Towards a First Spectro-Photometric Characterization of the Chilean Night Sky

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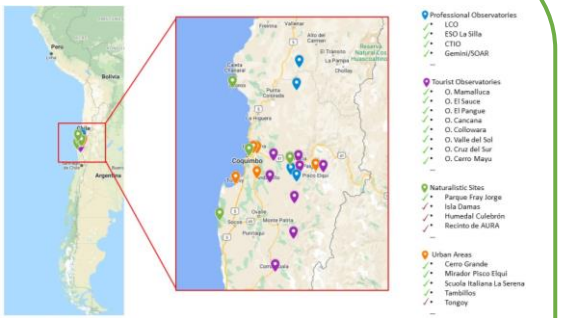
NOIRLAB-ULS-OPCC Research Group on ALAN

ABSTRACT

Light pollution is nowadays recognized as a global issue that, like any other form of anthropogenic pollution, heavily affects ecosystems and causes adverse effects on human health. Originally discussed by the astronomical community who was concerned that an inefficient, unnecessary and uncontrolled use of **Artificial Light At Night (ALAN)** could blind professional observatories, today it represents a fertile terrain for interdisciplinary scientific research, socio-economic studies and public cultural debates. In this poster, we introduce the NOIRLAB-ULS-OPCC Research Group on ALAN and present preliminary results of its night sky quality monitoring campaign across the Coquimbo Region, as we have been measuring it over the course of the last few years.

The Monitoring Campaign



Since 2019, our research group has started a systematic survey of the night sky quality of the Coquimbo Region. We are regularly monitoring (at least four times per year) different sites, including professional and tourist astronomical observatories, natural parks, and urban areas.

Diego Fernández (ULS MSc. student) aligning SQC ULS-1 before an observing run

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Why a Research Group on ALAN?

In Chile, despite a historic effort from various public and private actors to keep the light pollution phenomenon under control, until recently there was not a coordinated scientific approach to quantify, characterize and monitor ALAN of one of the most pristine night sky of the planet Earth.
Our interdisciplinary group - made of researchers, students and experts of lighting technology belonging to different institutions - was born with the explicit purpose of filling this need.

The Sky Quality Camera (SQC)

Euromix Ltd.

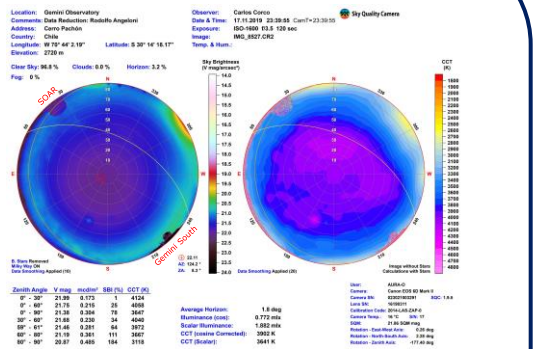
Hemispheric Field of View
- *Opening Angle: 186°*

Spatial Resolution
- *1 square degree*

Color Information
- *RGB channels*

It delivers calibrated values of both night sky ***surface brightness*** (in mag/arcsec^2) and ***correlated color temperature*** (in Kelvin deg) over the entire celestial hemisphere. The combination of these two parameters allows for a better understanding of the relative contributions of natural and artificial light sources, and is a direct measure of the night sky quality of a given site.

Cerro Pachón – 2019/11/17



La Serena city – 2022/06/28