

## INTRODUCTION

Chile is located just along the western coast of the southern cone of South America. It is one of the longest countries in the world (it has 4.800 km of length) and also is one of the narrowest, with an average width of 180 km. It is located on the Pacific coast of South America; the Andes Mountain Range stretches along the country his neighboring countries are: Argentina, Bolivia and Peru.

Tourism products are many and varied, from the Atacama Desert to the heart of the Andes Mountains, which can reach more than 5,000 meters above sea level, and volcanoes with covered summits with many nine points with a unique and largely unexplored landscape. The tourist agencies offer a variety of products such as hiking, fishing, skiing..

The country is divided into fourteen administrative regions, plus the metropolitan region of Santiago de Chile. Each region has individual activities and tourist attractions. San Pedro de Atacama and Torres de Paine are possibly the most frequented destinations.

Stand out Coquimbo Region, specifically the Valle del Elqui, attracting those interested in astronomy, as it boasts one of the areas on Earth with the clearest skies on the planet.

Chile has astrotourism products distributed between the region of Antofagasta and BíoBío, Coquimbo being the region with the most consolidated offer of this tourism product. Currently there are 21 scientific observatories in Chile, 10 of which are open to the public, 25 tourist observatories, 24 accommodations offered astrotourism services and over 50 tour operators offering astronomical tours. However, astrotourism offer is still limited and faces many problems that reduce competitiveness in the international and domestic market ; it has not been developed as a complementary product, routes and / or experiences are not related , making it difficult nowadays the design and implementation of joint actions undertaken to strengthen this product .

Across northern areas there are several ideal locations for observing the sky as the Pampa Joya, Mano del Desierto and Alto Loa in the region of Antofagasta ( that already have certification Starlight ) or Chañar , Andacollo , La Campana, Paihuano , Cochiguaz Magical and Pisco Elqui -Rio - Horcón , in the region of Coquimbo , which won the first South American Starlight certification. In 2014 three new certifications joined Starlight tourist destination in the sectors of Young Pampa, Mano del Desierto and Alto Loa, in the region of Antofagasta.

The climatic characteristics are one of the main factors that allow the destination possessor becoming a natural laboratory for astronomy.

With regard to existing resources in the country related to astro tourism, it is possible to stand out that there are more than a dozen astronomical facilities, including optical observatories and observatories radios. The most important are Paranal (VLT ), which is the astronomical complex more developed and powerful in the world, the ALMA (Atacama Large Array Mollimeter ), to date the largest astronomical project in existence and La Silla ; all are dependent on the ESO ( European Southern Observatory) .

One of the most important astronomical tourism services in Chile are the scientific observatories for visitors, such as scientific Observatory Cerro Panal, Observatory Microwave Telescope at Chajnantor Chajnantor, Observatory of the University of Tokyo Atacama (TAO), the Cornell Caltech Atacama Telescope ( CCAT) Bubmillimeter Atacama Telescope Experiment (ASTE), Observatory Cerro Armazones (OCA), Space: Observatory San Pedro de Atacama Celestial Explorations Ahlarkapin, Observatory Archeo-Astronomy Paniri Caur, Observatory Inca de Oro Tourism (CAIO), Observatory Scientific Las Campanas, Observatory Cerro Tololo Scientific, Observatory La Silla Scientist, Observatory Scientific SOAR (Southern Observatory for Astrophysical Research) Observatory Scientific Gemini South, Tourism Observatory Cerro Mayu, Tourism Observatory Mamalluca, Observatory Cancana Cochiguaz, Tourism Observatory Cruz del Sur, Tourism Observatory Collowara, Tourism Observatory of the Pangué, Hacienda de las Estrellas (L'Hacienda des Etoiles) Tourism Observatory Mamana (night) Inti-Runa (solar) Tourism Observatory, Astronomical Observatory Pocuro - Acuncagua Valley Observatory El Roble (Universidad de Chile ), Observatory Cerro Pochoco, Astronomical Observatory Andean (OAA), National Astronomical Observatory (Cerro Calan), UMCE Observatory, Observatory UC, Tourism Observatory Roan - Jase, Astronomical Observatory Melaga (Viña Santa Cruz) Tourism Observatory Cerro Shaman, Astronomical Center Tagua Tagua, Tourism Observatory Elke, Astronomical Observatory Skies Shangril-La and the Astronomical Observatory Amateur Antares.

## 1.- ANALYSIS OF THE DESTINATION AND VISITOR PROFILE

Countries with the largest number of astronomy associations detected are Colombia, Argentina, Chile and Brazil, according to 2013 statistics by the National Service of Tourism Region of Coquimbo. According to Study Survey Information Amateur Astronomers, in 2013 60% of tourists visiting Chile for astro tourism purposes were nationals, followed by visitors from Brazil and Argentina. In Chile you may find amateur astronomers, although most of them come from the Metropolitan Region, followed by the Valparaíso and Bio – Bio visitors.

Age range of astrotourists is between 26 and 40 years (39%), also there are a large number of tourists who are aged between 19 and 25 years (29%) these numbers are based on study of the National Service Tourism - Region of Coquimbo (2013) based on the South American survey of amateur and professional astronomy.

Most amateur astronomers are men 71%, while 29% are women. They belong to associations and participate actively in astronomy activities, according to the National Service of Tourism - Region of Coquimbo (2013) based on South American survey of amateur and professional astronomy.

Most fans of this type of activity have a high educational level , since according to data collected by the National Tourism - Region of Coquimbo (2013) , 32% have a full university degree and 33% do not have the full college career, but still have some principles related concepts learnt in college.

With regard to spending and purchasing power of astro tourist, based on the South American survey of amateur and professional astronomy; Brazilians spend more on their vacation that Argentines and Chileans.

According to data collected by the National Tourism - Region of Coquimbo (2013) based on the South American survey of amateur and professional astronomy, the age to start the hobby of astronomy begins before 19. In addition, the main topics of interest to amateur astronomers are usually related mainly to cosmology and astrophotography. On the other hand, the medium used to get information about issues and activities related astro is mainly internet, used by 95.4 % of them.

Tourist behavior of amateur astronomy : family travelers , about 70% according to the National Service of Tourism - Region of Coquimbo (2013) , followed by visitors travelling in group (23 %) and a lower percentage travelling solo ( 17%). Regarding the location of the destinations visited, 79 % said they visited destinations located within the country of residence, while another 11% travelled inside and outside their country of origin. Fans often stay with friends or family and to a lesser extent, in hotels or lodges.

According to the National Service of Tourism - Region of Coquimbo (2013) have collected data to claim that the average length of the holiday of the amateur astronomy was 11 nights. The medium used to inquire about their last holiday destination was internet and recommendations of third parties. This is a profile of tourists who regularly visit the destination (45% had visited the destination before) For fans is difficult to articulate their family trips with his astronomical interests. Some match their holiday dates when they know they will find interesting objects.

## 2.- Analysis of the tourism supply

The offer of astronomical tourism in Chile is concentrated among the regions of Antofagasta and Bio-Bio, according to SERNATUR - Ministry of Economy and Tourism, highlighting the Coquimbo region, home of 51% of private companies offering related products to this type of tourism.

According to a study by SERNATUR and performed by Green in 2013, astro-tourism fans in the region of Coquimbo consider the quality of its skies is unique, but the tourism product does not fit their needs. Nevertheless the region of Coquimbo has created attractive routes as the Route of the Sun and Stars, the Stars Dust Road or Route of the Interior and Sun Limari.

Coquimbo is a region with great appeal for the development of astro. However, the perception of tourists is that the region is not adapted to enjoy the astro and is not taking advantage of this opportunity. Main issues:

- No information has prepared specifically for this segment, nor is there the possibility to book online astro services.
- The offer of the Coquimbo region offers tourism products with little differentiation and lack of knowledge of the staff to enhance the astro.
- There are specialized services and infrastructure for amateur astronomy.

Shortcoming of Astrotourism in Chile:

- Little information on the Internet about astronomy tourism offer, except the region of Coquimbo.
- No knowledge on how to exploit the regional offer in Coquimbo and other regions of Chile.
- Lack of diversification of supply of astro.
- In the region of Coquimbo there is astro offer that does not have specific information for the segment that consumes this tourism product.
- Lack of additional quality services such as tourist accommodation or dining.
- The region of Coquimbo offers products with little differentiation and there is no associated design and powerful experiences.
- Need to educate and train more guides who work with astro product.
- Lack of adequate infrastructure to host upcoming events in astronomical observatories.
- Difficulty for the tourist to find effective information quickly.
- No astrotourist adapting to new technologies offer.
- Lack of an updated price list of the astro offer

Source: Astroturismo Chile (portal web).

Different agencies nationwide, both public and private that have joined the project "astro Chile", with the aim of transforming Chile into a astrotourist destination of excellence, becoming recognized and admired in the world by the appeal, quality, variety and sustainability of their resources.

The project develops various tools for quality and competitiveness of existing astrotourist products and the development of a strategic plan to ten years, with the aim of strengthening the astro-tourism in Chile. It also includes studies on supply and demand for astro, nationally and internationally, in order to meet current visitor profile and potential.

Partners in the project include: Undersecretary of Tourism, SERNATUR, the Committee on Foreign Investment, Tourism Chile, European Southern Observatory (ESO), Associated Universities, Inc. (AUI), the Chilean Society of Astronomy (SOCHIAS), the Pontifical University Catholic, the Planetarium Foundation (of Usach), and consultant Verde.

### 3.- Analysis of the tourist demand

Currently there are no published data on the demand of astronomical tourism in Chile. But some astro Chile Studies are about to be published in the month of June 2015.

### 4.- Diagnosis and conclusions: current product development and potential for future development in Valencia

Chile is a country with incredible astronomical conditions, in fact, meets third telescopes today on the planet, which has positioned as a global hub in the field, due to climatic conditions. In the next decade, the country will have 70% of the infrastructure for astronomical observation in the world. For that matter, astronomy should be considered a strategic asset Chile's development since the astronomical rise coming in the next few years represent great opportunities in scientific, technological, industrial and educational matters.

In conclusion, the Chilean tourism industry has not taken every opportunity offered by the astronomical tourism yet, considering the incredible Chile has comparative advantages over other countries / locations. Therefore astronomical tourism is a real opportunity for the development of the country, offering benefits to both astronomy and for the tourism industry.

### Attractive routes:

**Route of the Sun and Stars:** located in the La Serena - Coquimbo, combines the enjoyment of beaches and watching heaven.

- Places highlight of the route:
  - Meteorite Museum at the Horseshoe Coquimbo, where you will enjoy experiences such as the "touch" the stars; The museum has the largest collection of meteorites in Latin America, where it is possible to see meteors of millions of years old.
  - Cerro Mayu Observatory, located 600 meters above sea level, in Quebrada de Talca.
  - Collowara Observatory, located in the city of Andacollo in the Cerro El Churqui, includes the scientific observatories Tololo and Gemini South.

**Route Stardust:** the Valle de Elqui sky observation combined with relaxation and mysticism in its environment.

- Places highlight of the route:
  - Scientific Observatories size Tololo and Gemini South,
  - Ppublic tourist Observatories, like Mamalluca, and private linked to hotels like Cancana, Astrolodge Elqui Domes & Shelters La Frontera everyone in the commune of Paihuano.
  - Cancana Observatory, located in Monte Grande, which is equipped with a 14-inch telescope and located in an area where there is no street lighting.
  - Specialty Lodging:
    1. Elqui Domes Astrolodge, an exclusive hotel has its own observatory easier.
    2. Shelters La Frontera, located in the resort town of Alcohuaz, 7-shelters equipped to enjoy the astro.