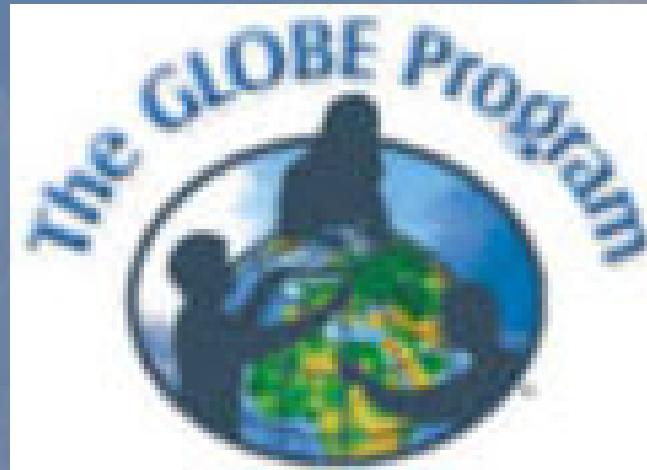


10 years with GLOBE program



in Estonia

Ülle Kikas

GLOBE CC Estonia

University of Tartu



The GLOBE program

Global Learning and Observations to Benefit the Environment

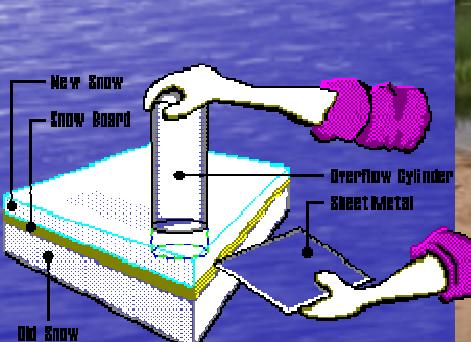
<http://www.globe.gov>

a world wide school-based program for
science and environmental education





Measurements and observations in natural environment measurement protocols – reliable results



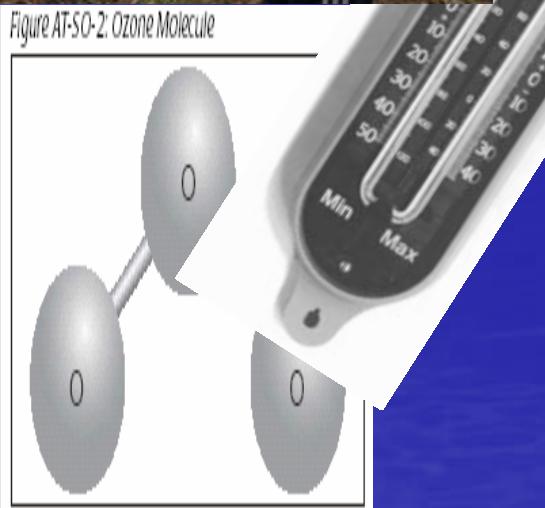
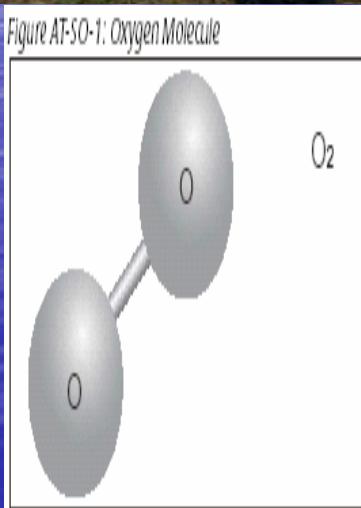
- Learning of local environment
- Creating knowledge through hands-on activities



ATMOSHERE

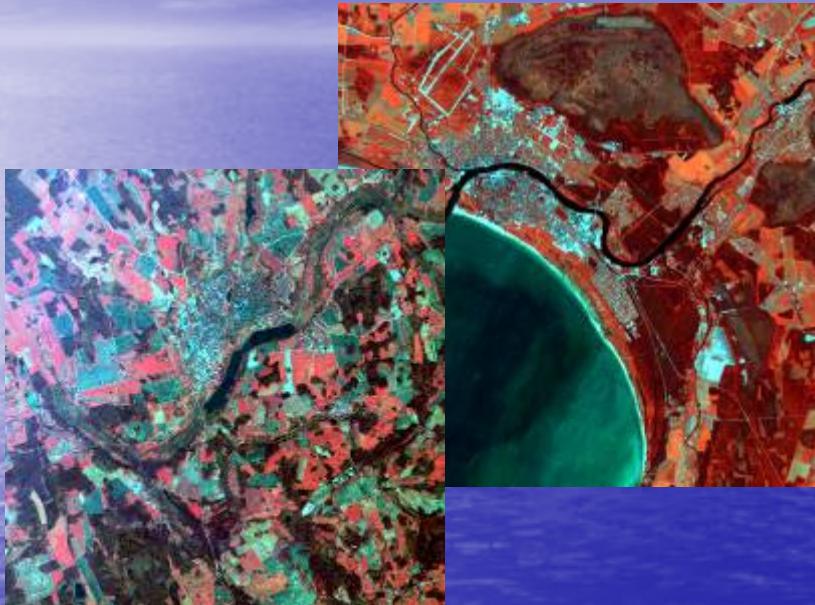


- Air temperature
- Precipitation
- Clouds
- contrails
- Aerosol
- Ozone





Land cover, biometry, phenology



Validation of satellite images in
nature

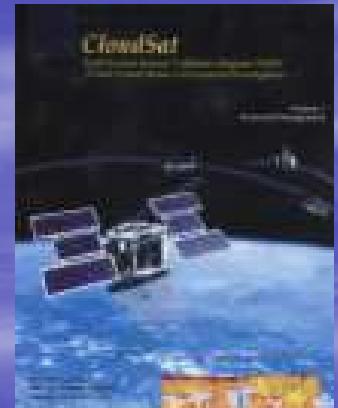
Biomass,

Land cover classification



GPS

- Geographic coordinates
- Locating measurement sites on GIS maps

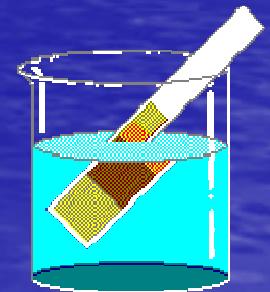




HÜDROLOGY



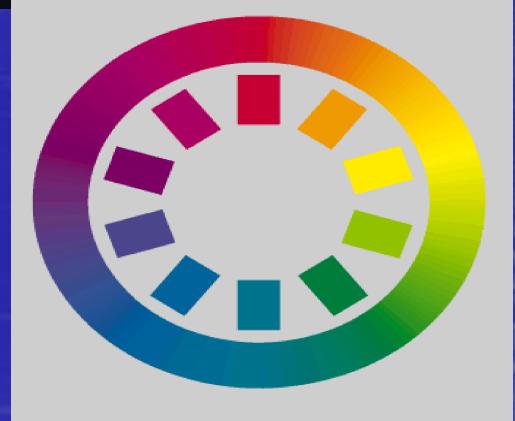
- Water temperature
- Color, transparency
- pH, DO, conductivity
- Micro-invertables





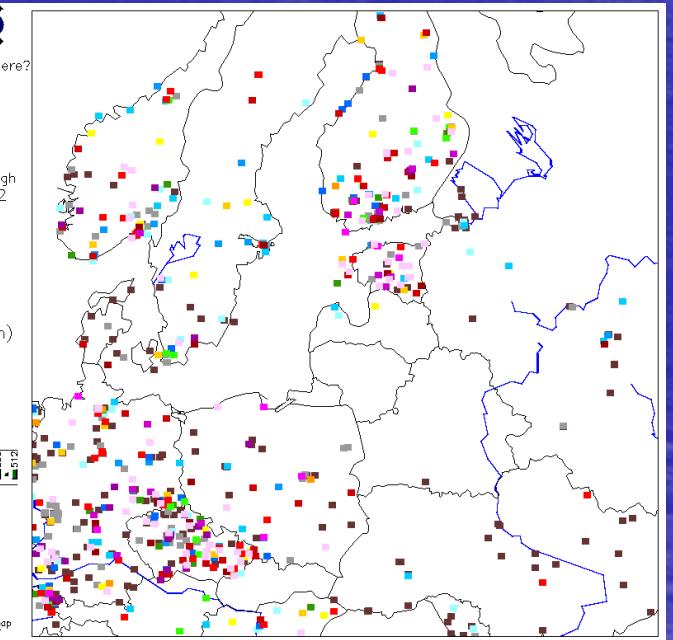
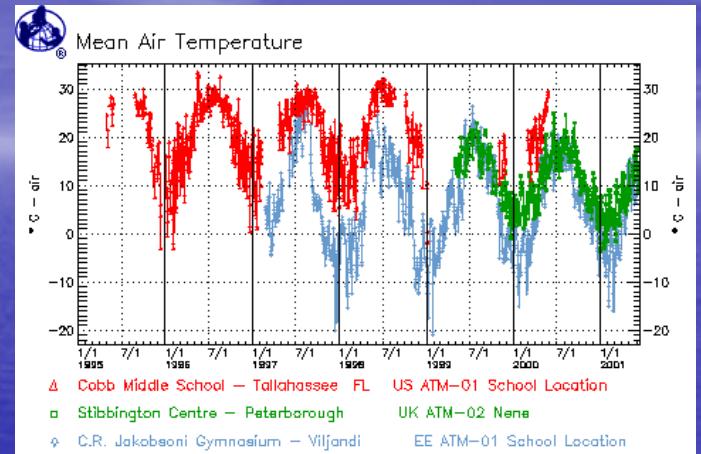
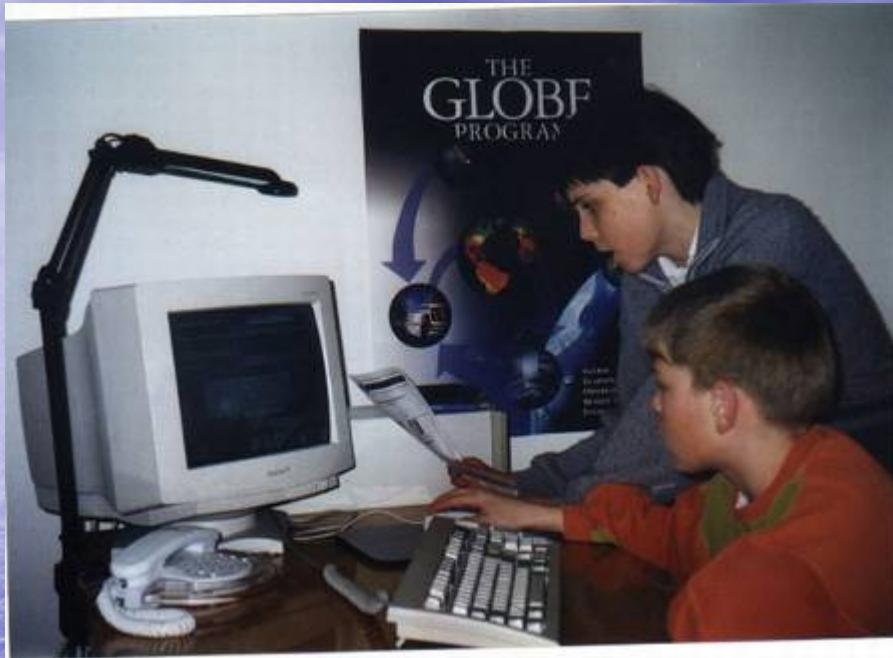
Soils

- horizons
- color
- structure
- Water content
- Soil NPK





Working and communication in Internet



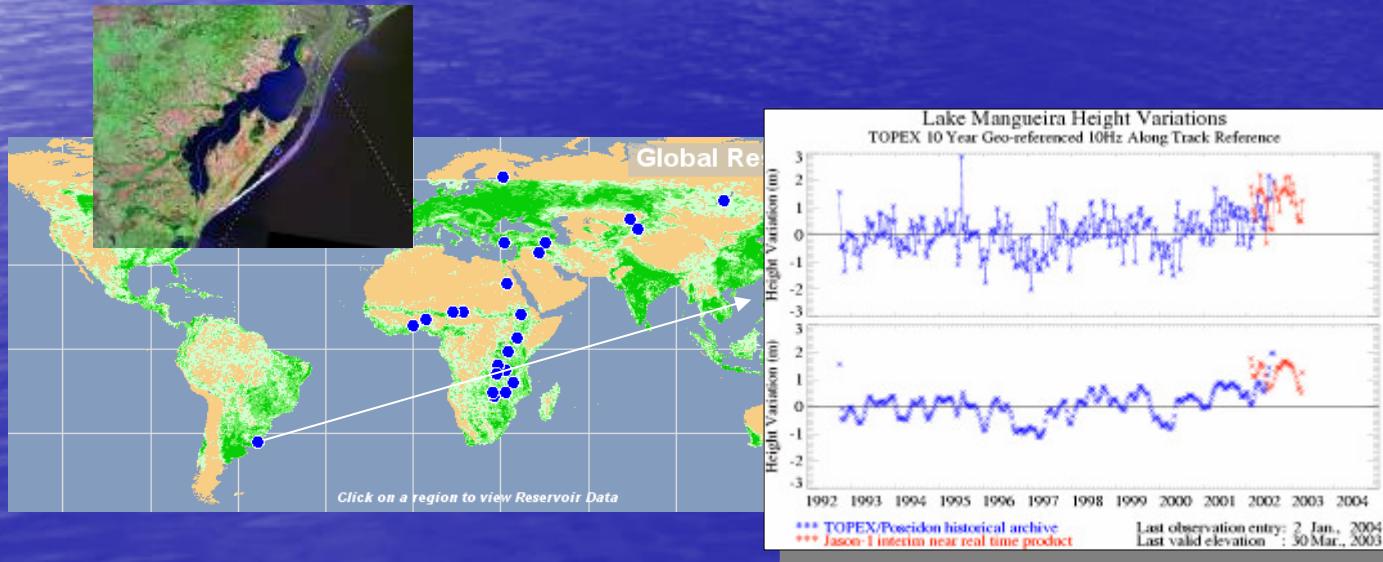
- ❑ GLOBE student data base :
- ❑ 450 000 records from Estonia
- ❑ Using data for learning



New concepts and technologies for learning Earth as a system



- Using instruments and quantitative methods
- Working with GPS and digital maps
- Using satellite images



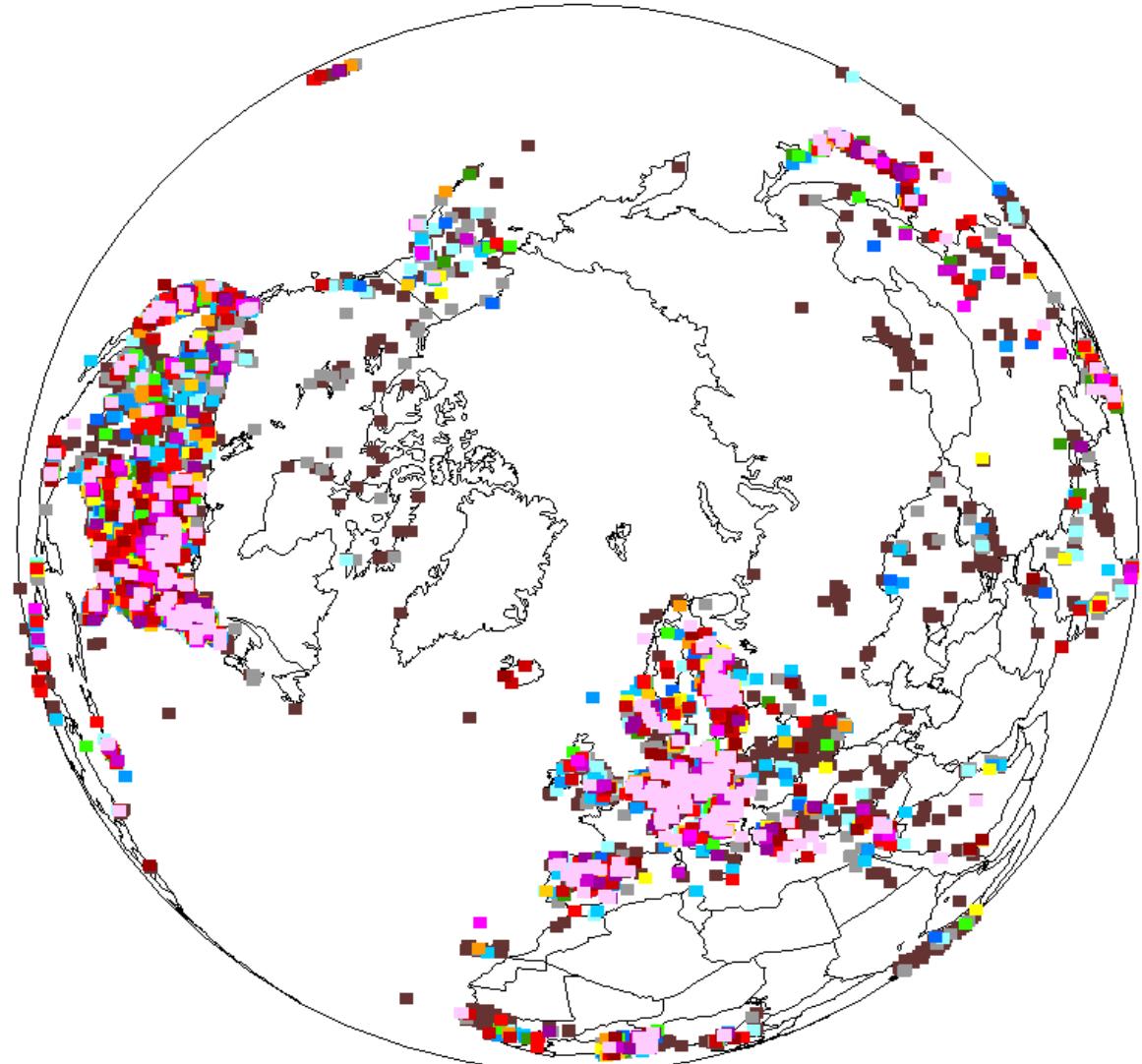


GLOBE program worldwide

109
countries

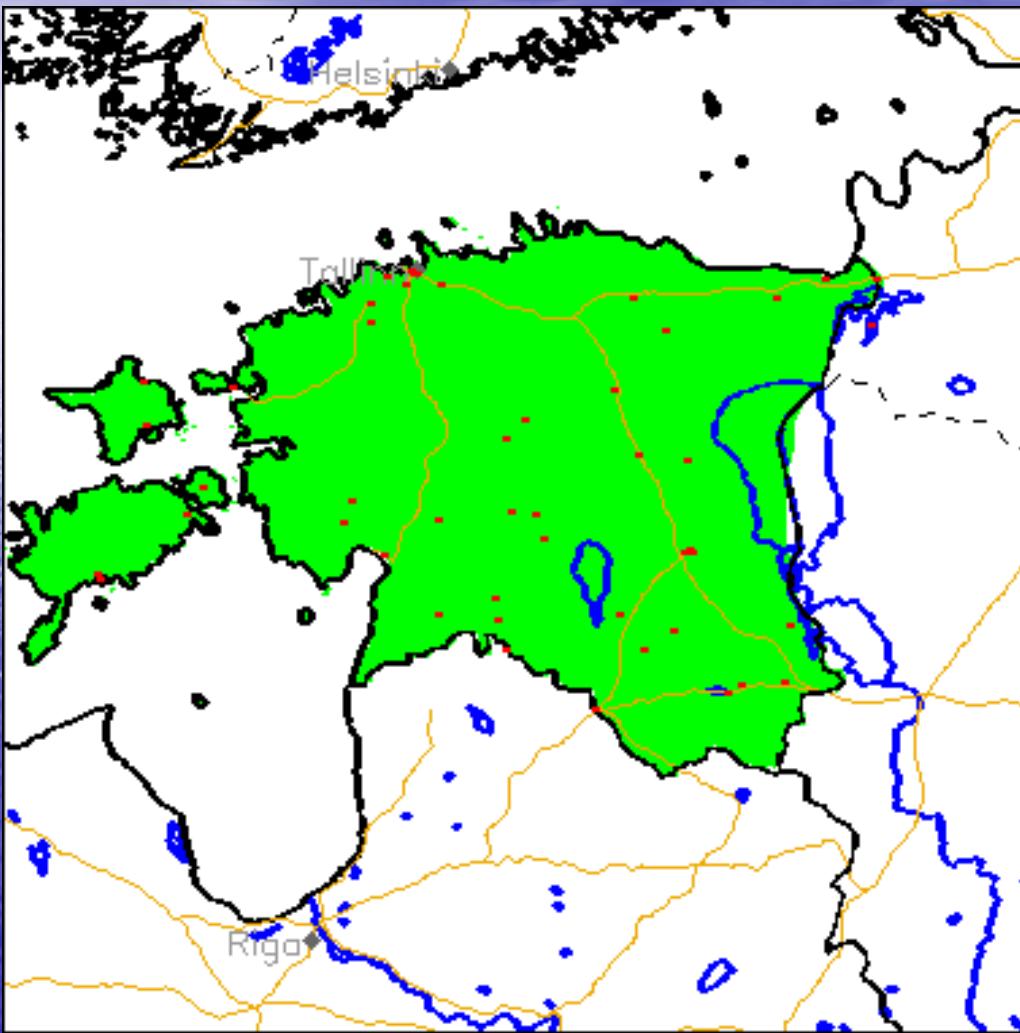
17000
schools

NASA
UCAR
NSF





GLOBE Program in Estonia



- 44 schools
 - Including 7 Russian-language schools
- 700 – 900 students participating each year
- 60 trained teachers



Scientific concepts
Educational materials
(NASA, US universities)



Measurement
protocols

Trained teachers

Continuous
measurements,
hands-on activities

Student data base
of environmental data



Student investigations

- Annual competitions of GLOBE research projects
- National student conferences
 - 30 – 50 presentations
 - First steps in research
 - students from grades 5 – 7 strongly encouraged
 - Organisers: schools in rotation
 - Rõngu, Paide, Viljandi, Paide, Kilingi-Nõmme, Rõngu, Tartu Kivilinna



- ✓ First places and awards
 - ✓ Estonian and European competition for young scientists
 - ✓ Int-l competition of environmental projects in Turkey
- ✓ Advisory from GLOBE scientists



Collaboration with scientists

NASA, NOAA, US Universities

- CloudSat (D. Krumm, M. Rogers)
- Urban phenology
- Seasons and biomes E. Sparrow
- Soil moisture (E. Levine, J. Robin)
- Aerosol (D. Brooks)
- Surface temperatures (K. Czajkovski)

“GLOBE fan -club”

Estonian scientists, doctoral students





GLOBE Games

Worldwide:

Helsinki, Finland,
Šibenik, Croatia

Regional:

Kääriku, Estonia
Vang, Norway
Czech Republic



GLOBE Games, Estonia:
1998 Värska, 1999 Jäneda, 2000
Kääriku, 2001 Kääriku, 2002 Lepanina,
2003 Rõuge, 2003 Sillamäe, 2004
Kopratalu, 2005 Mändjala, 2006
Narva-Jõesuu

Guests from Finland, Latvia, Russia

INCOMING!
8.-10. August 2007, Väimela

International collaboration of teachers



e-LSEE “e-Learning in Science and Environmental Education”
EE, CZ, NL, NO, PL, UK (2001 - 2003)

- ✓ Propagation of e-learning
 - ✓ online learning materials:
<http://www.globe-europe.org>
 - ✓ International conference,
Tartu 2003



Teachers educate teachers

innovation group of GLOBE teachers

- Curricula-adapted learning materials
- Video-lessons in web
- Teacher training workshops in counties
- Conference for Estonian science teachers
 - 9.-10. MArch, Tartu
 - 184 participants,
 - 23 parallel workshops
 - Honourable guests



Conference "Science Education and Sustainable development in Estonia"

Share the GLOBE experience to other teachers

- Diversify the learning environments
 - hands-on workshops
 - computer class workshops
 - e-LSEE, Google Earth, MultiSpec
 - outdoor learning



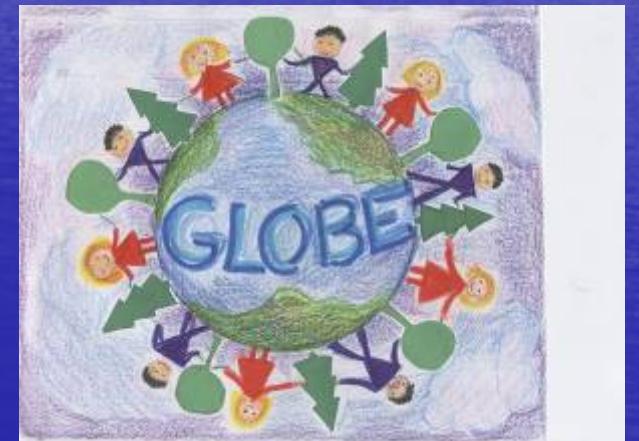
New projects

- CloudSat workshop
 - Workshop - Matt Rogers
 - 14 CEN schools,
- IPY projects
 - Karl Torstein Hetland
- GLOBE at night
 - star watching
- Surface temperatures
- Seasons and biomes
 - Tiiu Ehrenpreis
- Collaboration with St Petersburg
 - (environment in large and small cities)



GLOBE 10th anniversary

- GLOBE Games, Sillamäe August 2006
 - Visitor: US Ambassador to Tallinn
 - Video-welcome from GLOBE director
- Poster competition for students
 - February 2007
- Conference for teachers
 - March 2007
- GLOBE 10th anniversary book
 - May 2007
- Student research conference
 - May 2007



What is important? Communication

- International
 - Estonia-Norway-Finland-Latvia-Russia
 - Estonia-Germany-Kamerun
 - GLOBE Games
- GLOBE community in Estonia
 - Teachers-students-scientists
 - Small and large schools
 - GLOBE-Alumni
- Friendship, open outlook, environmental awareness, choice of profession



What is important? Human and professional qualities:

- GLOBE appraises for me the teachers profession: I feel - I can give my best for my students and for myself just being a teacher
- GLOBE has encouraged me for better organisation of my work
- Time spent together with my students outside of classroom offers different look to life and students
- I've developed as a person and a teacher because of being in the GLOBE

❖ Aiki Jõgeva, GLOBE õpetaja



HERE WE GO!

