

A SMALL CORNER OF THE STARS: ASTROTURISM FOR SUSTAINABLE DEVELOPMENT AT TATACOA-COLOMBIA

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RESUMEN

La esquinita de las estrellas, una diminuta casa junto al observatorio local en Tatacoa (Colombia), es el primer laboratorio de astroturismo vinculado a la fauna y flora locales, la astronomía y el cuidado del medio ambiente. A través del trabajo colaborativo con clubes científicos conformados por estudiantes de la escuela local de Tatacoa, estamos llevando a cabo experimentos que incluyen ciencias básicas, con el objetivo de ampliar la oferta turística actual. En esta contribución, presentamos resultados preliminares de este proyecto y los desafíos actuales que enfrentamos en relación con la sostenibilidad de esta iniciativa.

ABSTRACT

The small corner of the stars, a tiny house next to the local observatory at Tatacoa (Colombia) is the first astrotourism laboratory vinculated to local fauna and flora, astronomy and care of the environment. Through collaborative work with science clubs conformed by scholars of the local school of Tatacoa, we are conducting experiments including basic sciences, aimed to expand the current touristical offer. In this contribution we present preliminary results of this project and current challenges we are facing concerning the sustainability of this initiative.

Key Words: astrotourism — communities — sustainable development

1. INTRODUCTION

The idea that astronomy can be used as a tool for sustainable development, education and social changes is becoming popular among latin-american astronomers. This beautiful wish is shared and supported by the Office of Astronomy for Development (OAD), a joint project of the International Astronomical Union (IAU) and the South African National Research Foundation. Since 2011, the OAD has granted more than one million of euros in 215 projects in 5 continents through its annual call for proposals (OAD-AnnualCall 2022). In this contribution we present the results of one of these projects funded by the OAD-2022 call and developed with rural communities at Tatacoa, Colombia.

La Tatacoa is a dry-tropical forest in Colombia, home to numerous fossil deposits, some of which date to the pre-Cambrian period. It is also considered one of the best destinations for astrotourism due to its dark skies, excellent weather and landscapes. In 2019 La Tatacoa was certified as a starlight destination (MinComercio 2020) and as a consequence the

number of visitors has been growing reaching almost 90,000 in 2023 (GobHuila 2020). However, the majority of the local population remains unknown to the richness of their marvelous territory which includes: the Magdalena river, a dry forest extending 300,000 square kilometers, dark skies, fossils and diverse fauna and flora. This lack of territory appropriation is because river, sky and all others have remained absent in the school curricula or disconnected from the basic sciences teaching activities. This project is an initiative supported by OAD (Office of Astronomy for Development) for unifying natural environment and cultural resources in science club activities with young local scholars of Gabriel-Plazas local School.

Despite having important educational and social projects currently in development, graduate students of Gabriel-Plazas competences seem disconnected from the most important economic activity of the region i.e. tourism. This is a consequence of old curricula at school with very tangential or null connections with the environment and territory. Recently, local authorities in collaboration with CAM-Huila³, have enabled the use of a small house near to observatory for activities related to the astrotourism with the participation of local school community.

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Fig. 1. Teacher training program at Gabriel-Plazas local School (March 2023) activities in which we recognize together with participants the main potentialities of Tatacoa for astrotourism.

Our main challenge has been the use of this space for the development of a sustainable community project based on qualified tourism. We plan to empower local community of young scholar from the perspective of the knowledge and appropriation of the territory. Our intervention will facilitate sustainable development through a right flow between the science clubs and a tourist center at a small corner of the stars.

2. A SMALL CORNER OF THE STARS

The project involves collaborative work between three main actors: (1) The Gabriel-Plazas School community, (2) local authorities & CAM-Huila and (3) local entrepreneurs with the aim to establish sustainable development on the basis of amplification and diversification of the current astrotourism offer at Tatacoa.

We started with a Teacher Training Program (TTP) in basic Astronomy, Paleontology and Biology of Tatacoa organized for 16 teachers and 2 local entrepreneurs (see Fig. 1). Material of our Teacher Training Program include experiences reached with the OAD project: Astronomy motivation activities in rural India (2021). The TTP is structured as follows: Module 1 (2h): Tropical forests in



Fig. 2. The history of the universe, light-box panels at small corner of the stars.

Colombia, flora and fauna at Tatacoa, The care of Magdalena river; Module 2 (2h): Stories from the desert. The pre-Cambrian period and the richness; Module 3 (2h): The marvelous skies of Tatacoa, a starlight destination for preserving dark skies. Careful review of previous science clubs, classroom activities related to tourism and astro-tourism were done. TTP was aimed to the creation of science club: *Sky and nature keepers* that help in tourist attendance.

3. SCIENCE CLUB ACTIVITIES

Several astronomy practices on position astronomy as well as birds and night-sky observations have been conducted. A total of 23 young scholars 14-17 years old, belonging to the Gabriel Plazas school were initially interested in become part of the science club : “Keepers of the sky and nature”. Despite of being only a few percentage of them that have actively participated in our proposed activities, we are able to continue due to they are really engaged with the project.

Astrophotography activities were also conducted with the support of our team. These photos are the most popular souvenir at small corner of the stars. Three main astrotourism projects are currently working at the small corner of the stars: An indoor exhibition about the universe, a scale solar system which extends up to 4 kilometers and a banner illustrating the importance of dark sky preservation.

3.1. The history of the universe

A set of ten light-boxes illustrating the history of our universe, from the Big-bang up to the earth formation and evolution including the formation of the Tatacoa constitute the main indoor activity at small corner of the stars. Each image contains a



Fig. 3. Artificial light that is not needed has negative impact on astronomy and harmful consequences for human health.

short text and one big astronomy question to be discussed with the audience (Fig. 2). Questions such as: Why don't I feel the cosmic expansion?, How can you see the cosmic microwave radiation?, Why do the stars die?, How old is the Sun?, Is the earth a unique planet? and the associated discussions guided by science club members define our first astrotourism experiment. We remind that Tatacoa is an unelectrified place, so we had to install a small solar energy plant (1 kW) dedicated to the light-boxes.

3.2. Dark sky protection

With the aim of promoting the preservation and protection of dark night skies in Tatacoa for posterity, we designed a permanent banner (Fig. 3) showing differences between two images of the starry night one of them taken with a high level of light pollution with this text: *The light that we see from celestial objects has travelled during thousand million years before it reaches our eyes, don't lose it during the last fraction of second of their whole travel.*

3.3. Scale solar system

Together with science club students we created our own scale model of the solar system by learning

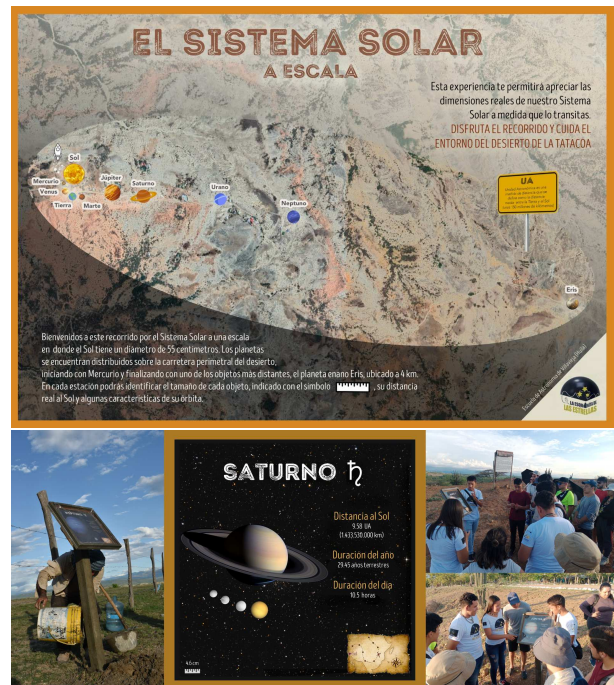


Fig. 4. Scale solar system at Tatacoa in which the borders of the system are placed up to 4 km away from the Sun.

how to calculate scale distances and the relative sizes of planets and minor bodies when the Sun has a diameter of 55 centimeters. Science club members are in charge of the first scale solar system in Tatacoa (see Fig. 4). The tour extends up to ~ 4 km over the Tatacoa desert. Future plans include horseback ridings and bike tours.

4. CONCLUSIONS AND PERSPECTIVES

Our project is an initiative rooted on diversity, inclusion and Sustainable Development Goals number 8, i.e., decent work and economic growth. We envisage sunny days and starry nights involving experiences and special moments around astronomy, promoted by our science clubs. Although, the sustainability of our intervention is still not guaranteed. We have found difficulties with the conformation of the committee responsible of the administration of "A small corner of the stars". Our strategy is to continue promoting dialogue among all actors.

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