ISTS Newsletter

2-15-2009

ISTS E-Newsletter, February 15, 2009

Iowa Academy of Science

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Calling Presenters!

Why not register right away to be a presenter at next year’s ISTS Fall Conference?

Registrations are open. Perhaps you’ve been thinking of a topic. Instead of forgetting about it, go ahead and sign up now. Have it out of the way! Whether you are presenting alone or with a partner, don’t wait... The ISTS Fall Conference will be in Des Moines on Wednesday, October 28, 2009!

Proposal deadline: June 1, 2009.

Find the proposal form at http://ists.pls.uni.edu/forms/fall-conf/present/
Greetings from the Chair

Spring 2009

Time is really flying by… I will be passing the (ISTS Chair) baton to De Anna Tibben (Vice Chair) in the next couple of months. I will then move to the position of Fall Conference Program Chair where things get really exciting. It will be very difficult to follow last year’s conference put together by Traci Maxted. I will definitely need your help.

We are already deep into the planning stages for the 2009 Fall Conference, which will be held at the Polk County Convention Complex in Des Moines. Please note a small change in the dates of this year’s conference as a result of the availability of the facility. This year the conference will be held on **Tuesday evening, October 27th** and **all day Wednesday, October 28th**.

We have a terrific line up of speakers including our luncheon speaker Phil Plait, (author of Bad Astronomy), who will have you sitting on the edge of your seat as he talks about “Seven Ways a Blackhole Can Kill You”. We also have featured speakers with topics surrounding assessment, inquiry, elementary and secondary teaching strategies, updates on the Iowa Model Core, geology, biology and chemistry. Specific details will be on the ISTS website soon.

These are all great starting points for our conference, but most important is YOU!! Attending and/or presenting at the ISTS Conference is one of the most rewarding experiences you can have as a science educator. It is a great source of ideas and strategies you can take back to your own classroom. I would encourage each of you to consider presenting at the Fall Conference. Share one of the investigations, activities or strategies you use in your classroom. Sometimes it is the simplest of things that helps others generate new ideas and strategies for their classroom. How do you start each class period? What activity really gets your students involved? What are some of the exemplary projects your students have produced? What is your favorite diagnostic, formative or summative assessment strategy? What has been an effective integrated curricular activity or investigation? There are ideas, strategies and lessons that need to be shared with science classroom educators. I would also like you to encourage another colleague to share their experiences or make a presentation with you as a team.

Website for Iowa Science Teachers Fall Conference presentation proposal form: [http://ists.pls.uni.edu/fall-conference/index.html](http://ists.pls.uni.edu/fall-conference/index.html)

I encourage you to talk with your building principals soon and get your name on the calendar for attending the ISTS Fall Conference Wednesday, October 28th.

Some science districts may be considering cutting back on professional
development. However, this is one investment that consistently pays high dividends to both staff and students.

Don’t hesitate to contact any of the ISTS officers or Regional Directors for more information. Come join us in Des Moines in October, and consider presenting!

*Morgan Masters – ISTS Chair 2008-09 Fall Conference Program Chair, 2009*

**From the Chair-elect, Traci Maxted:**

*And what can ISTS do for YOU?*

At every opportunity; journal, newsletter, meeting or phone call, we try to show you ways to “get involved!” “be involved!” or “be part of the action!”

Of course you know that you get more out of an activity or lesson if you become involved. You tell that to your students at least once a month: “DO the work, turn it in and you WILL learn more than just sitting there letting information wash over you.” We want more involvement because that helps us reach our mission to of further scientific research, science education, and public understanding of science, and to recognize excellence in these. We want more involvement because many hands make the work lighter. We also want more involvement because it helps you reach your potential as a leader and teacher. But you say, “I’m loaded down now. I can’t get any more involved!”

OK, then – what can IAS/ISTS do to help you? The annual fall conference has exhibitors and presenters who are there to show you new ideas, including stuff you can use in your classroom that next week. The next conference will be Wednesday, October 28, 2009. The IAS Annual Meeting is where the Junior Academy of Science really strut their stuff. Go look over the presentations and gain some new ideas of what kids can do in science. Researchers from around the state will be there as well. The next annual meeting is in Des Moines on April 17-18. There are regular presentations at Saylorville Lake given by various IAS members on a wide range of topics. Treat yourself to a night with the out-of-doors.

How about publications? This newsletter is so full of opportunities you can’t possibly do them all. The ISTJ (Iowa Science Teaching Journal) [http://ists.pls.uni.edu/istj/issues/35/3_fall_08/](http://ists.pls.uni.edu/istj/issues/35/3_fall_08/) is an online publication of ISTS. Take a few minutes to read some new ideas.

While you are looking online at the ISTJ, take a few extra minutes to see what else we can do for you. Right now the ISTS site has information about summer programs at UNI, [http://ists.pls.uni.edu/](http://ists.pls.uni.edu/). You can use your membership to log in
and contact other science teachers in the state. Build a network of others to share ideas and activities.

The National Wildlife audio series is incredible! [http://www.scienceiniowa.org/nwr/](http://www.scienceiniowa.org/nwr/) You can listen to dialogues about the six National Wildlife refuges in Iowa and even download the tapes to take with you when you go to visit.

Direct from the website is information about what is coming next from the Iowa Academy of Science: iWonder. “iWonder is a program for Iowa explorers from kindergarten to 8th grade. iWonder activities, video, journals and field trips will bring families together to learn about the science that happens in the state of Iowa. Explore the wonders of our state one wonder at a time!”

One final thing to find on the website: ways to be involved! :-)

Traci Maxted, Past Fall Conference Chair

**Messages from your Vice Chair, De Anna Tibben:**

Ever wonder where the term “the blahs” came from? Sometime between 1915 and 1920 it appeared in Webster’s Dictionary with the listing of "idle, meaningless talk." Soon it was also used to describe something "bland" or "dull." This time of year many of us talk of the “February blahs.” Are you experiencing the classroom blahs? Do you feel your teaching is not impressive, or it is boring, bland, or without character? Do you feel as if you are in a “teaching rut?” Do you need a new boost or infusion into your teaching, whether through new lesson ideas, a new focus on content background, or a renewed perspective on questioning skills?

Or possibly you’re on the other end of the spectrum; you have developed a new twist on an old lesson, you’ve written an exciting lab activity that your students are actively engaged in, or you’ve put together a website connecting content and pedagogy. No matter which description fits you, Morgan Masters, ISTS 2009 Fall Conference Chair, has an exciting offer for you! The 2009 ISTS Fall Conference October, 27 & 28 is a chance for you to be re-energized, to share your ideas and lessons, and to send the “blahs” right out of your classroom! Go to [http://ists.pls.uni.edu/](http://ists.pls.uni.edu/) to submit a presentation proposal and to register today!

Also save the date for 2010! The 2010 ISTS Fall Conference will be October 7, 8 and 9 (Thursday night presentations, Friday Conference, and Saturday field trips) in Ames.

Hope to see you in Des Moines in 2009 and in Ames in 2010!

-De Anna Tibben, chair-elect
Announcements

• **Save a Rainforest:**
  You can save the rainforest by shaping the new climate change agreement. The last, best chance to save the world's rapidly dwindling tropical forests is upon us. The nations of the world are negotiating a new climate change agreement this year that could include compensating developing countries for protecting their forests—which sequester up to 400 tons of carbon per hectare. If this happens, developing countries could receive between $600-$8000 from the international carbon trading market for every hectare of standing forest they preserve. Such an incentive would trigger strict protection of forests throughout the tropics. To find out how teachers and students can help shape the outcome of the climate change negotiations visit Save The Rainforest’s website at www.saverfn.org.

  Bruce Calhoun, President
  Save The Rainforest, Inc.
  www.saverfn.org
  Ph 608 729 4877

• **Iowa Bill Regarding Evolution**
  The Evolution Academic Freedom Act introduced in the Iowa Legislature is an Act relating to the teaching of chemical and biological evolution in school districts and public postsecondary institutions.

  To read the bill go to the Iowa Legislature website at http://www.legis.state.ia.us/index.html. Enter HF 183 in the search box in the upper right. You will see the complete text of the bill and also be able to follow the bills' progress. It was referred to subcommittee on February 5th.

  The Academy has referred the bill to the Societal Issues Committee for review.

• **NSTA State of Science Education Survey:**
  You are cordially invited to participate in the first NSTA State of Science Education Survey. This survey, developed by Julie Luft, NSTA Director for Research in Science Education, will help NSTA to obtain some very valuable information from you and your colleagues on a host of issues important to science education and educators.

  As a token of our gratitude for participating in this important survey, you can enter to win a FREE airline ticket to travel anywhere in the continental U.S. (some travel restrictions apply)!

  The survey will close on **Monday, March 2** SO ACT NOW!

  Thanks for your input. You can access the survey by going to:

  http://www.surveymonkey.com/s.aspx?sm=v0ICnq3m9CbxwZNuuhh4YA_3d_3d
Opportunities

• UNI Earth Science Conference Update

What? Global Climate Change—Content and Pedagogy!

Date? April 10, 2009

Who should attend? Middle School and High School Earth Science Teachers

Where? Sessions: UNI, Latham Hall
8:50 A.M – 3:20 P.M.

Check-In: 8:00 – 8:40 AM

Cost (Includes lunch, refreshments, & handouts): $25 (Early Registration – Must be received by March 28)

Latham 111 $30 (Registration – Must be received by April 2)

Space is Limited to 50 participants (Register early):

Experience a day filled with informative presentations on Global Climate Change, including curriculum for teaching about Global Climate Change. Enjoy informal discussions with UNI faculty and Update participants on issues and topics related to teaching earth science. Come to the conference to revitalize your enthusiasm for teaching earth science and to network with other earth science teachers as well as UNI Earth Science Department faculty. Take home new knowledge activities to use in your classroom!

Registration forms available at the UNI Earth Science webpage: *www.earth.uni.edu*<http://www.earth.uni.edu/> For more information contact Tim Cooney via e-mail: *timothy.cooney@uni.edu*

Earth Science Update Conference Tentative Schedule:

“Volcanic eruptions and their impacts on the climate change”—Professor Ken De Nault, UNI

“Air-Quality and particulate matter”—Professor Alan Czarnetzki, UNI


“Investigation of potential sites in Iowa for sequestration of CO2 in subsurface geologic strata”—Ray Anderson, Iowa DNR –Geological and Water Survey

“Hurricanes and climate change,”—Professor Chad Heinzel, UNI

“Global Climate Change Curriculum,”—Professors T. Cooney and A. Czarnetzki, UNI
• **Nanoscale Science and Engineering Opportunity**

The National Center for Learning and Teaching (NCLT) in Nanoscale Science and Engineering at Purdue University has an opportunity for you!! The multi-university collaborators at the NCLT believe that it is very important to integrate nanoscale science and engineering topics into the middle- and high-school classrooms, as this science will eventually become a part of the science curriculum. Additionally, nano is also becoming a large part of society and the future workforce. As a part of the NCLT, we hold a professional development program for middle- and high-school science teachers about nanoscale science and engineering during the summer. This coming summer, we will be holding our fourth professional development workshop. The program consists of a 2-week institute at Purdue University from July 13-24 as well as a year-long follow-up. Teachers are paid for their participation in the program and they will also be fully reimbursed for all travel.

Information about the program and instructions for applying to the program is also available on the website: [www.nclt.us](http://www.nclt.us). If you have any questions about the program, I encourage you to contact me; I'd be happy to tell you more.

Kelly Hutchinson
NCLT PD Program Coordinator

• **Summer Science Workshops for Teachers and Students**

Carleton College is offering many science workshops for AP teachers this summer. Teachers will have an opportunity to earn graduate credit for taking these courses. Our Summer Teaching Institute will take place June 22-25, 2009. In addition, we are unrolling our new Carleton Summer Science Institute for high school sophomores and juniors. This program is designed to give students a brief look at three different areas of science and then they complete an independent project for the end of the course. Students will also receive college credit upon successful completion. The Science Institute will run from July 19 – August 7, 2009. You can learn more about our programs at [www.carleton.edu/summer](http://www.carleton.edu/summer)

Jeremy Updike       Phone: 507-222-4098
Director of Summer Academic Programs
Carleton College
One North College Street
Northfield, MN 55057
• **Weather Forecasting & Earth Science Contest**

Your students are invited to participate in the Free Seventh Annual National Weather Forecasting and Earth Science Contest. Students will get a chance to compete against other teams from schools across the USA. They will have a chance to win hundreds of dollars and additional prizes. Last year's champ received $250 dollars and additional prizes for their performance. The 2007 championship team got a special tour of a NWS office and the captain received an internship with the National Weather Service.

The 2009 contest begins on March 9 or 16, 2009. To find more information, email weducate@dramscape.com.

Although the contest is limited to 5 students, the learning tools, principles, and concepts derived from the contest can be easily adapted to the classroom environment. For the last several years we have been assisting teachers in changing the way that the weather and climate module is taught in the classroom. Find out why an inquiry based methodology is extremely effective for the teaching of earth science. In addition to weather and climate, the contest also covers other earth science topics.

No purchases or special equipment are required. Through the use of existing technology (readily available in all schools), we can create a high-performance learning environment that overcomes the limitations of textbooks. As a result, students are learning first hand that the atmosphere and weather are not 2-D and static but a 4-D dynamic experience.

We hope that you will give your students an opportunity to have a fun learning experience. Only one team per school is allowed. Every school building however, in the district with earth science (or equivalent) can have a participating team.

Richard Morris, Meteorologist & Founder, Weducation, Inc.

• **Attend the NSTA National Convention**

Testing in science is coming. Are you sure your students will perform well enough to meet requirements? If you need to build your skills, learn new content, and develop new strategies to raise performance, the National Science Teachers Association can help. The NSTA National Conference on Science Education is happening in New Orleans, March 18-22, 2009. Join 10,000 science educators at this premier event and take advantage of expert-led workshops on critical topics, presentations by renowned speakers, and sessions for every discipline and
grade band. With nearly 2000 sessions to choose from, you’ll surely find what you need most. Here is just a sample of what you can expect in professional development.

- Scientist, comedian, teacher, and author Bill Nye the Science Guy, one of the original founders of The Planetary Society will present on studying the planet from space.
- Renowned ethnobotanist Mark Plotkin will speak on “Rain Forests, Medicine Men, and Google Earth: Curing the Incurable and Saving the Amazon in Six Dimensions”
- Detecting, Diagnosing, and Coping with Students’ Chemistry and Physics Misconceptions (High School)
- Developing Literacy and Addressing Content Standards Through Issue-oriented Science (High School)
- Hopping Into Math and Science Integration (Elem-Middle)
- The Inquiry Carnival: A Potpourri of Activities to Identify, Discuss, and Define Process Skills Used in Inquiry-based Science (Middle)
- Innovative Technology in Science Instruction (Middle-High)
- Science Fair Projects for Elementary Students (Elem)
- Phenomena of Nature: Developing, Classifying, and Answering Investigative Science Questions in the K–8 Classroom (Elem/Supervision)
- Assessing the Effects of Professional Development on Teacher Pedagogical Knowledge (Supervision)

There is a lot more to consider including Day Long Programs i.e. Informal Day, Professional Development Institutes (ticketed) that are comprehensive and focused study sessions, field trips, and the Exhibition Hall where you can view new products and bring home hundreds of freebies for the classroom. Graduate credit can be earned by attending 12 hours of conference programs. Take advantage of our advanced deadline extended to Feb. 20 for the best savings. For additional information, visit www.nsta.org/conference.

- **ISU Summer Research for Biology Teachers**

Reminder from last newsletter: Summer Research Experience in Molecular Biology, Biotechnology and Genomics at ISU, June and July, 2009. There is a $5000 stipend. Free housing in furnished apartments is available if needed. There is a travel Reimbursement.  
http://www.eeob.iastate.edu/plantgenomeoutreach/7-12teachers.htm
• **Midwest Environmental Conference**

The 2009 Midwest Environmental Education Conference (MEEC) will be held at the I Hotel and Conference Center in Champaign, IL, October 14-17.

MEEC’s 2009 Theme is "Climbing the Green Wall". Everyone has ‘walls’ or barriers to climb in their profession, whether those barriers are with Administration, Interpretation, Natural History or Sustainability; this conference will give you the knowledge to climb over those walls to maximize your potential in the field of EE! The call for presentations is due by April 1st. For more information and to register: [http://www.eeai.net/annual_conf.htm](http://www.eeai.net/annual_conf.htm)

• **UNI STORM Project Summer Short Course**

The Science Center for Teaching, Outreach, and Research on Meteorology (the STORM Project) at the University of Northern Iowa will sponsor a short course entitled “Studies in Air Quality for Science Educators” on June 21-26, 2009. Participants will receive a stipend. Expenses, including travel, will be paid by the STORM Project. Out-of-state teachers are encouraged to apply. Applications received by February 27 will receive first consideration. For more information, see: [http://www.uni.edu/storm/saqse/](http://www.uni.edu/storm/saqse/)

• **Institute in Physics & Physical Science**

Summber Institute in Physics and Physical Science, June 23-July 31, 2009 - Department of Physics, University of Washington, Seattle

This Center for Physics Education offers a six-week, 10-credit summer institute in physics and physical science for full-time teachers. Classes meet from 9 a.m. to 3:30 p.m. Mon. -Thurs. Directed by Professor Lillian C. McDermott and supported by NSF, the institute is tuition-free and a $1500 stipend is offered on successful completion of the course work. Additional money is available for lodging for persons from outside the Seattle area.

The *Physics by Inquiry* curriculum used in the course has been designed to strengthen the subject matter background of teachers in topics typically covered in precollege physics and physical science using inquiry instruction. The materials emphasize the development of fundamental concepts and reasoning skills through laboratory experience. The class is divided into two sections: one for elementary-middle school teachers with little or no background in physics; the other for high school teachers of physics, physical science, and mathematics.

The application deadline is February 28, 2009.

Additional information is available on our website: [http://www.phys.washington.edu/groups/peg/si2009.html](http://www.phys.washington.edu/groups/peg/si2009.html).
Activities

• Geologic Time:

Those of us who teach deep time know that geologic time is a very abstract idea for high school students. For students who are “in the here and now” realizing the immense amount of geologic time can be a challenge. Here’s an activity that was passed on to me from Jack Troeger, retired AHS Earth Science teacher. Through this activity, students use a yearlong calendar to model the geologic calendar. Please feel free to modify the following activity to fit your classroom! You will need a current year calendar for this model for figure 1. This activity is written for the 9th grade student. You will need to make changes in dialogue for older or younger students.

To extend this activity, you may want the students to think about specific events that have occurred in Earth's history. Students could determine which day of the human calendar these events occurred and mark them on the calendar in Figure 1.

SOME POSSIBILITIES.... first life forms, first complex life forms, trilobites common through extinction, corals populate oceans, plants begin, first land animals begin, fishes, first amphibians, greatest mass extinction (Permian), first dinosaurs, first mammals, first whales, hominids appear, Pangaea forms, Appalachians form, Atlantic begins to form, Pangaea splits, extinction of dinosaurs, Rocky Mountains begin form, Alps and Himalayas form, Ice Ages occur, Volcanoes in Iowa (Precambrian), Oceans cover Iowa, Iowa becomes dry land, meteorite impact in Iowa, Glacier covers central-Iowa. Enjoy!

– De Anna Tibben, chair-elect

TIME IN A ROCK

Have you ever kept a diary or journal? Earth is like a great big diary. The rocks retain a record of events just like people keep a record of their lives in a diary. The calendar used by humans is short and easy to work with. Earth's calendar is much longer and not quite so simple, but it gets easier to use the more you use it. The calendar you use begins on January 1st and ends on December 31st, then starts over again. Earth's calendar never ends, it just keeps going....and going....and going....like a little, pink, furry bunny we all know. The human calendar is divided into months, weeks, and days. Earth's calendar is divided into Eras, Periods, and Epochs.

How long does a year seem to you? Does a year seem to go by fast or slow? Which day do you look forward to most each year? Obviously, the first day of school, right? Have you ever really thought about just how much you do in one year? For example, how many times does your heart beat in a year? How many times do you breathe? How much food must your body eat and digest to keep you healthy?

What would it be like if you could squeeze your whole life into the time of just one year? Most of you are 14 or 15 years old. Imagine putting all those years into 12 short months or 365 days. Imagine squeezing all of your life into one year! You are young, that wouldn't be so hard to do. Now, imagine squeezing all of your teacher's life into just one year! Each month would be equal to a little over 3 years! But wait, there's more...

Now, imagine squeezing all of Earth's "life" into just one year! That's some task! Remember, scientists believe the Earth is about 4.6 Billion years old--just a tad older than your teacher!! Earth's birth would be on January 1st, and today, right now, would
be the last moments of December 31st. Just how would all of Earth's history fit into one year?

Look at the calendar shown in **FIGURE 1**. All 365 days are shown. Now, look at **TABLE 1** below. Use the calendar (figure 1) and the table to list the dates you think each of the following time periods began in the proper blanks. The Precambrian Era begins on January 1st. Estimate what date the Cambrian Period began. Did it start on January 15th? February 11th? March 8th? etc? Make an educated estimate based on what you already know about geologic time as to when each Period would be on the calendar. NOW is marked December 31st on **TABLE 1**.

**TABLE 1**

<table>
<thead>
<tr>
<th>Period</th>
<th>Date</th>
<th>Period</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precambrian Era</td>
<td>January 1</td>
<td>Triassic Period</td>
<td></td>
</tr>
<tr>
<td>Cambrian Period</td>
<td></td>
<td>Jurassic Period</td>
<td></td>
</tr>
<tr>
<td>Ordovician Period</td>
<td></td>
<td>Cretaceous Period</td>
<td></td>
</tr>
<tr>
<td>Silurian Period</td>
<td></td>
<td>Tertiary Period</td>
<td></td>
</tr>
<tr>
<td>Devonian Period</td>
<td></td>
<td>Quaternary Period</td>
<td></td>
</tr>
<tr>
<td>Mississippian Period</td>
<td></td>
<td>NOW</td>
<td>December 31</td>
</tr>
<tr>
<td>Pennsylvanian Period</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permian Period</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Now let’s calculate the actual dates for the following events on the human calendar if the Earth's history is scrunched down to one year's time. In other words, on what date did the events listed in **TABLE 1** occur? There are 365 days in the year and there are 4.6 Billion years in Earth's history. Written out 4.6 billion looks like this: 4,600,000,000!

**How would you figure out where to put the events on the human calendar?**

Remember, you are trying to squeeze 4.6 billion years down to 365 days. Question--one day on the human calendar equals how many years of Earth history? 5 years? 500 years? 5000 years? 5 million years? If you know how to calculate the answer already, skip down to the next line like this one:

If you need some help calculating the answer to the question above, continue reading. Think of it this way. If 365 days equals 4.6 billion years, 1 day equals how many years? Perhaps the 4.6 billion years is such a large number that you are overwhelmed by it, so let's figure this out with a number you can deal with. Replace 4.6 billion years with, say, 1000 years. Now, if 365 days equals 1000 years, 1 day equals how many years? To find the answer divide 1000 by 365 or

\[
\frac{1000}{365} = 2.739726
\]

The answer is: 1 day = 2.739726 or 2.7 years rounded off.

Now, do the same thing with 4.6 billion years.

\[
\frac{4,600,000,000}{365} = 12,601,066.2567668
\]

The answer is: 1 day = 12,601,066.26 years rounded off.
Round off your answer to the nearest hundred thousand years.

One day = ________________ years.

Is the number you wrote on the blank above bigger or smaller than you thought it would be? Explain.

Show me your answer on the line above before you go on!!!

Teacher Check #1_____

Now look at TABLE 2. It lists the same periods of time shown in TABLE 1. But it also lists when the time period began. For example, the Precambrian era began 4.6 bya (bya = billion years ago) and the Cambrian period began 600 mya (mya = million years ago). The length of each period of time is also shown. For example, the Precambrian era was 4 by (billion years) long from start to finish. The Cambrian period was 100 my (million years) long. How long was the Permian period? _______

The numbers shown in TABLE 2 are approximate and have been rounded off for your convenience. Use the number you just calculated to find how many days from NOW (December 31st) you will need to count backwards to equal the 600 million years that the Cambrian period lasted. Do this for each period and round off to the nearest day except for the Quaternary Period, which will have to be given in hours before NOW. Remember NOW is midnight on December 31st.

### TABLE 2

<table>
<thead>
<tr>
<th>Time period</th>
<th>began</th>
<th>days ago on scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precambrian Era</td>
<td>4.6 bya</td>
<td>365</td>
</tr>
<tr>
<td>Cambrian Period</td>
<td>600 mya</td>
<td></td>
</tr>
<tr>
<td>Ordovician Period</td>
<td>500 mya</td>
<td></td>
</tr>
<tr>
<td>Silurian Period</td>
<td>440 mya</td>
<td></td>
</tr>
<tr>
<td>Devonian Period</td>
<td>400 mya</td>
<td></td>
</tr>
<tr>
<td>Mississippian Period</td>
<td>360 mya</td>
<td></td>
</tr>
<tr>
<td>Pennsylvanian Period</td>
<td>320 mya</td>
<td></td>
</tr>
<tr>
<td>Permian Period</td>
<td>290 mya</td>
<td></td>
</tr>
<tr>
<td>Triassic Period</td>
<td>245 mya</td>
<td></td>
</tr>
<tr>
<td>Jurassic Period</td>
<td>200 mya</td>
<td></td>
</tr>
<tr>
<td>Cretaceous Period</td>
<td>140 mya</td>
<td></td>
</tr>
<tr>
<td>Tertiary Period</td>
<td>65 mya</td>
<td></td>
</tr>
<tr>
<td>Quaternary Period</td>
<td>2 mya</td>
<td>hours</td>
</tr>
<tr>
<td>NOW</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Show me your answers for TABLE 2 above before you go on!!!

Teacher Check #2________

Now you will use the numbers you wrote in on TABLE 2 to fill out TABLE 3. REMEMBER you must count backwards from December 31st each time to fill in the dates on TABLE 3. According to our scale what day and month did the Cambrian Period begin? Put that date in the blank on TABLE 3 for the Cambrian Period.
Calculate and fill out the rest of **TABLE 3**. Be very careful with the numbers; it is very easy to make a mistake here. Check your work.

**TABLE 3**

<table>
<thead>
<tr>
<th>Time period</th>
<th>date began on scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precambrian Era</td>
<td>4.6 bya</td>
</tr>
<tr>
<td>Cambrian Period</td>
<td>600 mya</td>
</tr>
<tr>
<td>Ordovician Period</td>
<td>500 mya</td>
</tr>
<tr>
<td>Silurian Period</td>
<td>440 mya</td>
</tr>
<tr>
<td>Devonian Period</td>
<td>400 mya</td>
</tr>
<tr>
<td>Mississippian Period</td>
<td>360 mya</td>
</tr>
<tr>
<td>Pennsylvanian Period</td>
<td>320 mya</td>
</tr>
<tr>
<td>Permian Period</td>
<td>290 mya</td>
</tr>
<tr>
<td>Triassic Period</td>
<td>245 mya</td>
</tr>
<tr>
<td>Jurassic Period</td>
<td>200 mya</td>
</tr>
<tr>
<td>Cretaceous Period</td>
<td>140 mya</td>
</tr>
<tr>
<td>Tertiary Period</td>
<td>65 mya</td>
</tr>
<tr>
<td>Quaternary Period</td>
<td>2 mya</td>
</tr>
<tr>
<td>NOW</td>
<td>midnight on Dec. 31</td>
</tr>
</tbody>
</table>

Show me your answers for **TABLE 3** above before you go on!!

**Teacher Check #3**

Now refer to the calendar in **FIGURE 1**. Use colored pencils to *lightly* color in the parts of the calendar that represent each time period on the geologist’s calendar. In other words, color all of the Precambrian Era a particular color from January 1st through the day before the date you entered for the Cambrian Period in **TABLE 3**. Then color in the days represented by the other time periods using a different color each time. There may be more time periods than colored pencils so you will need to use some colors more than once. **How will you communicate different periods if they are the same colors?** *(Answer: students will need to use patterns)* Label the time periods with the appropriate names. Also label the Paleozoic Era beginning with the Cambrian and continuing until the end of the Permian, the Mesozoic (Triassic-Cretaceous), and the Cenozoic (Tertiary-Now).

Use **TABLE 4** to make a legend for your calendar. For each time period color the blank in the column "**color used**" the same color as what you used for that time period on **FIGURE 1**.

**TABLE 4**

<table>
<thead>
<tr>
<th>Time period</th>
<th>color and/or pattern used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precambrian Era</td>
<td></td>
</tr>
<tr>
<td>Cambrian Period</td>
<td></td>
</tr>
<tr>
<td>Ordovician Period</td>
<td></td>
</tr>
<tr>
<td>Silurian Period</td>
<td></td>
</tr>
<tr>
<td>Devonian Period</td>
<td></td>
</tr>
<tr>
<td>Mississippian Period</td>
<td></td>
</tr>
<tr>
<td>Pennsylvanian Period</td>
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<tr>
<td>Permian Period</td>
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<tr>
<td>Triassic Period</td>
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<tr>
<td>Jurassic Period</td>
<td></td>
</tr>
<tr>
<td>Cretaceous Period</td>
<td></td>
</tr>
<tr>
<td>Tertiary Period</td>
<td></td>
</tr>
<tr>
<td>Quaternary Period</td>
<td></td>
</tr>
</tbody>
</table>
• **Beginning-of-Year Letter:**

Do you have a student teacher this spring semester? Is there a student teacher in your department or in your building? Do you remember your student teaching experience? Do you remember that first year? Did you just shudder from those memories? Or did you have a mentor who made that first year a little better by sharing ideas and lessons with you? For part of my submission to this issue of the ISTS newsletter, I thought I would share the letter I send home with my students on the first day of classes. This letter (that is the first page of my syllabus) has evolved over the years. I’ve included some of that evolution and my rationale for the changes. Possibly you could share this letter or your own letter with a student teacher in your building or a first-year teacher. Giving your new and future colleagues examples to get started will help both them and you. Anytime we reflect on why we do what we do, what our goals are, and are able to clearly articulate these, we grow as professional teachers.

Best wishes for a positive spring semester!

-De Anna Tibben
ISTS Chair-elect

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2007-08 School Year

Dear Parent/Guardian,

Greetings! My name is Mrs. De Anna Tibben and I will be teaching your son’s/daughter’s Earth Science content teacher this year. I am looking forward to working with you and your child this year as we learn and explore together!

I feel that Communication between teacher/parent/student is vital for student success. **Together we can ensure that your son/daughter not only is successful with the science lessons, but also with the life-lessons such as responsibility, being an effective communicator, being respectful of self and others, and being able to know his/her own learning and effective methods of learning.** With this in mind, I have provided you and your son/daughter with this Earth Science Class Packet. This packet will outline the course and classroom expectations. A general syllabus has been included, but please note that changes may occur.

Please take time to go over this packet with your son/daughter. Once you and your child have read over the packet, please sign the bottom portion. **Your son/daughter will receive credit when he/she turns it in by his/her class period on**

Assignments, assigned readings, extra credit opportunities, test/quiz assessment notices (quizzes/tests/self-assessments), and other classroom activities will be posted on infinite campus. Please feel free to visit my
classroom (room 45), call me at AHS 817-0600 ext. 261, or send me an email at dtibben@ames.k12.ia.us with any questions, concerns or comments. Remember communication can be is the key to success!

Sincerely,

De Anna Tibben
Earth Science Teacher

Assessment is more than a number. I don’t want to set the stage for the “hoop jumping” of expecting points on all work, and playing the number game to figure out what assignments a student can be “lazy” on or which ones they really need to do. I want them to have meaningful assignments that they will want to do their best on. How will I do this? Keep them involved in the learning process!

**********************************************************************
Student Name ________________________________ period ______________ (print)
We have read the Earth Science Class Notes together and understand the expectations for each Earth Science student. We understand that if there are any questions or concerns, we can contact Mrs. Tibben at the High School.
Parent/Guardian Signature(s): ______________________________________
Student Signature:________________________________________________
The bottom portion of this letter must be returned by class time _____________ in order for your son/daughter to receive credit. (Please keep upper portion for your records)

I have added the changes to my syllabus to reinforce my teaching philosophy; that I teach skills by using Earth Science content, not that I teach Earth Science content by using skills. To help create a classroom climate in which students will begin to look at themselves as learners and to evaluate their preferred learning styles, I have directly put such expectations in my course syllabus. I want to set the expectations so that the student knows EXACTLY what is expected so that they may have the most success. I do not want the learning process to be a mysterious thing. I want to model thinking patterns and study pattern from day one. I want to provide experiences for my students to be metacognitive.

Presenters’ Guide, adapted by Traci Maxted

This guide has been prepared with you, the presenter, in mind. Its only purposes are to help you make your experience as a presenter the best one possible and to help provide the best possible experiences for those that attend the ISTS Fall Conference. We wish you the best of luck with your presentation this year and thank you for your
participation. Without your efforts, the Fall Conference could not be a success.

Parts of this guide was adapted by Jim Kubichek, 1992 ISTS Conference Chair, from a presentation made at the 1991 New Orleans NSTA Regional Convention titled “You Should Be up Here” by Drs. Karen Swift and Sandra Cain, Central Michigan University.

Selecting the Topic

You have may have already selected your topic but perhaps this portion of the Presenters’ Guide may be of value in future presentations.

The ISTS Fall Conference emphasizes the presentation of materials which incorporate the Iowa Science Core Curriculum framework of science concepts and skills. It is hoped that the focus of these presentations will help teachers be more aware of and effectively use research-based, best-practice instructional and assessment strategies which will help students become more scientifically literate.

In selecting your topic consider these FAQ’s:

Who is my audience? Identify your target audience and keep the presentation relevant to them. Does this topic pertain to elementary, middle school, or high school teachers and students? Is this a general update on education that would be relevant to all audiences? Be sure to indicate your intended audience when you submit your proposal.

What are the current issues? Consider your own classroom, school district, discussions with colleagues, recent journal articles, recent state and national legislative actions, classroom technologies, and educational trends and research. The Conference Strands suggested when you submit your proposal are to help the participants choose which of the break-out sessions to attend. If you feel your presentation fits more than one of the strands, indicate that in the “other information” section of the proposal.

What do I have to offer my audience? You can rely on your experiences, your students’ experiences and your district’s experiences. Often it helps to have a partner to broaden the range. Remember, ideas that are “old” to you probably are new to someone else.

Have I sufficiently narrowed the focus of my presentation to make the best of the allotted session time? Allow for
questions from the audience/ participants. Be sure that you can complete your presentation in the allotted time. Remember that you will need some time to clear the room for the next presenter. There are only 15 minutes between presentations.

Preparing the Proposal

Where can I find the proposal form?

Online at http://ists.pls.uni.edu/forms/fall-conf/present/index.html

Be sure to have the form filled out by the deadline of June 1, 2009.

If you need assistance in filling out the form contact:
Conference Chair, Morgan Masters at morgan.masters@ankenyschools.org
ISTS chair DeAnna Tibben at dtibben@ames.k12.ia.us
Program chair: Traci Maxted at tmaxted@cr.k12.ia.us
Or the IAS Program Director: Marcy Seavey at seavy@uni.edu
Office - 319-273-7486

What information do I need to submit a proposal?

Title: An attractive or catchy title is helpful in attracting participants. Be sure to use a positive approach.

Brief description: A brief but complete description of the presentation is needed to help understand your proposal. This helps the conference committee decide what presentations to use and how to balance the program.

Summary Statement: The summary statement will be used in the program to let the participants know what to expect from the presentation. This is your opportunity to “sell” your presentation.

Length of Presentations: Will be 30 or 45 minutes. There is also a place to indicate either is OK.

Type of Presentation:

Hands-On Workshop - This is a presentation that provides everyone in the audience with a hands-on experience. Tables/Chairs are provided for participants.

Demonstration - This is a series of activities or experiments allowing only limited participation by the audience. Chairs are provided for the participants.

Lecture - This is a sharing of ideas, techniques, or research results, with audience participation limited to questions. Chairs are provided for participants.
Preparing the Presentation

*What is the purpose of your presentation?* Is it to 1) increase knowledge, 2) increase skills, or 3) influence attitudes or a combination of these?

**Consider Collaboration:** A partner can really help insure the success of a presentation, especially for the first few times. They can provide needed moral support. They can also logistic support during the presentation by handing out or collecting materials. Your partner may provide another viewpoint for evaluation and input. It is true that in many cases “two heads are better than one.”

**How should I structure my presentation?** Think of your presentation as a lesson plan. Plan your presentation to your colleagues as you would a presentation to your students.

- **Opening:** the “grabber”, an advanced organizer or anticipatory activity
  Get them focused on you and your presentation.
- **Experience:** Consider what method will best present your information.
- **Closing:** Be sure to bring your presentation to closure.
  Try to end it with a “clincher”. Challenge your participants to make a commitment to try something new, change their behavior, modify their beliefs or etc. Keep them thinking about your presentation after they leave.

**What is your presentation method?** Are the participants going to learn by hearing, seeing, doing or a combination of these? The most effective approach is probably to combine all three in your presentation if possible. Consider the type of presentation you have selected.

Methods for Telling:
- Lecture
- Storytelling
- Panel
- Case Study/Analogy
- Challenging Statements
- Recordings

Methods for Doing:
- Supervised Practice
- Role playing for participants
- Coaching
- Simulations
- Hands-On Activities
- Reflecting & Synthesizing
- Participant Sharing
Methods for Showing:
- Pictures
- Videos
- PowerPoint presentations
- Physical Models/Examples
- Overhead slides (projectors are increasingly difficult to obtain)

<table>
<thead>
<tr>
<th>Pictures</th>
<th>Charts/Graphs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Videos</td>
<td>Demonstrations</td>
</tr>
<tr>
<td>PowerPoint presentations</td>
<td>Skits/role playing</td>
</tr>
<tr>
<td>Physical Models/Examples</td>
<td>Behavior Modeling</td>
</tr>
</tbody>
</table>

**Dress:** Be professional. First impressions count.

**Handouts:** Be sure to have sufficient numbers – at least 50 copies. Participants appreciate handouts and will often take more than one.

**Equipment:** You will be provided an extension cord with at least three outlets. Each room will have a table for the presenters and their AV equipment. A blank wall or screen will be available for projection. There is a room for you store your materials when you are not using them. Wifi should be available in all the presentation rooms.

**Presenting:**

**Before the conference:**
- Make plenty of copies
- Double check all needed materials before leaving home.
- Bring extras – of everything!
- Business cards are a nice touch and make it easy for participants to network with you in the future.

**At the Conference - Before the presentation:**
- Register on arriving. Here you will also find where you may store materials for your presentation. If necessary you may unload your materials at the Conference Center. Please move your vehicle as soon as possible.

- If you have a lot of materials to move, check with registration about getting help. This is another good reason to consider a partner.

- Find the room in which you will present and double check the time. Last minute changes do occur. If possible check the room for your needs such as
arrangement of tables, outlets and AV hookups. Check your AV equipment to be sure it is working properly. Tech problems are a big distraction.

*Your Presentation!*
Relax and enjoy your presentation. This is a great opportunity to share information with others. You may learn a thing or two yourself.

Let the conference committee know of problems as soon as possible. We are there to make your presentation go smoothly.

Remind the audience of the presentation. Try to provide the participants with something they can actually take home. Packets, outlines, a sample, something made or created during the session are examples.

Thank-you for taking the time and effort to present. The Fall Conference could not happen without you!

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**News**

- **Iowa Hygienic Lab on IPTV**

  Iowa Hygienic Lab has several shows on IPTV (iptv.org) for teachers, students and the public. Check out the following titles:
  
  - Edible Aquifers         February 28
  - Public health: Pathway to Adventure  March 3
  - Mom, Why Can’t I Eat Hamburgers?  April 21

- **Physics Instruction Websites**

  Here are two not-for-profit sites that support high school physics instruction and learning--*The Physics Front* ([http://www.thephysicsfront.org/](http://www.thephysicsfront.org/)) and *Physics To Go* ([http://www.physicstogo.org/](http://www.physicstogo.org/)).
*The Physics Front* is an online library of physics and astronomy resources whose goal is to provide enhanced accessibility to peer-reviewed quality physics teaching resources for all pre-college teachers of physics and the physical sciences with special support for new and "cross-over" teachers of all levels of science. The collection contains references, lesson plans, activities, labs, assessments and best teaching practices all searchable by subject and course type. Users can also contribute to this dynamic and growing online physics teacher community by sharing, accessing and archiving exemplary teacher-designed materials.

*Physics To Go* is a collection of more than 700 carefully selected online resources for physics learning, and it has great potential value for teachers. The homepage offers striking images, from both everyday physics and from research, with links to related sites that discuss the physics involved. These features can be very useful as examples of the application of physics concepts. The homepage is updated every two weeks, and past features, including more than 120 images, are archived.

*The Physics Front and Physics To Go* are part of the ComPADRE ([http://www.compadre.org/](http://www.compadre.org/)) collection of electronic resources in physics and astronomy education. ComPADRE is a joint project of the American Association of Physics Teachers, American Astronomical Society, American Physical Society, and American Institute of Physics. ComPADRE is supported by the National Science Foundation.

A third site is from MIT and features Open Courseware materials and courses for high school students...and it's all free! This might be a good resource for AP students, as well as students who learn by demonstration (they have a lot of videos demonstrating scientific principles).

Go to: [http://ocw.mit.edu/OcwWeb/hs/home/home/index.htm](http://ocw.mit.edu/OcwWeb/hs/home/home/index.htm)

• **Public Television Materials**

Public television has long been a supporter of science education, offering high-quality television for adults and children alike, as well as FREE educational outreach materials. Members may find these materials useful in their work; they are especially relevant for the upcoming Earth Day (4/22). Specifically:

THE GREENS Activity Guide springs from a PBS Web site that encourages kids ages 9 to 12 to explore sustainability and take action wherever they cans. How-to information in the Guide pairs hands-on activities to deepen kids’ understanding of topics like recycling and global warming with campaigns to reduce junk mail
and get drivers to stop idling cars. The Guide can be downloaded at http://meetthegreens.pbskids.org/features/, and FREE print copies may be ordered by putting “THE GREENS” in the subject line of an e-mail to wgbhmaterialsreq@wgbh.org.

New activities from CURIOUS GEORGE focus on earth science and Societies might consider leveraging GEORGE’s appeal with preK-2 children to celebrate Earth Day, April 22, 2009. Age-appropriate investigations are detailed online at pbskids.org/curiousgeorge/parentstteachers/activities/ aptly named “Curiosity Centers”. At these “Curiosity Centers” (or activity stations), children can make their own discoveries about recycling, wind, water drops, and the properties of soil and sand. A related episode from CURIOUS GEORGE, which might help introduce the topic of earth science to children, can be ordered for free by contacting gay_mohrbacher@wgbh.org.

Gay L. Mohrbacher Phone #617-300-5308 Outreach Project Director, WGBH Educational Foundation One Guest Street Boston, MA 02135

• **Up-To-Date Space Science News**

You are invited to register for the free weekly publication by requesting same via email on the Space Calendar site: http://www.spaceagepub.com/calendar/currentcalendar.html.

You may find the astronaut podcast videos interesting as well, at www.bcit.ca/returntothemoon.

John Chapman, PEng., FCIM. Phone: 604.536.8356

• **News from The Space Place at NASA**

1. **Solve the Weather Picture**

Weather can be puzzling. What’s it going to do next? If only we could learn to solve it as easily as the weather picture "Slyder" puzzles on The Space Place (http://spaceplace.nasa.gov/en/kids/goes/slyder). You can pick easy, medium, or hard levels of difficulty to challenge your logical- and spatial-reasoning muscles and to reveal dramatic ground- and space-based images of Earth and space weather phenomena. Each image is
identified and credited. Whether you solve your chosen puzzle or not, you will be no doubt find abundant weather enlightenment.

2. **Severe Space Weather**
   by Dr. Tony Phillips

Did you know a solar flare can make your toilet stop working?

That's the surprising conclusion of a NASA-funded study by the National Academy of Sciences entitled *Severe Space Weather Events—Understanding Societal and Economic Impacts*. In the 132-page report, experts detailed what might happen to our modern, high-tech society in the event of a “super solar flare” followed by an extreme geomagnetic storm. They found that almost nothing is immune from space weather—not even the water in your bathroom.

The problem begins with the electric power grid. Ground currents induced during an extreme geomagnetic storm can melt the copper windings of huge, multi-ton transformers at the heart of power distribution systems. Because modern power grids are interconnected, a cascade of failures could sweep across the country, rapidly cutting power to tens or even hundreds of millions of people. According to the report, this loss of electricity would have a ripple effect with “water distribution affected within several hours; perishable foods and medications lost in 12-24 hours; loss of heating/air conditioning, sewage disposal, phone service, fuel re-supply and so on."

“The concept of interdependency,” the report notes, “is evident in the unavailability of water due to long-term outage of electric power—and the inability to restart an electric generator without water on site.”

It takes a very strong geomagnetic storm to cause problems on this scale—the type of storm that comes along only every century or so. A point of reference is the “Carrington Event” of August-September 1859, named after British amateur astronomer Richard Carrington who witnessed the instigating solar flare with his unaided eye while he was projecting an image of the Sun on a white screen. Geomagnetic storms triggered by the flare electrified telegraph lines, shocking technicians and setting their telegraph papers on fire; Northern Lights spread as far south as Cuba and Hawaii; auroras over the Rocky Mountains were so bright, the glow woke campers who began preparing breakfast because they thought it was morning!

“A contemporary repetition of the Carrington Event would cause … extensive social and economic disruptions,” the report warns. Widespread failures could include telecommunications, GPS navigation, banking and finance, and transportation. The total economic impact in the first year alone could reach $2
trillion (some 20 times greater than the costs of Hurricane Katrina).

The report concluded with a call for infrastructure designed to better withstand geomagnetic disturbances and improvements in space weather forecasting. Indeed, no one knows when the next super solar storm will erupt. It could be 100 years away or just 100 days. It’s something to think about … the next time you flush.

One of the jobs of the Geostationary Operational Environmental Satellites (GOES) and the Polar-orbiting Operational Environmental Satellites (POES) operated by NOAA is to keep an eye on space weather and provide early warning of solar events that could cause trouble for Earth.

You can keep an eye on space weather yourself at the National Weather Service’s Space Weather Prediction Center, www.swpc.noaa.gov <http://www.swpc.noaa.gov/>. And for young people, space weather is explained and illustrated simply and clearly at the SciJinks Weather Laboratory, scijinks.gov/weather/howwhy/spaceweather.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

3. **Create a Cloud Mobile**

Really get your head into the clouds when you make a wispy, light-as-a-cloud mobile that moves gracefully with the slightest breeze. From simple materials, construct a variety of clouds, using either our patterns or your own. Styrofoam take-out containers become your clouds, with shiny Mylar shredded "rain" falling from them. Just as in the atmosphere, your cirrus clouds will be at the top of the mobile and your nimbostratus at the bottom. And your big, scary cumulonimbus will reach from bottom to top. Visit spaceplace.nasa.gov/en/kids/clouds to get started.

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**Your ISTS Leadership:**

Iowa Academy of Science Mission:

- Promote scientific research and its dissemination
- Improve instruction in the sciences
• Promote public understanding of science
• Recognize excellence in science and science teaching

Check out past issues of the ISTS newsletter at: http://ists.pls.uni.edu/newsletters/index.html.

Your ISTS Leadership Team can be found at: http://ists.pls.uni.edu/officers.html.

(We are always looking for good people. Send an e-mail to scihawk@aol.com if you wish to be more involved.)

Invitation to improve/contribute to this newsletter:

How best can this newsletter serve you? Do you have something to contribute for the good of the ISTS membership? Zing a line at nweirather@central-lee.k12.ia.us or scihawk@aol.com.