

**ERASMUS+ 2017-1-ES01-KA219-038074\_1**  
**OUT OF THE DARK: ASTRONOMY AS UNIFYING THREAD FOR CULTURES.**



## ***Visiting the MDSCC NASA Robledo de Chavela***

### ***Introduction***

The acronym MDSCC corresponds to the English name of the Deep Space Communications Complex of Madrid or Madrid Deep Space Communications Complex.



The Madrid complex is part of a worldwide network that has two other similar centers in Australia and California. The geographical situation of the three complex, separated approximately 120 degrees in length, has been chosen so that the vehicles can maintain contact with some earth station, independently of the daily movement of rotation of the Earth.

The network is known internationally as DSN, an acronym that corresponds to its name in English: Deep Space Network, and is managed by the Jet Propulsion Laboratory (JPL) of Pasadena, California. It is currently the largest and most sensitive telecommunications system for scientific applications in the world.

Students and visitors can see the complex and enjoy its museum in the Visitors Center. Our students goes every school year to do rocket workshop. On this occasion, we have shared the activity with the whole Erasmus international team.

Carolina has been our teacher after introducing the Center with a video.

## Material

For the construction of each rocket you need:

- 2 empty 1.5 liter plastic bottles that originally contained a soda
- Scissors
- Scotch tape

The rocket launches are carried out outdoors. For this we need:

- Air pump
- Water
- Support
- Rope

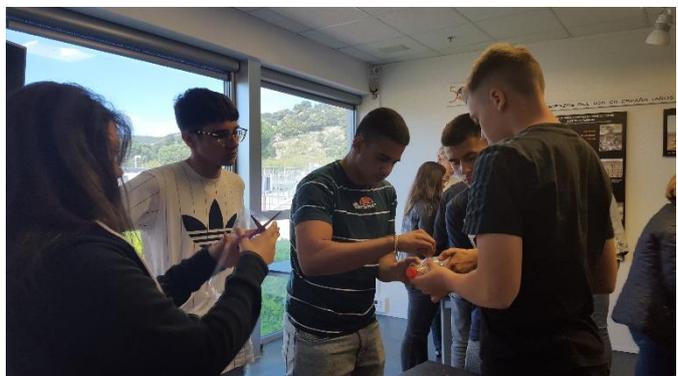
## Procedure/Method

With the help of a PowerPoint presentation Carolina explained the laws that are used to propel the rockets, as well as the steps to follow for their construction.

By means of homemade materials (plastic bottles) a rocket is built with the necessary accessories to obtain a greater elevation (nose, ailerons, ...).

The construction of the rocket is planned in groups.

In the launch phase the rocket is mounted on a prefabricated shuttle. Water and air under pressure are introduced so you can take off.



## Results

Once again, the Erasmus international team showed a good capacity to coordinate and work on a common Project.

In fact, the rockets they built were spectacular and reached a great height in the launch phase.



### ***Conclusions***

During our visit to the MDSCC we were able to learn a lot about astronomy, and we were lucky to meet the director of the institution, Mr. Ángel Martín, who told us about the role of these facilities in the space race and in the current research of space.

The students were able to talk with him about the professions linked to this type of centers.

### ***Thanks***

We thank the staff of the NASA MDSCC for their attention throughout the project, and especially during the last visit.

We want to express our deepest gratitude to the director, Mr. Ángel Martín, for dedicating his time both during the transnational meeting of teachers and in the last phase with the students.



### ***Bibliography***

<https://www.mdsc.nasa.gov/index.php/history/>

<http://outofthedarkerasmus.blogspot.com/search/label/MDSCC%20NASA%20Robledo>