What are we doing here?

Spark Pre-college Internship Writing Workshop 1
June 27, 2012
Notes

• RAL students: You need to attend a RAL orientation this afternoon at 2 pm, FL2-2097

• Rocky Mountain National Park: The SOARS protégés are doing a trip to Rocky Mountain National Park on Friday, July 20th. Would you like to go?

• On July 18th, our writing workshop will be at Metro State University in Denver. We’ll have transport available from here but can have parking passes if you’d like to meet us there - would you like one?
Internship so far....

Good?
Bad?
Confusing?
Out of the stratosphere awesome?
What is the stratosphere anyway?

Picture by Randy Russell, http://www.windows2universe.org
Studying the atmosphere - some terminology

- Meteorology
- Dynamics
- Atmospheric Chemistry
- Radiation
- In-situ measurements
- Remote sensing
- Modeling
- Others?
Can you speak in acronym?
Is there anything else you want to know before we talk about writing?
Our aim: To make an exciting poster showcasing the amazing work you’ve done during your internship.

Our goal: To do that while learning some new stuff, without stress, and while having fun!

How do you eat an elephant?
One bite at a time!

Keep good notes
Work on writing along the way
Take pictures or draw diagrams
Don’t try to eat the whole elephant on the last day!
So what is a poster?
**An Analysis of the Sensitivity of Pavement Temperature to the Makeup of the Road Surface**

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3 Research Applications Laboratory, National Center for Atmospheric Research

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**MOTIVATION**

- **Safety** - 24% of all United States Highway crashes are weather-related causing over 673,000 injuries annually
- **Economic** - $9.5 billion annually in congestion costs, shipping companies (i.e., FedEx, UPS) $3.5 billion annual losses
- **Environmental** - Decrease in air quality and increased pollution of local watersheds from exhaust and chemical runoff

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**RESEARCH**

- **Current pavement temperature forecasts are for a point**
- **Fails to describe road conditions in between the points**
- **Desire to grid the model for better resolution**
- **Sensitivity of relationship between pavement temp and material and thickness not well understood, imperative for gridding model**

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**METHODS**

- **Case Studies**
  - Uniform radiation
  - Variable weather
- **Comparisons**
  - Concrete versus Asphalt
  - Elevated versus Non-Elevated
  - Asphalt Control
  - Concrete Runway Control
- **Difference Statistics**
  - Mean Absolute Difference (MAD)

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**RESULTS**

- **Concrete roads ~3.2°C > Asphalt roads**
- **Elevated roadways ~3.3°C < Non-elevated**
- **Like sites temperature did not vary beyond sensor noise**
- **More robust comparison with larger sample size warranted**

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**CONCLUSIONS**

- Perform a similar analysis with RWIS data from the Minnesota DOT
- Use the results of these studies to grid the pavement temperature model

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**FUTURE WORK**

- ~100 RWIS stations in Colorado
- Asbuilt information for 29 stations
- 11 usable for this assessment based on missing data and poor sensor maintenance

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Things to remember

• Layout is completely up to you, but your reader should be able to follow it easily (use headings or arrows) and read it easily
• Leave plenty of white space so you don’t overload your reader
• At least 36+ point font for text, 56 point for headings and 72 point for title
• Keep the number of words to a minimum!
• Figures, diagrams, pictures and plots are great - interesting and good for you to talk about
How are our writing workshops going to work?

• We’ll look at a different section of the poster each week

• You’ll start to think and write about that section in the workshop and finish it during the coming week

• Your first draft will have too many words. Don’t throw it away - it’s a valuable record and would be great if you were writing a paper (your mentor might even want it). Just be prepared to cut it later. And edit it as things develop throughout the summer. And then cut it some more!
Your writing

• I encourage you to share your writing with your mentors
• You’re welcome to email it to me for feedback: rbatch@ucar.edu or come and see me during my office hours: Wednesday, 1 - 4 pm FL2-2007
A quick reference check

Do you know how to:

Use Word or other word processing software? (For writing)
Use power point? (For making the poster)
Use email programs? (For communication)

Are there things you need to learn that aren’t on this list and that your mentor assumes you know but you don’t?
Where do I start?
The Research Question

• Your research question defines your research... what are you trying to do or find out?

• It is usually the basis for your poster title

• It may change as you go along and discover new and exciting things, but you should always have a question in mind

• Do you know your Research Question?
The elevator speech

• A 1 minute summary of your research, suitable for explaining to your grandma, the teacher or that really important guy who might just give you a job who you meet in the elevator...

• Assume you have a smart listener but one who doesn’t know anything much about your topic
The Recipe

• Start with the big picture
• Explain why we care
• Put your research into the context of the big picture
• Leave out the specifics and no jargon!
An example

One of the things I study is the amount (in parts per billion) of hydrogen cyanide in the Arctic.

If I want to tell my grandma about my research, what should I say?
• **Start with the big picture**
  - Pollution from our towns and cities is transported all around the Earth. Some of it even ends up in the Arctic, hundreds of miles from the nearest human settlement.

• **Why are we interested in that?**
  - This pollution makes the Arctic atmosphere look hazy, deposits on the snow and affects the health of animals and people there.

• **How does my research fit into the big picture?**
  - I measure hydrogen cyanide in the Arctic atmosphere. Hydrogen cyanide is produced when we burn forest and farmland. By measuring it in the Arctic, we can study how well we understand the processes that move pollutants around the world.

• **Leave out the specifics**
  - My grandma doesn’t need to know that on March 25, 2008, there was $4.07 \times 10^{15}$ molecules of HCN above Greenland!
Homework

• Talk with your mentor about your research question. What are you trying to do or find out in your research project? Is your question too broad? (remember you only have 6 weeks)

• Come up with a <1-minute “elevator speech” explaining what you’re doing and why we care. Keep it suitable for the old lady sitting by you in the bus. We’ll give these to the group next week.
Don’t forget....

One bite at a time!

Keep good notes
Work on writing along the way
Take pictures or draw diagrams
Don’t try to eat the whole elephant on the last day!

Our next writing workshop is on Monday July 9th
The Elevator Speech Recipe

• Start with the big picture
• Explain why we care
• Put your research into the context of the big picture
• Leave out the specifics and no jargon!