gill Sans

Avenir

Helvetica



THE GLOBE PROGRAM

Use Consistent, Large Fonts

Title = 80 or larger

Headings = 40-60

Body text = 36 or larger



THE GLOBE PROGRAM

Avoid Using

Drop shadow

Reflection

REFLECTION

Outline

Glow



THE GLOBE PROGRAM

- ✓ Components of a Science Poster
- ✓ Fonts
 - Colors
 - Graphics
 - The Presentation
 - PowerPoint Basics
 - Other tips and tricks



THE GLOBE PROGRAM

Colors

Ahhhhh!!!!!! My
eyes!!!!!!

So Hard to read

Poor Contrast



THE GLOBE PROGRAM

Colors

Ahhhhh!!!!!! My
eyes!!!!!!
So Hard to read

Much Better
Easier to read

Poor Contrast

Good Contrast



THE GLOBE PROGRAM

Having a hard time picking colors?

Use Themes in PowerPoint

or

paletton.com



THE GLOBE PROGRAM

- ✓ Components of a Science Poster
- ✓ Fonts
- ✓ Colors
- Graphics
- The Presentation
- PowerPoint Basics
- Other tips and tricks



THE GLOBE PROGRAM

Graphics

Higher resolution & compress



VS.





THE GLOBE PROGRAM

- ✓ Components of a Science Poster
- ✓ Fonts
- ✓ Colors
- ✓ Graphics
- The Presentation
- PowerPoint Basics
- Other tips and tricks



THE GLOBE PROGRAM

The Presentation

Face-to-Face

vs.

Virtual



THE GLOBE PROGRAM

- ✓ Components of a Science Poster
- ✓ Fonts
- ✓ Colors
- ✓ Graphics
- ✓ The Presentation
 - PowerPoint Basics
 - Other tips and tricks



THE GLOBE PROGRAM

PowerPoint Basics

- Start with a template or open a new file
- Adjust the page size using
File -> Page Setup
- If starting from a new empty file, create boxes for your poster components
- Use your align and grouping tools
- Create space between text



THE GLOBE PROGRAM

Free Poster Templates

[GLOBE poster template](#)

[MakeSigns.com](#)

[PosterPresentations.com](#)



THE GLOBE PROGRAM

- ✓ Components of a Science Poster
- ✓ Fonts
- ✓ Colors
- ✓ Graphics
- ✓ The Presentation
- ✓ PowerPoint Basics
- Other tips and tricks



THE GLOBE PROGRAM

Other tips and tricks



THE GLOBE PROGRAM

Contact Dr. Elizabeth Burakowski

elizabethburakowski.com

twitter  @LizBurakowski

burakows@ucar.edu