

## Climate – extended package

### Guide with lesson plans

Download educational materials described in this guide from:

<https://www.igf.edu.pl/eris.php>



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## Climate – extended package

### Methodological guide

<b>Title</b>	<b>CLIMATE</b>
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<b>Students' age</b>	15+
<b>Level of education or type of school</b>	Upper Secondary School
<b>School subject</b>	Physics, Mathematics
<b>Short description of content</b>	
<p><b>Understanding the concept of climate</b></p> <p>The general public is familiar with the notion of weather conditions, commonly known as "weather", and weather forecasting on a few days scale. The weather is characterized by several atmospheric parameters of which the best known are the temperature, the wind and the precipitations. The weather can vary greatly from one day to another or from one place to another, even if the two places are close enough. We say that weather is very heterogeneous temporally and spatially.</p> <p>The climate represents meteorological weather but averaged over long periods, typically at least 10 years. The climate is much less heterogeneous than weather, temporally and spatially. On average, we can see several typical climatic zones, strongly dependent on the sunshine: tropical climates to polar climates and temperate climates to medium latitudes. Meteorological observations and models show that the climate has warmed up over the last 5 decades.</p>	
<b>Concept and learning outcomes</b>	
<p><u>The student knows:</u></p> <ul style="list-style-type: none"> <li>• Notion of infrared radiation</li> <li>• Notion of greenhouse effect</li> <li>• Notion of radiative balance</li> </ul>	

The student understands:

- Exchange of energy

The student can:

- Understand the mechanisms involved in the Earth's radiative balance

**Elements of educational package** (created in ERIS)

<b>1-Guide</b>	Guide for teachers
2-Presentation	File pptx. This file includes the 3 movies indicated below
<a href="#">2a-Climate - movie</a>	Movie based on presentation
3-CLIMATE-text	Text of the tutorial for this package
4-Kahoot_answers	Answers to the Kahoot (see next)
5-Kahoot test	<a href="https://play.kahoot.it/#/?quizId=3ae33a71-5de1-42d1-837e-ad31639f0f06">https://play.kahoot.it/#/?quizId=3ae33a71-5de1-42d1-837e-ad31639f0f06</a>
<b>Not created in ERIS</b>	These 3 movie are silent, explanation should be provided by the teacher
6- Movie on Climate	Movie <a href="https://youtu.be/FGB3mEI1ms">https://youtu.be/FGB3mEI1ms</a> How we build a model
7- Movie on Meteo	Movie <a href="https://youtu.be/O6mplf_VCPo">https://youtu.be/O6mplf_VCPo</a> Difference between meteorology and climate
8- Movie on Simulation	Movie <a href="https://youtu.be/MKDYsITrQcl">https://youtu.be/MKDYsITrQcl</a> Results of simulation

**Additional materials for teachers** (websites links, science articles, etc.)

No

# Lesson 1

## Subject: Climate and greenhouse effect

Lesson plan for "Climate" – extended package

<b>Subject</b>	<b>Climate and greenhouse effect</b>
<b>Duration</b>	1h00
<b>Materials/Preparation</b>	
Smartphone Infrared remote control, similar to those used for TV	
<b>Lesson flow</b>	
Must follow the steps indicated in the tutorial	
<b>Homework</b>	
No	

In order to conduct the lesson, it will be necessary to provide:

- a multimedia projector for presentation, a computer for groups of 2-3 students;
- a modern remote control and cell phone (photos);
- no printing for the student all necessary documents are in the package and can be viewed on the computer;
- Internet link (kahoot).

Expected educational goals of the lesson:

The general aim and the detailed objectives are consistent with the objectives of the "Climate" education package.

We propose to follow the indications provided in the "Climate" presentation (no. 2).

Lesson procedure:

Lesson procedure:

1. Start of the lesson, organizational activities, attendance list check.
2. Start ppt file of the presentation "Climate" (No 2)
3. During the presentation indications are provided in ppt file to show movies (on YouTube):
  - a. <https://youtu.be/MKDYslTrQcl>
  - b. [https://youtu.be/O6mplf\\_VCPo](https://youtu.be/O6mplf_VCPo)
  - c. <https://youtu.be/FGB3mEIl1ms>
4. Kahoot if internet available, or traditional test (No. 5) - (Test with answers (No. 4).