

NIXNOX project

Sites in Spain where citizens can enjoy dark starry skies

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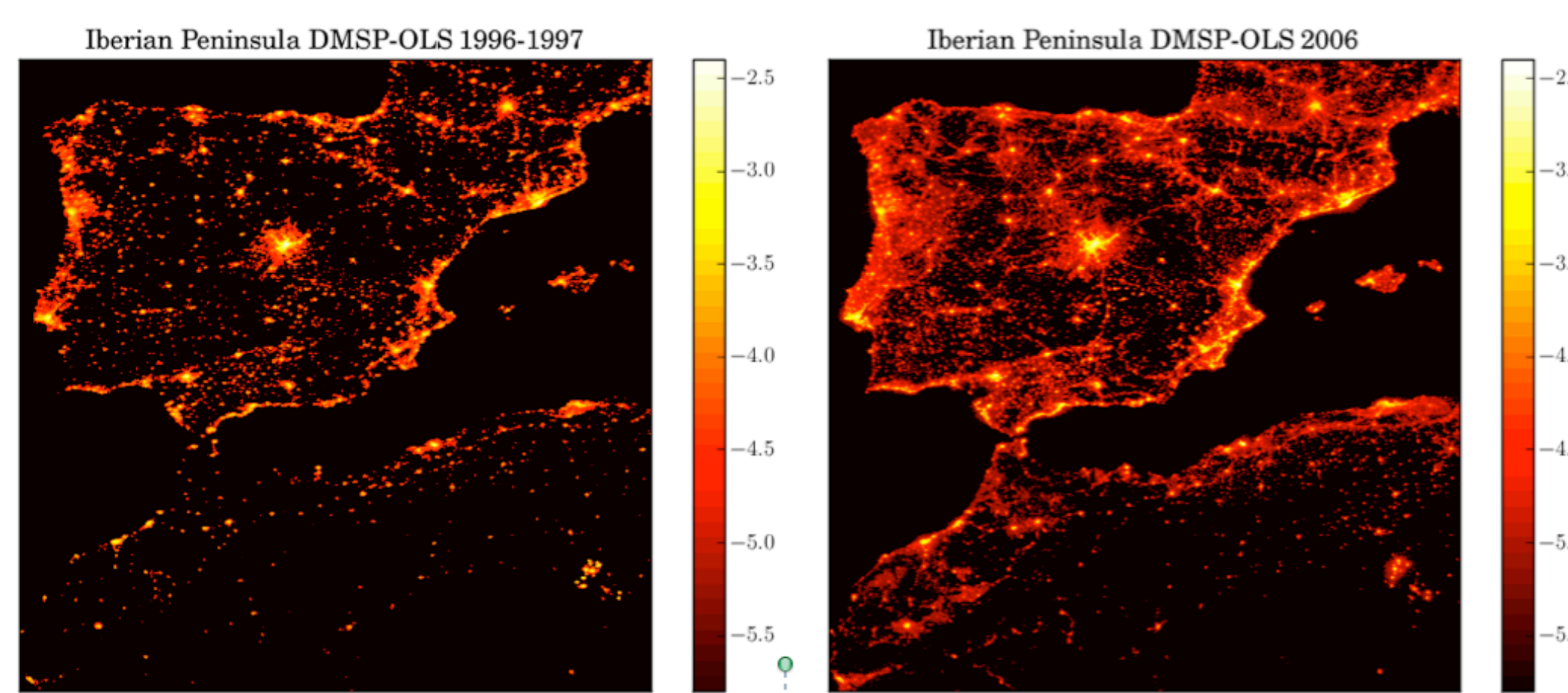
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NIXNOX

- Pro-Am work promoted and sponsored by the Spanish Astronomical Society (SEA) to find and characterize open air observatories.
- Observations and additional information provided by amateur astronomer
- Help to dark skies fights.
- Astronomy outreach.
- Scientific project.



www.sea-astronomia.es



Evolution of the amount of light detected from space (1996-2006) with radiance calibrated data from DMSP-OLS satellite (units of $W/m^2/sr/\mu m$ and log scale)

OBJECTIVES

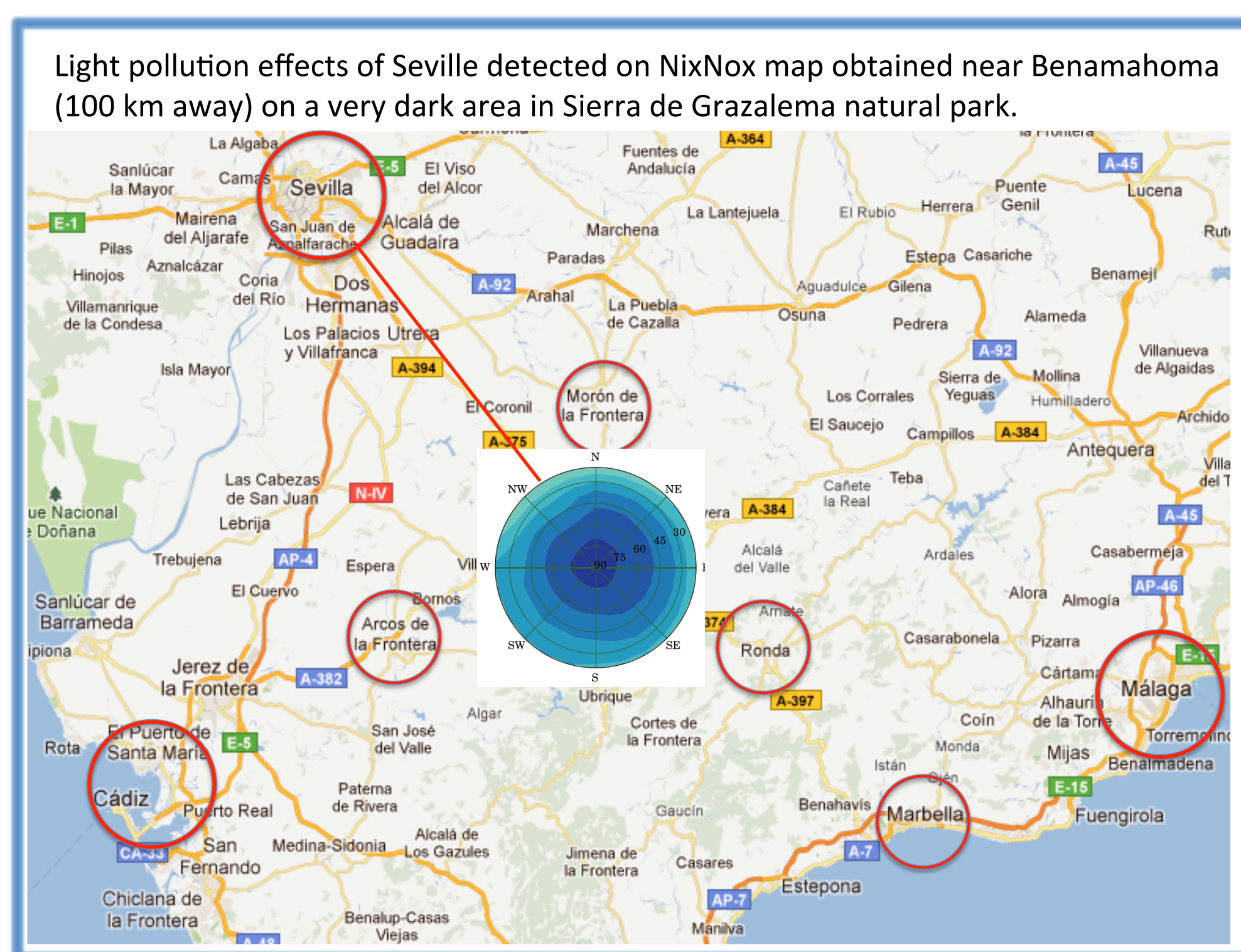
- Locate sites with dark skies with easy access.
- Help citizens to enjoy the starry skies.
- Encourage local authorities to preserve them.
- Evolution of light pollution will be measured with repeated observations in the next years.

HOW TO

- Measuring night sky brightness in places selected by amateur astronomers associations.
- All-sky brightness maps with SQM-L.
- 12 photometers where cross-calibrated.
- Observations on clear and moonless nights.

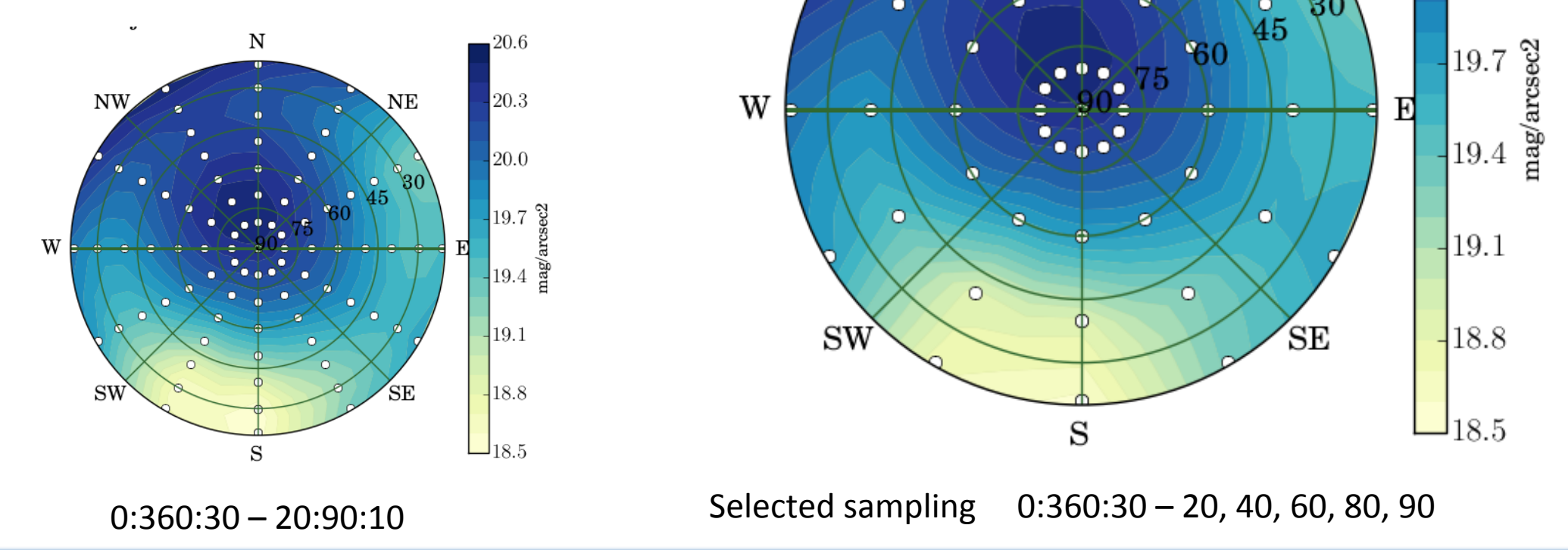
Where to go with my family or friends to see the stars ?

- Citizens have the right to enjoy dark and starry skies.
- Increasing light pollution reduces the number and quality of sites where we can access to this cultural heritage.
- We intend to find and characterize these privileged places to inform the citizens and to preserve them.
- Amateur astronomers have the knowledge and capability to be our task force.



Spatial sampling

Trade-off between resolution and time but seems to be enough. White points mark the observations. Higher sampling (lower map) is not needed



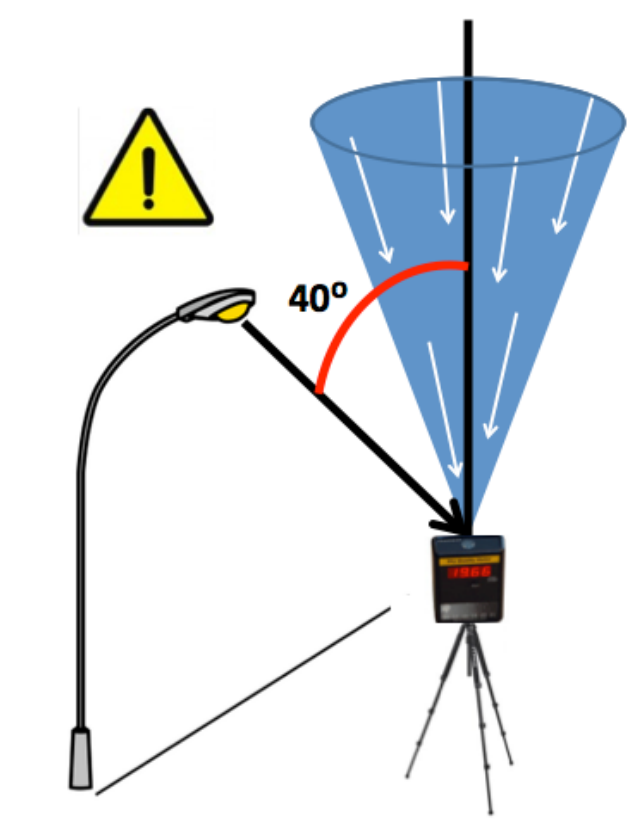
SQM-L Photometer

- Cheap, pocket size, portable and user friendly photometer.
- Point, press, and read night sky brightness (mag/arcsec²) on display after a while.
- Not a toy: reliable and calibrated.

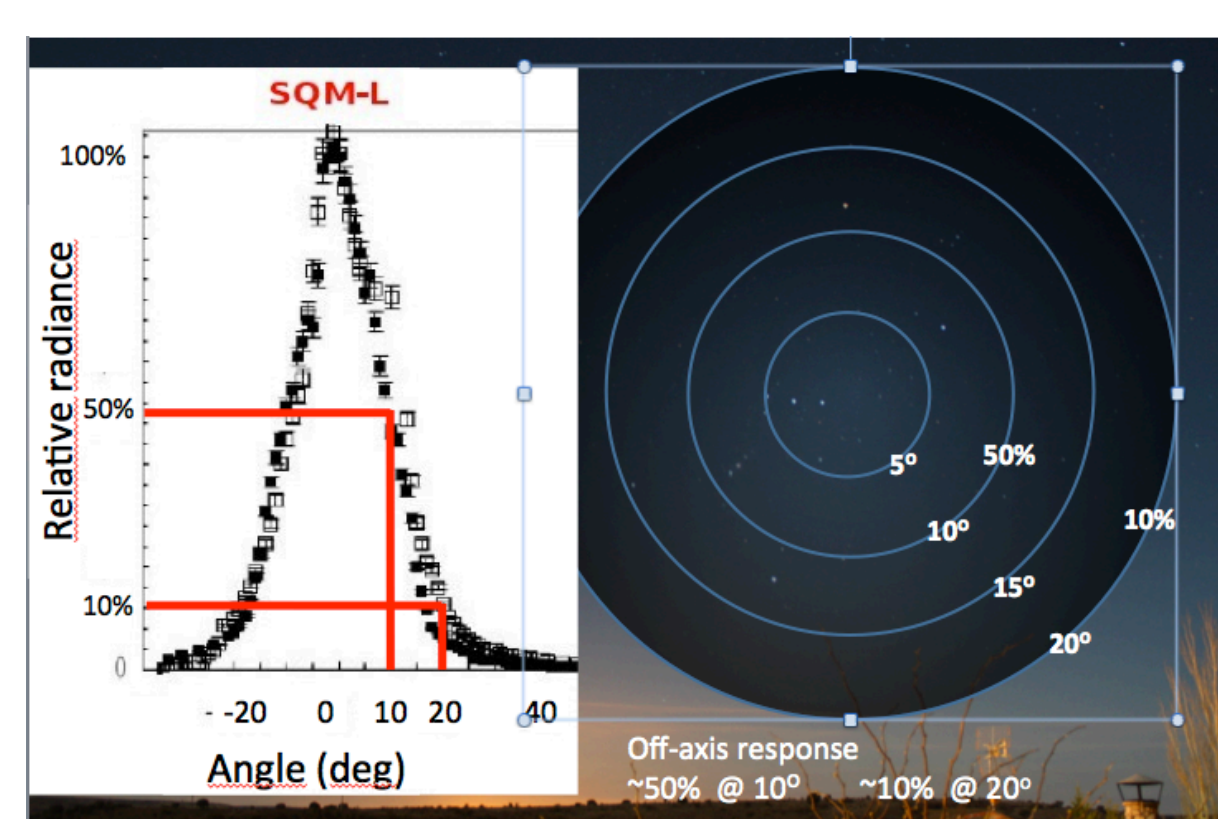


SQM-L Spatial response

- Field of View 20 deg.

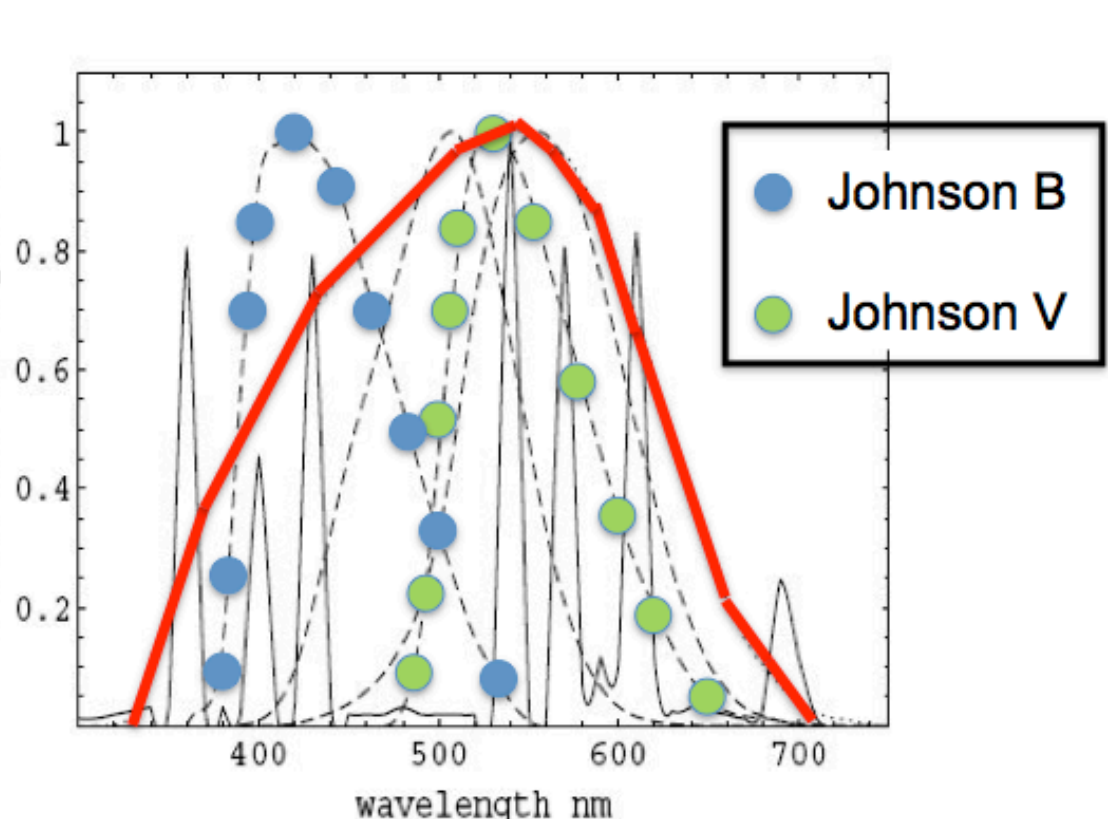


40° off-axis sensitivity is 1/100 but lights are bright !

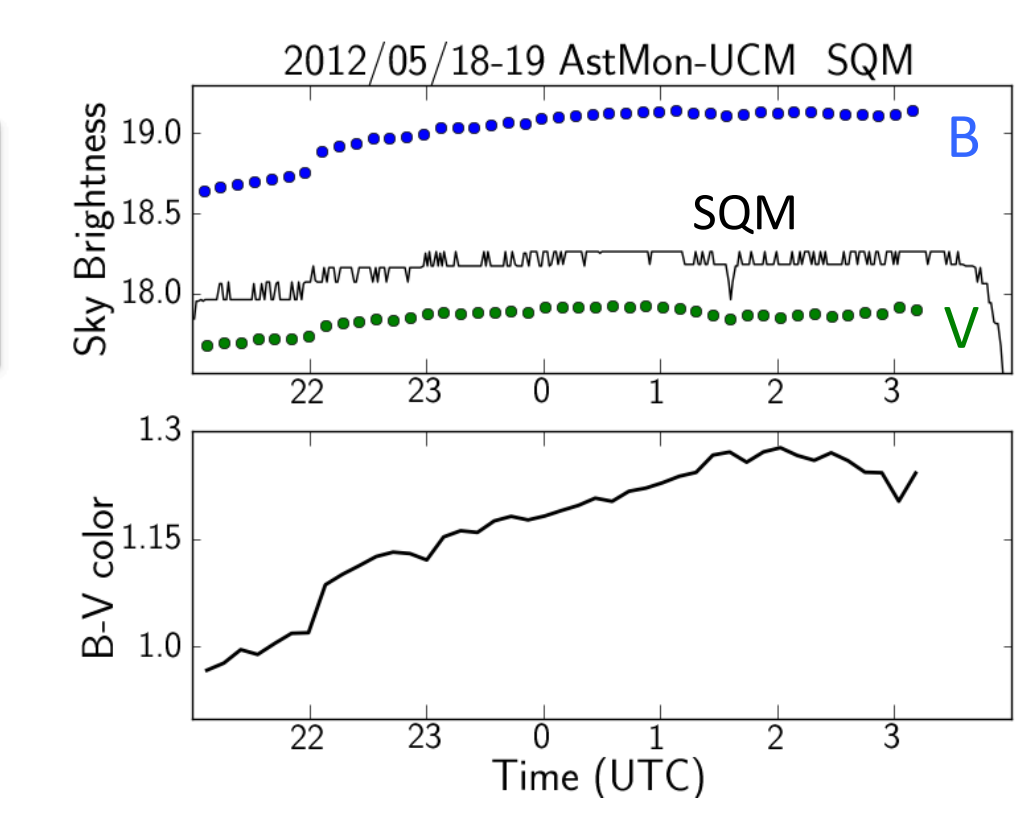


Adapted from Pierantonio Cinzano (2005) *Night Sky Photometry with Sky Quality Meter*

SQM-L photometric band

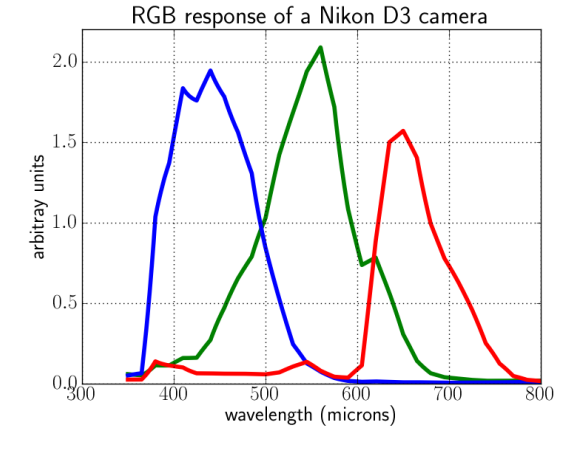
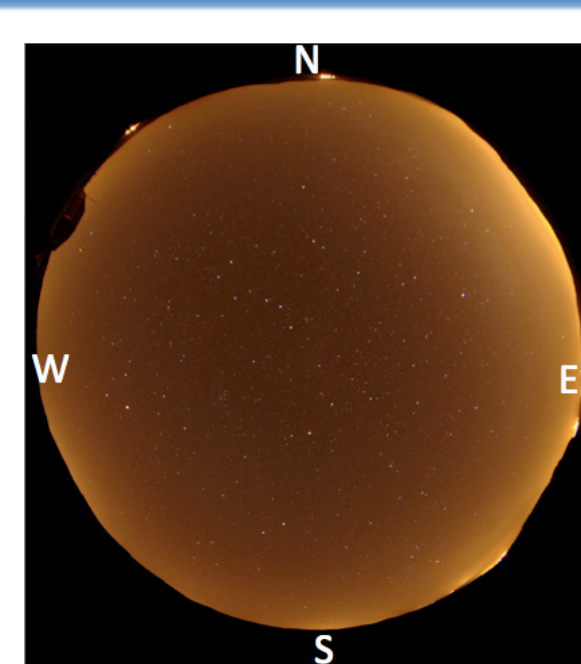


Adapted from Pierantonio Cinzano (2005) *Night Sky Photometry with Sky Quality Meter*



Miguel Nievas (Trainee Project, UCM 2012)

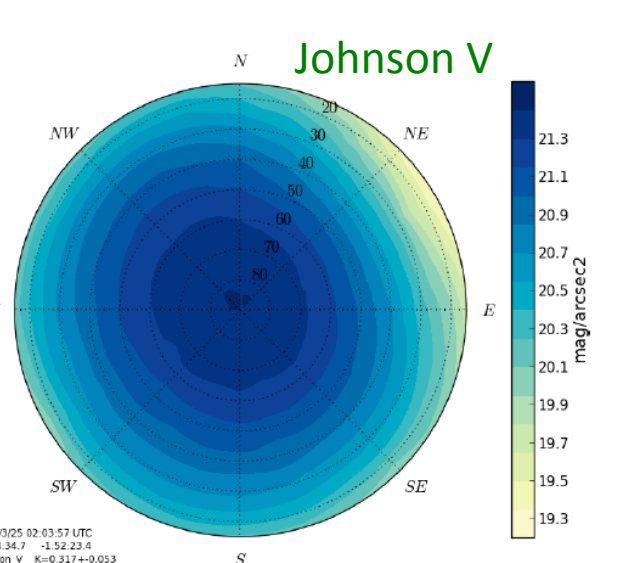
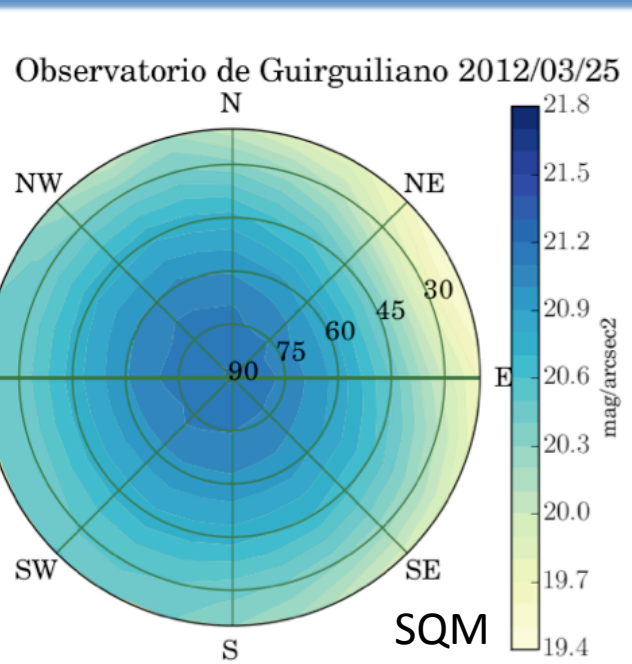
NixNox vs. All-sky images



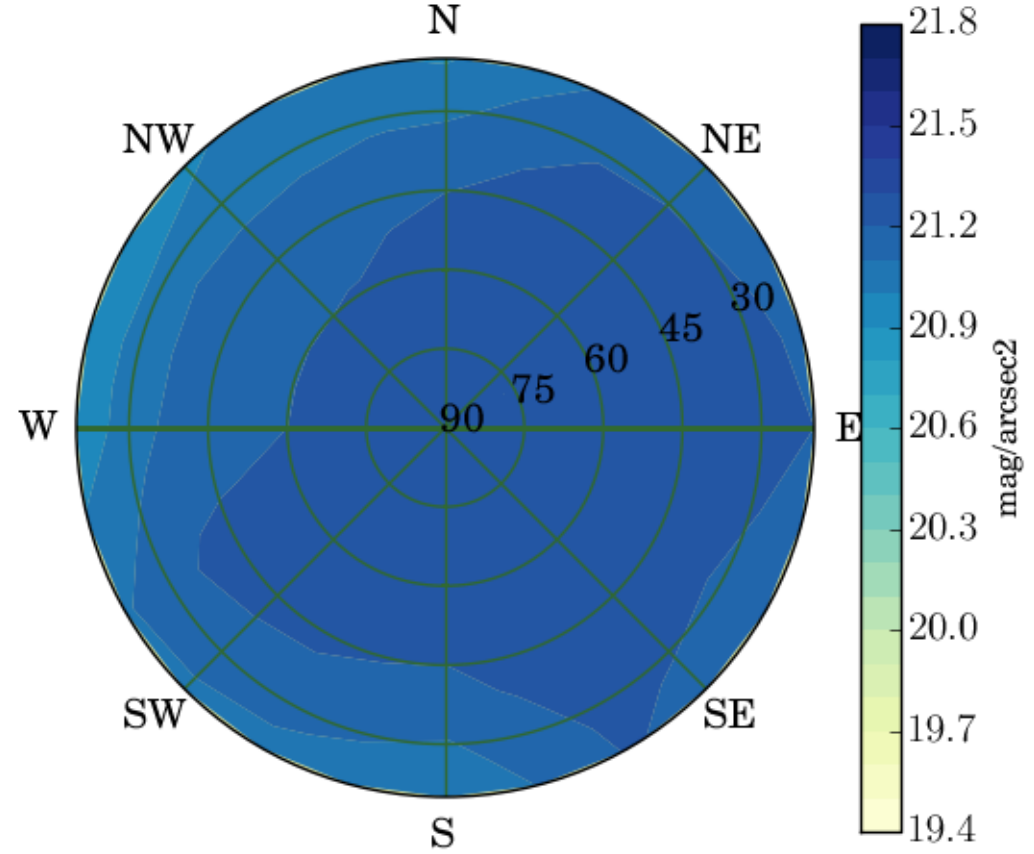
G channel similar to Johnson V photometric band

NixNox map (SQM band) and sky brightness map using G channel and calibrated (absolute photometry) in Johnson V band.

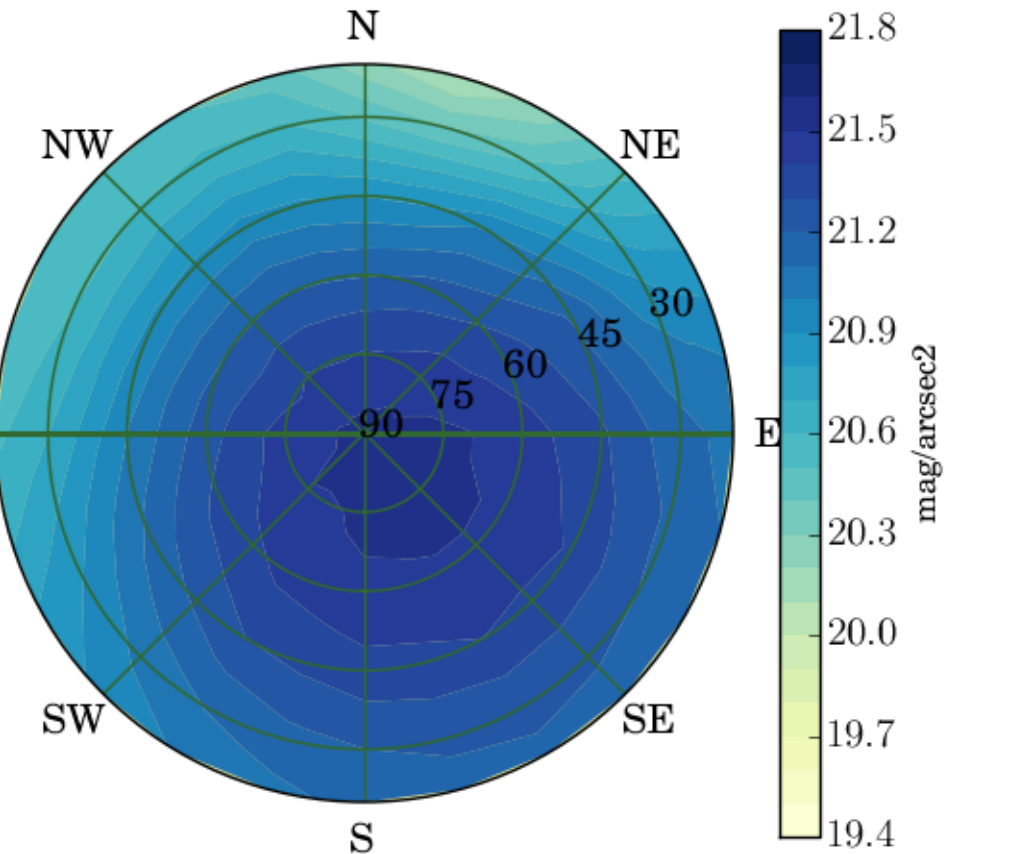
DSLR Camera + fisheye lens: expensive & not easy calibration. Results similar to SQM maps with better spatial resolution



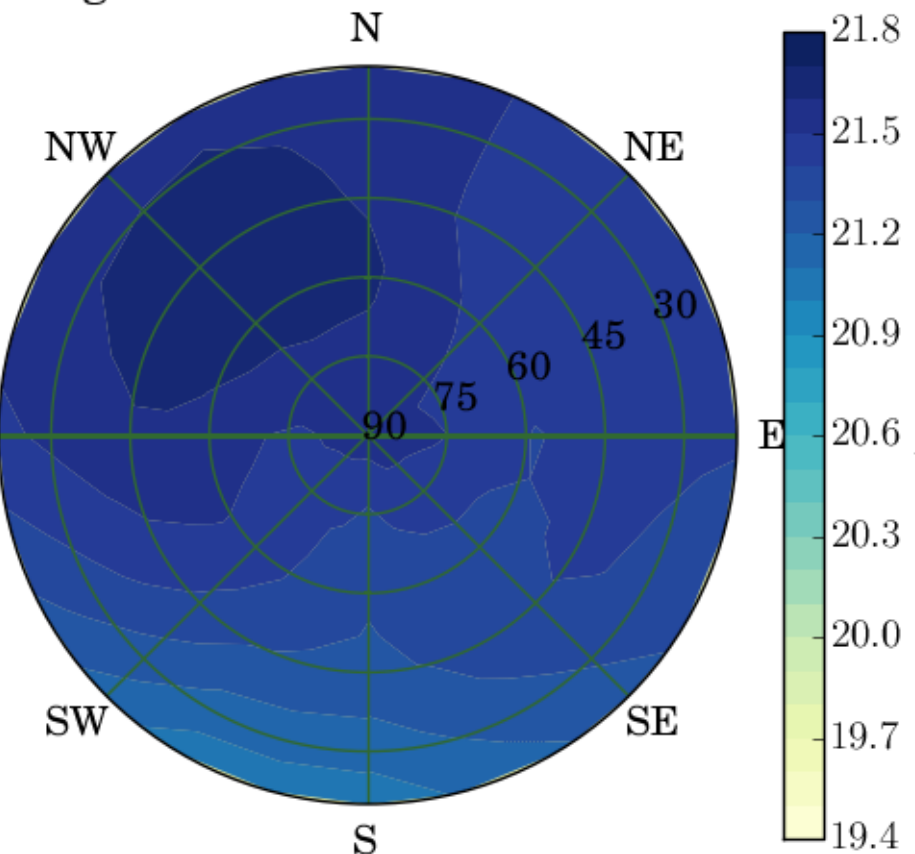
Barajas de Melo 2012/01/04



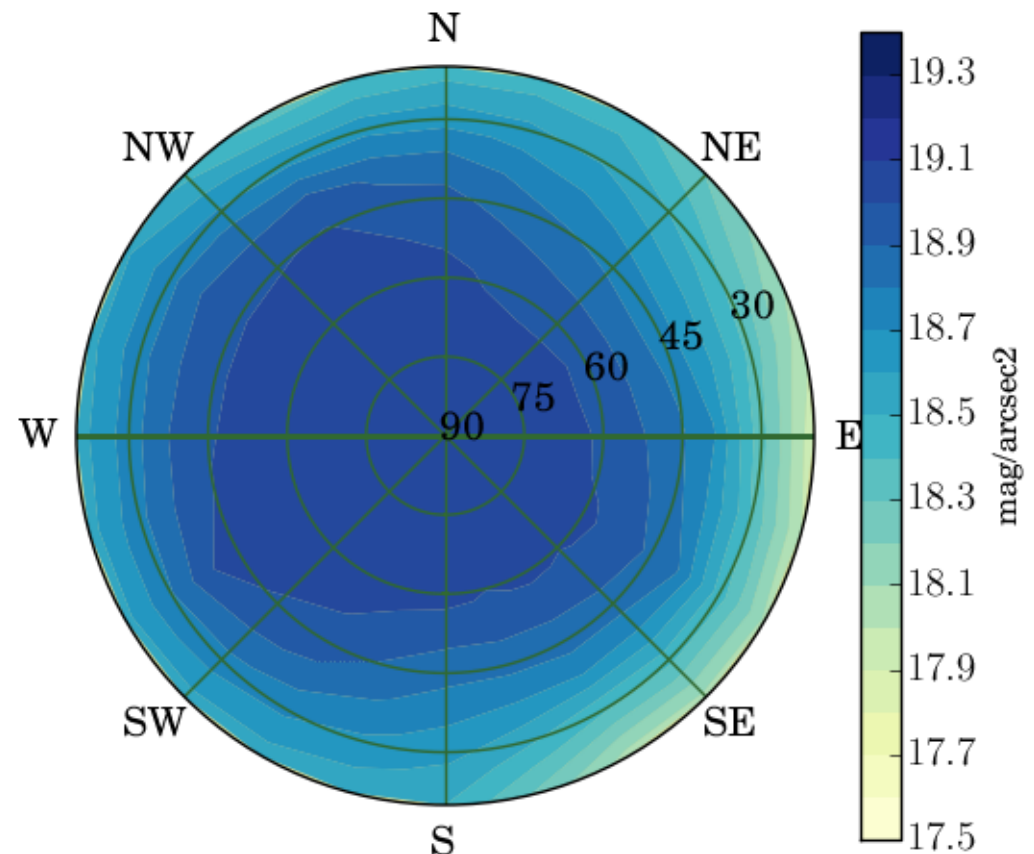
Torre de Peña 2012/03/24



Ager-Montsec 2011/07/30



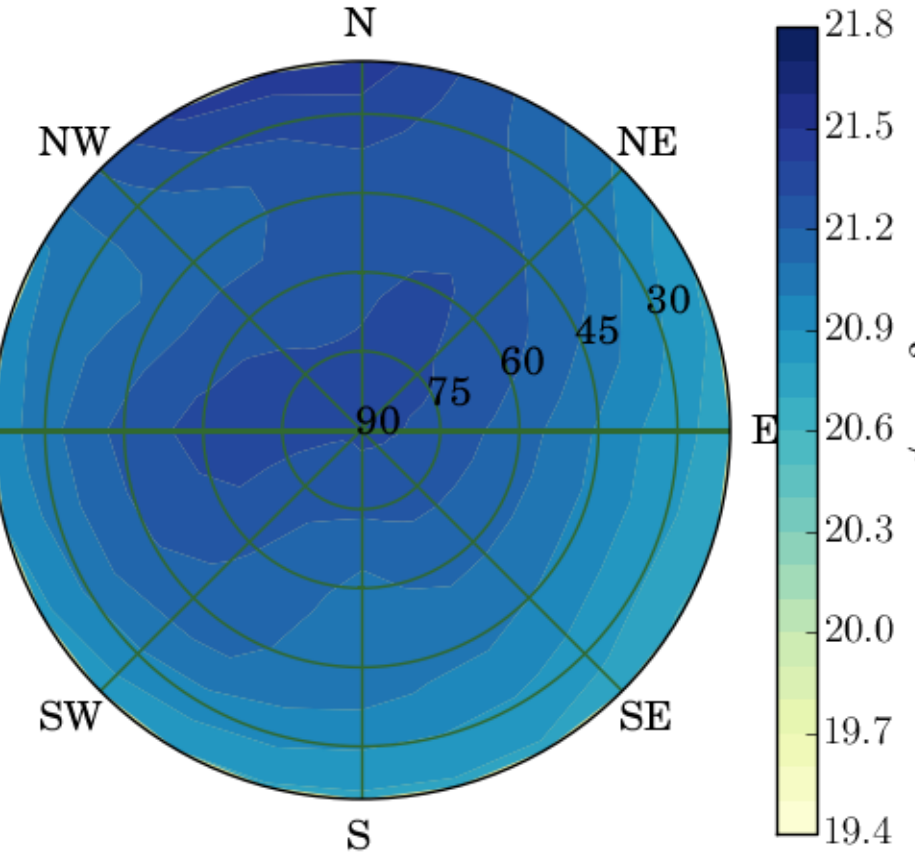
Sant Esteve Sesrobieires 2011/06/28



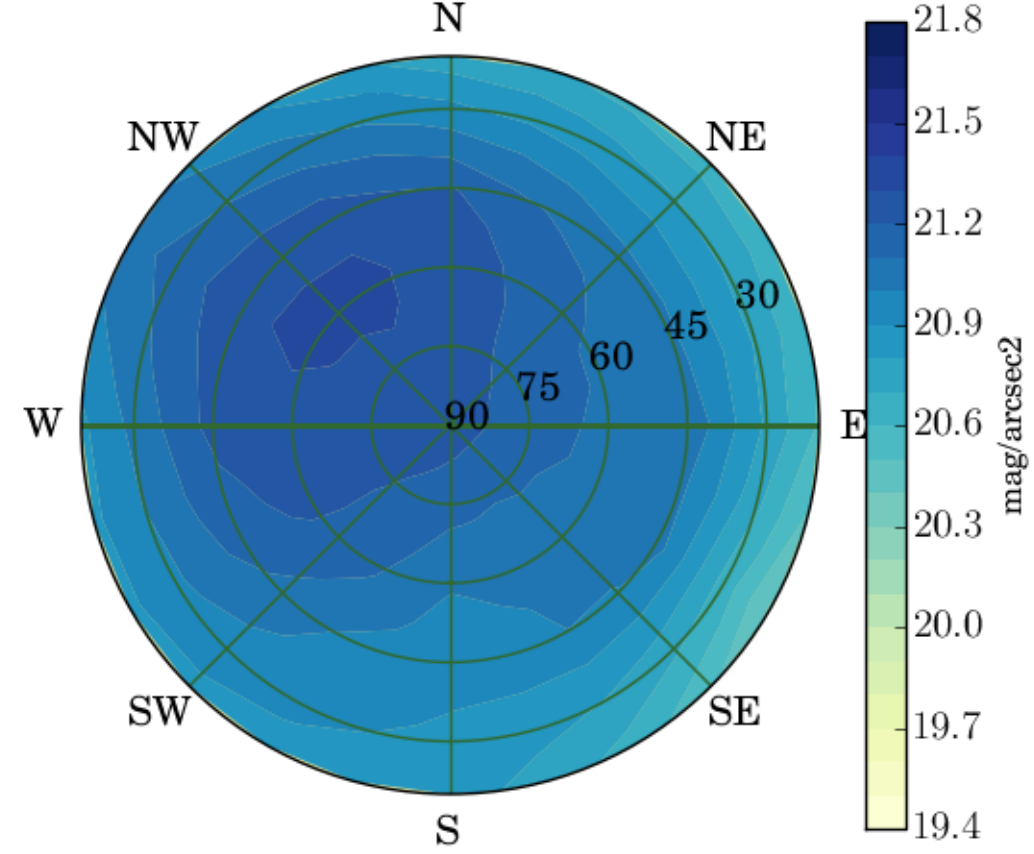
44+ Amateur associations



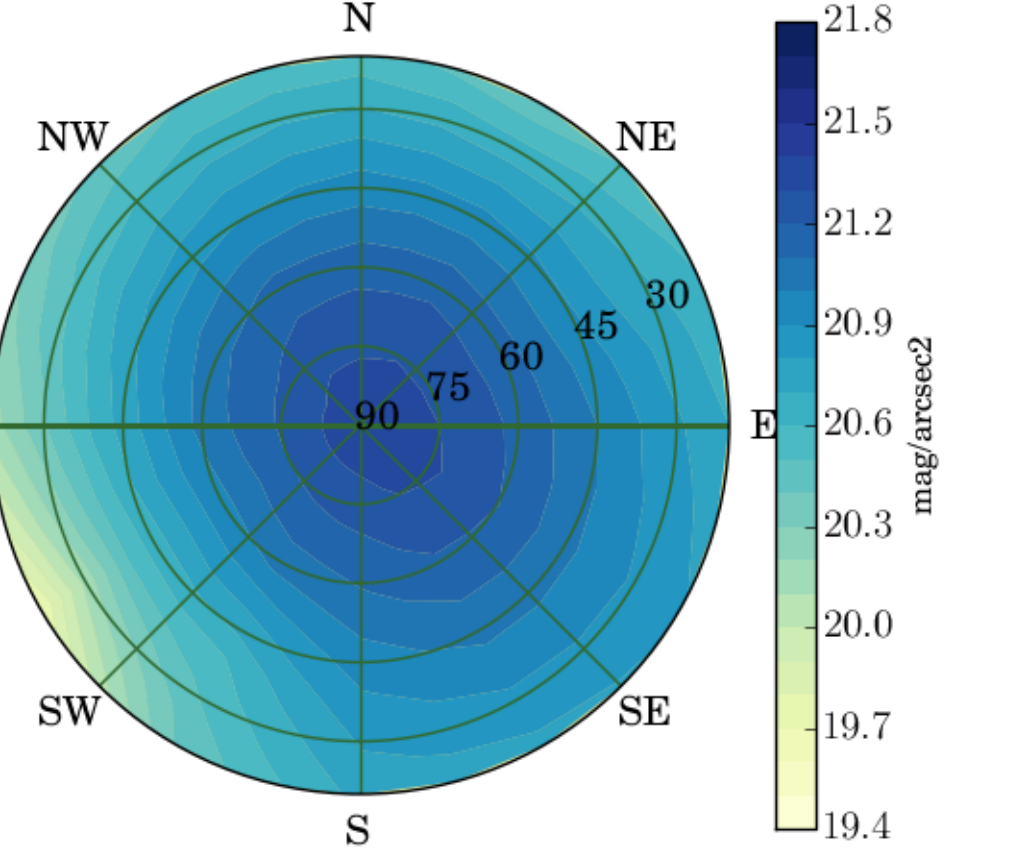
Coll de Jou 2011/10/02



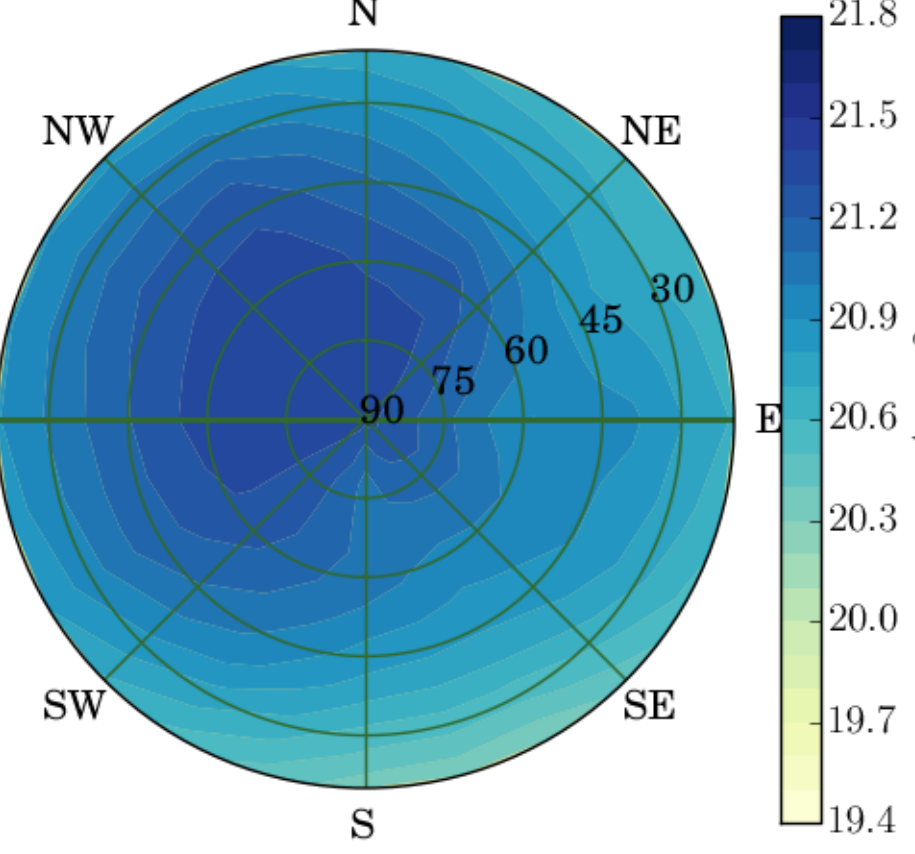
Talamanca 2011/08/05



Villaverde del Ducado 2011/05/28



Muela del Buitre 2012/07/10



Additional information

Info for Talamanca (Abridged)

- Terrace after 24 km post of Terrasa to Talamanca road (BV-1221)
- 41.733 N, 1.9821 E (550 m above sea level)
- Talamanca www.talamanca.diba.es (pop. 143)
- Tourist information "Montcau Valleys": www.vallsdelmontcau.org/
- Lodging at Mura (6km), Monistrol de Calders (10km), Navarcles (12km) & Terrasa (24km)
- Meteo www.cemura.cat/growmeteo/ meteosantfrutos.blogdns.com/

