



**E-ALAN 2020
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Light sensor

Light collector

Open design & results

The hardware, software
and data are open and
free.

Weatherproof
enclosure
box

WiFi + microcontroller

Wherever there is
electricity and WiFi you
can install it as a fixed
station to monitor the sky
brightness every night.

358 deployed
photometers

6800 messages
per hour reach our
MQTT broker

46.512.227
measures taken so far

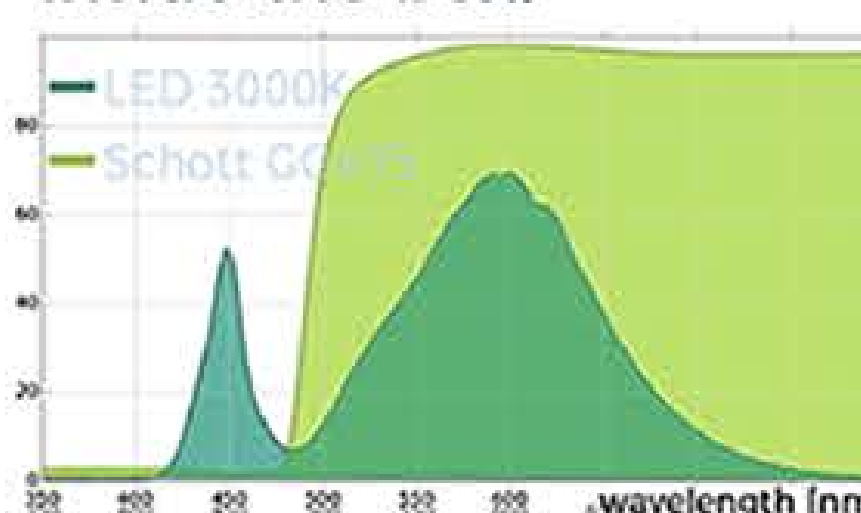
TESS-W CONNECT REGISTER & FORGET



Dichroic filter



Select your favorite pass-
band. TESS-W photome-
ter is designed so extra
filters can be installed
inside the box.



Detection of the blue
component of LED
spectra using two
photometers, one of
them with an extra long
pass filter.

Clear glass window

Heater

This device comes
with extra features
such
anti-condensation
heating.

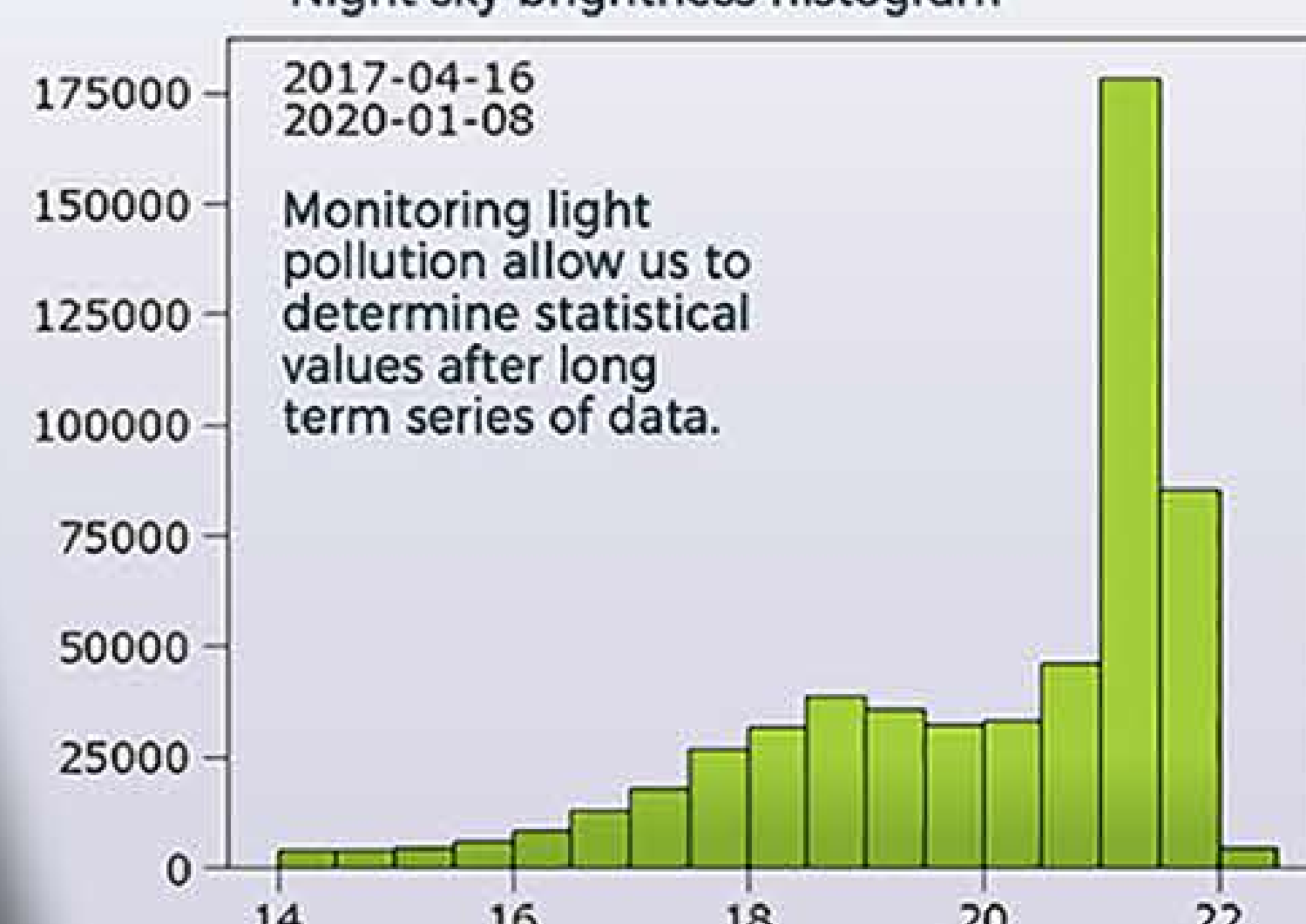
Infrared thermometer

TESS-W allows to make
cloud coverage
estimations by
comparing the sky and
the device temperatures.

USB wire
(for powering)

Centre d'Observació del'Universe,
Stars62 - Àger, Lleida, Spain.

Night sky brightness histogram



Monitoring light
pollution allow us to
determine statistical
values after long
term series of data.

TESS-W

The Telescope Encoder
and Sky Sensor (TESS-W) is
the first model of several
compact devices to
monitor the night sky.



It doesn't need a computer
to work. TESS-W sends the
brightness values
automatically to our data
repository using Internet of
Things (IoT) protocols.

TESS-P

A portable version can
be used to take
measurements "on the
go" in remote locations.



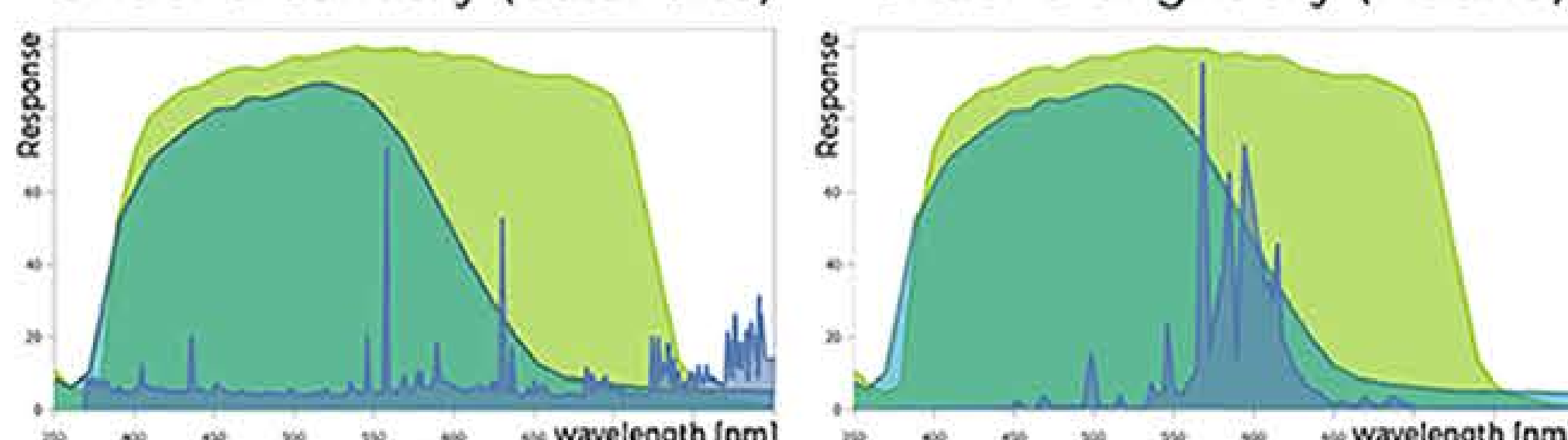
More info:
<https://tess.stars4all.eu/products>

TESS vs SQM

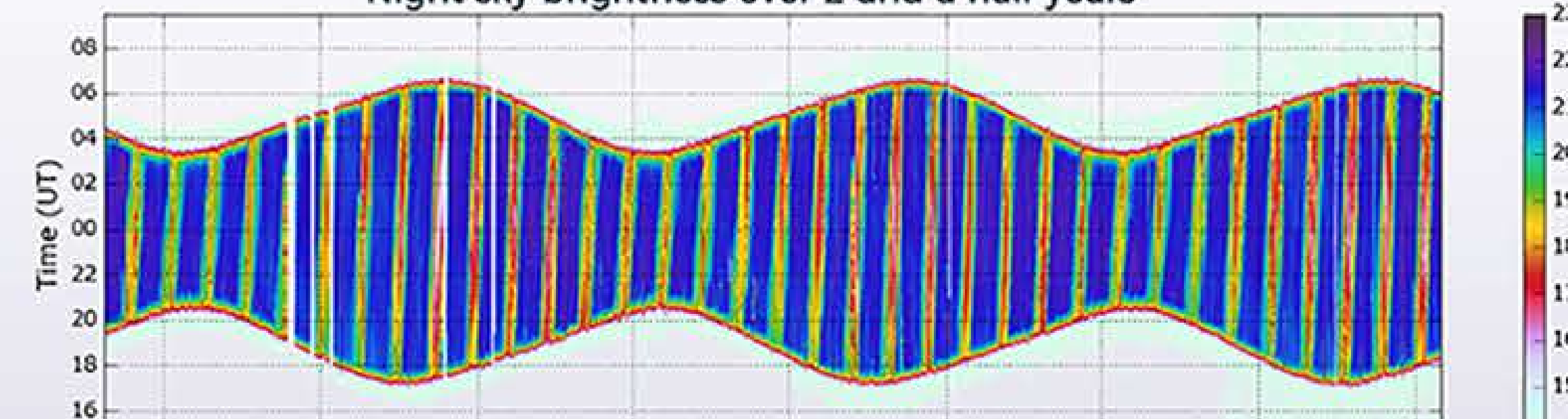
TESS detector is sensible to light beyond red. Its
response is higher and almost flat plus it detects
light from 400 to 750nm.

Under a dark sky (Calar alto)

Under a bright sky (Madrid)



Night sky brightness over 2 and a half years



Sensor temperatura - Sky temperature

