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02.12.2018

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In a new exciting venture with several partners, I have come to greatly appreciate the many science-based resources for teachers housed at the U.S. National Oceanic and Atmospheric Administration (NOAA).

NOAA is a trusted source of accurate and useful data. When you think of NOAA, your first thought may not be its educational mission but instead the fact that it delivers the data needed by meteorologists to make weather forecasts. It also produces annual [State of the Climate](#) [5] reports and the congressionally mandated [National Climate Assessment](#) [6].

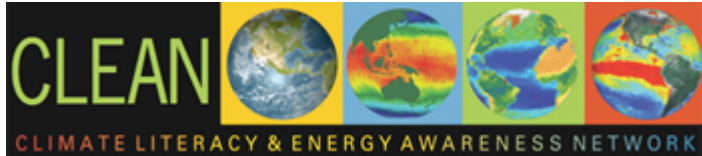
NOAA's approach to education is to promote data-driven lessons, but as NOAA's Frank Niepold, Senior Climate Education Program Manager puts it, "data is not enough." A good lesson must make the data relevant by the application to real world problems. I recently had a conversation with Frank, and we discussed why data-driven, place-based lessons are so effective.

Two themes quickly emerged: NOAA's role as a leader in providing resources for teachers, and Frank's unique insights that make him the perfect liaison to execute NOAA's mission. In Frank's words, "teacher's

trust NOAA educational resources because they know they combine relevant real-world data with well vetted lesson plans.”

Part of NOAA’s mission is to share knowledge and information about climate, weather, oceans and coasts, which is congressionally mandated. NOAA’s main information-sharing programs are [CLEAN](#) [7](Climate Literacy & Energy Awareness Network) and NOAA [Planet Stewards Education Project](#) [8].

CLEAN is a collection of educational resources vetted by a rigorous review process that includes teachers, science educators, and scientists. That's why teachers trust CLEAN's



lessons. CLEAN also has an amazing [webinar series](#) [9], on topics such as how to plan climate and energy units, using 3-D learning techniques, and aligning lesson plans with the Next Generation Science Standards (NGSS).

Planet Stewards, formerly Climate Stewards, recognizes excellent teachers who not only teach climate science effectively, but also use it to organize their curricula across scientific disciplines.

Both CLEAN and Planet Stewards are integral parts of a teacher professional development workshop NCSE is participating with NOAA called "Turning Misinformation into Educational Opportunities" (TMEO). NCSE will host this workshop with John Cook, and develop lesson units on climate change that teachers can use in the classroom. TMEO lessons will incorporate data from NOAA sources and use NOAA data analysis tools. TMEO lessons will put these resources into a context that makes the data relevant for teachers, not only in their classrooms, but in their local communities.

TMEO lessons will be effective because students will have the opportunity to construct their own understanding of climate science without the distraction of previous misconceptions they may have from ideological influence. They will “discover” accurate, relevant, and reliable conclusions from their direct experience with data. This pedagogical approach is especially valuable for climate change topics, which is why TMEO is dedicated to developing these type of lessons, and why NOAA’s and Frank’s involvement are so crucial.

NCSE knows the power of teachers tapping into new sources of information and data. That’s why NOAA’s vast teacher-focused repository of information is such a national treasure.

And it’s why we’re excited to work with NOAA, and the other TMEO partners, the Alliance for Climate Education, and the Center for Climate Communication at George Mason University, to deliver professional development on climate change topics for teachers.

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<https://www.ametsoc.org/ams/index.cfm/publications/bulletin-of-the-american-meteorological-society-bams/state-of-the-climate/>

[6] <https://nca2014.globalchange.gov/>

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