

Elementary GLOBE




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University of Arkansas GLOBE Workshop
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8:30	Introduction to Elementary GLOBE - Literacy and Inquiry Connections - Framework Correlations and Curriculum Alignment GLOBE webpages & Getting Registered
9:00	Earth As A System: <i>Our World On Stage</i> - Earth System In a Bottle - We're All Connected - Earth Systems card game
9:30	Seasons: <i>The Mystery of the Missing Hummingbirds</i> - All Year Long - Colors of the Seasons - Honing In on Hummingbirds
10:30	Atmosphere and Weather: <i>Do You Know That Clouds Have Names?</i> - Cloud Fun - Cloudscape - To Spread or Not to Spread - Data collection and GLOBE Data Entry
11:30	Lunch
12:00	Hydrology: <i>Discoveries at Willow Creek</i> - Measure Up - Magnify That - Water Wonders
1:00	Soils: <i>The Scoop on Soils</i> - Getting To Know Soil and Texture By Feel - Soil Treasure Hunt - We All Need Soil
2:30	Dismiss



June 9-10 Agenda Arkansas State University, Jonesboro

Tuesday		Wednesday
8:30	Intros and Logistics	GPS Setting a Site
8:45	Intro to GLOBE	
9:00	Earth as a System Introduction Cycles and Systems	Soils Introduction Soil Characterization Activity: <i>Texture By Feel</i>
10:00	Break	Break
10:15	Earth as a System cont. Activity: <i>Incredible Journey</i> Activity: <i>Surf and Sand</i>	Soils cont. NPK, pH
11:30	Lunch	Lunch
12:30	Atmosphere Thermometers current, max/min, calibration Activity: <i>Exploring Thermometer Readings</i>	Soils cont. Activity: <i>Just Passing Through</i>
1:45	Break	Break
2:00	Atmosphere cont. Clouds cover, type, contrails Precipitation measurement, rain gauge, pH Atmosphere observations/data collection	GLOBE online Review GLOBE website GLOBE ID and Data Entry Implementation Framework Tie-Ins
3:15	Wrap-up	Wrap-up
3:30	Dismiss	Dismiss

GLOBE Institute

5 Day Agenda

	GLOBE Day 1	GLOBE Day 2	GLOBE Day 3	GLOBE Day 4	GLOBE Day 5
8:00	Intro to GLOBE	EARTH SYSTEMS	PHENOLOGY Protocols	SOIL Protocols	REMOTE SENSING
8:30					
9:00					
9:30	ATMOSPHERE Protocols				
10:00					
10:30					
11:00					
11:30	Lunch	Lunch	Lunch	Lunch	Lunch
12:00	ATMOSPHERE Protocols and Activities continued	HYDROLOGY Protocols	BIOMETRICS Protocols	SOIL Protocols continued and Watershed Activities	Data Collection, Data Analysis Lessons and Projects
12:30					
1:00					
1:30					
2:00					
2:30					
3:00					
3:30	Date Entry - Atmosphere	Date Entry - Hydrology	Date Entry - Biometrics	Date Entry - Soils	Implementation
4:00	Framework Correlation	Framework Correlation	Framework Correlation	Framework Correlation	
4:30	Implementation	Implementation	Implementation	Implementation	
5:00	Dismiss	Dismiss	Dismiss	Dismiss	Dismiss

GLOBE Atmosphere Workshop
March 20, 2010

Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- What kind of weather did you see on the way in?
- Why would we want to study the atmosphere?
- Name one way weather changes over time.
- What do you want to know/study about weather?

Foundation Activities

- Orientation to how GLOBE 'numbers' pages
- [Atmosphere Investigation at a Glance Introduction](#)
 - o [Introduction](#)
 - o [Protocols Introduction](#)
- Clouds Foundation
 - o [Observing, Describing, and Identifying Clouds](#)
 - o [Estimating Cloud Cover](#)
 - o [Cloud Watch](#)
 - o [Cloud Quiz](#)
 - o [Observing Cloud Type](#)
 - o [Cloud On-Line Learning Module](#)
- Instrument and Site Set-up Foundation
 - o [Instrument Construction, Site Selection and Set-Up](#)
 - [Site Definition Sheet](#)
 - o [Studying the Instrument Shelter](#)
 - o [Investigation Instruments](#)
 - Clinometer (pg. 15-18)
 - [Clinometer Sheet](#)
 - [Table of Tangents](#)
 - o [GPS Protocol](#)
 - Compass (pg. 7)
 - [Field Guide](#)
 - [Data Sheet](#)

Field Work

- [Cloud Protocols](#)
 - o [Clouds 1-Measurement Data Sheet](#)
 - o [Clouds 7-Measurement Data Sheet](#)
- [Precipitation Protocols](#)
- [Digital Multi-Day Max/Min/Current Air and Soil Temperature Protocol](#)
 - o [Digital Max/Min Thermometer Calibration and Reset Data Sheet](#)
 - o [Digital Multi-Day Max/Min Data Sheet](#)
- [Optional Automated Soil and Air Temperature Monitoring Protocol](#)
- Multiple Protocol Data Sheets
 - o [Integrated 1-Day Data Sheet](#)
 - o [Integrated 7-Day Data Sheet](#)

GLOBE Intro Powerpoint

Evaluations for K-4 Teachers/Lunch for 5-12 Teachers

Field Activity

- [Optional Barometric Pressure Protocol](#)
- [Relative Humidity Protocol](#)
- [Surface Temperature Protocol](#)
 - o [Surface Temperature Data Sheet](#)

Earth as a System

- [Poster Activities](#) (2007 and 1987 Posters and Activities)

Evaluations for 5-12 Teachers

Earth as a System/Land Cover GLOBE Workshop
January 22, 2010

Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- What kind of land cover did you see on the way in?
- Why would we want to study land cover?
- Name one way land cover changes over time.
- What do you want to know/study about land cover?

Foundation Activities

- Orientation to how GLOBE 'numbers' pages
- [Land Cover/Biology Investigation at a Glance](#)
 - o [Introduction](#)
- Zoom by Istvan Banyai
- Side to Top Views
 - o [Odyssey of the Eyes Beginning](#)
 - o [Site Seeing Beginning](#)

Field Work

- [Site Selection](#)
- [Investigation Instruments](#)
 - o Modified UNESCO Classification (MUC) System (pg. 1-12)
 - [Practice Examples](#)
 - [MUC System Glossary](#)
 - o Densimeter (pg. 13-14)
 - o Clinometer (pg. 15-18)
 - [Clinometer Sheet](#)
 - [Table of Tangents](#)
 - o Pacing (21.2 m = # steps = # of samples) (pg. 19-20)
 - o Tape Measure (pg. 21)
 - o Investigation Instrument Assessment (pg. 22)
- [GPS Protocol](#)
 - o Compass (pg. 7)
 - o [Field Guide](#)
 - o [Data Sheet](#)
- [Land Cover Sample Site](#)
 - o [Field Guide](#)
 - o [Data Sheet](#)
- [Biometry Protocol](#)
 - o Ground and Canopy Cover
 - [Field Guide](#)
 - [Data Sheet](#)
 - o Tree Height
 - [Simplified Height Field Guide](#) & [Data Sheet](#)
 - [Field Guide](#) & [Data Sheet](#)

Classification

- [Bird Beak Activity](#)
- [Leaf Classification](#)

GLOBE Intro Powerpoint

Evaluations for K-4 Teachers/Lunch for 5-12 Teachers

Field Activity

- [Site Seeing Intermediate](#)
- [LC1: Connecting Parts of the Study Site](#)

Earth as a System

- [RC2: Effects of Inputs and Outputs on a Region](#)
- Inputs and Outputs
- Closed vs. Open Systems
- [Poster Activities](#) (2007 and 1987 Posters and Activities)

Evaluations for 5-12 Teachers

Elementary GLOBE and Inquiry Workshop

March 18 and 19, 2010

Elementary GLOBE

- Introductions
 - o Name, grade, school.
 - o What do you teach?
 - o Why are you here?
 - o Science Background
- Read the "All About Earth: Our World on Stage" book
- Activities
 - o [Earth System in a Bottle](#)
 - o [We All Need Soil!](#)
 - o [The Colors of the Seasons](#)
- Elementary GLOBE Introduction
 - o Walk thru books
 - o Powerpoint
- On-line Connections
- Science Process Skills Worksheet
 - o Inquiry Process Skills
 - o Questions
 - o Observing skills
- Read "The Scoop on Soils"
- Read "Discoveries at Willow Creek"

Inquiry Activities

Introductions/Inquiry Questions

- Four Question Strategy from [STUDENTS AND RESEARCH: PRACTICAL STRATEGIES FOR SCIENCE CLASSROOMS AND COMPETITIONS](#) by COTHORN JULIA H, GIESE RONALD N, and REZBA RICHARD J (Paperback - May 30, 2007).
 - o What materials are readily available for conducting experiments on _____?
 - o How does _____ act?
 - o How can you change the set of _____ materials to affect the action?
 - o How can you measure or describe the response of _____ to the change?
- Inquiry Powerpoint
- Types of Questions activity
- Chocolate Experiment and Data Analysis

GLOBE Intro Powerpoint

GLOBE Phenology Teacher Workshop – 3/9/13

One-Day

Approx 25 Teachers

Protocols: BudBurst, Green-Up, Green-Down

Learning Activities: Earth As A System, Green-Up Cards, Global Patterns in Green-Up & Green Down, Pigemt/Chromotography

Time	Topic	Materials/Resources
8:30-9:00	Registration	
9:00-9:15	Intro to GLOBE	PPT
9:15-9:30	Q: What is a System?	
9:30-9:45	<i>Earth as a System Activity</i>	<i>Posters</i> <i>Earth as a System Cards</i>
9:45-10:00	"	
10:00-10:15	Q: What are Seasons? What is Phenology? (Discuss Seasons & Phenology)	"Journals"
10:15-10:30	Intro GLOBE Phenology Protocols	
10:30-10:45	Budburst Observations	Twigs, Magnifying Glasses
10:45-11:00	Budburst Observations - Inquiry Questions	
11:00-11:15	<i>Green-Up Cards Activity</i>	<i>Green-Up Cards</i>
11:15-11:30	"	
11:30-12:00	Guest Speaker & Lunch	
12:00-12:15	<i>Chromotography Activity</i>	Filter Paper, Black Markers (different #s), Small Clear Plastic Cups, Rulers, Popsicle Sticks
12:15-12:30	Chromotography Summary, Experimental Design	
12:30-12:45	Budburst & Green-Up Protocols	PPT
12:45-1:00	Green-Down Protocol	
1:00-1:15	" (<i>Protocols Cont</i>)	Color Guides
1:15-1:30	<i>Seasonal Patterns in Green-Up Activity</i>	<i>Images</i>
1:30-1:45	"	<i>Poster, Global Patterns Worksheet</i>
1:45-2:00	Climatology Predictions & Extensions	
2:00-2:15	Student Research	
2:15-2:30	Q- How do plants affect Climate?	
2:30-2:45	Summary	
2:45-3:00	Survey & Certificates	

Trainer: Jessica Taylor, NASA Langley Research Center

Seasonal Change GLOBE Workshop
March 6, 2010

Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- How do you know that the seasons are changing?
- How could you measure seasonal change?
- What do you want to know/study about seasonal change?

Foundation Activities

- Orientation to how GLOBE 'numbers' pages
- [Earth System Science Investigation at a Glance](#)
 - o [Introduction](#) (starting pg. 9-27)
- [Seasons and Phenology](#)
 - o [Introduction](#)
 - o [Introduction](#)
- [P1: Green-up Cards](#)
- [P2: A Sneak Preview of Budburst](#)
- [P3: A First Look at Phenology](#)

Field Work

- [GPS Protocol](#)
 - o [Field Guide](#)
 - o [Data Sheet](#)
- [Budburst Protocol](#)
 - o [Budburst Site Definition Sheet](#)
 - o [Budburst Data Sheet](#)
- [Green-up Protocol](#)
 - o [Green-Up and Green-Down Site Definition Sheet](#)
 - o [Tree and Shrub Green-Up Data Sheet](#)
 - o [Grass Green-Up Data Sheet](#)
- [Hummingbirds Protocol](#)
 - o [Ruby-throated Hummingbird \(RTHU\) Site Definition Data Sheet](#)
 - o [RTHU Hummingbird Sighting Protocol Data Sheet](#)

Websites – [Budburst](#) & [Operation Ruby Throat](#)

GLOBE Intro Powerpoint

Evaluations for K-4 Teachers/Lunch/PD Certificates

Seasonal Change

- [S1: What Can We Learn About Our Seasons?](#)
- [S2: What Are Some Factors That Affect Seasonal Patterns?](#)
(Note: Use Seasons Background PowerPoint to cover major objectives of this activity and the previous one.)
- [S3: How Do Seasonal Temperature Patterns Vary Among Different Regions of the World?](#)
(Note: This has some good descriptions of different ways to look at temperature data on the GLOBE website.)
- [S4: Modeling the Reasons for Seasonal Change](#)
(Note: This is a difficult activity and there are probably better ones but the participants felt that the 3-D model of the Earth was helpful in discussions and could be used in many different ways. Good protractor for Earth's tilt.)
- In groups, teachers complete and discuss the following activities:
 - o [S5: Seasonal Change on Land and Water](#)
 - o [P6: Global Patterns in Green-up and Green-down](#)
 - o [P7: Temperature and Precipitation as Limiting Factors in Ecosystems](#)
(Note: This activity involves pre-teaching and higher level vocabulary.)
 - o Topics to share with rest of participants:
 - Describe activity
 - Value to classroom
 - Any modifications or implementation points

Evaluations for 5-12 Teachers/PD Certificates

Addendum:

- For Green-Down Concepts
 - o [P4: A Beginning Look at Photosynthesis](#): Plants Need Light
 - o [P5: Investigating Leaf Pigments](#)
- [Green-Down Protocol](#)
 - o [Green-Up and Green-Down Site Definition Sheet](#)
 - o [Tree, Shrub, and Grass Green-Down Data Sheet](#)

Soil GLOBE Workshop

June 3, 2010

Elementary GLOBE

- Introductions
 - o Name, grade, school.
 - o What do you teach?
 - o Why are you here?
 - o Science Background
- Read the Soil Book
- Activities
 - o [Getting to Know Soil](#)
 - Observing skills
 - Science Content: What is soil composed of? Five soil-forming factors.
 - o [Soil Treasure Hunt](#)
 - o [We All Need Soil!](#)
- Elementary GLOBE Introduction
 - o Walk thru books
 - o Powerpoint
- On-line Connections
- Science Process Skills Worksheet
 - o Inquiry Process Skills
 - o Questions
 - o Observing skills

Friday, June 4, 2010

Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- What do you notice about the soil that you see in your backyard?
- Why would we want to study soil?
- Name one way soil changes over time.
- What do you want to know/study about soil?

Foundation Activities

- Orientation to how GLOBE 'numbers' pages
 - o [Soil Investigation at a Glance](#)
 - o [Introduction](#) to Soil
- Why Do We Study Soil?
 - o [Introduction](#) to Learning Activities
 - o [Soil and My Backyard](#)
 - o [Why Do We Study Soil?](#)
 - o [Just Passing Through - Beginners](#) – test own soil
 - o [Just Passing Through](#) – design a soil column

Classification

- [Bird Beak Activity](#)
- [Leaf Classification](#)

Field Work

- [Soil Site Selection and Exposure](#)
- [Investigation Instruments](#)
 - o Clinometer (pg. 15-18)
 - [Clinometer Sheet](#)
 - [Table of Tangents](#)
- [GPS Protocol](#)
 - o Compass (pg. 7)
 - o [Field Guide](#)
 - o [Data Sheet](#)
- Protocols
 - o [Introduction](#)
 - o [Soil Characterization](#)
 - o [Soil Temperature](#)

GLOBE Intro Powerpoint

Evaluations for K-4 Teachers/Lunch for 5-12 Teachers

Field Activity

- [Gravimetric Soil Moisture](#)
- [Bulk Density](#)
- [Soil Particle Density](#)
- [Soil Particle Size Distribution](#)
- [Soil pH](#)
- [Soil Fertility](#)
- [Digital Multi-Day Soil Temperatures Protocol](#)
- [Infiltration Protocol](#)

Earth as a System

- [Poster Activities](#) (2007 and 1987 Posters and Activities)

Evaluations for 5-12 Teachers
