

VENUS – extended package

Guide with lesson plans

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VENUS – extended package

Guide with lesson plans

Title	VENUS
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Students' age	15+
Level of education or type of school	Upper Secondary School
School subject	Physics, Mathematics
Short description of content	
SODISM is a kind of camera onboard the satellite Picard in orbit around the Earth. SODISM regularly takes photos of the Sun to study its atmosphere. We will use these images obtained during the transit of Venus (passage of Venus in front of the Sun for an observer on Earth) to explore the peculiarity of the space experiments. For this we will use true scientific observations. Objective Understand some operational parts of a space experiment on real example Tools SODISM experiment onboard PICARD and its observations of Venus transit on the Sun But first, some definitions and reminder of the scientific objectives of SODISM. PICARD is a french satellite dedicated to Solar studies SODISM is dedicated to the measure of the solar diameter and its variations related	

to the SUN-Climate of the Earth's relations.

SODISM is a telescope taking images of the Sun

SODISM is not the first to measure the solar diameter, but he makes it with a very high precision

The Solar diameter is it variable during time ?

Is it affecting the climate of the Earth ?

These are the two important questions scientist want to answer

But here, we will limit our analyse to the study of a space experiment . For this, we will use real scientific results.

Concept and learning outcomes

The student knows:

- What is a transit
- What is a satellite orbiting around the Earth
- Cross-multiplication rule
- What is a solar spot

The student understands:

- That images contain always some defects
- Calculate position in images

The student can:

- Identify details in images
- Interpret observations of a transit seen from the orbit around the Earth
- To calculate the size of a solar spot knowing the size and the distance of Venus from the Sun

Elements of educational package (created in ERIS)

1- Guide	Guide
2-Presentation	Pptx document
2a-VENUS movie	Movie based on presentation
3-Venus.doc	The tutorial for this package

4_Venus_Kahoot answers	Answers of the questionnaire (see 5-)
5_VenusKahootEN	Questionnaire, https://play.kahoot.it/#/?quizId=f47dd199-875c-4623-946f-fd45fc6c42b1
6-ImagesSodismPNG	97 images from SODISM during the transit of Venus
7-VenusTransit.mov	The movie of the transit, https://youtu.be/mzWUJgG4Fi8
Not created in ERIS	
6-Venus_EN.mov	Movie, https://www.youtube.com/watch?v=MSKT6nl-W3U

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

None

Lesson 1

Subject: VENUS

Lesson plan for "VENUS – extended package"

To conduct the lesson, it will be necessary to provide:

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

<https://play.kahoot.it/#/?quizId=f47dd199-875c-4623-946f-fd45fc6c42b1>

Lesson Goals:

The overall goal and detailed objectives are consistent with the objectives of the "Venus" education package.

We propose to follow the indications provided in the ppt file n°2

Lesson :

1. Start of the lesson, organizational activities, attendance list check.
2. Start ppt file of the presentation 2-
3. During the presentation indications are provided in ppt file to show movies 6 and 5 (on YouTube)
4. Kahoot if internet available, or file 5- (answers for the teacher in file 4-)
5. If enough time or home work, exercises of the file 3-Venus.doc using file 6-