Do weather changes matter?

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August 30, 2017

Contents

1 Introduction

1.1 Climate and the IPCC

According the the Inter-Governmental Panel on Climate Change or IPCC, the last three decades at the Earth's surface have seen the most amount of successive warming than any decades since 1850. All in all, the averaged data for ocean surface and land temperatures combined points to a rise of 0.85 [0.65 to 1.06] degrees Celsisus from 1880 to 2012 [1] – but this global average is not evenly distributed accross the globe.

This change and causes of this change are perhaps some of the most contested environmental issues in the 50 year history of the environmental movement. So much so, that as EA students, we need to understand what the scientific conclusions are and how these conclusions were made, while understanding the potential implications.

1.1.1 What is the IPCC?

The Intergovernmental Panel on Climate Change (IPCC) is a scientific and intergovernmental body under the auspices of the United Nations, set up at the request of member governments and dedicated to the task of providing the world with an objective, scientific view of climate change and its political and economic impacts.

The IPCC was created in 1988. Initially it was set up by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) to prepare -based on available scientific information- assessments on all aspects of climate change and its impacts, with the intent of formulating realistic response strategies.

[1] IPCC, 2014: Climate Change 2014: Synthesis Report . Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Table 1: Major IPCC Reports

Assessment Report	Published
First Assessment Report (FAR)	1990
Supplementary Report	1992
Second Asessment Report (SAR)	1995
Third Assessment Report (TAR)	2001
Fourth Assessment Report (AR4)	2007
Fifth Assessment Report (AR5)	2014
Sixth Assessment Report (AR6)	2022*

1.1.2 IPCC's Role

The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis and risk of human-induced climate change, its potential impacts and options for adaptation and mitigation.

As an intergovernmental body, membership of the IPCC is open to all member countries of the United Nations (UN) and WMO. Currently 195 countries are Members of the IPCC.

The IPCC has published five comprehensive assessment reports reviewing the latest climate science (Table 1), as well as a number of special reports on particular topics. These reports are prepared by teams of relevant researchers selected by the Bureau from government nominations. Drafts of these reports are made available for comment in open review processes to which anyone may contribute.

Each assessment report is in three volumes, corresponding to Working Groups I, II, and III. Unqualified, "the IPCC report" is often used to mean the Working Group I report, which covers the basic science of climate change.

1.2 Global and Regional Average Temperature Changes

In speaking about the topic of climate change it is easy to cite a global temperature average. However, this is part of what makes climate change such a contentious issue. An average temperture increase for the globe is actually somewhat abstract and, perhaps, beyond what humans can reliably perceive. In this sense, perhaps we should evaluate how temperature (and/or rainfall) might be changing at regional scales.
Are there strategies to help us appreciate the impact of climate change on weather patterns at the regional level?

Thus, for this project, we'll try to understand **how temperature changes "map" onto a community that we care about**. To do this we will obtain and analyze tempterature data to determine if weather changes have compelling impacts on local communities.

In other words, we are seeking to answer the question: do weather changes matter?

1.3 Goals of this Document

This document is meant to be a resource and guide to you as you undertake the task of answering the question: Do weather Changes Matter? This document contains:

1. Descriptions of the overarching goals and approaches for each assignement in the project;
2. Guidelines and resources for completing each assignment; and
3. Grading rubrics and descriptions of how we will evaluate the project process and products.

2 Project Description

2.1 Driving Question(s)

The driving questions for this project can be stated as follows:

- Is my region's climate changing?
- How is climate change affecting my community?

However, as we move along in the course and in this project you may find it worthwhile to try phrasing the questions in a number of ways – this might help you find ways to make the question more provactive and interesting, For example, instead of asking "how is the climate in my region changing?" you could ask "how does the changing climate in my region affect cloud coverage in my area and what ecological impact does that have on nearby forests/wildlife?"

You can modify these questions to develop the project that you might find compelling.

In addition, we may develop "sub-questions" whose answers might inform the main question or questions. For example,

- Are there biases in weather data? Can these biases be corrected? If so, how?
- How can we evaluate trends? What are the most appropriate statistical tools to test for trends?
- What is the best way to display visual data? Are there best practices to guide a public product to make it more compelling or interactive?

2.2 Public Products

Science is a social project. From the questions we ask, to the results and their presentation, science is usually embedded in a culture of norms (such as research journals, reports, documentaries, etc.). To frame our science within these norms of communication, each of us will publish a series of blogs utilizing our findings to answer the question, "do weather changes matter?"

In addition, each student will write and submit an OpEd piece to a regional newspaper that frames regional climate issues into a newsworthy item.

Finally, we will hold a Q &A session with public school teachers to help them implement NGSS standards on weather and climate.

3 Directed Practice

3.1 Learning Goals

For this project, you will use weather data to answer the question "do weather changes matter." How you answer the question is largely up to you, however, to be successful students will demonstrate compentency in some specific skills and knowledge.

Skills

- Ability to download and process weather data;
- evaluate temporal trends in weather data;
- research the environmental impacts on human or non-human communities; and
- communicate conclusions to the public with special attention to guide how data misinterpretations should be considered.

Knowledge

- Understand how data climate data is currated;
- Analyze climate impacts from around the world.

Throughout this project, your team and instructor will develop the strategies and skills to address this question and help you make some conclusions and present the results to the public.

3.2 Resources

Students will have the following tools available:

- Servers where stored weather data can be downloaded;
- R Studio Server with some scripts & libraries to help develop analyses;
- Github to store project codes and as a platform to make the product public;
- Lectures, reports, and presentations on climate change science, the social and ecological implications of climate change, and the polcies and politics of climate change;
- Random numbers for student submissions; and
- Shiny app templates that might be used as a container for interactive content.[2]

[2]Currently under-development – We will likely skip this application since I not confident in using this particular tool.

3.2.1 Software Guides

Much of the environmental data collected has become electronic. Using software requires certain skills, which requires students to appreciate that different types of software exist.

In particular, I am constantly thinking critically about what software I advise students to use and learn. For my "developmental thinking" on this issue, I suggest you read the following draft white paper: Open Source and Liberation.

Since climate data rely on large time series datasets, we need to rely on software to access to and process these data, we need use tools to access, pre-process, and analyze these data. Below are resources that we have developed to assist you in this class (Table 2).

Table 2: Software guides developed for EA30/31. These SOPs have been developed by students and faculty over the years and are loaded on the github.com/SOPs repository.

SOP #	Description
06	An Introduction to R, Rstudio, Github
06b	Introduction to Markdown–Html
06c	Introduction to Markdown–Word
06d	Visual Display of Data using R

3.2.2 Data Processing and Analysis Tools

Much of the environmental data collected has become electronic. Thus, to access to and process these data, we need use tools to access, pre-process, and analyze these data using computer software.

Below are resources that we have developed to assist you in this class (Table 3).

Table 3: Resources to obtain, pre-process, and analyze NOAA climate data.

SOP #	Description
84	Obtaining Climate Records
85	Using NOAA climate Records
90	Analyzing Climate Trends

These SOPs can be found in the Rproject/Github Respistory –Climate Change Narratives and in the 'Analysis_SOPs' directory.

The analysis of trend data can range from simple to complex. For a brief introduction, read an introduction on the Trend Analysis on the Climate Data Guide website.

3.2.3 Readings and Other Climate Change Resources

I have put these readings in the syllabus schedule, since these readings are more background material.

3.2.4 Contested Science and Critical Thinking

- "The Rhetorical Tools of Logical Fallacies"
- "Critical Thinking in EA"

3.2.5 Communication Resources

We will learn and practice our skills to communicate using written and oral media.

Scientific writing is a skill that takes years to develop. Although there are many types of readings, scientific writing does have some unique characteristics that will seem a bit awkward. However, you might be surprised about how much you already know about technical writing. We have selected key resources that we think will help you further develop and improve your writing skills.

Below is my list of key areas to be cognizant to improve our capacity to communicate science:

Clarity, Forthrightness, and Economical

Accuracy and Precision Accuracy and precision occurs at several scales in writing, word choice, sentence level, paragraph, and essay level.

Critical Thinking

Cited Evidence

However, specific genres require specific adjustments in our writing style. Please use the following to help in your writing process:

- "Scientific Writing and Climate Narratives"
- "Op-Ed Guidelines"
- "Scientific Blog Guidelines"
- "Visual Presentation of Data using R"
- "Citing References in EA30"
- "Peer review writing – Dos and Don'ts"

Oral presentations will also be part of this project and course. Students will use Rpres for their presentations and here is a short tutorial for this tool:

- "Using Rpres to Develop Oral Presentations"
- "Guide for Oral Presentations"

Table 4: Project Deliverables, milestones and point distribution.

Deliverable	Launch	Due Date	%
Op-Ed #1	Aug 30	Sept 4	5
Climate Science Review	Sept 4	Sept 10	5
Climate Science Review Presentation	Sept 4	Sept 11	5
Climate Science – Peer Review	Sept 11	Sept 15	5
Draft Regional Analysis	Sept 11	Sept 11	5
Regional Climate Literature Review	Sept 11	Sept 22	10
Regional Climate Literature Review – Peer Review	Sept 23	Sept 25	10
Blog DRAFT	Sept 18	Sept 27	15
Blog –Peer Review	Sept 28	Oct 2	5
Blog FINAL	Oct 2	Oct 8	20
Op Ed #2 Draft	Oct 9	Oct 12	10
Op Ed #2 Submission	Oct 13	Oct 18	5

4 Project Milestones

To complete the project in a timely fashion, we will be adhering to a rather strick schedule (Table 4).

5 Op Ed #1: Why Care about Climate?

5.1 Rationale

Climate change may be the most controversial environmental issue in history. However, compared to other issues, this history is relatively short. Fueled by opposing political parties and industry goals, the conclusions of scientists is a fundamental source of conflict – thus, science itself has become extremely politicized.

Nevertheless, how and where science and scientists became embroiled became a battle ground negotiating the appropriate level of regulation (regulatory reach), economic and industrial *Laissez-faire*, and environmental risks. Environmental issues are almost always controversial and in the case of climate change, few dominate the political agenda like climate change.

5.2 Assignment

Write an Op-Ed piece that outlines why residents in a specific US region should care about temperature changes. Spend sometime deciding what is currently in the news that you consider a compelling issue to your audience.

5.3 Submission Format and Naming Convention

Submit your Op Ed as a pdf via `Sakai`, using the following naming convention: OpEd_XXXXX.pdf, using one of your 5 digit random numbers for the Xs. See `https://github.com/marclos/Climate_Change_Narratives/raw/master/Admin/RandomNumbers.pdf` to get the list of assigned random numbers.

5.4 Grading

I will be grading these according several criteria. First, the topic must be compelling – connecting current affairs to the historical issues of climate. Second, I will be looking for good use of evidence and citations, while creating fluid prose that compel the reader to continue reading. If the reader gets stuck in statistics, it can be like wading in mud – but without some "numbers" the argument may become glittering generalities without a sense of a gritty reality. Again, your job is to find a compelling balance. Finally, you want the read to jump out of their seat and "do something". Thus, the Op-Ed should compel the reader into action, see assignment handout for more information.

6 Developing Specialized Knowledge

To develop expertise, we will rely on teams of students to develop and evaluate various aspect of climate data. Each of us form an essential component for the effort. Organized as teams and expert groups, we will disassemble the project into chunks that each of us will contribute in specific and effective ways. This expertise will be used to develop our Q & A sessions, as well as, to help us develop and write our op-ed and blogs. The experts should include areas of contravery and how scientists and non-scientists wressle over the data.

6.1 Topics of Expertise

We will will create expert groups on to present the following topics:

1. Radiative Gases – What are they and what do they do?
   List the major compounds categorized as radiative gases and describe how various processes determine their role as GHGs. Provide detail on how different wavelengths of light interact with the gases. Finally, a discussion of water is key, since it is one of the main sources of controversy.
2. GHG Emission Trends and Sources – Carbon Dioxode (CO_2), Nitrous Oxide (N_2O), and Methane (CH_4).
   Describe how carbon dioxide and other GHGs are emitted and remain in the atmosphere. Distinguish between natural and anthropogenic sources and why that distinction might be important. Desribe various type of sources and how these might be linked to certain types of economic development and activities. In addition, describe the role of vegetation and other forms of carbon sequestration.

3. Role of Water and Other Feedbacks
   Climate change feedback is important in the understanding of global warming because feedback processes may amplify or diminish the effect of each climate forcing, and so play an important part in determining the climate sensitivity and future climate state. Feedback in general is the process in which changing one quantity changes a second quantity, and the change in the second quantity in turn changes the first. Positive feedback amplifies the change in the first quantity while negative feedback reduces it. Be sure to include the following feedbacks: Clouds, gas release, ice-albedo, carbon, and water vapor.
4. Terrestial Surface Temperature Records
   The instrumental temperature record provides the temperature of Earth's climate system from the historical network of in situ measurements of surface air temperatures and ocean surface temperatures. Data are collected at thousands of meteorological stations, buoys and ships around the globe. The longest-running temperature record is the Central England temperature data series, that starts in 1659. The longest-running quasi-global record starts in 1850. In recent decades more extensive sampling of ocean temperatures at various depths have begun allowing estimates of ocean heat content but these do not form part of the global surface temperature datasets.
5. Ocean Tempertures and Sea Level
   Describe how ocean temperatures have been measured over time and how these have lead to a range of interpretations of the results. Disucss how the thermal expansion of water may influence sea leval rise. Discuss how sea temperature change may affect different parts of the world differently. Describe the methods to distinguish sea level rise and coastal elevation changes, including how satellites work to collect these data.
6. Satellite-based Temperature Measures
   Satellites can be used to measure outgoing radition. However, each atmospheric layer has different properties and is impacted by GHGs in differing ways. Describe how the satelite data has been used, how these instruments have changed and why there are several different methods to evalaute satellite data. Because satellite data has result results, describe how these methods have been used to support or limit our confidence in climate change.
7. Weather Extremes Trends Explained
   Weather and climate extremes such as hurricanes, tornadoes, heavy downpours, heat waves, and droughts affect all sectors of the economy and the environment, impacting people where they live and work.

6.2 Expert Teams

Although most of the work will be individual, we will also work in pair for the presentation.

The following students have been assigned to the teams below:

Topic	Team_A	Team_B	Presentation_Date
1	Brooke	Caroline	09/11/17
2	Mina	Kihara	09/11/17
3	Troy	Sarah	09/11/17
4	Kyle	Chris	09/18/17
5	Bebe	Katherine	09/18/17
6	Meily	Marc	09/18/17

6.3 Climate Science Review Presentation

6.3.1 Rational

Climate change science is complex and requires a tacit understanding of a range of scientific disciplines. Instead of trying to learn all about them, we will hear presentations from our peers on various topics based on their own research.

Following the adage, 'the best way to learn is to teach', is an appropriate way to think about this assignment.

6.3.2 Assignment

Create a presentation as a R Presentation (.Rprs) and it each person should limit their presentation to 8 minutes/person. Eight minutes goes quickly, so I suggesty you practice a few times to ensure that you don't lose unnecessary points. Longer presentations will be penalized.
Assignment:

- Describe the historical development of the scinece/topic.
- Describe how data are collected and used to develop conclusions.
- Describe area of uncertainty.
- Make an organized presentation that effectively communicates how various scientific arguments have been distorted and politicized;
- Identify how conventional scientific standards have been comprimised; and
- Use the allotted time (10 min) effectively. I suggest you practice, 10 mintues can go very quickly when presenting complext scientific data.

6.3.3 Submission Format and Naming Convention

In addition, each team will present (via open-source software, i.e. rPres) their results to the class. ainty.

6.3.4 Presentation Grading Criteria

The Climate Science Presentation will be grading using the criteria in Table 5.

Table 5: Presentation Grading Criteria

Standard	Percent
Accuracy	20%
Completeness	20%
Clarity	20%
Timeliness	20%
Use of Technology	20%

6.4 Climate Science Review

6.4.1 Rational

Learning about climate science requires students to dig deep into meteorology, atmospheric chemistry, physics, biogeochemistry, etc. Thus, learning about the science requires a bit of patience and lots of hard work.

Using a literature genre, this asssignment has been designed to give you the capacity to be familiar and develop some expertise in one topic of climate change and to become a resource to others in the class.

6.4.2 Assignment

Investigate the assigned topic so you can write a thoughtful and critical review of the topics. Be sure to include how data might be used to counter common arguments that critique climate change science. Submit a written summary of your research findings and their references. The paper should be less than 8 pages (double spaced).

Please include the following sections:

- Historical Development.
- Data Sources and Methods of Analysis.
- Areas of Uncertainty.
- Politicization of Evidence and Conclusions;

6.4.3 Submission Format and Naming Convention

Submit via `Sakai` using the following naming convention: Climate_Science_Review_F17_XXXXX.pdf, where the XXXXX refer to the five digit assigned random numbers.

6.4.4 Climate Science Review Grading

The Climate Science Review will be grading using Table 6.

Table 6: Climate Science Grading Standards.

Criteria	Standard	Percent
Historical Development	Completness	20%
Data Sources and Methods	Completeness	20%
Logical Fallacies	Identified and Confronted	20%
Critical Thinking	Advanced	20%
Writing		20%
Submission		20%

6.5 Peer Review of Climate Science Review

6.5.1 Rational

Communicating about climate sciene is fraught with potential stumbling blocks. First, it's hard to hit the audience knowledge level correctly. Second, many readers have biases, which means that readers have filters that we might not be able to appreciate. Finally, since we are not climate scientists, we are working to translate the science into a languages that others can understand – back to first point!

By using peer reveiw, we can develop methods that might reduce this stumbling blocks, where your peers will be able to read and evaluate if the text is clear, accurate, and comprehendable.

6.5.2 Assignment

Read two of your peers' Climate Report and evaluate the report using the following questions as a guide:

1. What is the argument of the report?
2. Describe three sources of evidence for this argument. What is compelling about these sources? What might be criticisms about these sources? If evidence is missing please explain.
3. What counter arguments are used in the report? Are these accurately characterized? Is the evidence for the counter arguments documented and evaluated to your satisfaction? If not what's missing?
4. List terms that may not be defined well enough for you and the general public.
5. Re-write two sentences that could be improved for clarity.
6. Re-write two sentences that could be improved for precision.
7. Re-write two sentences that could be improved for accuracy.

6.5.3 Submission Format and Naming Convention

Climate_Science_PeerReview_XXXXX.pdf

6.5.4 Peer Review Grading

Table 7 will be used to evaluate the peer review exercise.

Table 7: Peer Review Grading Standards.

Standard	Percent
Identifying Argument	5%
Evidence Evaluation	10%
Counter Argument Evaluation	5%
List of Terms	20%
Re-write – Clarity	20%
Re-write – Precision	20%
Re-write – Accuracy	20%

7 Regional Climate Analysis

Each of us will select a region of interest. Perhaps, somewhere that you have spent a compelling time in or that you wish to know more about. Please select a region that has not been done by previous classes.

7.1 Analysis of Regional Data

7.1.1 Rational

EA students...need to...

Learning to analyze data requires a range of skills that include collecting, analyzing, and interpreting data. For our purposes, this portion of the class is what might traditionally understood as "doing science." We will learn how to test a hypothesis and what it means if we reject the null hypothesis. We will create figures that can be used to communicate our results and finally, we interpret the results.

Ultimately, this analysis will be used a template for our blogs and inform our second Opinion Editorials.

7.1.2 Assignment

Using the resources supplied, it will be up to you to download, pre-process, and analyze a trend analysis using R – where the slope, r^2, and probability are calculated[3] and explained.

[3]We will have to learn what these are to be able to explain our results! Be sure to ask lots of questions about the statistics so you appreciate this important topic that nearly every

Using R studio, analyze a long-term climate record, create 3-4 figures that will be used to communicate these climate records, e.g. 100-year temperature **and** precipitation record for a specific region. Be sure to include language about the "null" hypothesis for your trend analysis.

1. Download and analyze data (i.e. make inferences) to create an public product; I have uploaded all the climate data on a network drive, `//fargo/classes/EA30-LosHuertos`//fargo/classes/EA30-LosHuertos.[4]

that describes the methods (data sources), data quality, and trends.

7.1.3 Submission Format and Naming Convention

As specified by the milestones (Table 4), submit the draft analysis and results using Rstudio.

The Rmd file (and the compiled html) should be saved the the 'student_submissions' directory using the following naming convention:

Region_XXXXX.Rmd

Region_XXXXX.html

NOTE: Be sure the file still compiles. For example, you may need to change the path to the Data directory.

Since the regional analysis has been down within Rstudio, you will use the version control procedures to commit and push your analysis onto the Github repository. Thus, be sure to commit and push your files so I have access to the files.

7.1.4 Data Analysis Grading

The Data Analysis html files will be grading using the criteria in Table 8.

Table 8: Summary of Data Analysis grading standards.

Criteria	Standard	Percent
Records	Compelling, e.g. Over 60 years	10%
Knowledge of Data	Limitations and Methods of Collection	10%
Analysis	p-values and R^2 reported	20%
Analysis	Validated Model	20%
Interpretation	Accurate, e.g. rejected null	10%
Graphics	Publishable Quality	20%
Accessible	Pushed and named correctly 10%	

scientific field relies!

[4] I haven't been able to get the directory working consistently, so stay tuned on this.

7.2 Regional Climate Impacts – Literature Review

7.2.1 Rational

7.2.2 Assignment

Review regionally relative results and conclusions from peer reviewed climate science. See this document as a resource.

Evaluate peer-reviewed articles to determine potential ecological, economic, and sociological implications of climate patterns.

Summarize these papers into a stand-alone paper.

7.2.3 Submission Format and Naming Convention

The paper should be double-space, 12 point font, and less than 8 pages (excluding citations). As a pdf, the paper should be submitted via Sakai with the following naming convention:

RegionalImpacts_F17_XXXXX.pdf

where the XXXXX refer to one set of the assigned random numbers.

7.2.4 Grading of the Regional Impacts Summary

The regional impacts review will be grading using the criteria in Table 9.

Table 9: Summary of Data Analysis grading standards.

Criteria	Standard	Percent
Sources	Compelling, e.g. Over 20 papers	15%
Ecological	Knowns and unknowns	20%
Economic	costs and benefits	20%
Social	e.g. Social Justice	20%
Communication	Accurate, e.g. rejected null	25%

8 Communicating Science

8.1 Analyzing Prior Communication Edeavors

8.1.1 Climate Change Blogs and Websites

EA 30 Blogs

Here are some good examples of climate blogs:

- Accuweather
- Nature Magazine
- Think Progress
- Climate Four Future

Useful sites:

- Climate Central
-

8.1.2 Climate Blogs/Websites Evaluation

8.1.3 Rational

8.1.4 Assignment

8.1.5 Submission Format and Naming Convention

Review previously written EA 30 Blogs to evaluate which ones are effective and what you like about each one.

Select 4-5 blogs and write a summary for each one, describe three things that you like about each one and describe one thing you might improve. Finally, look up one topic for each one that you are more interested in learning and summarize what you find.

8.2 Writing a Scientific Blog

8.2.1 Rational

8.2.2 Assignment

Write blog to effectively and clearly describe results.

The blog shall be publish-ready and include the following:

- Describe the economic, cultural, and physical geography of the region (2-3 sentences);
- Describe climate patterns (1-2 sentances);
- Describe where the data were obtained and summarize how the data were processed and analzyed;
- Time series plots of temperture data using R (3-4 graphs, with several setences describing the results);
- Evaluation of data to determine if trends exists;
- Compare results to model predictions and possible ecological and economic implications to the region;
- description of what the data tells about about the region,
- a few short paragraphs describing how data can be interpretted; pitfalls of unintentional and intentional misinterpretations; and
- narrative that describes the climate and climate implications for a community that you care about.

8.2.3 Submission Format and Naming Convention

Region_XXXX.Rmd and Region_XXXX.html

8.2.4 Scientific Blog Grading

8.3 Peer Review Blogs

8.3.1 Rational

Reviewing a public product is a priviledge. And for the 'reviewed' it's a gift. Thus, for each, the reviewer and reviewed, the value for the greater good is indisputable.

As you review your collegeues work, try to keep in mind that you are promoting a better outcome and better science. In addition, pay attention to thinks that might have escaped your own process and that you find yourself saying, "wow, that's a cool approach!" Perhaps, you might adapt some of the things you read into your own writing!

8.3.2 Assignment

To assess the Blogs, each student will review two blogs and submit a evaluation form for each one.

8.3.3 Submission Format and Naming Convention

Save and submit the form as a pdf, with the following naming convention – "RegionReview_XXXXX.pdf"

8.3.4 Blog Peer Review Grading

The Climate Science Reports will be grading using Table 10.

Table 10: Blog Peer Review Grading Standards.

Standard	Percent

8.4 Publishing Revised Blog

8.4.1 Rational

Our capacity to publish our blogs demonstrates that our projects have value beyond our classroom. In addition, these provide a litmus test for our work – how will the public or specific stakeholders respond to our efforts. Will they see this a valueable, value-added, or problematic? Although we might not get immediate feedback, the process to publish our blogs gives an opportunity that would be missing if we only wrote papers for the instructor!

8.4.2 Assignment

Capitalizing on the regional data analysis and impact summary, create a blog that describes the patterns of clilmate change and their implications. Your final products should include:

- Effectively display climate patterns from NOAA repositories, with at least 6 decades of data. Be sure all graphics are appropriate labeled and have captions that the reader can use to intrepret the data;
- Analyze the data using a linear model using R (i.e. lm);
- Describe the methods used to obtain and analyze the data; and
- Evaluate peer review literature to determine potential regional impacts from climate change – be sure to include ecological and economic impacts;
- Cite instances of how various scientific arguments have been distorted and politicized;
- Identify how conventional scientific standards have been compromised and how arguments that might be based on distortions can be countered.

If it helps, read the Project_Report.pdf on the Project Site for some helpful hints.

8.4.3 Submission Format and Naming Convention

The Blog will be published online (via `Github.com`)

8.4.4 Published Blog Grading

The Climate Science Reports will be grading using Table 11.

Table 11: Climate Science Blog Grading.

Standard	Percent

8.5 Op-Ed 2

8.5.1 Rational

Successful editorials requires two things: 1) a compelling and newsworthy opinion and 2)

8.5.2 Assignment

Select a regional newspaper where you can submit your Op Ed. Learn the format and length allowed for a submission.

Using the Op-Ed guidelines, write an Op-Ed to summarize 2-3 salient points from your Blog where you should:

- Describe regional climate changes and predictions that include ecological impacts;
- Cite instances of how various scientific arguments have been distorted and politicized;
- Identify how conventional scientific standards have been compromised and how arguments that might be based on distortions can be countered.

Write and submit the editorial that highlights the key aspects of climate change that you discovered and link that to a newsworthy item. Be sure to cite and provide the URL to your blog. Submit the editorial and include the 'proof of receipt' with you submssion.

8.5.3 Submission Format and Naming Convention

Uses the Op-Ed guidelines, submit a draft Op-Ed via `Sakai`. Include a description of the local or regional papers that this Op-Ed might be submitted and several examples of Op-Eds that have discussed environmental issues.

Write an Op-Ed to propose what makes a good public product with respect to criticisms of climate science debates and criticisms. In other words, describe (2-3) ways that climate change skeptisism might misuse the data analysis and how one might prevent the misuse, be sure to cite your blog as an attepmpt to accomlish these goals.

Submit Op-Ed to the appropriate regional or local paper.

8.5.4 Grading of Published Op Ed 2

The 2nd Op Ed will be grading using the criteria in Table 12.

Table 12: Published Op Ed Grading Criteria

Standard	Percent
Accuracy	20%
Completeness	20%
Clarity	20%
Timeliness	20%
Use of Technology	20%

9 Peer Evaluation Forms

9.1 Literature Review–Peer Evaluation

Evaluator: _____

Author: _____

1. Describe two items you learned.

2. Describe one concept or fact you would like to learn in more detail.

Table 13: Please circle the best response, where one is inadequate and five is outstanding—i.e. should be teaching the topic!

How clear was the presentation?	1	2	3	4	5
Suggestions:					
Did the analysis seem valid?	1	2	3	4	5
Suggestions:					
Was information complete enough?	1	2	3	4	5
Suggestions:					
To what extent could you use this example in climate discussions?	1	2	3	4	5
Suggestions:					

9.2 XX–Peer Evaluation

Evaluator: _____

Author: _____

1. Describe two items you learned.

2. Describe one concept or fact you would like to learn in more detail.

Table 14: Please circle the best response, where one is inadequate and five is outstanding—i.e. should be teaching the topic!

How clear was the presentation?	1	2	3	4	5
Suggestions:					
Did the analysis seem valid?	1	2	3	4	5
Suggestions:					
Was information complete enough?	1	2	3	4	5
Suggestions:					
To what extent could you use this example in climate discussions?	1	2	3	4	5
Suggestions:					

9.3 DRAFT Blog – Peer Evaluation

Evaluator: _____

Presenter: _____

1. Describe two items you learned.

2. Describe one concept or fact you would like to learn in more detail.

Table 15: Please circle the best response, where one is inadequate and five is outstanding—i.e. should be teaching the topic!

How clear was the presentation?	1	2	3	4	5
Suggestions:					
Did the analysis seem valid?	1	2	3	4	5
Suggestions:					
Was information complete enough?	1	2	3	4	5
Suggestions:					
To what extent could you use this example in climate discussions?	1	2	3	4	5
Suggestions:					