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An Exploration of Climate Change in the K-12 Classroom

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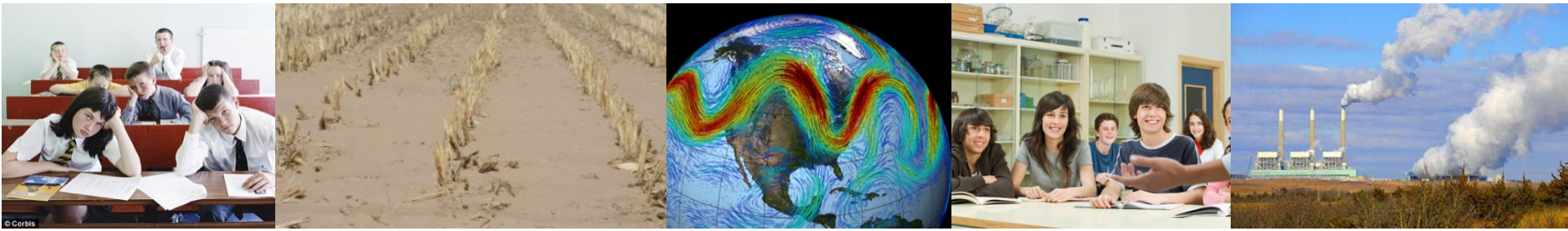

An Exploration of Climate Change Education in the K-12 Classroom

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Overview

- Have you ever wondered how climate change is being taught and portrayed in the K-12 classroom?
- How are teachers being taught to teach climate change? What are the best practices?
- Phase 2 of research to understand current education methods and content foci of climate change education

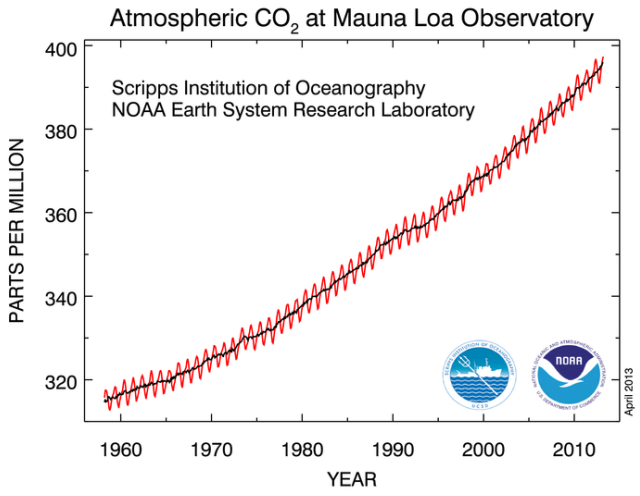
Acknowledgements

- Madyson Walker and Shannon Garrett – our colleagues on this project
- Geographic Alliance of Iowa
- UNI Conservation Corps
- UNI Department of Geography

Climate Change

- Strong evidence of occurrences from the global to local scale

- Scientific consensus



Climate Change Education in the U.S. K-12 Classroom

- The idea of anthropogenic forcing of the climate system has been part of science education for nearly 60 years, however inconsistently and variably
(McCaffrey and Buhr, 2008)

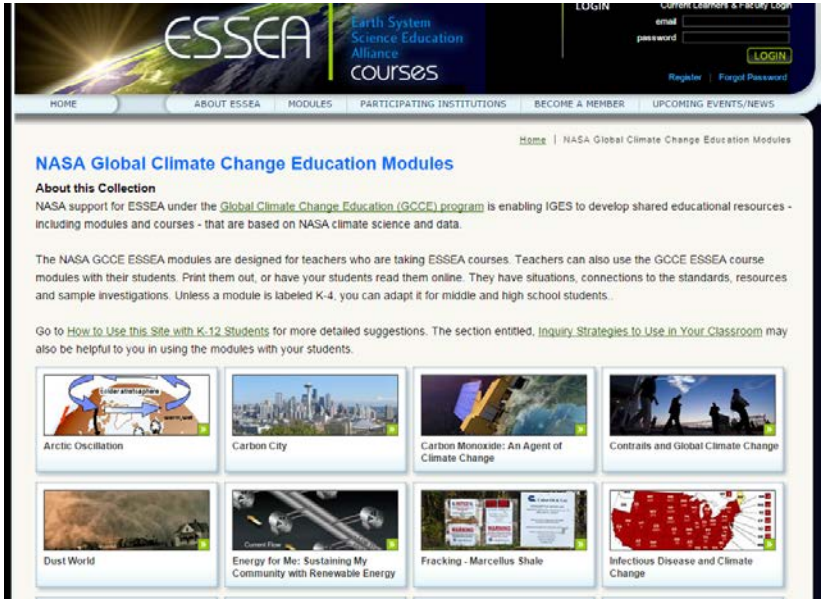
- Teaching climate change in the K-12 classroom, has not yet become a wide spread practice

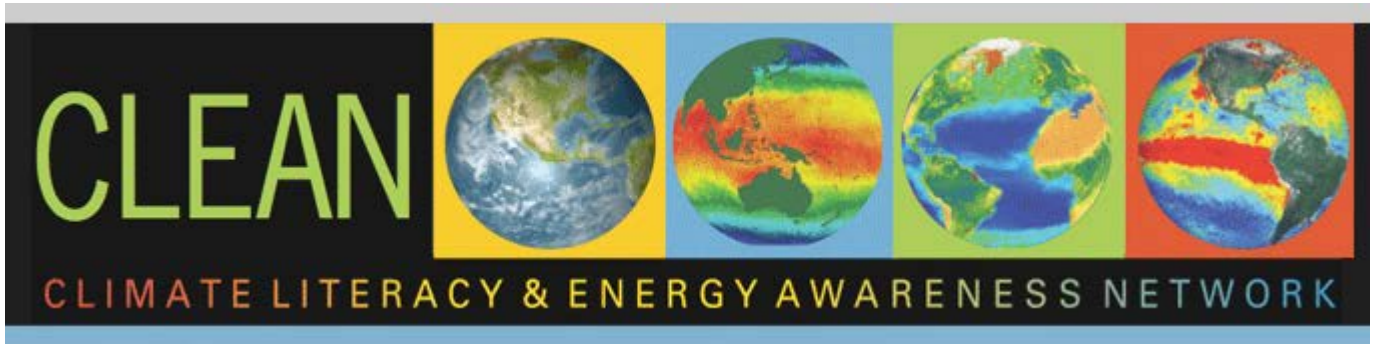
Next Generations Science Standards (NGSS)

- In 2013, the Next Generation Science Standards were released
  - They have standards and student performance expectations that specifically teach climate change

- Now, teachers in the states who have adopted the NGSS are required to teach a subject they likely do not any content or pedagogical knowledge in teaching

A lot of good stuff has come from this…





So how is this being translated into the K-12 classroom?

- How: Qualitative analysis of academic literature on teaching climate change

- Why:
  - Summarize to understand how climate change is being taught and recommendations for teaching
  - Identify opportunities for growth and other possible concerns

Phase 1: Background on the (turned out to be) Pilot Study

- As **part of the reading for my dissertation** in climate change education, **I started to notice a patterns** in the literature that had little to do with my actual dissertation….
  - (My dissertation investigated using GIS and the local perspective as a mechanism to teach new NGSS climate change standards in the 7-12 classroom)
  - This happened during 2015-2016

Qualitative Analysis of Literature on Teaching Climate Change

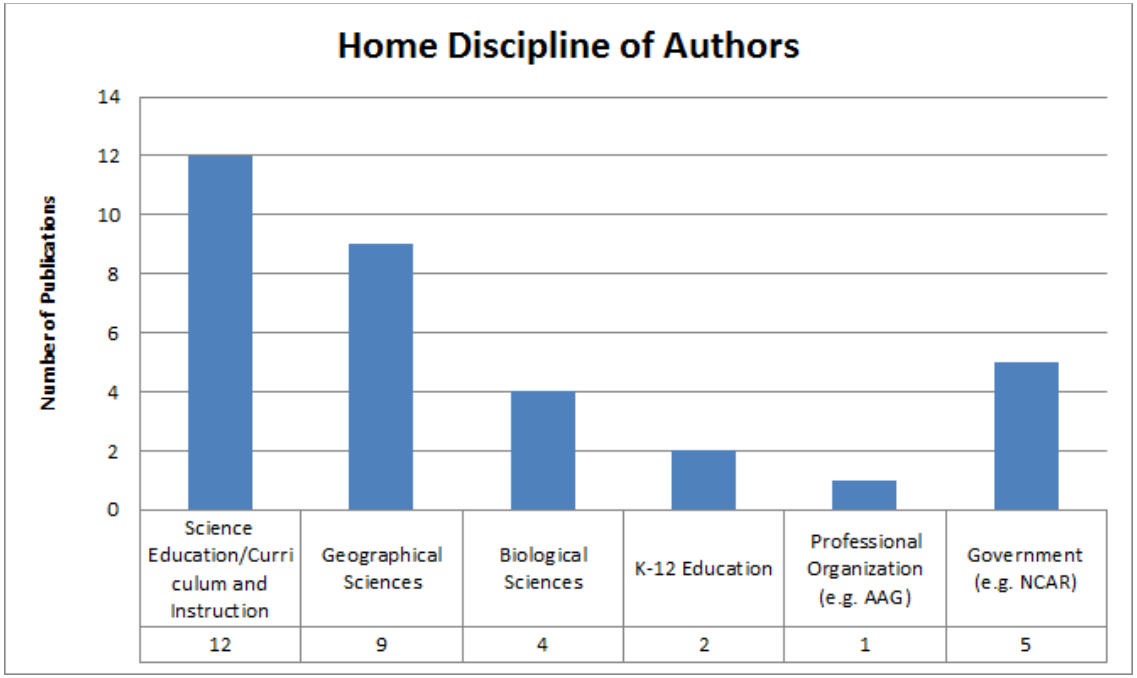
- Criteria:
  - USA and Canada
  - Since 2000
  - Peer reviewed and scholarly literature based
    - No websites
  - K-12 education specific
    - Empirical research
    - Lessons/activities
    - Discussion of methods/processes
  - Keywords used in searches:
    - K-12, elementary, secondary, climate change, climate change education
  - Sources searched :
    - Google
    - Google Scholar
    - Pro Quest and ProQuest ERIC (Education Resources Information Center)
    - Educational Full Text
    - Web of Science
    - Scopus

General Article Information

- <u>20 articles total</u>

- Location
  - 18 from the USA
  - 2 from Canada

- Type
  - 6 **empirical research**
  - 9 **lessons and activities**
  - 5 **methods and practices**



Putting the Pieces Together

Focus: 66/33 student-teacher split → Consensus

Grade level: 6-8 middle level occurs most often, but not yet a defined pattern

Length of activity: one-day lessons or activities occurs most, but not yet a defined pattern

→ Need to determine our audience and the amount of time it takes to teach about climate change more specifically

Content: general climate and weather occurs most, then a bunch of other stuff

Teaching methods: use of graphics/maps/images occurs most, then a bunch of other stuff

→ Off to a good start, but need a clearer definition about essential content and methods for teaching about climate change

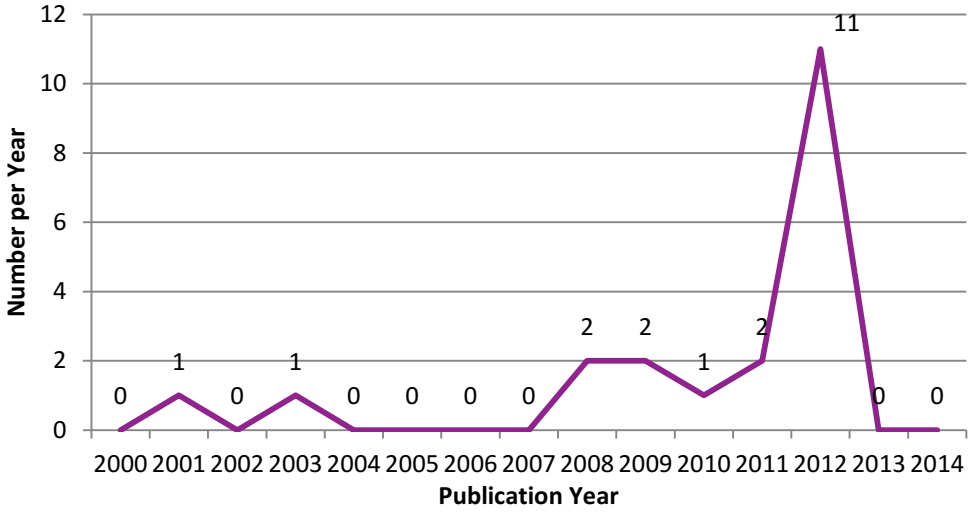
This led to Phase 2 of this research

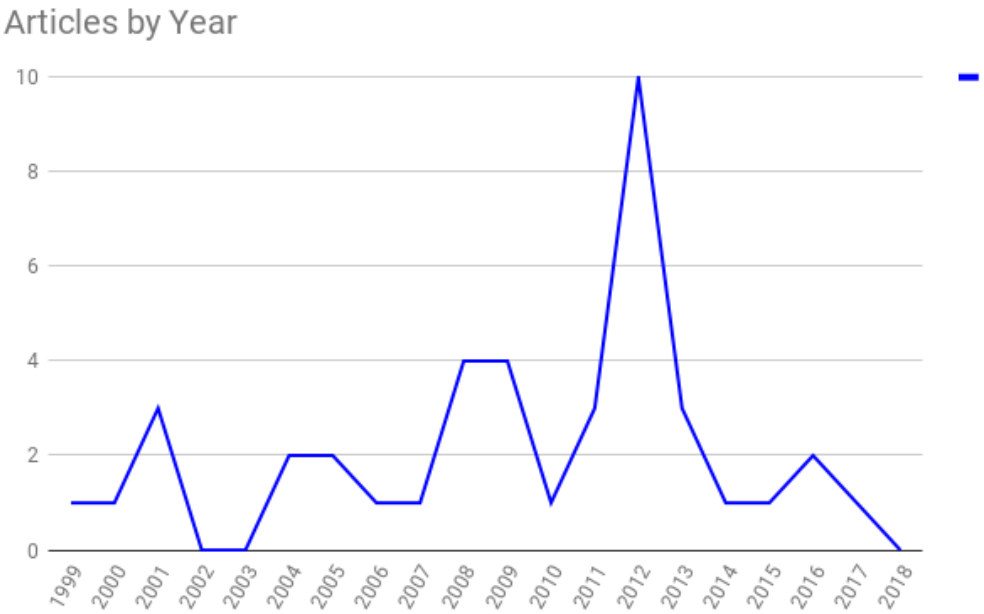
- 2017-2018
  - Three student team (1 grad student, 2 undergrads)
  - Expanded to a global search
- Plans:
  - Thorough literature review
  - Qualitative analysis with goal of end suggestions for best practices
  - Implementation of suggested best practices during teacher professional development for teacher feedback

Phase 2

- Number of articles, based on the same search terms, has doubled, from 20 to 41
- Compared publication years
- Annotated bibliography is well underway, and will be built into comprehensive literature reviews, then coded for themes
- Ask for teacher feedback on the themes and recommendations

Pilot Study Publications by Year

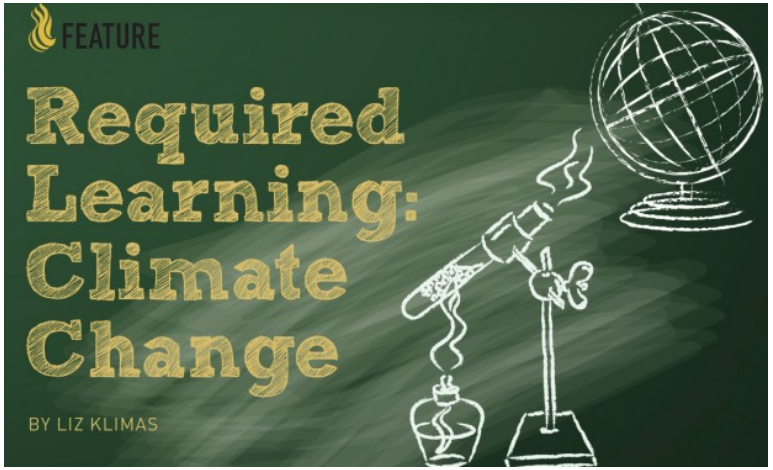




Long Term Goals for this Project

- Influence types of educational outreach materials and activities to create and how to share and promote these materials

- Gives consideration as to how we want to mold the future of climate change education
  - Perhaps creation of an educational model on teaching climate change?



Thank You!

Questions, thoughts, comments?

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