

January 2001

## Nebraska Earth Systems Education Network – Winter 2000/01

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## **Nebraska Earth Science Education Network**

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### **Winter 2000-2001 Newsletter**

Issue Number 26

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## **“Everything is Connected to Everything Else.” - Dave Gosselin, NESEN Director**

Over the past few years as I have increased my involvement in education, I have also become very passionate about soccer coaching. Much of what I have learned from my K-12 colleagues about teaching and learning I have tried to incorporate into my coaching philosophy and methodology. At a recent coaches meeting, the importance of sportsmanship was emphasized: that players need to learn not to play the “blame game” - blaming officials, other players, coaches, etc. The blame game is usually invoked under conditions where external pressure is being applied. Playing this type of game can destroy a team. Currently our educational system, at all levels, is under pressure from a variety of sources and for a variety of reasons. The blame game is being played all around us. It is very important that each of us try to avoid getting caught up in the game. Whether we are an elementary or college teacher, we should consider ourselves to be on the same team. We are involved in education. We all have our own set of problems, some of which we have helped to create and some of which have been thrust upon us. Whatever the case, it is incumbent upon us to acknowledge that there are problems and to use our skills to help resolve them. More importantly, however, whenever we get the opportunity we also need to focus on the good things that we see and tell each other about it. Doing this will help us to create a more positive environment and allow us to better enjoy our profession. I consider it a privilege to watch my young ladies play and I hope you have similar feelings toward your students. Our time with these young people is limited, but can have a long-term impact. It is to our benefit, and theirs, to contribute to the extent that we can to create a positive educational environment. Have a great spring semester!!!!

## **Global Environmental Change Workshop for K-12 Educators -- Steve Meyer**

During the summer of 2001, we have an opportunity for earth science teachers and a colleague to be compensated for the development of a locally relevant interdisciplinary curriculum unit related to the important issue of global environmental change. This workshop will focus on global environmental change using a systems perspective and a multidisciplinary approach, both of which are key components to the National and Nebraska science education standards. In addition to the potential of graduate credit, we are also willing to work with you and your school district to have this workshop count towards your professional development points. See enclosed flyer and application form for more details. Also feel free to contact Steve Meyer at 402-472-876 or smeyer1@unl.edu.

## **NESEN 2001 Summer Workshops Announced -- Dave Gosselin**

This summer NESEN will be offering three summer workshops entitled The Dynamic Earth and Nebraska: Plate Tectonics, Earthquakes and Volcanoes (July 9-10, 2001); Hands-On With Nebraska's Geology: 300 Million Years of Change (July 12-13, 2001); and Soil Structure: The Building Within the Profile (July 17-18, 2001). These workshops provide a great opportunity for teachers to increase their knowledge and understanding of Nebraska's and related regional natural resources systems. Workshops are designed to engage the participants in hands-on

activities, field trips and other active learning strategies. These workshops also provide you with the opportunity to take some new activities back to your classroom. Opportunities to obtain graduate credit from UNL are available. We are also willing to work with individual teachers and school districts to provide professional development points. If there is enough interest in your school district or educational service unit, workshops could be developed to meet your specific needs. For more information, contact Dave Gosselin at 402-472-8919 or dgosselin2@unl.edu. For more information and to register, see the enclosed flyer.

## **Research Experience Teaches Students, Educators How Science Is Done – Charles Flowerday**

To really communicate to students how science works and to help them better understand scientific content, science education has to change from something that is done to students to something that students do. So says the vision for science literacy expressed in both the national and Nebraska science education standards.

In pursuit of these objectives, a four-week program at UNL was put together this past summer to better integrate scientific research and education. Supported by a grant from the National Science Foundation in cooperation with the UNL Teachers College, NESEN brought science education students and secondary-level educators together with university researchers to form a single team investigating scientific questions. The participants then collaborated on educational approaches that integrated the research into K- 12 teaching. The point of this project was to communicate some of the excitement, dilemmas and strategic thinking that accompany research. Other faculty involved in the project have pointed to the tactical and improvisational skills students and educators acquire as they encounter the real-world tangles known as “confounding variables.”

The teacher’s training was aimed at practicing “inquiry-based” or problem-solving methods of science education. Such an approach attempts to replicate what scientists do as they analyze a specific real-world issue, investigate it and evaluate the results. The research teams focused on bring these lessons into the classroom through several collaborative workshops.

Teams formed to examine climate change; nitrogen cycling in prairie landscapes; windbreaks; groundwater-surface water dynamics and water quality; fertilizer management for the environment; the diet and environment of a prehistoric culture of Chilean Indians called the Chinchorro; agricultural uses of remote sensing; use of rubidium as a corn rootworm tracer, and invertebrates as indicators of water quality. Discussions of the individual projects and the lessons learned, both foreseen and unforeseen, are explored in the 2000 edition of the Conservation and Survey Division’s Resource Notes. Free hard copies can be obtained from the CSD Map and Publications office (472-7523) or online copies can be viewed on the CSD website: <http://csd.unl.edu/csd/resource/vol-14/research.htm>. Projects and team members are listed below:

Project	Research Advisor	Teacher	Pre-Service Teacher
Climate Change in Our Lifetime, Facts and Fallacies	Dr. Ken Dewey	Deb Engell	Jason Morphey
Nitrogen Cycling and Prairie Ecosystems	Dr. David Wedin	Linda Geisert	Lori Watson
Artificial wind-breaks and their effect on wind speed and pressure profile	Dr. James Brandle	John Snoozy	Laurie Kleager
Groundwater/surface water dynamics and water quality	Mr. Jim Goeke	Kandi McFadden	Jason Lavaley
Fertilizers and environmental management	Dr. Charles Shapiro	Janet Oborny	Kristina Nevius
Environmental interactions of the Chinchorro culture	Dr. Karl Reinhard	Sara Leroy-Toren	Melanie Olson

Analysis of agriculture using remote sensing	Dr. Don Rundquist	Mark Shearer	Chris Moon
The use of rubidium as a corn rootworm tracer	Dr. Blair Siegfried	Sean Putnam	Lacey Dokken
The use of macroinvertebrates as biological indicators of water quality		Tom Gerdes	Joedy Poppe/Mitch Donnelly

## **Fall and Winter STEDII program - Mark Mesarch**

During October 2-16, 2000, 10 schools took part in the fall focused measurement period (FMP) of the STEDII weather data collection program. "Great Job" goes to Aquinas Middle, McCook Jr. High, Evergreen #53, Holdrege Middle, Kewanee #4, North Bend Jr.-Sr. High, Rock Valley, Spalding Academy, and Valentine Middle Schools. There was a nice winter-like storm that passed through the state during the FMP. Anyone can retrieve these schools' data by going to the STEDII web site at <http://nesen.unl.edu/stedii>. The next official collection period is February 19- March 6, 2001. This will coincide with the data collection period of the One Sky, Many Voices weather collection project that encompasses the entire United States (<http://www.onesky.umich.edu/>). STEDII participants, please remember that you can collect and enter data into the data base at any time. You do not have to wait for a FMP.

## **Electronic Term Papers at UNL - Ken Dewey**

During the past two years, Ken Dewey, Professor in the School of Natural Resources Sciences and Department of Geosciences, has abandoned the paper form of term papers, and has instead required that his students create individual electronic term papers which are subsequently posted on a class web page (<http://www.hprcc.unl.edu/nebraska/studentprojects.html>.) Each student chooses a topic, collects data and information on the Internet and then creates an individual web site for their electronic term paper. This activity provides students with the opportunity to explore the vast amount of information available via the Internet and teaches them how to publish to the Internet. Now, instead of the term papers gathering dust over the years on a shelf in his office, these projects are available instantly for future students to pursue via the school Internet site. The reaction from the students has been an increased level of enthusiasm toward what was once viewed as a necessary and often boring assignment. Ideally, students in other universities as well as in high school could also try this type of term paper and then post links to these various school web sites to facilitate additional interactions between students of science.

## **"Inside Rain" - Curriculum and Collaborative Effort - Mark Mesarch**

The National Science Teachers Association has just published the second in the series of "Teach with Databases" series called "Inside Rain." Through the laboratory exercises and online classroom activities, students learn about precipitation chemistry, the process of atmospheric deposition (related to acid rain) and the effect of the changing chemical content of precipitation. The materials are designed for grades 9-12. It uses the wealth of precipitation data from over 200 data collection sites across the United States in the National Atmospheric Deposition Program (NADP) free online database. For more information about the curriculum check out the web site at <http://nadp.sws.uiuc.edu/nsta/about.htm>.

NESEN has a connection to the NADP program in that I am the site supervisor for the collection site near Mead, NE, and I participate in some of the committees in NADP. I, along with NADP, would find it interesting to "shadow" a school that would use part or all the "Inside Rain" curriculum in the near future. I may be able to get additional resources for the class from NADP or arrange a field trip to the Mead collection site. The teacher(s)

involved could then work with me to put together a presentation for the annual technical meetings that NADP conducts each fall. This presentation could also be given at NATS, which is usually held close to the same time as the NADP meetings. If you are interested in finding out more about the “Inside Rain” curriculum, the NADP or this collaboration on using the curriculum, please contact Mark Mesarch at mmesarch1@unl.edu or 402-472-5904.

## **NESEN Web Site - Mark Mesarch**

When was the last time you pointed your browser at <http://nesen.unl.edu> or clicked on your NESEN bookmark? Our web site tries to keep adding new lessons and activities created and tested by teachers. We add links to other web resources that are interesting and innovative and direct you toward data resources that are free and/or online that you can use in your classroom. If you have any ideas for information to add to the web site, please contact us at NESEN. If you find links on our web site that are broken, let us know and we will try to fix these. It is a web site for you...help us make it better for you.

## **Agricultural Science Lessons & Activities Links on Website – Mark Mesarch**

What is Dr. Dirt doing by cooking up DIRT PUDDING or ENGINEERING SANDCASTLES? Where would you find lessons on soil erosion and soil color or activities about earthworms? How would you investigate competition between plants (GO TEAM BRUSSELS SPROUTS!)? What does a herbarium curator do and what do they love about their job? How does a soybean plant grow and where do weeds come from: To find the answers to these questions, look at the new link section on the NESEN web site about Agricultural Sciences at <http://nesen.unl.edu/teacher/links/link-agscience.html>. If you have a link that would be useful to add to this topic area, let the NESEN staff know.

## **CHANGE....NEW & IMPROVED.....BIGGER & BETTER...EASIER TO USE - Mark Mesarch**

These are all words that you hear everyday about the products you use. It comes time when things need an adjustment to make them fresh and current. The same goes with web sites. The NESEN web site, in its current form, has been serving its purpose for several years now. Part of the web site’s design was based on learning some new software to make the navigation easier and maintain uniformity. As we try to keep the page current and viable, we find it is time to do a complete overhaul of our site. BUT we need your help. We are looking for several volunteers to come to Lincoln for one afternoon/evening to brainstorm the new web site and review the old one. We cannot offer you much...some food...some laughs...and ultimately a tool that will help you with your teaching projects. If you have an interest in helping us, call Mark Mesarch at 402-472-5904 or email him at mmesarch1@unl.edu. Even if you cannot commit to the meeting and you have some ideas, let us know. Every idea helps.

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