



Global Learning and Observations to Benefit the Environment



The GLOBE Program:

Developing Global Leaders, Connecting the Next Generation of International Scientists, and Providing an International Model for **Student Scientific Research June 2010**

Dr. Teresa J. Kennedy, Ph.D. **Director, International Division, The GLOBE Program Professor, Bilingual/ELL/STEM Education** tkennedy@globe.gov









The GLOBE Program

Global Learning and Observations to Benefit the Environment

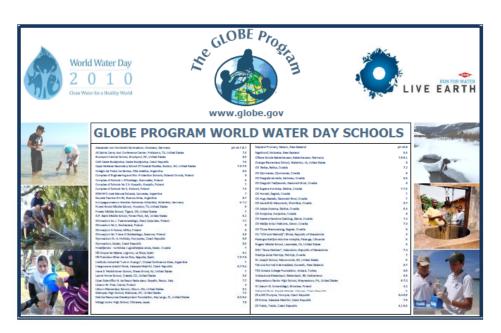
Former U.S. Vice President and Nobel Peace Prize Lauriat Al Gore invited countries around the world to join together to build and nurture a global network of young scientists on Earth Day 1994.

- * 1994-1995: International Scientists and Educators designed the GLOBE Program.
- * Earth Day 1995-1996: 35 Countries joined The GLOBE Program in the first year of operation.
- * Earth Day 2010: 111 Countries are working together, building the next generation of scientists and creating global citizens who understand and respect each others unique cultures!



GLOBE —15 Years!

Global Learning and Observations to Benefit the Environment



Earth Day 1995 - 2010:

Field Campaigns, Web chats and Forums, Student-Scientist Events and global research collaborations!



April 22nd



GLOBE strives to expand international student inquiry-based research using GLOBE data and other scientific data sets, facilitating student-scientist collaborative projects, and building strong community connections.



Global Learning and Observations to Benefit the Environment

GLOBE Vision

A worldwide community of students, teachers, scientists, and citizens working together to better understand, sustain, and improve Earth's environment at local, regional, and global scales.

GLOBE Mission

To promote the teaching and learning of science, enhance environmental literacy and stewardship, and promote scientific discovery.

Goals:

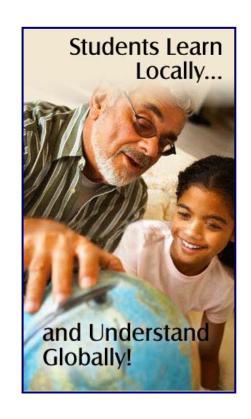
- Improve student achievement across the curriculum with a focus on student research in environmental and Earth system science;
- Enhance awareness and support activities of individuals throughout the world to benefit the environment;
- Contribute to scientific understanding of Earth as a system; and
- Connecting and Inspiring the next generation of global scientists.





Students Learn Science By Doing Science and Working with Scientists

- GLOBE students conduct inquiry projects
 - Ask questions and make observations about the world around them;
 - Collect research quality environmental data using GLOBE scientific protocols;
 - Report their observations to the GLOBE data archive (GLOBE Web site);
 - Analyze their data with GLOBE visualization tools (GLOBE Web site);
 - Seek additional data sources from scientists and community members;
 - Write and Publish research reports; and
 - Present their research at local community events as well as at national, regional and international student events.













GLOBE Sponsoring Agencies









Founding Organizations







CONCORDIA LANGUAGE VILLAGES







Cooperating Organizations-





INTERNATIONAL®



EARTH OBSERVATIONS





















NATIONAL MARRIE SANCTIMENT











Geosynchronous

Imaging Fourier

Transform

Spectrometer





Lilacs Special Measurement











AWS / International

Partners in Education



Institute of Electrical and

Electronics Engineers

































USAID United States Agency for International Development Development













University Corporation for Atmospheric Research Boulder, Colorado



Tall towers of the Mesa Laboratory



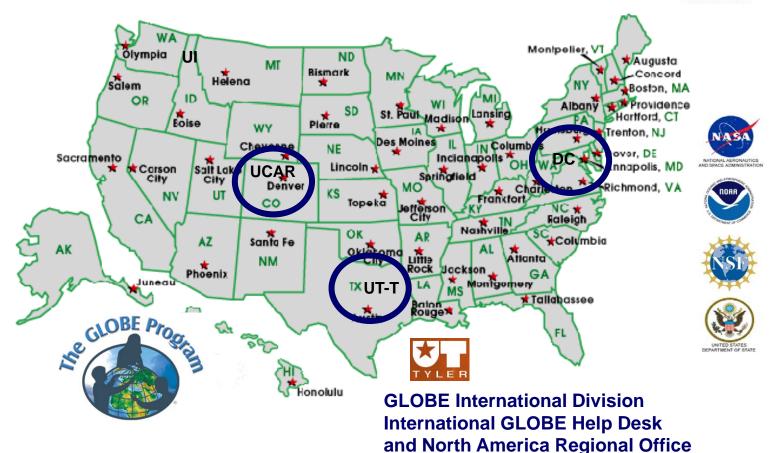
Manages the GLOBE Program Worldwide

UCAR is a non-profit consortium of research universities, serving as an international hub for research, education, and public outreach for the atmospheric and Earth-system science community:

28 countries plus the U.S.



The Mesa Laboratory and the Flatirons
© 2003 UCAR



--There are over a million and a half GLOBE students--

GLOBE Around the World



GLOBE has trained over 54,000 teachers representing more than 23,000 schools worldwide.

"GLOBE is the quintessentially ideal program for involving kids in science." Nobel Laureate Dr. Leon Lederman



GLOBE Partner Countries

Argentina Ethiopia Lithuania Philippines Poland Australia 🚾 ₩ŦFIII Luxembourg Austria Finland Macedonia Portugal Bahamas France Madagascar Qatar Gabon Romania Bahrain Maldives Bangladesh Gambia Mali Russia Rwanda Belaium Germany Malta Benin Ghana Marshall Islands Saudi Arabia Bolivia Greece Mauritania Senegal Bulgaria ■Guatemala Mexico Serbia and Montenegro Guinea Micronesia Burkina Faso South Africa Honduras Moldova Cameroon Spain Monaco Canada Hungary Sri Lanka Cape Verde lceland Mongolia Suriname Chad India Morocco Sweden Ireland Mamibia -Chile Switzerland Israel Nepal Colombia Tanzania Congo, The Republic of Italy Netherlands Thailand Japan Wew Zealand Costa Rica Trinidad and Croatia Jordan Tobago Niger Cvprus Kazakhstan Tunisia Nigeria Kenya Czech Republic Turkey Norway Korea, South Denmark Uganda Man Oman Dominican Republic Kuwait Ukraine Pakistan Kvravz Republic Ecuador United Arab Palau Emirates Latvia Egypt Panama United Kingdom El Salvador Lebanon Paraguay United States of Estonia Liechtenstein

America

territories
Uruguay

Peru

- Internationally, GLOBE is implemented through bilateral agreements between the U.S. government and the governments of GLOBE's 111 Partner Countries.
 - The bilateral agreements outline the responsibilities of the GLOBE Program Office and the responsibilities that all partner countries follow to ensure the students and their communities benefit from the vision, mission and goals of the GLOBE Program.

Partners recruit, train and mentor GLOBE teachers to support student research activities and connect SCIENTISTS to the GLOBE Community.



GLOBE Partner Countries by Region



Europe-Eurasia (40)Austria Harman (GLOBE site) Belaium Poland (GLOBE site) Bulgaria Croatia (GLOBE site) Cyprus Czech Republic (GLOBE site) Denmark (GLOBE site) Estonia (GLOBE site) Finland (GLOBE site) ■ France Germany (GLOBE site) Greece (GLOBE site) Hungary (GLOBE site) Israel lceland Ireland Italy (GLOBE site) Kazakhstan Kvrovzstan Latvia (GLOBE site) Liechtenstein Lithuania (GLOBE site) Luxemboura 🔣 Macedonia (GLOBE site) Malta Malta Moldova Netherlands LOBE site)







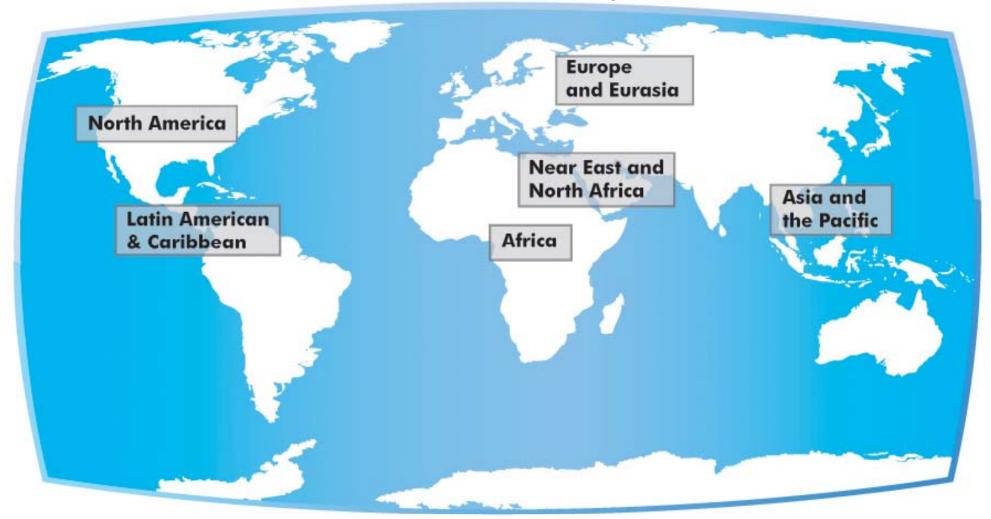


6 Regional Offices 25 national Web sites

5 regional Web sites

GLOBE Regions and the GIAC

GLOBE International Advisory Committee



Chair Asia/Pacific (India)



Mr. Rajinder Mehta Mr. Mark Brettenny Africa (South Africa)



Dr. Andy Tasker (UK) Mrs. Dana Votápková (Czech Rep) **Europe**





Prof. Maria del Carmen Mrs. Zakeva Ali Galloni, Latin America Caribbean (Argentina)



Near East (Bahrain)



Ms. Martha Willis **North America** (Texas)



GLOBE Student Research Campaign on Climate 2011-2013

GOALS

- Promote student-led climate research activities and strengthen international student-scientist collaborations;
- Enhance Climate literacy and understanding for millions of people around the world; and
- Continue developing collaborative partnership with international science organizations.

ACTIVITIES

- Climate Campaign Planning meeting at the WMO (2009);
- GLOBE Professional Development for teachers and Materials Development for classrooms (2010-2011);
- Begin Campaign (2011), linking to events around the world; and
- Fifth GLOBE Learning Expedition (2013) on Climate Research.

Climate Research on locally-relevant topics:

- Exploring Ecosystems and Climate
- Climate, Carbon & Your Footprint
- Global Climate Local Impacts
- Climate, Pollution & Human Health













GLOBE Highlights and Achievements

GLOBE has over 100 "known" Scientific and Pedagogical Publications



GLOBE was the recipient of the
2010 Award for Excellence in Science Education
from the Center for Excellence in Education
April 2010





The **Program for International Student Assessment (PISA)** 2006 reported that Finnish students have again garnered the top ranking amongst all 57 OECD nations plus 27 other administrative regions in science achievement for high school students (age 15).

• Chapter 13 of the book "How Fins Learn Mathematics and Science" (Sense Publishers, Rotterdam, 2007), the Fins have actively implemented GLOBE and other GLOBE supported activities such as the **ENO Program** in their compulsory science curriculum since 1996.

GLOBE Highlights and Achievements

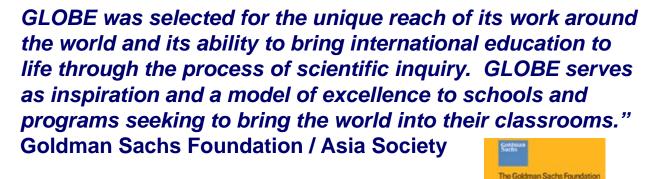


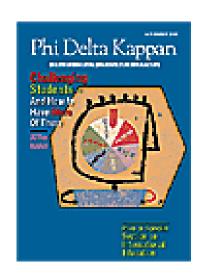
The GLOBE Program: Winner of the 2004 Media and Technology Category

The GLOBE Program

Technology Provides International Link

The awardees reflect new ways of teaching world languages and focus on the international dimension of every major subject, including math, science, language arts, history, geography and economics. They also feature creative and innovative uses of technology.



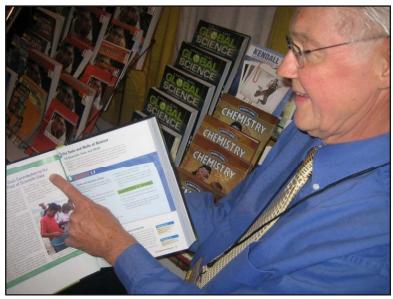


Phi Delta Kappa International— November 2004 • Volume 86 • Number 3 International Studies Resource Guide http://www.pdkintl.org

GLOBE in K-12 Textbooks

GLOBE activities have been included in textbooks in many countries around the world, such as in the 7th Edition of *GLOBAL SCIENCE*.





Primary Author: John Christensen

SPECIAL FOCUS

Make Your Own Contribution to the Global Pool of Scientific Data

ClobE is an ongoing international education and science program that unites students, teachers, and scientists in the study of Earth as a system. Students participating in GLOBE engage in inquiry-based scientific research of their local environment (Figure 1.7). GLOBE students collect, analyze, share, and report their data and findings with other students and with scientists around the world via the GLOBE website and database [www.globe.gov].

Students benefit from GLOBE through a better understanding and appreciation of Earth system science and through improved achievement and interest in science. Teachers benefit from GLOBE through professional development workshops and educational materials that support the integration of inquiry-based scientific investigations into their curricula. Scientists benefit from GLOBE through access to quality ground truth data from around the world that is unavailable by other means and through their interactions with teachers and students. Communities and countries benefit from GLOBE through enhanced awareness of and attention to local and regional environmental problems and through the building of cross-cultural relationships.

The GLOBE data are available at no cost to students and scientists worldwide. In the United States, GLOBE is primarily sponsored by the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF).

the University Corporation for Atmospheric Research (UCAR), Colorado State University (CSU), and the U.S. Department of State.

To begin making your contribution to the global pool of scientific data, go to www.globe. gov. Work with your teacher to establish your school's involvement.



▲ FIGURE 1.7 Students in Thailand prepare to work on GLOBE water quality protocols. (Courtesy: The GLOBE Program)



http://www.kendallhunt.com

GLOBE Program Evaluation

Stanford Research Institute (SRI International)
Program Evaluation 1994 - 2006



Positive impact on student learning and performance

- GLOBE contributed to the development of students' science knowledge
- More time hands-on / Less time memorizing

Improved student higher order thinking skills

- Interpreting data
- Drawing inferences

Enhanced student appreciation of what scientists do

- Studying problems without a clear solution
- Collaboration with other scientists

Heightened teacher expectations of students

"By 2004, GLOBE positioned itself as a leading and worldwide environmental science program that could significantly impact students' learning and understanding of science." (SRI, 2006) Current
evaluation
efforts are
focused on the
impact of
GLOBE's
inquiry-based
learning model





Search

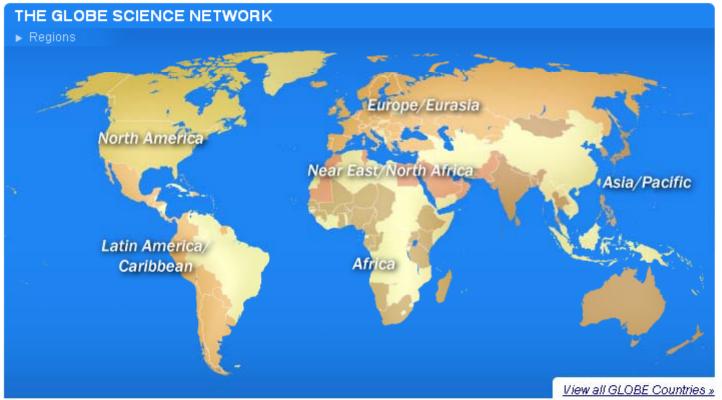
classic.globe.gov (13)

Sign In

Select Language

Powered by Google™Translate

HOME - ABOUT GLOBE - EXPLORE SCIENCE - WHAT'S NEW? -









GLOBE Global Learning and Observations to Benefit the Environment





















Sign In

HOME

PROJECTS

EVENTS

FORUMS

About GLOBE

Policies

Notre Dame School



Santo Domingo

Maria De Ruiz-Alma Grades 5 - 8

Projects

- · pH Protocol
- Temperature Data
- · World Water Day
- Live Earth

Teacher's Corner

- · Resources
- Climate Foundation Framework
- Messages
- Data Entry



Bulletin Board

· Tuesday's pH Protocol Activity

Lab Reports have been graded and posted

World Water Day Ideas

Come Up with a World Water Day Activity and Receive 5 Bonus Points on next Quiz







Incorporating: Google Earth to bring schools together and

using



GLOBE Science Network and



to promote

social networking and collaborative GLOBE research!



GLOBE Program

The



Hands-on Minds-on science











Atmosphere/Climate,
Hydrology, Soil,
Land Cover/Biology,
Phenology and
4 NSF Earth
System Science
Projects

AND SPACE ADMINISTRATION



Over 21 million environmental measurements



International
Science Education
Program in 111
countries







Dr. Teresa J. Kennedy, Director – International Division tkennedy@globe.gov