



# *Technology Working Group Report*

**The GLOBE Program**

**An International science and education Program**

[www.globe.gov](http://www.globe.gov)

## Technology Working Group

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- \* ***Purpose: to guide & assist continuing development & improvement of GLOBE data & information systems - website, mobile apps, data entry, visualization, online workshop management, and online training & collaboration, etc...***

## *Technology Working Group*

- *Scott M Graves, USA/North America (Chair);*
- *Maria Auxiliadora Portuguese Campos, Costa Rica, Latin America & Caribbean (vice Chair);*
- *Krisanadej Jaroensutasinee, Thailand, Asia-Pacific (Secretary);*
- *Nadhira Iharthy, Oman, Near East & North Africa;*
- *Charles Mwangi, Kenya, Africa;*
- *Matthijs Begheyn, Netherlands, Europe and Eurasia;*
- *David Overoye, Ratheon (ex-Officio);*
- *Nargess Memarsadeghi, NASA/GSFC GLOBE Technology Manager (ex-Officio);*
- *Cornell Lewis, JPL(ex-Officio);*
- *Tony Murphy, GLOBE GIO;*
- *Ming Ying-Wei, NASA Administrator.*



[www.globe.gov](http://www.globe.gov)

# GLOBE - website & VIS

Major themes for upcoming needs, challenges & opportunities

\* from first WG meeting New Delhi, 2014

Website design - simplify, reorganize, prioritize, etc...

Data entry - simplify, reorganize, in-app & in-page help

APPs - IOS & Android, API clarification for app dev, App-Athon?, custom project-based GLOBE data collection

VIZ - layers++, Sat imagery! Plots on school pages! KMZ & WorldWind export, Climate & Issues-based prompts

Graphing enhancements, analysis of basic stats, custom format plots

Enhanced multiLingual access - data entry & VIZ

Communications - Virtual meetings, discussion forums, scientist - student communications for protocol help

Social networks - collaboration finder, student-student/group project, story report sharing, "Like" & reporting, notifications

e Training - update video/modules for offline viewing options

# The GLOBE Program

An exciting, worldwide, hands-on education and science program



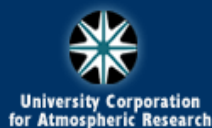
"I've been a teacher for over 30 years and it's  
the best thing that I've ever come across."  
--GLOBE Teacher

[Learn About GLOBE](#)

[Enter the GLOBE Site](#)

[GLOBE Schools Log-in](#)

[ [Español](#) ] [ [Français](#) ] [ [Русский](#) ] [ [عربي](#) ] [ [Deutsch](#) ] [ [Nederlands](#) ]



[Other Cooperating Organizations](#)

# www.globe.gov

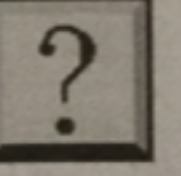
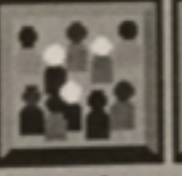


# The GLOBE Program

## Welcome to the GLOBE Data Server!

*The GLOBE Program Experiment Phase has now officially started!*

- About The GLOBE Program
- GLOBE Update
- Using the Button Bar
- Answers to Frequently Asked Questions



*NOAA/Forecast Systems Laboratory, Boulder, Colorado*

# “wire-frames” prototype

GLOBE LOGO

THE GLOBE PROGRAM

Log-in English

**Title**  
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean euismod bibendum laoreet.

Features

About
Join
Get Trained
Teach GLOBE Science
GLOBE Data
Community
News & Events
Support

### Welcome to GLOBE!

The Global Learning and Observations to Benefit the Environment (GLOBE) program is a worldwide hands-on, primary and secondary school-based science and education program.

**What is GLOBE?**

[Learn More...](#)

**See GLOBE in Action**

[See More...](#)

**Benefits of Joining**

[Join Today](#)

### GLOBE Community

School: 20,145

Teacher: 27,563

Measurements: 7064952

Measurements this month: 61,189

[View GLOBE Countries](#)

### Latest News & Events

News
Events

**06/02/2014**  
**Message from the GLOBE Director**  
Bi-weekly letter to the community

---

**06/02/2014**  
**Title to go here**  
Teachers: If your students are planning to attend the GLOBE Learning Expedition

### Highlights

Featured Student Research Report

**Climate and the Bass Population of Lake Texoma**

The objective of our project was to determine if climate affects the growth of the Striped Bass population.

[See All Student Reports](#)

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Featured Classroom Activity



### Featured

#### Now Available! New Mobile App for Data Entry

As part of their 20th Anniversary celebration, GLOBE is releasing a Data Entry App that will allow GLOBE users to enter data directly into their phone or tablet device while out in the field.

[View GLOBE Around the World](#)

#### RECENT MEASUREMENTS


[McKnight Middle School](#), United States, Weatherbug, Measured on: 2015-07-20



[Enter Data](#)

[Visualize Data](#)

### Latest News and Events

[NEWS](#)
[EVENTS](#)
[CAMPAIGNS](#)



#### The GLOBE International Scientist Network Doubles in Size

13 July 2015



#### 2015 GLOBE Games in Czech Republic

1 July 2015

### GLOBE ON SOCIAL



RT @jlteisan: #GLOBEInLA2015 Thrilled to be working with this cohort of international science ed leaders <http://t.co/HsWW7w0Om1>

12 hours ago

The GLOBE Working Group meeting begins! #GLOBEInLA2015 @ Hilton Los Angeles / Universal City <https://t.co/LvcEYK4uVQ>

13 hours ago

The GLOBE Working Group meeting begins! Representatives from all six regions meet to discuss GLOBE. #GLOBEInLA2015 <http://t.co/oN7ZldyhOk>

13 hours ago

Rainy weather to welcome GLOBE to #LosAngeles -

Sponsored by:



Supported by:



Implemented by:  UCAR

Welcome

# “wire-frames” prototype

Classroom Home    Share

## GLOBE Classroom

### Who's in this Classroom

School 1  
 Teacher 1  
 Student 1  
 Student 2  
 Student 3

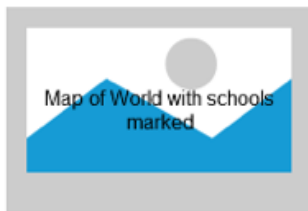
It is 9:00 AM at School 1

School 2  
 Teacher 1  
 Teacher 2  
 Student 1  
 Student 2

It is 1:00PM at School 2

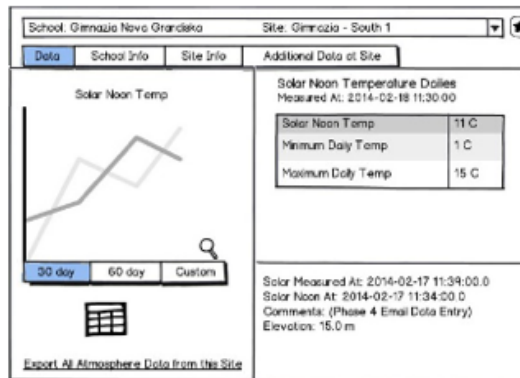
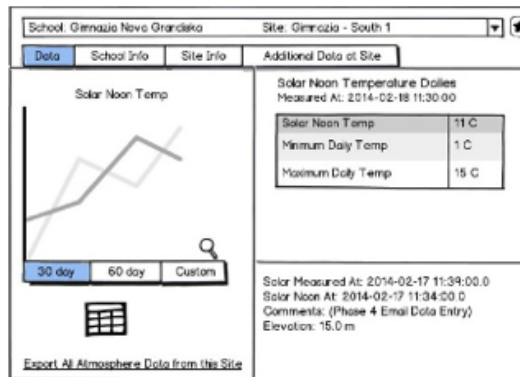
Partners:  
Partner 1  
Partner 2

### School Locations



Request to Join

### Our Latest Data



### School 1 Site Pictures



### School 2 Site Pictures





Home > Community > Matthijs Begheyn > Profile

Profile Collaboration Blog



**Matthijs Begheyn**  
Netherlands GLOBE Country Coordinator

[Send Email](#)

Languages I speak:  
Dutch (Nederlands)

Account Status:  
GLOBE Member

Training Status:  
Trained

User Type:  
Blogger  
Country Coordinator  
Teacher  
Trainer

### Member Network



Hi,

Welcome at my GLOBE profile page!

I have several roles in the GLOBE community:

- country coordinator for the Netherlands
- Chair of the board of GLOBE in Europe and Eurasia
- Member of the international working group for the GLOBE website

I think GLOBE is an excellent way to involve students with science, environment, sustainability and international cultures. In the Netherlands we founded the GLOBE Netherlands Foundation in 2014 where we work with several scientific and didactic partners to make sure that GLOBE connects as well as possible to what teachers need in their class.

Below you see me (second from right) with members of the Europe & Eurasia board in Cyprus for our annual GLOBE meeting in 2014.



### Member Activities

 July 14, 2015 3:33 PM  
Matthijs Begheyn updated a calendar event, [Earth Day](#), in

Number of my students using GLOBE this year: 0

Recognition Protocols and Activities Used

GLOBE Member Recognition

1 YEAR 2009 5 YEARS 2013

### Member Location

Netherlands



Member's Organization Schools

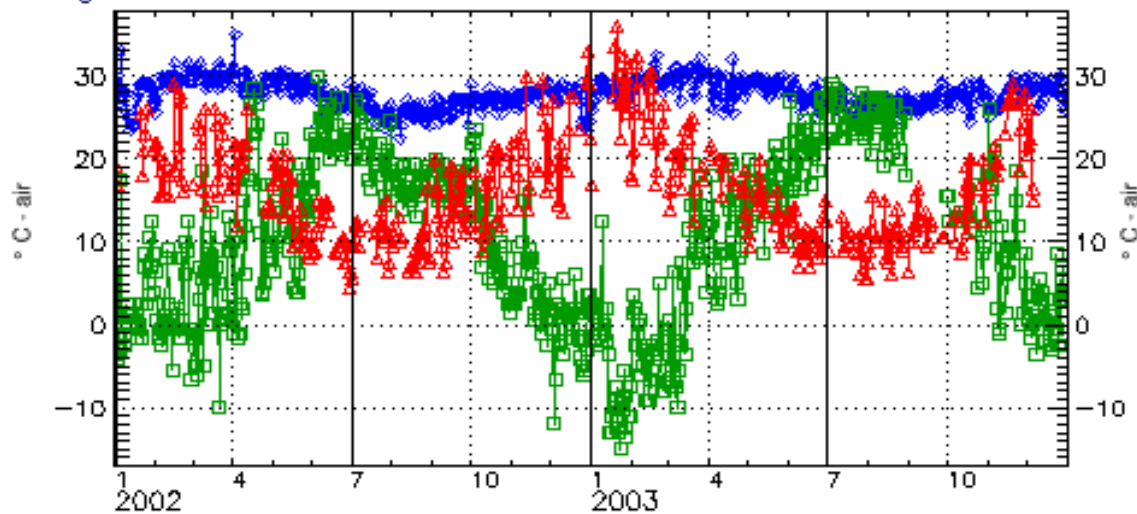
# GLOBE Graphs



Data from up to six schools can be displayed in the same graph.



## Mean Air Temperature



- △ Gladstone High School-Gladstone, SA, AU  
ATM-01 School Location
- Reynolds Jr Sr High School-Greenville, PA, US  
ATM-02 WEATHER STATION
- ◇ CEG1 Lokossa-Lokossa, BJ  
ATM-01 School Location

This graph displays the mean air temperature for schools in three different countries.

Air temperature and seasonal fluctuations can be seen for both Northern and Southern hemispheres as well as Equatorial.



Map Type: **Measurements** **Data Counts** Sites on Map: 4797

Streets

1995-01-01 to 2003-08-03

Layers

Filters

Multi-Site Plots

**Plot:** Maximum Daily temperature  
**Range:** 2001-06-12 to 2008-10-27

**School:** Serpentine Primary School

**Site:** School Location:ATM-01

**Protocol:** Air Temperature Dailies (1797)

**Plot:** Maximum Daily Temperature

**Range:** 1996-02-06 to 2004-12-14

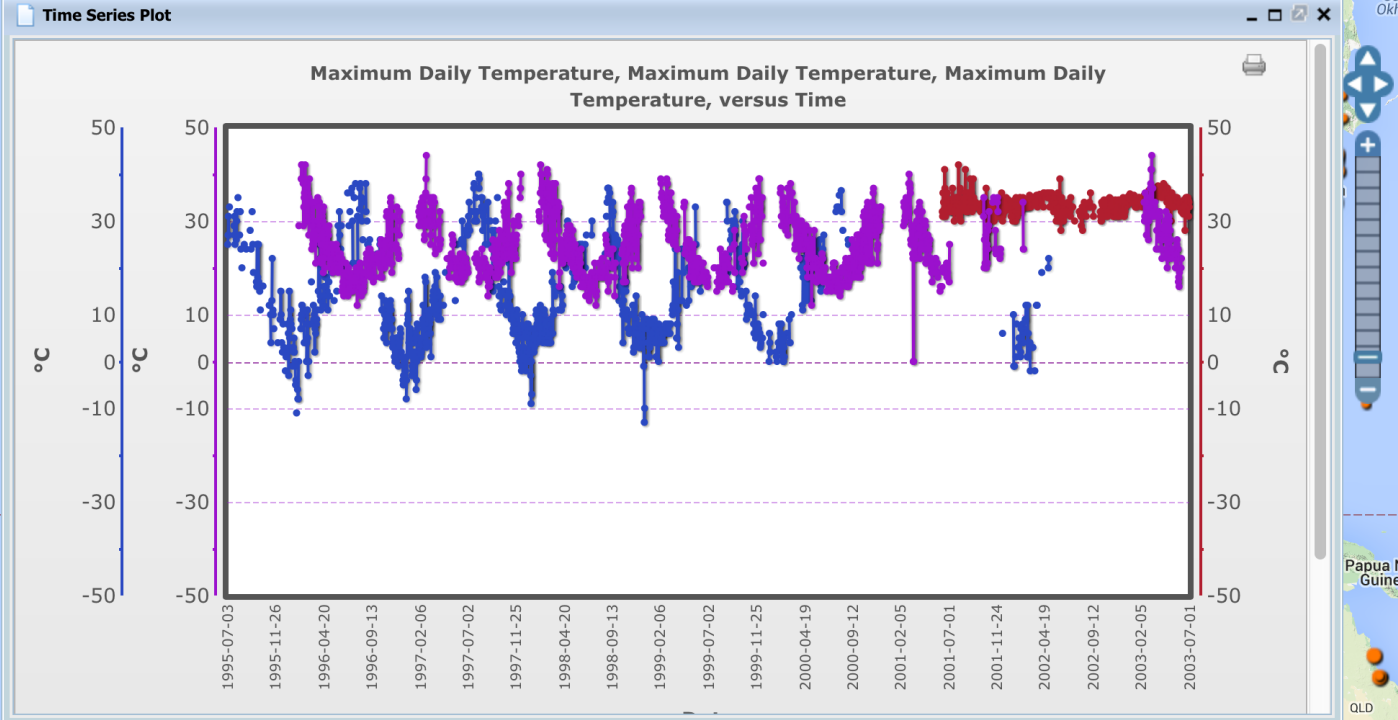
Plot Date Range

1995-07-03 to 2003-07-03

For optimum performance, the maximum recommended date range is 5 years

Use Auto Y-axis

[Plot All](#) [View Plot Data](#) [Clear List](#)



South Atlantic Ocean

South Africa

LEGEND

Sponsored by:



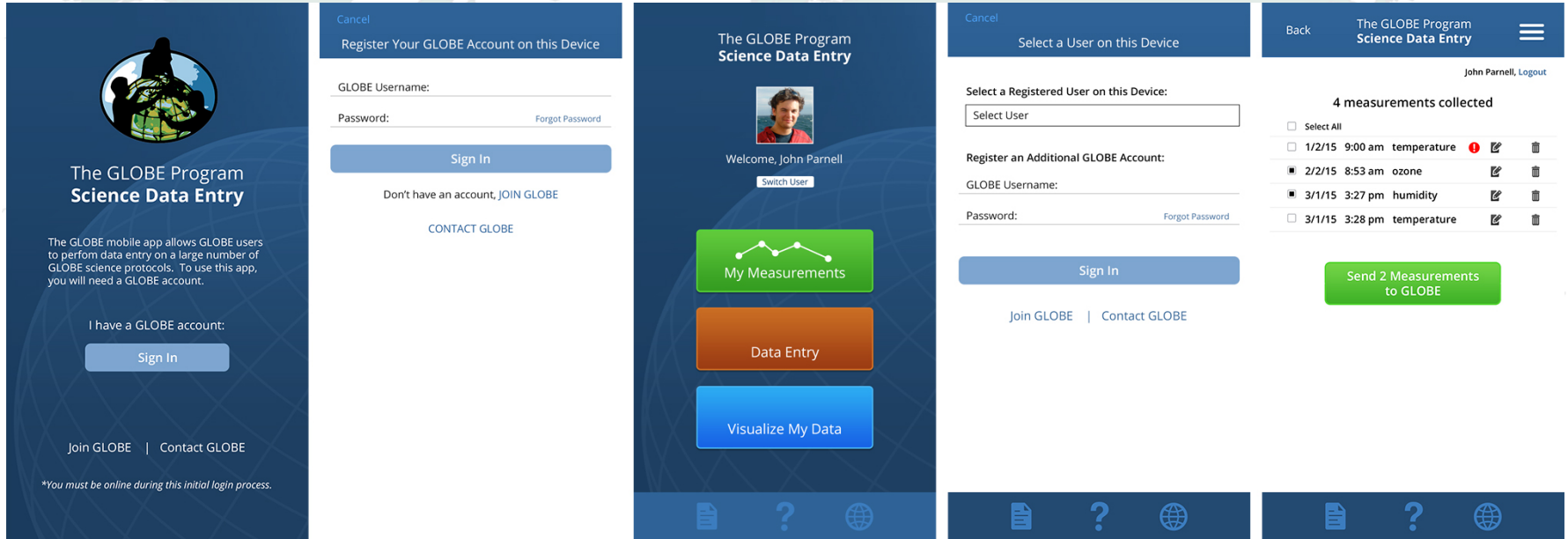
Supported by:



Implemented by:



# Cloud App “wire-frames” prototype

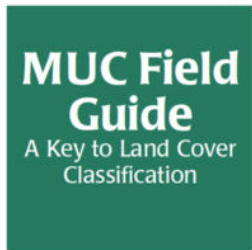
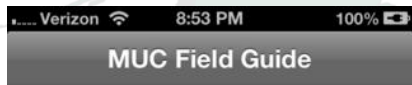


The wireframes illustrate the user flow for the GLOBE Program Science Data Entry mobile app. The screens are as follows:

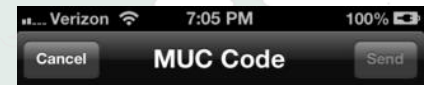
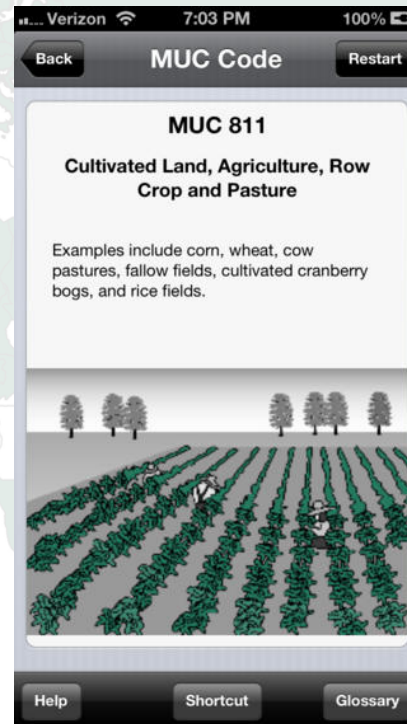
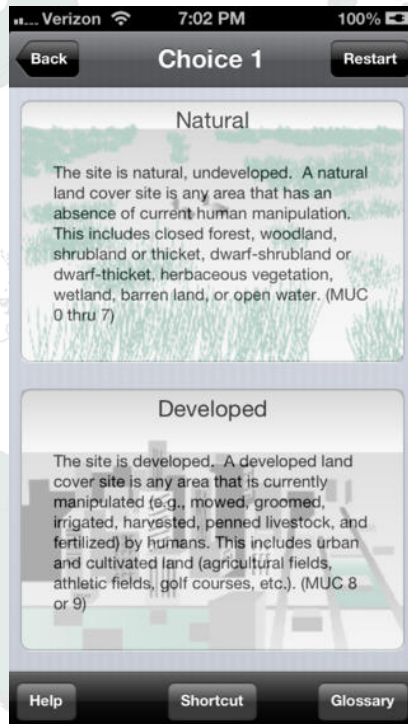
- Screen 1 (Login):** Features the GLOBE logo, the title "The GLOBE Program Science Data Entry", and a description of the app's purpose. It includes a "Sign In" button and links for "Join GLOBE" and "Contact GLOBE". A note at the bottom states: "\*You must be online during this initial login process."
- Screen 2 (Registration):** Titled "Register Your GLOBE Account on this Device", it contains fields for "GLOBE Username:" and "Password:" with a "Forgot Password" link. A "Sign In" button is at the bottom, along with "Don't have an account, JOIN GLOBE" and "CONTACT GLOBE" links.
- Screen 3 (Welcome):** Displays "The GLOBE Program Science Data Entry" and a user profile for "John Parnell" with a "Switch User" button. Three main action buttons are shown: "My Measurements" (green), "Data Entry" (orange), and "Visualize My Data" (blue).
- Screen 4 (User Selection):** Titled "Select a User on this Device", it includes a "Select Registered User on this Device:" section with a "Select User" dropdown, a "Register an Additional GLOBE Account:" section with "GLOBE Username:" and "Password:" fields, and a "Sign In" button. Links for "Join GLOBE" and "Contact GLOBE" are at the bottom.
- Screen 5 (Data Entry):** Shows "4 measurements collected" with a list of entries:
 

Date/Time	Measurement	Alert	Edit	Delete
1/2/15 9:00 am	temperature	🔴	✎	🗑️
2/2/15 8:53 am	ozone		✎	🗑️
3/1/15 3:27 pm	humidity		✎	🗑️
3/1/15 3:28 pm	temperature		✎	🗑️

 A "Send 2 Measurements to GLOBE" button is located at the bottom right.



To find the appropriate MUC code, proceed step by step, tapping the better choice of the two shown. Then tap Submit to send the data to GLOBE.



To: \_\_\_\_\_

Cc/Bcc: \_\_\_\_\_

Subject: MUC Code

**MUC Code: MUC 811**  
MUC Description: Cultivated Land, Agriculture, Row Crop and Pasture  
Latitude: 26.32677° N  
Longitude: 81.83812° W  
Altitude: 2.3 meters +/- 10.0 meters  
Location: Bonita Springs, Florida, United States

This message was sent from the MUC Field Guide Release 1.2.2 running on an iPhone under iPhone OS 6.1.2



Sent from my iPhone

*i technologies*

 THE GLOBE PROGRAM



Sponsored by:  

Supported by:  

Implemented by:  UCAR

# Digital Field Data Collection “probe-ware”

- Vernier LabQuest PDA



- Water Quality Probes

- Temp, pH, Conductivity, Salinity, Dissolved Oxygen, more.

*i technologies - hardware*



*digital probeware*



**Vernier Video Physics for iOS**



Play the video above to see a demo of our app, or download an [iPDF](#).

**Capture, Analyze, and Share.**

Vernier Video Physics for iOS brings physics video analysis to the iPhone, iPad touch, and iPod. Take a video of an object in motion, mark its position frame by frame, and set up the scale using a known distance. Video Physics then draws trajectories, position, and velocity graphs for the object. Share videos, graphs and data to Facebook, your photo library and to your computer running Vernier's Logger Pro software.

**Available on the App Store**

Share | Like | Retweet | Facebook

Support  
Help, Video Physics iPDF





*Digital Collection Devices* ✓

*Collaboration Tools* ✓

*Visualization Tools* ✓

*GLOBE Lite*

*Country Coordinator's and My Page* ✓

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*Translations....* ✓

*FAQ's*

*Webinars* ✓

*Automated Notifications*

*Citizen Scientist Clouds  
& Data Entry apps* ✓

- *Scientific American* “\* apps that turn citizens into scientists”
- <http://www.scientificamerican.com/article/8-apps-that-turn-citizens-into-scientists/?page=2>

- ***GLOBE Program Apps!!!!!!?***

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- *Nadhira Iharthy, Oman, Near East & North Africa;*
- *Charles Mwangi, Kenya, Africa;*
- *Matthijs Begheyn, Netherlands, Europe and Eurasia;*
- *David Overoye, Ratheon (ex-Officio),*
- *Nargess Memarsadeghi, NASA/GSFC GLOBE Technology Manager (ex-Officio),*
- *Cornell Lewis, JPL(ex-Officio)*
- *Tony Murphy, GLOBE GIO;*
- *Ming TYng-Wei, NASA Administrator*



[www.globe.gov](http://www.globe.gov)

# Data Communications

## Retrieve

## Send



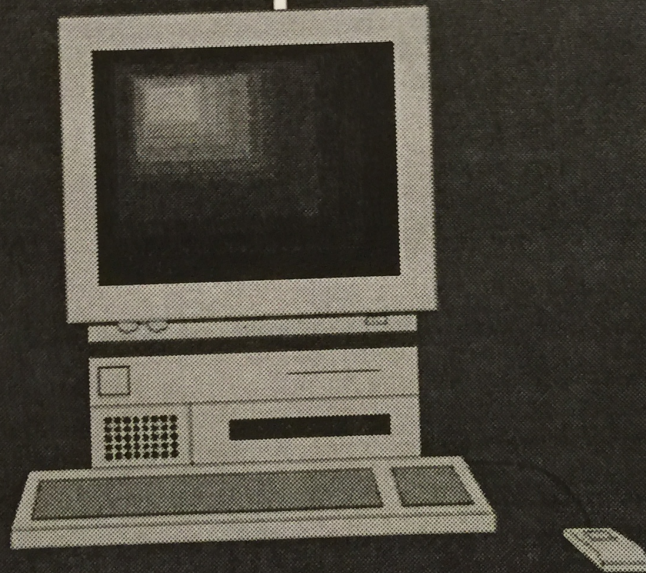
Current Daily Hemispherical Views



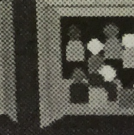
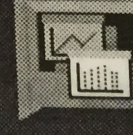
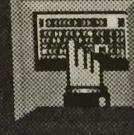
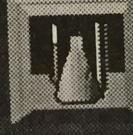
Current Flat Map Views



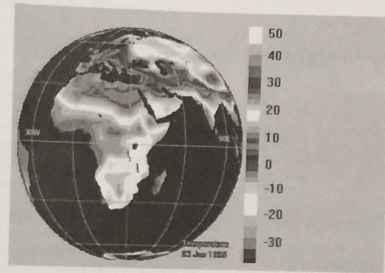
All Student Data



Setup



# GLOBE World Wide Web User's Manual



Global Learning and Observations to  
Benefit the Environment

Prepared by:  
RDD Consultants, Inc.  
Louisville, Colorado

For:  
Forecast Systems Laboratory  
National Oceanic and Atmospheric Administration

Dr. Khatun  
observed  
She is a  
Director  
Mark M

Dr. Khatun  
collects  
measure  
atmosph  
meteo  
Graduat  
Change  
Environ  
Washin  
Enginet

Dr. Ma  
acrom  
Laver

Introduction

GLOBE Information

GLOBE Educational  
Materials

Data Entry

GLOBE Visualization



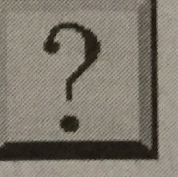
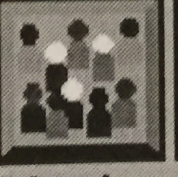
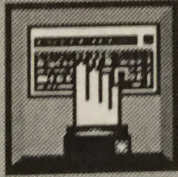
# The GLOBE Program

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## Welcome to the GLOBE Data Server!

*The GLOBE Program Experiment Phase has now officially started!*

- About The GLOBE Program
- GLOBE Update
- Using the Button Bar
- Answers to Frequently Asked Questions



*NOAA/Forecast Systems Laboratory, Boulder, Colorado*

## How to use the Button Bar...

You can travel in the GLOBE Server by clicking on the **Button Bar** buttons. Here is where they go...



*Go to the GLOBE Home Page*



*Read about GLOBE experiments*



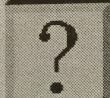
*Enter your GLOBE Data here*



*See global Visualizations*

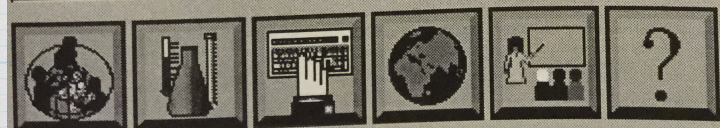


*Look at other GLOBE Schools*



*Help for the current page.*

If you have further questions or comments you can send mail to the GLOBE technical staff by pressing the E-mail Icon.



## Air Temperature Measurement

Student ID:

Measurement Time:

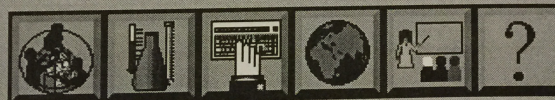
GMT

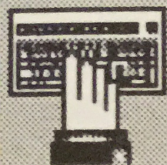
Units:

Current Air Temperature:

Maximum Daily Air Temperature:

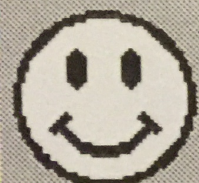
Minimum Daily Air Temperature:



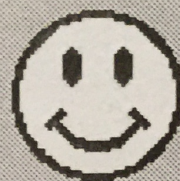


# Air Temperature Measurement Verification

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Your Input has passed system checks!



Student = SUSAL824

Time = 1995 February 1 22 GMT

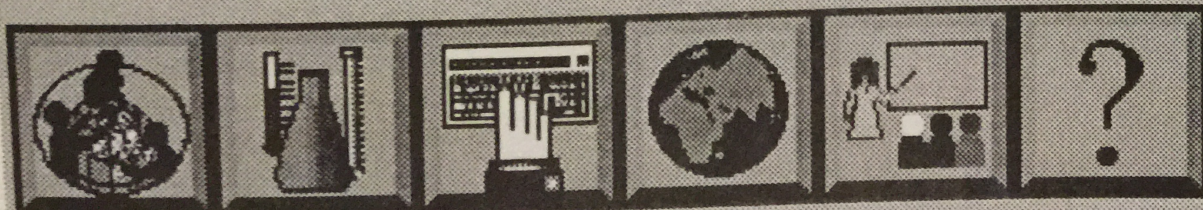
Cur = 23 degrees Celsius

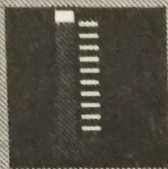
Max = 25 degrees Celsius

Min = 21 degrees Celsius

You can enter other measurements by selecting the *Data Entry* button on the Button Bar below.

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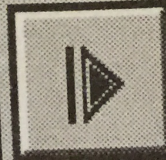
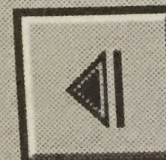
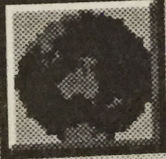
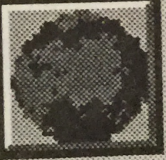
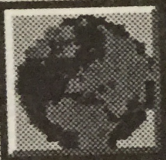
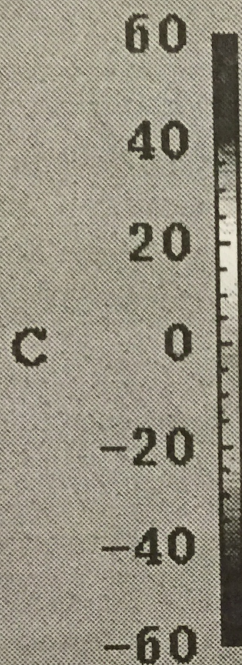


# Europe

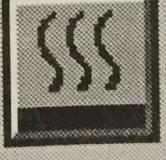
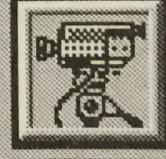
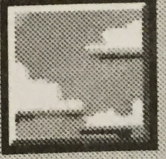
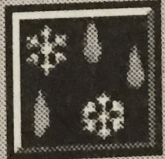
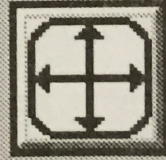
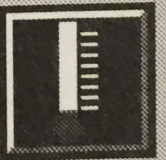
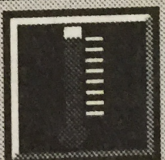
## Maximum Temperature

### March 1, 1995

24 hour maximum  
from the National  
Meteorological Center



Student  
Data



# Data Analysis

## Parameters

Snow

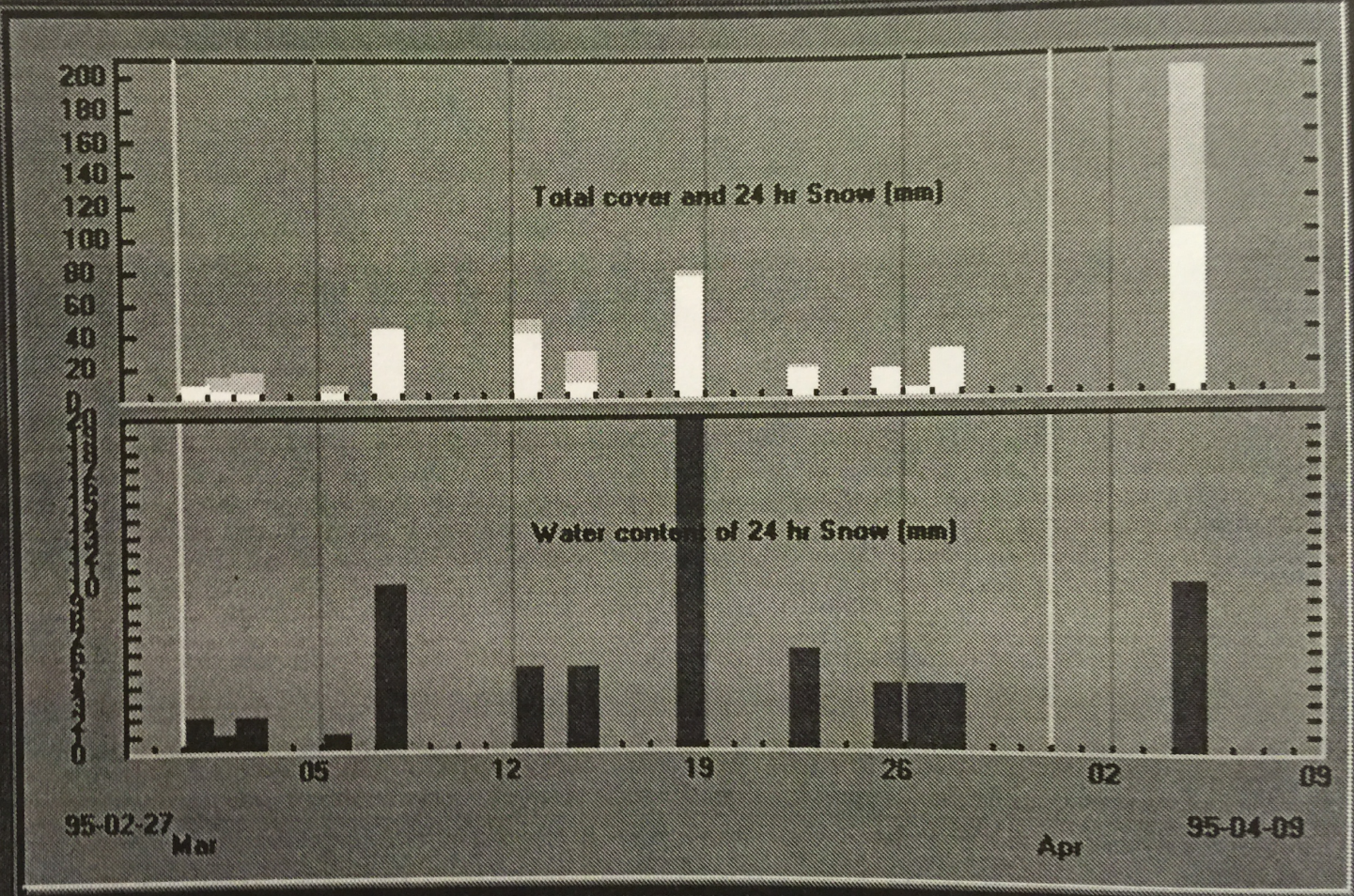


## IDs

ALL



Generate



Time Range

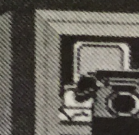
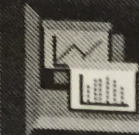
From

95 FEB 27



To

95 APR 09



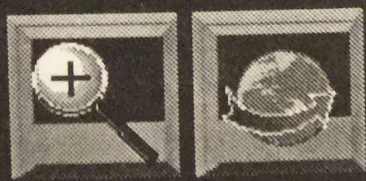
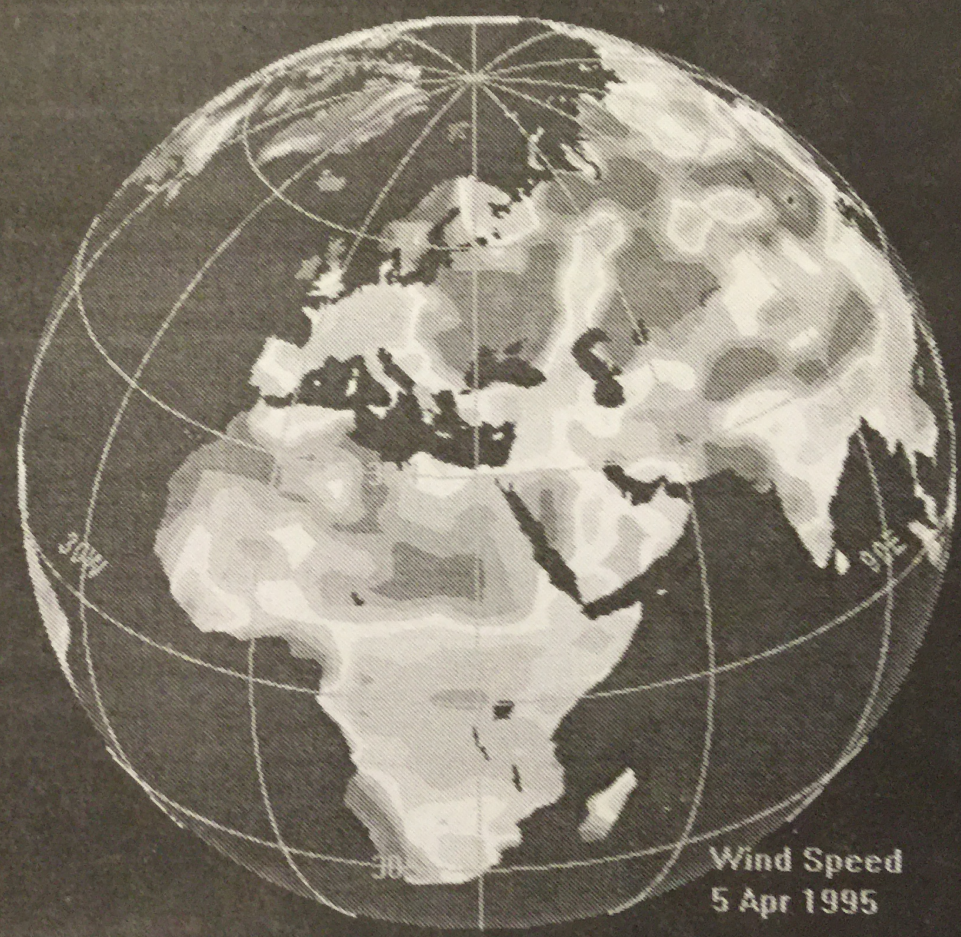
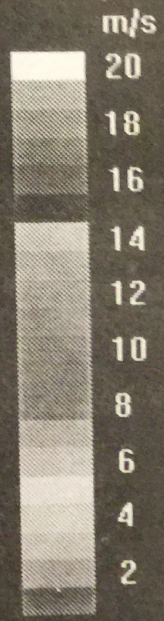
### Hemispherical Views

- topography
- land cover
- temperature
- precipitation
- wind speed
- pressure
- cloud cover

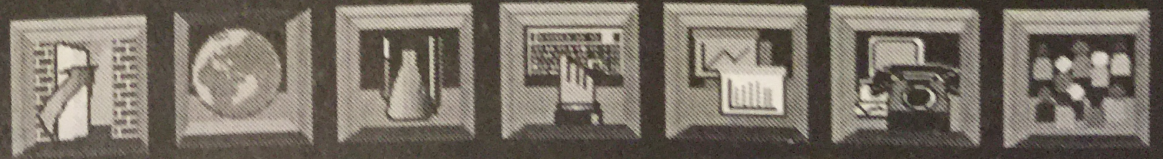
### Flat Map Views

- max temperature
- min temperature
- precipitation
- total cloud cover
- image of the day

### Wind Speed



### REFERENCE MAP



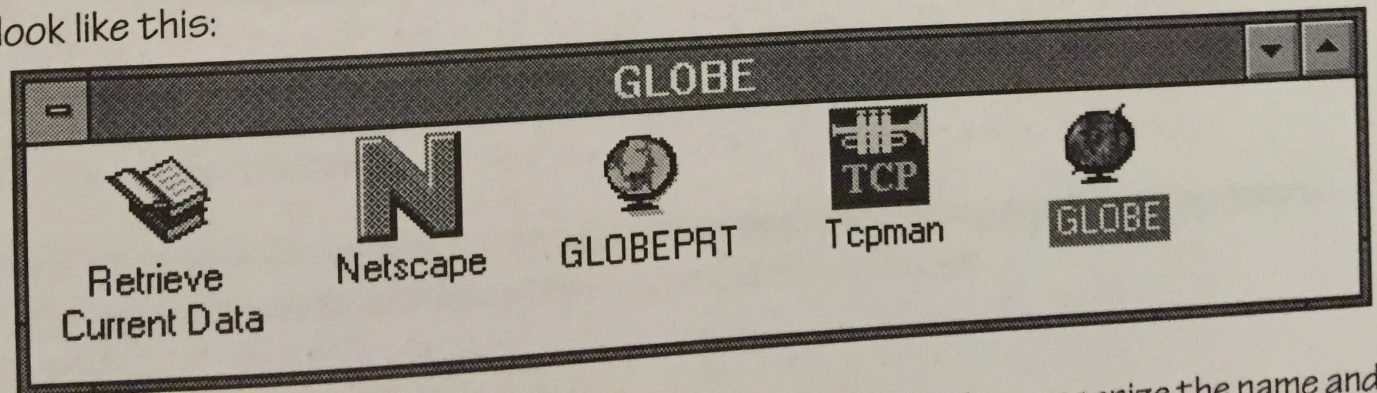
# Appendix F: Introduction to the Microsoft Windows Operating System

The operating system of a computer controls basic functions such as saving and finding files, and it also affects how the user communicates with the computer. The Microsoft Windows operating system on the GLOBE workstation allows you to tell the computer what you want it to do without having to memorize specific commands. Instead of specific commands, you use **windows**, **menus**, and **buttons** to communicate with the computer.

The following sections explain what windows, menus, and buttons do. "How to use a computer mouse" on page 105 will give you specific instructions on how to use these tools.

## What is a Window?

This is a defined box on your computer screen that displays files and messages from the computer. When the box is showing on the computer, we call the window "open", and when the box is not showing, we call the window "closed." A typical open window might look like this:



to recognize the name and

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