



United Nations  
Climate Change



# **CLIMATE CHANGES:** *the role of the school in educating the future*



**Regional Workshop on Action for Climate  
Empowerment for Europe and the  
Mediterranean region**

***Roberto Antiga –USR Liguria***

**La Spezia 2-4 Ottobre 2018**

UFFICIO SCOLASTICO REGIONALE  
PER LA LIGURIA

SITO ISTITUZIONALE



M.I.U.R.



UFFICIO SCOLASTICO REGIONALE  
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M.I.U.R.



**Greetings of good work dell'USR LIGURIA  
on which the workshop is held by:**

**Director-General dr. *Ernesto Pellecchia***

**Technical Manager dr. *Roberto Peccenini***

# **EDUCATING THE FUTURE** in terms of **SUSTAINABLE DEVELOPMENT**

*means traveling through different paths*



➤ **TEACHER TRAINING**

➤ **STUDENT EDUCATION**

# TEACHER TRAINING

*Develop interdisciplinary working groups*

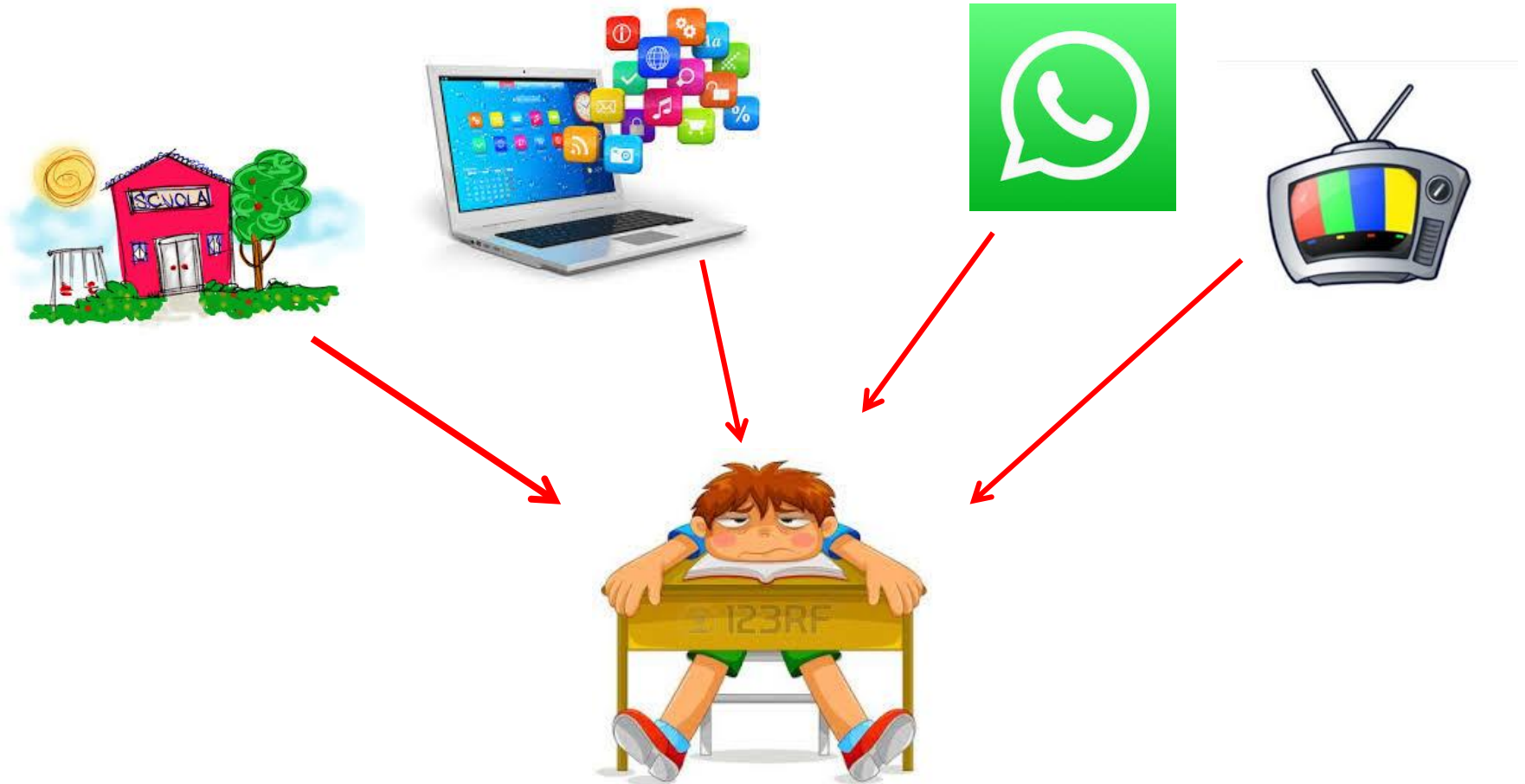
- **Scientific skills**
- **Historical skills**
- **Economic skills**



**Es. Laboratori di formazione docenti neo  
assunti 2017 sul tema:**

**AMBIENTE E SOSTENIBILITA'**

# STUDENT EDUCATION



**STUDENTS ARE SUBJECT TO A GREAT DEAL OF INFORMATION  
AND OFTEN DO NOT ENTER THE DEPTHS OF THESE**

# STUDENT EDUCATION



***Brochures,  
Educational Videos,  
Codes of Behavior***

**ARE USEFUL  
BUT VERY OFTEN THEY ARE NOT VERY EFFECTIVE**

# MORE USEFUL

## TO REASON THE STUDENTS IN TERMS OF

## THE PHYSICAL SYSTEM SYSTEM

**RESEARCH VARIABLES** (endogenous processes and exogenous processes)

and **RELATIONSHIPS** between them

### CAUSE - EFFECT



# The PLANET EARTH (or rather the EARTH SYSTEM)

is in **CONSTANT EVOLUTION**

THESE CHANGES ARE



**SLOW**



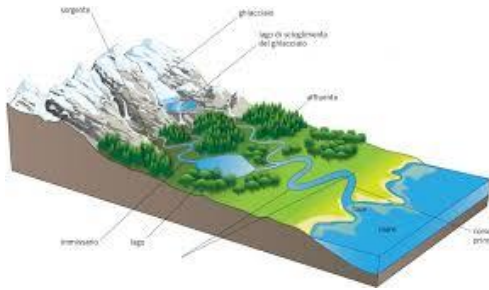
**FAST**





# TO LET THE STUDENTS ACQUIRE THE CONCEPT OF DYNAMIC EQUILIBRIUM

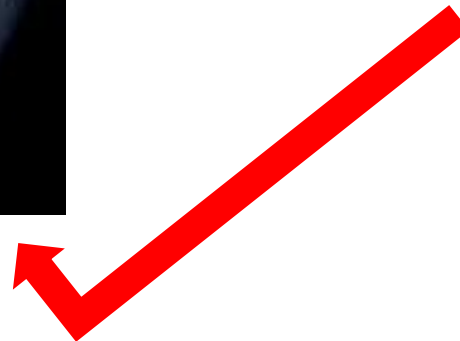
**CLIMATE CHANGES ARE NATURAL PROCESSES TO WHICH THE EARTH RESPONDS BY INSTIGATING A NEW EQUILIBRIUM**



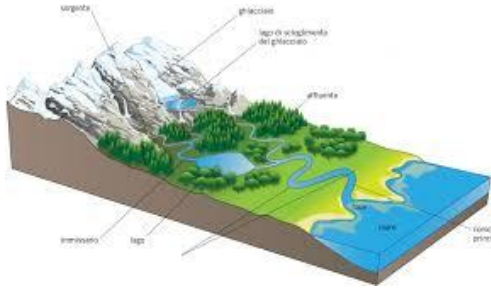
**exogenous agent**



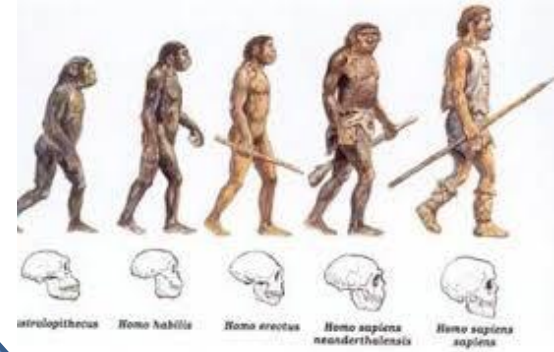
**endogenous agents**



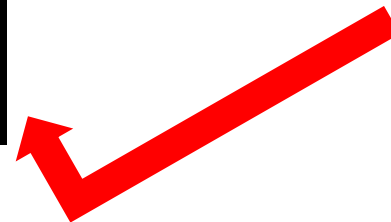
# MAN ARRIVES ON EARTH



exogenous agent



endogenous agents



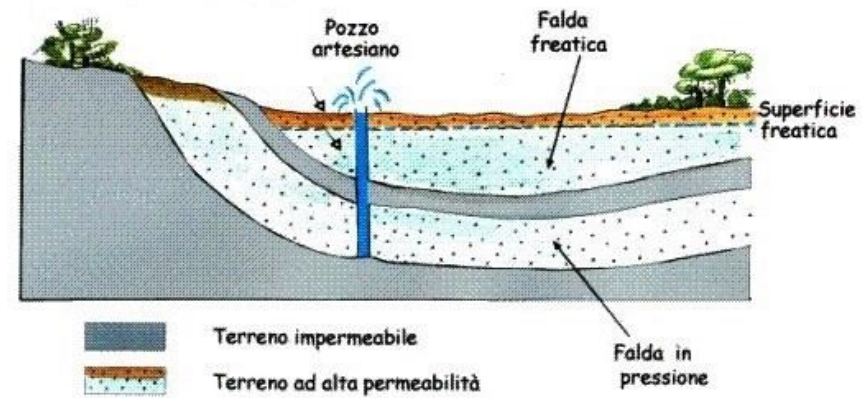
# REFLECT ON MAN'S ACTIONS AND CONSEQUENCES ON THE EARTH SYSTEM



from extensive to intensive farming



Es. FREALICAL FALSE POLLUTION

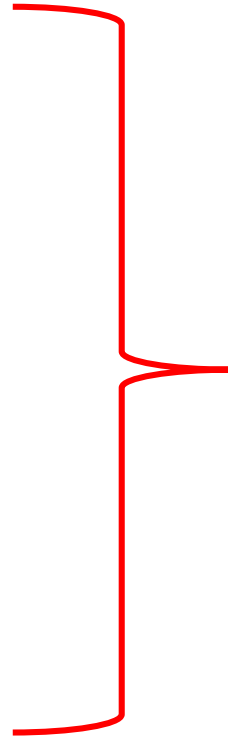


# REFLECT ON MAN'S ACTIONS AND CONSEQUENCES ON THE EARTH SYSTEM

## URBANIZATION



## DEFORESTATION



# REFLECT ON MAN'S ACTIONS AND CONSEQUENCES ON THE EARTH SYSTEM

## INDUSTRIALIZATION





**THEY BECOME EFFECTIVE**  
for correct behavior aimed at sustainable development

# LABORATORY TEACHING PROJECTS in **LIGURIA**

## **Guardiani della Costa:**

the project promoted by ***Costa Crociere Foundation*** and courses for students and teachers of secondary secondary schools to preserve the environmental quality of Italian coasts.

# Isa 2 LA SPEZIA

## PERCORSI NEL BLU





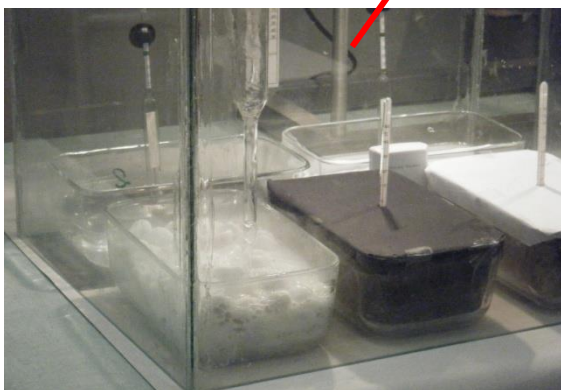
# Isa 6 "UBALDO MAZZINI" LA SPEZIA

## GREENHOUSE EFFECT AND CLIMATE

**CHANGE:** *development of an experimental model to evaluate the effects of CO<sub>2</sub> on the internal temperature of two sample physical systems*



# EXPERIMENTAL



**CO<sub>2</sub> PRODUCTION IN THE CONTAINER**



# SCHEDA RACCOLTA DATI CONTENITORE N. 1

VASCHETTA n.1

MATERIALE: Acqua

COLORE DEL FONDO: Bianco

**INIZIO ESPERIENZA: 9.17 h**

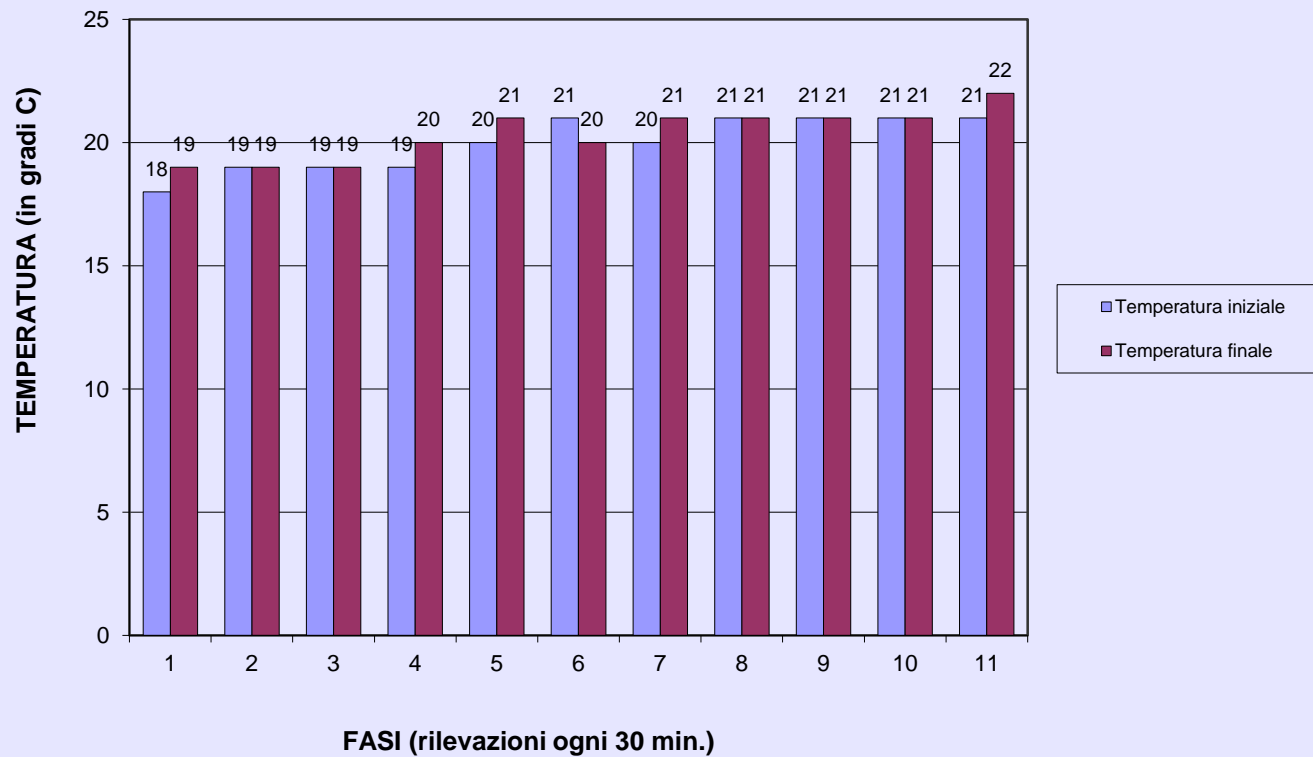
**FINE ESPERIENZA: h. 14.47**

## MISURAZIONI SPERIMENTALI

**OPERATORI: Sabatini Andrea, Ferdani  
Francesca, Piastri Margherita**

FASI	TEMPO INIZIALE (h)	TEMPO FINALE (h)	TEMPERATURA INIZIALE (°C)	TEMPERATURA FINALE (°C)	CONDIZIONI LUMINOSITA'	NOTE
1	09.17	09.47	18	19	LUCE ACCESA	
2	09.47	10.07	19	19	LUCE SPENTA	
3	10.07	10.47	19	19	LUCE ACCESA	
4	10.47	11.17	19	20	LUCE SPENTA	
5	11.17	11.47	20	21	LUCE ACCESA	
6	11.47	12.17	21	20	LUCE SPENTA	
7	12.17	12.47	20	21	LUCE ACCESA	
8	12.47	13.17	21	21	LUCE SPENTA	
9	13.17	13.47	21	21	LUCE ACCESA	
10	13.47	14.17	21	21	LUCE SPENTA	
11	14.17	14.47	21	22	LUCE ACCESA	
12						
13						
14						

### CONTENITORE 1 (presenza CO2) - H2O FONDO BIANCO



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Grazie per  
l'attenzione

