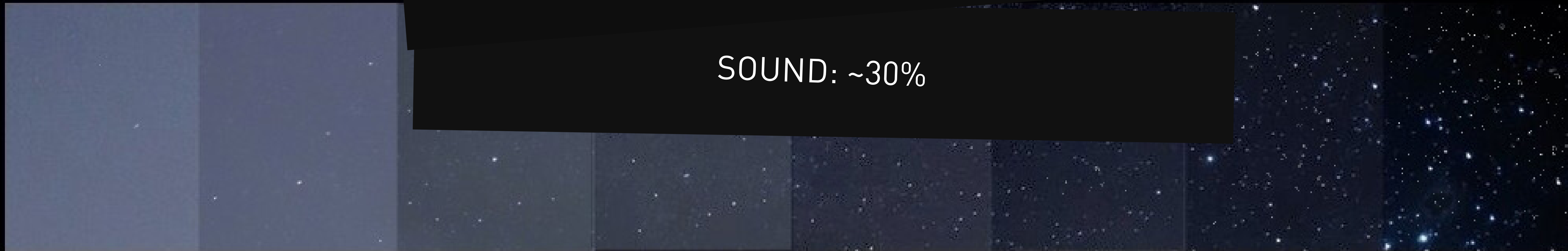


USE FULL SCREEN MODE

SCREEN BRIGHTNESS: 50~70%

SOUND: ~30%



- 8/9 City/Inner City Sky
- 7 City/Suburbia Transition
- 6 Bright Suburban Sky
- 5 Suburban Sky
- 4 Suburban/Rural Transition
- 3 Rural Sky
- 2 Dark-Sky Site
- 1 Excellent Dark-Sky Site



LOST IN LIGHT

REIGNITING THE MAGIC OF DARKNESS

FREDRIK SILOW

CREATIVE DIRECTOR

PRESIDENT OF SAAF



NATURAL SCIENCE
& ENGINEERING

COPYWRITING

CREATIVE DIRECTION

PHOTOGRAPHY

BRAND & CORE STRATEGY

BENEATH ALL THE HATS — STILL THE ASTRONOMY GUY

SENAB

Rörstrand

SALMING.

Koenigsegg

BRIO®

Tretorn

HENRI LLOYD

PUMA

HONDA

WWW.MANNENIHATTEN.SE



SAAF

EXPAND YOUR UNIVERSE



CONNECTING ENTHUSIASTS



AMATEUR ASTRONOMERS — EXPERT OBSERVERS AND HOBBY SCIENTISTS

AN ENDANGERED SPECIES



SCIENTIFICALLY EQUIPPED REMOTE OBSERVATORY



MAGAZINE



PRO-AM COLLABORATIONS



HANDBOOKS



IN THE BEGINNING...

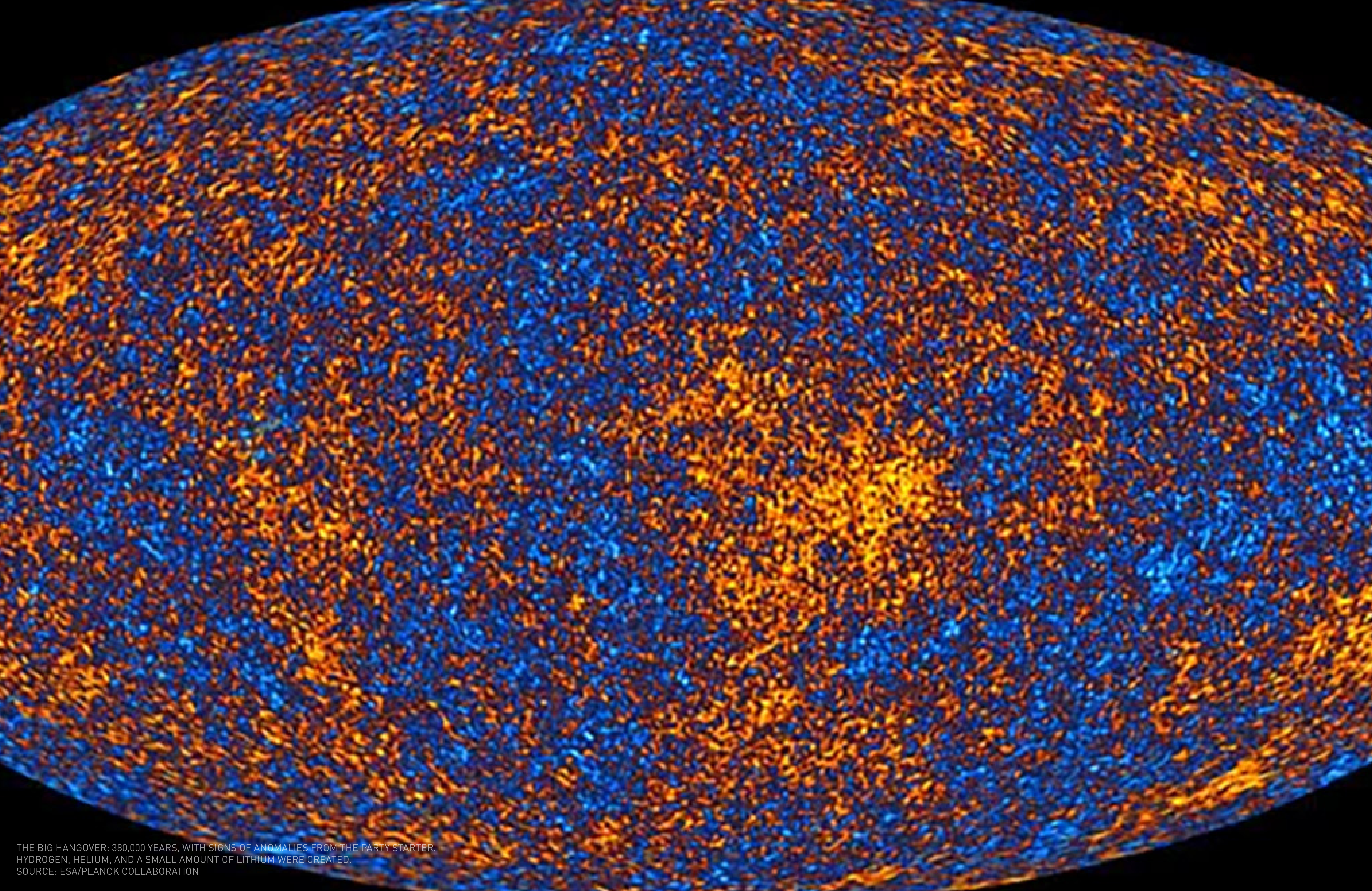




THE IMPORTANCE OF THE NIGHT SKY – INSPIRING US HUMANS TO THINK BEYOND OURSELVES
PHOTO: FREDRIK SILOW

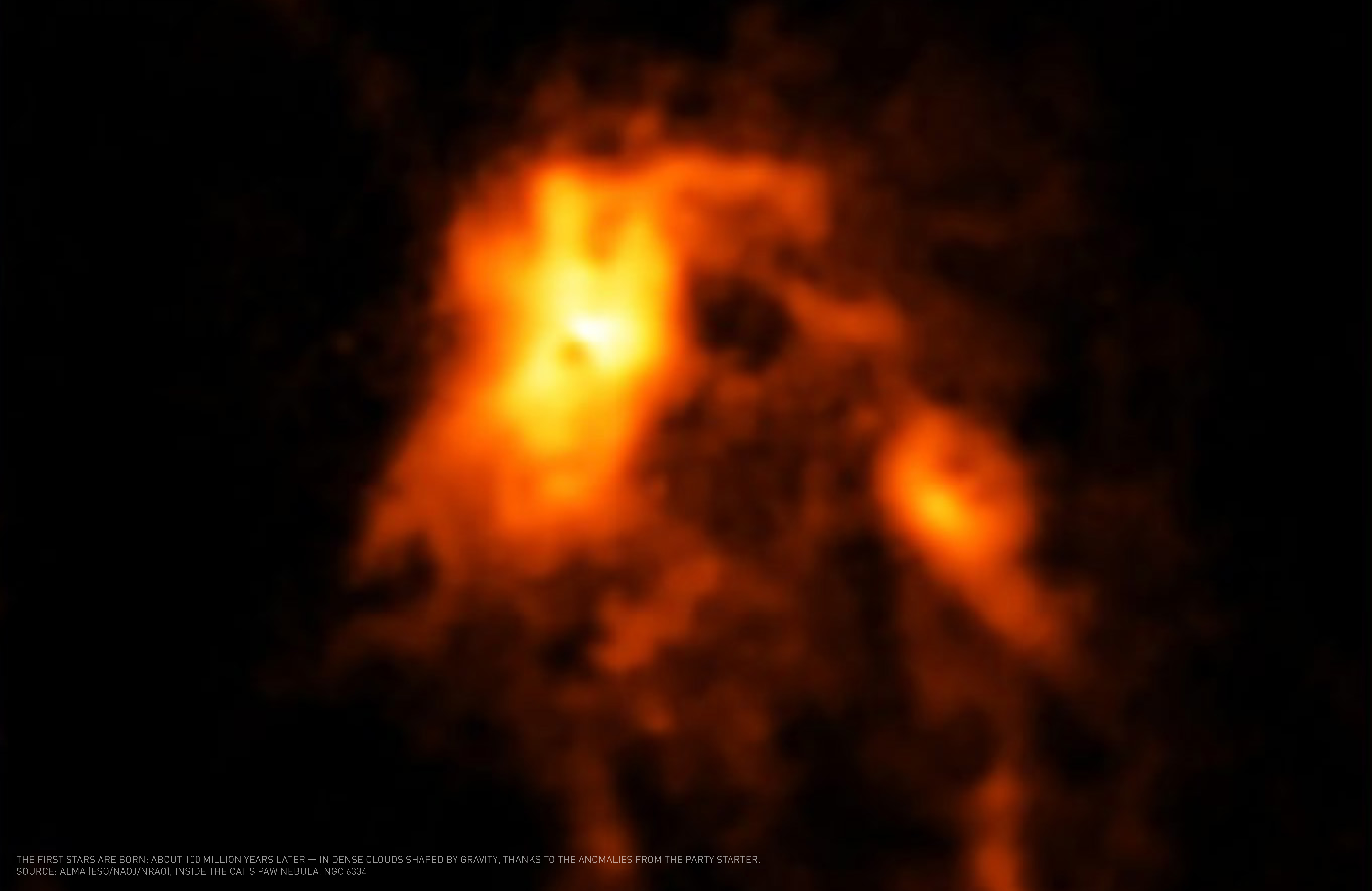
"TO MAKE AN APPLE PIE FROM SCRATCH YOU MUST FIRST INVENT THE UNIVERSE."





THE BIG HANGOVER: 380,000 YEARS, WITH SIGNS OF ANOMALIES FROM THE PARTY STARTER. HYDROGEN, HELIUM, AND A SMALL AMOUNT OF LITHIUM WERE CREATED.

SOURCE: ESA/PLANCK COLLABORATION

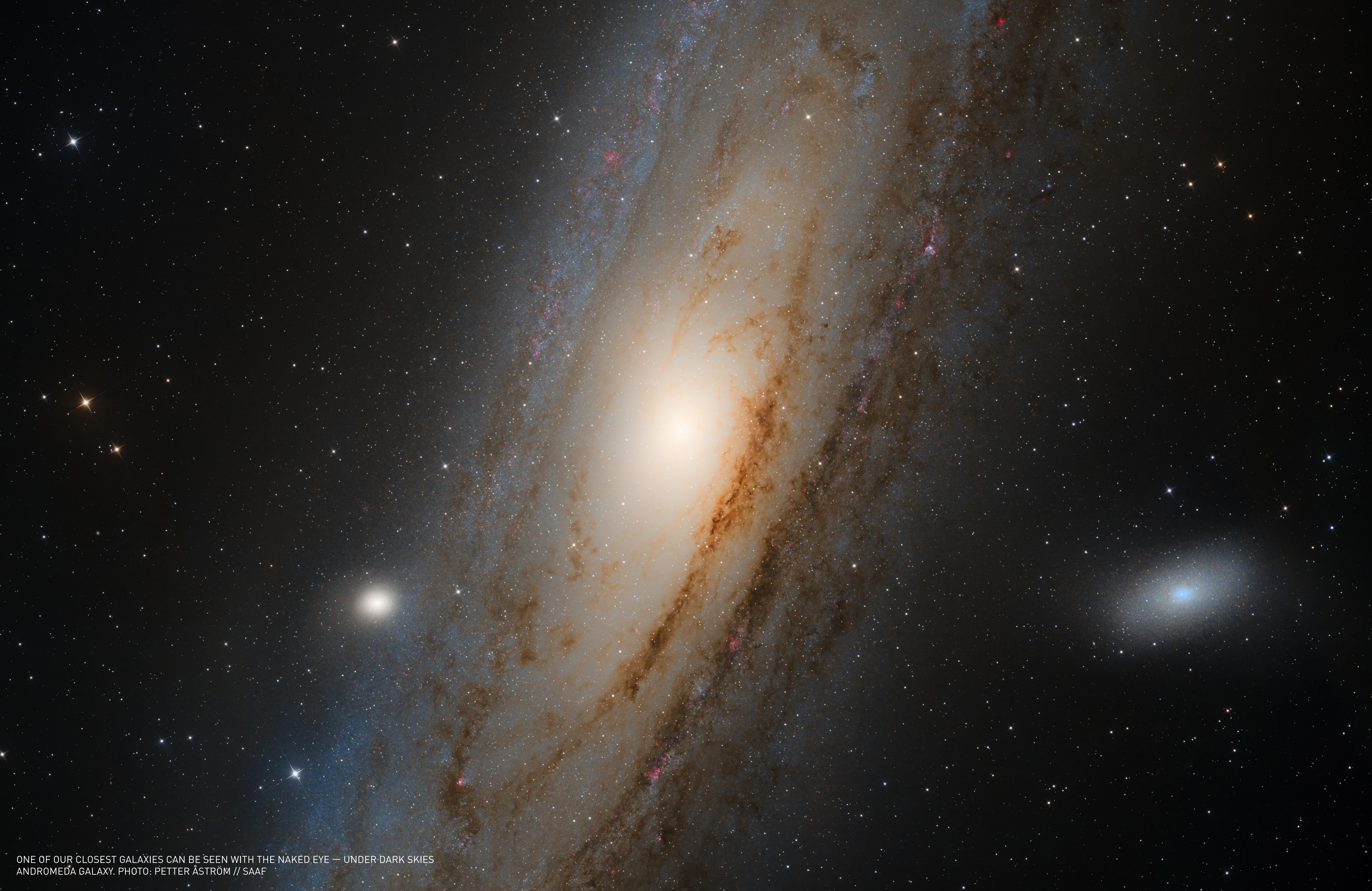


THE FIRST STARS ARE BORN: ABOUT 100 MILLION YEARS LATER — IN DENSE CLOUDS SHAPED BY GRAVITY, THANKS TO THE ANOMALIES FROM THE PARTY STARTER.
SOURCE: ALMA (ESO/NAOJ/NRAO), INSIDE THE CAT'S PAW NEBULA, NGC 6334

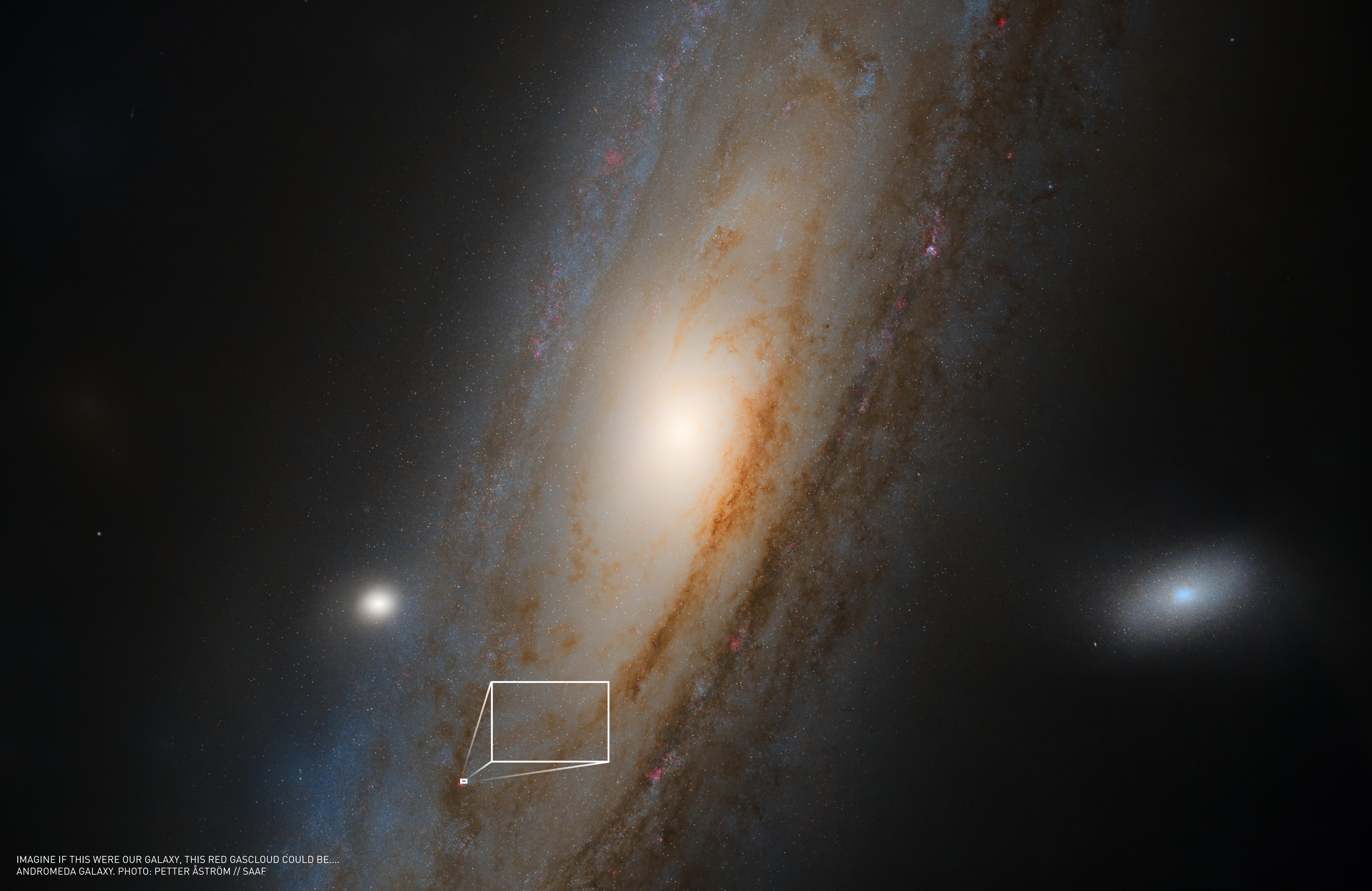


JADES-GS-z14-0





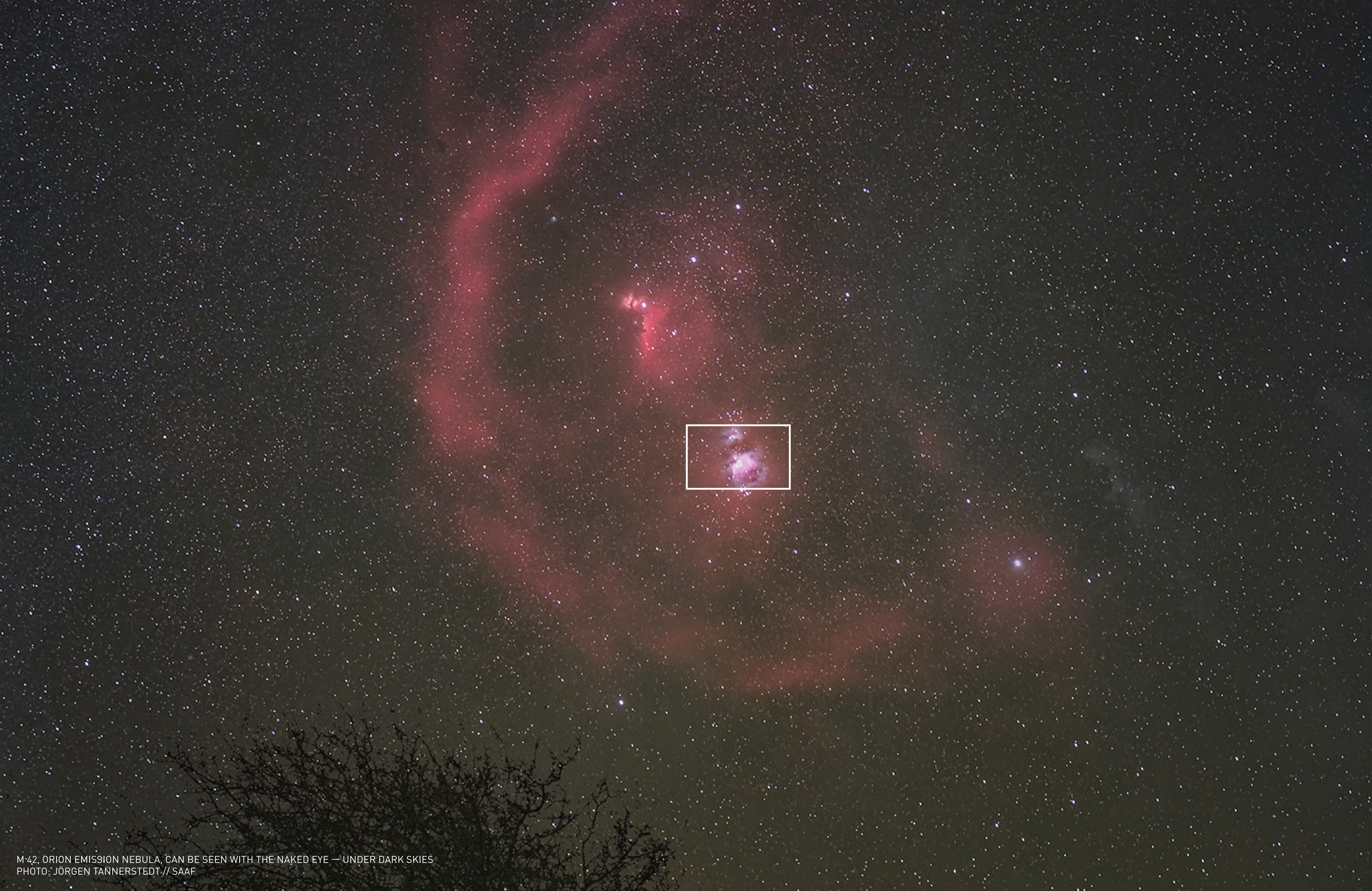
ONE OF OUR CLOSEST GALAXIES CAN BE SEEN WITH THE NAKED EYE — UNDER DARK SKIES
ANDROMEDA GALAXY. PHOTO: PETTER ÅSTRÖM // SAAF



IMAGINE IF THIS WERE OUR GALAXY, THIS RED GAS CLOUD COULD BE....
ANDROMEDA GALAXY. PHOTO: PETTER ÅSTRÖM // SAAF



LARGER STARS EVENTUALLY EXPLODED AS SUPERNOVAE (AND STILL ARE), PRODUCING MANY OF THE HEAVIER ELEMENTS.
ORION WITH THE ORION NEBULA IN THE MIDDLE, SURROUNDED BY BARNARD'S LOOP — AN EMISSION NEBULA — ARCS ALONG THE PERIMETER OF A SUPERNOVA-CAUSED CAVITY IN ORION.
PHOTO: JÖRGEN TANNERSTEDT // SAAF



M42, ORION EMISSION NEBULA, CAN BE SEEN WITH THE NAKED EYE — UNDER DARK SKIES
PHOTO: JÖRGEN TANNERSTEDT // SAAF



ORION NEBULA CLOSE UP
PHOTO: PETER ROSÉN // SAAF

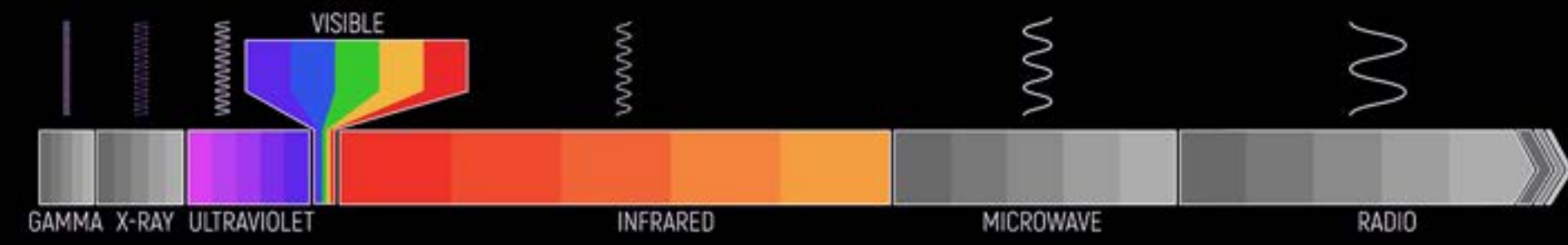


DENSE REGIONS OF GAS CLOUDS...
PHOTO: PETER ROSÉN // SAAF

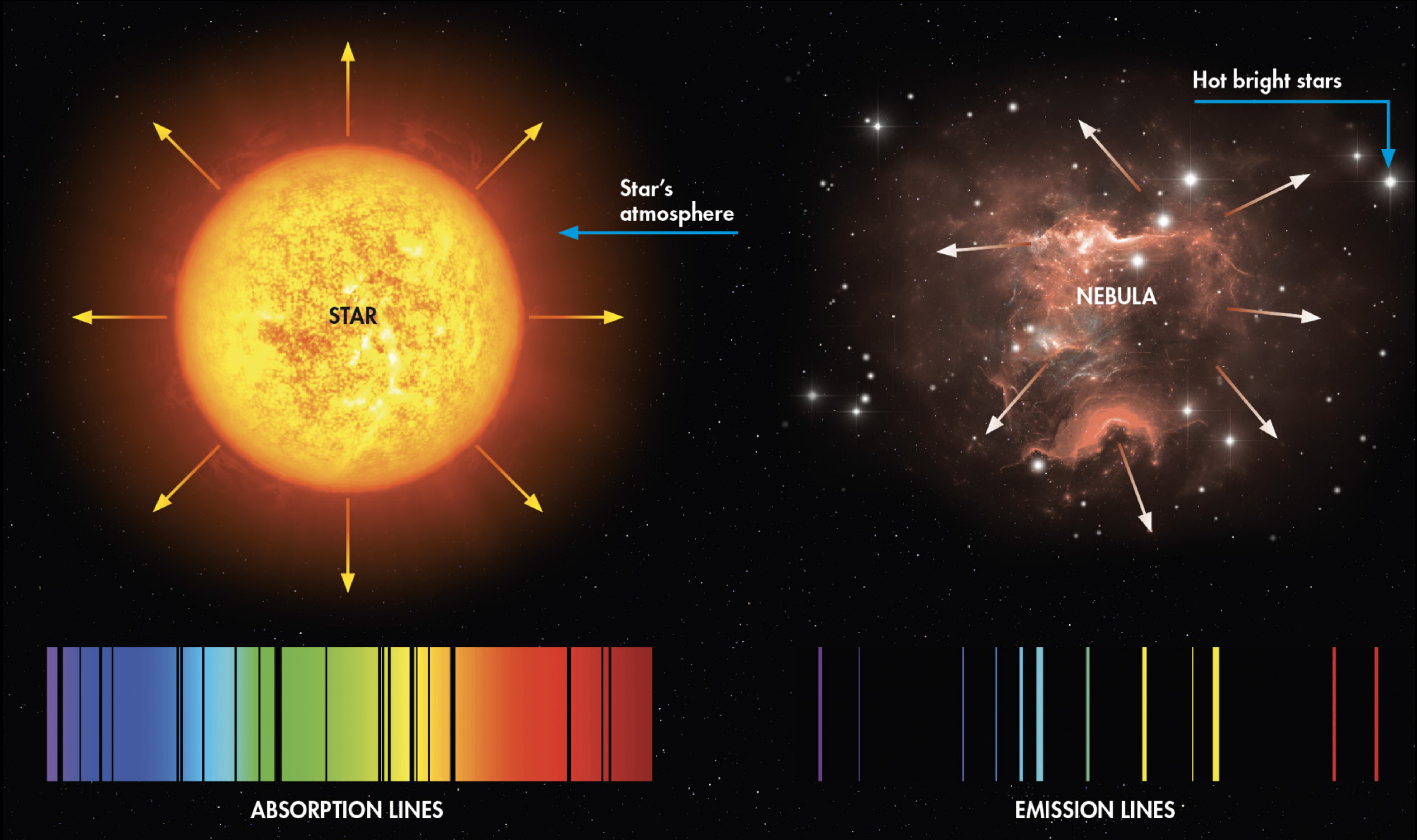


... REGIONS WHERE SOLAR SYSTEMS ARE FORMED
PHOTOS: BACKGROUND, LARS ZETTERLUND AND PETER ROSÉN. PROPLYDS, NASA/ESA/G. STRAMPPELLI (STSCI).

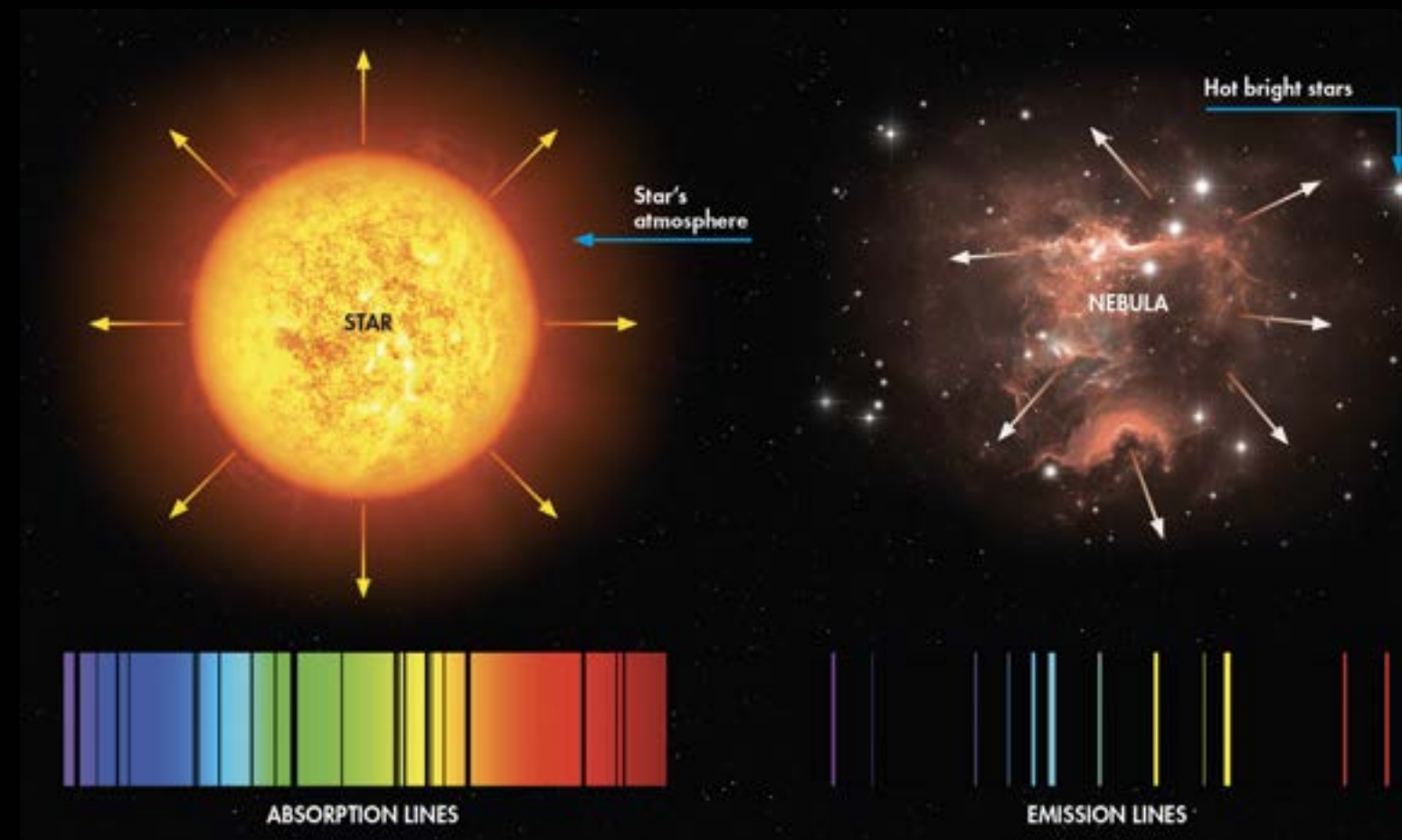
ALL WAVELENGTHS)



HOW DO WE KNOW ALL THIS?



(VISIBLE WAVELENGTHS)



LIGHT — LOST IN LIGHT

| Type | Description | S/P Ratio | Sky Glow ¹ (relative to LPS) | Sky Glow ¹ (relative to HPS) | FDSC Grade ² |
|----------------------|--|------------------|---|---|-------------------------|
| LPS | Low-pressure sodium – a nearly monochromatic yellow-orange light source used mostly in areas near astronomical observatories and sea turtle nesting beaches. | 0.23 | 1.0 | 0.4 | AAA |
| NBA LED ³ | Narrow-band amber LED – a narrow-spectrum yellow-orange LED nearly equivalent to LPS in light pollution impacts. | 0.23-0.30 | 1.0 | 0.4 | AAA |
| HPS | High-pressure sodium – A golden-yellow light source, widely used throughout the world. | 0.64 | 2.4 | 1.0 | A |
| PCA LED ⁴ | Phosphor-converted amber LED – Similar to HPS though products vary. | 0.45-1.0 | 1.8-4.1 | 0.7-1.6 | AA-B |
| FLED ⁵ | Filtered warm-white light-emitting diode – a straw-yellow LED lamp with a filter that removes most emission with wavelength shorter than 500 nanometers. | 0.9 | 3.6 | 1.5 | B |

MORE OR LESS OK

| Type | Description | S/P Ratio | Sky Glow ¹ (relative to LPS) | Sky Glow ¹ (relative to HPS) | FDSC Grade ² |
|-----------|--|------------------------------|---|---|-------------------------|
| LED 2200K | Light-emitting diode with "correlated color temperature" (CCT) of 2200K – a "warm-white" LED. This type of LED has not seen wide use. | 0.84-0.90⁶ | 3.6-3.8 | 1.4-1.5 | C |
| LED 2700K | Light-emitting diode with "correlated color temperature" (CCT) of 2700K – a "warm-white" LED. | 1.0-1.1⁶ | 4.4-4.9 | 1.7-1.9 | C |
| LED 3000K | Light-emitting diode with "correlated color temperature" (CCT) of 3000K – a "warm-white" LED. | 1.3⁶ | 5.4 | 2.0-2.2 | C |
| LED 4100K | Light-emitting diode with CCT of 4100K – a "cool-white" LED. This is a common LED type in recent LED area lighting installations. | 1.6⁶ | 6.4 | ~2.7 | D |
| LED 5100K | Light-emitting diode with CCT of 5100K – a "cool-white" LED. This also is a common LED type in recent LED area lighting installations. | 2.0⁶ | 7.9 | ~3.3 | E |

A night sky filled with stars, with a group of people gathered around a large telescope in the foreground. The scene is illuminated by the ambient light of the stars and some ground-level lights. A black banner with white text is positioned in the upper right corner.

THREATENED VIEWS, EXPERIENCES, AND DISCOVERIES

AMATEURS CONTRIBUTE TO SCIENCE AND SCIENTIFIC PAPERS THROUGH VARIABLE STAR OBSERVATIONS, SUPERNOVA DISCOVERIES, COMET DISCOVERIES, NEO DISCOVERIES, AND PLANETARY NEBULA DISCOVERIES — BUT NOT UNDER HEAVILY LIGHT-POLLUTED SKIES.
PHOTO: GÖRAN STRAND // SAAF



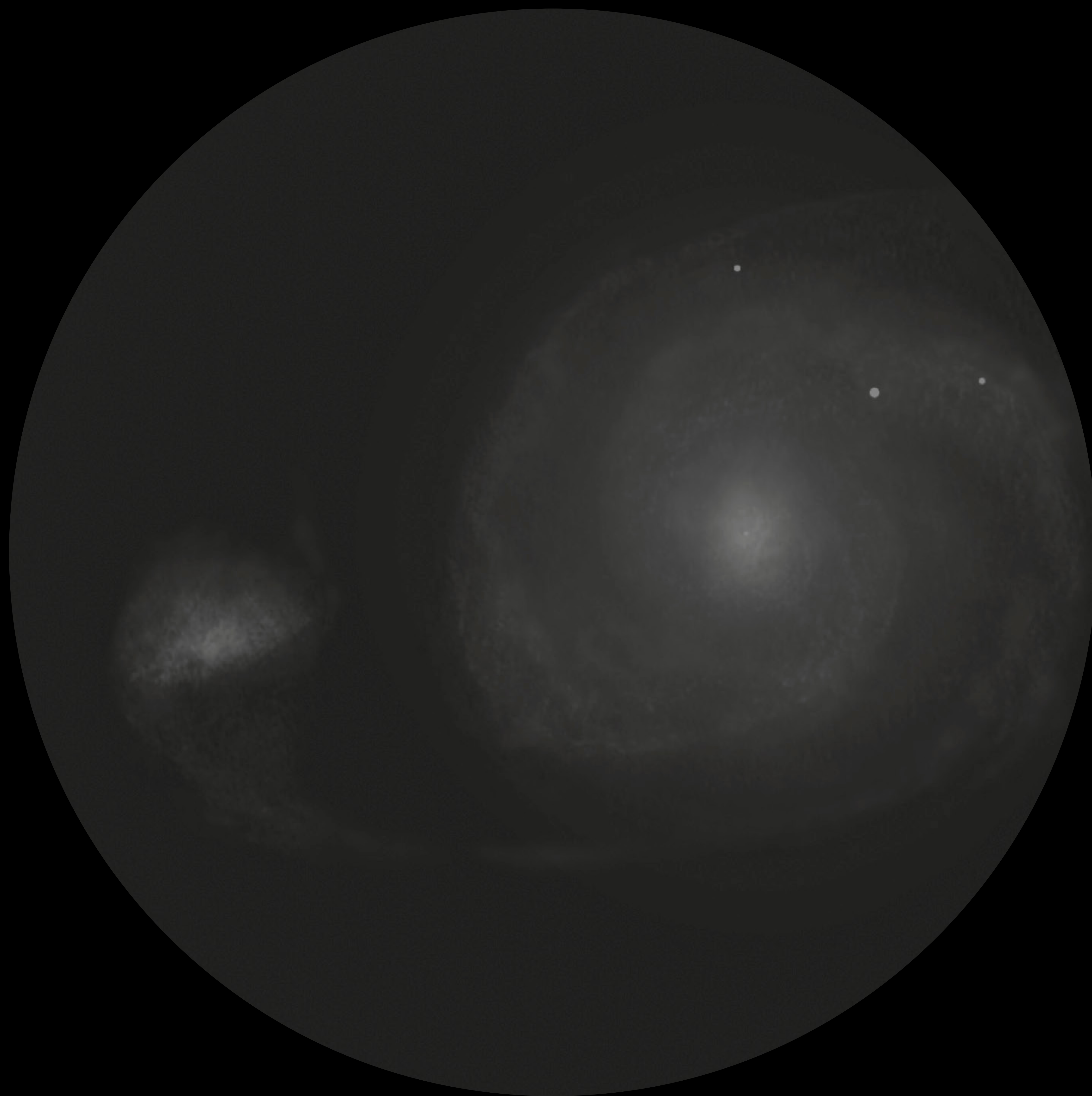
OUR EYES AND LIGHT

PHOTO
THE HUMAN EYE DOES NOT
PERCEIVE COLORS IN DARK
ENVIRONMENTS

VISUAL ADAPTATION:
THE HUMAN EYE'S ROD CELLS ACTIVATE IN
DARKNESS, REQUIRING 30-45 MINUTES FOR
FULL DARK ADAPTATION, ALLOWING US TO SEE
IN "GREYSCALE"



PHOTO OF
M 51 GALAXY



VISUAL EXPERIENCE OF M 51
18" NEWTON TELESCOPE AT BORTLE 2



VISUAL EXPERIENCE
UNDER A LIGHT POLLUTED SKY

SIMULATION: FREDRIK SILOW

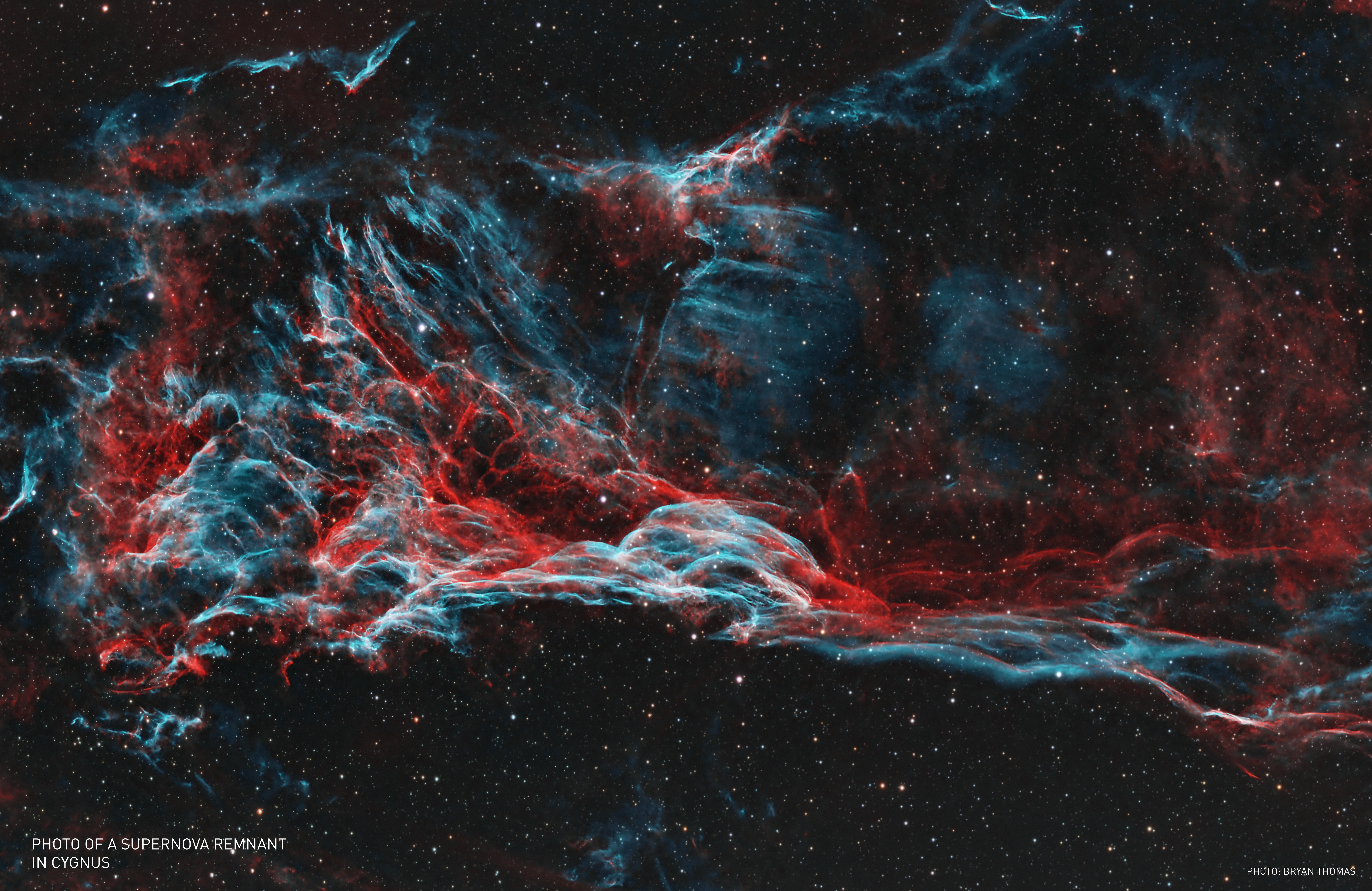


PHOTO OF A SUPERNOVA REMNANT
IN CYGNUS



VISUAL EXPERIENCE, WITH OIII-FILTER
30" NEWTON TELESCOPE AT BORTLE 2

SIMULATION: FREDRIK SILOW



VISUAL EXPERIENCE
UNDER A LIGHT POLLUTED SKY

SIMULATION: FREDRIK SILOW

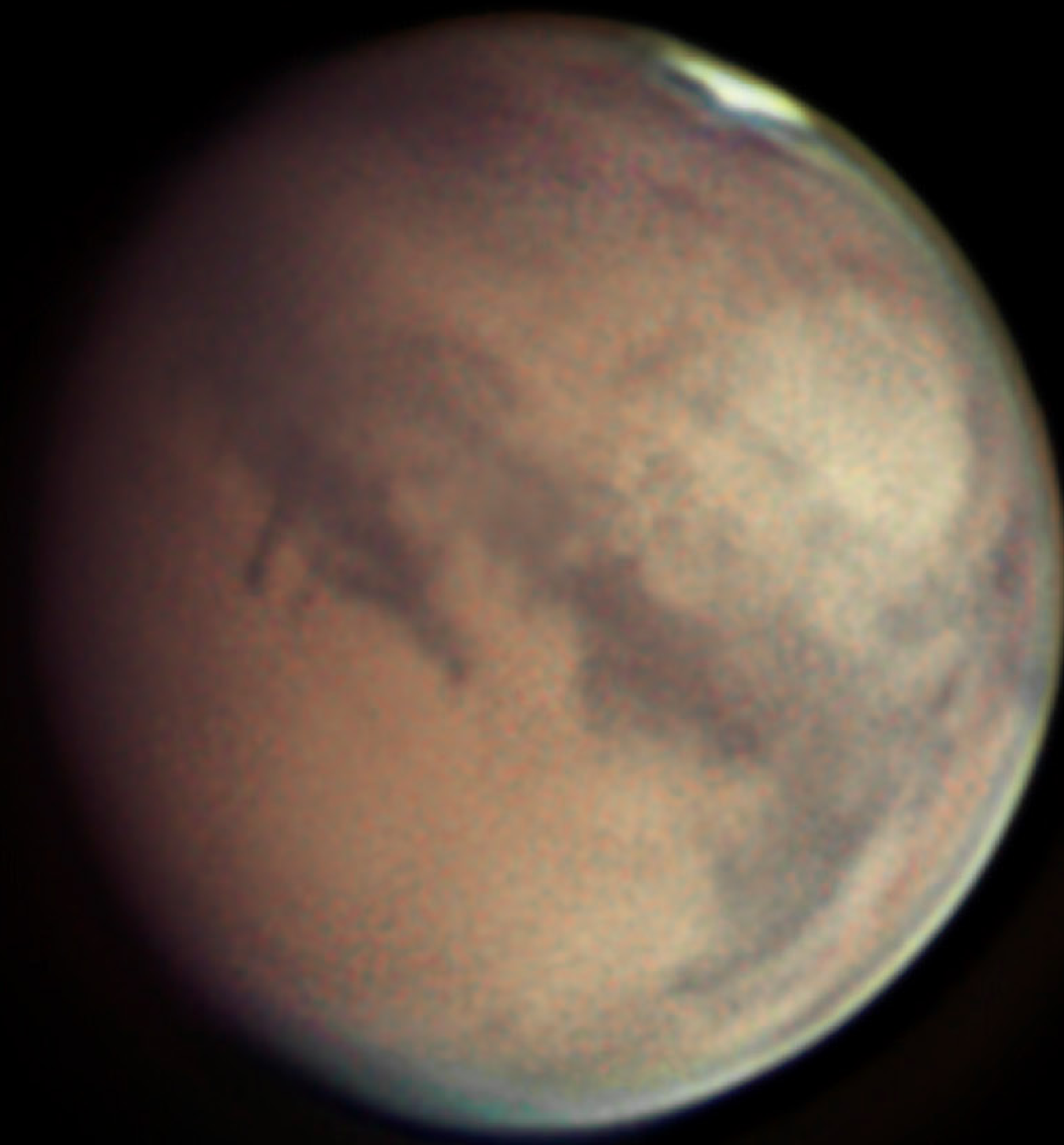


PHOTO OF MARS



COMMON VISUAL EXPERIENCE OF MARS
THROUGH TELESCOPE

SIMULATION: FREDRIK SILOW



MARS THROUGH A TELESCOPE, VISUAL EXPERIENCE
FROM A CITY — POOR SEEING DUE TO TURBULENCE FROM WARM BUILDINGS

SIMULATION: FREDRIK SILOW

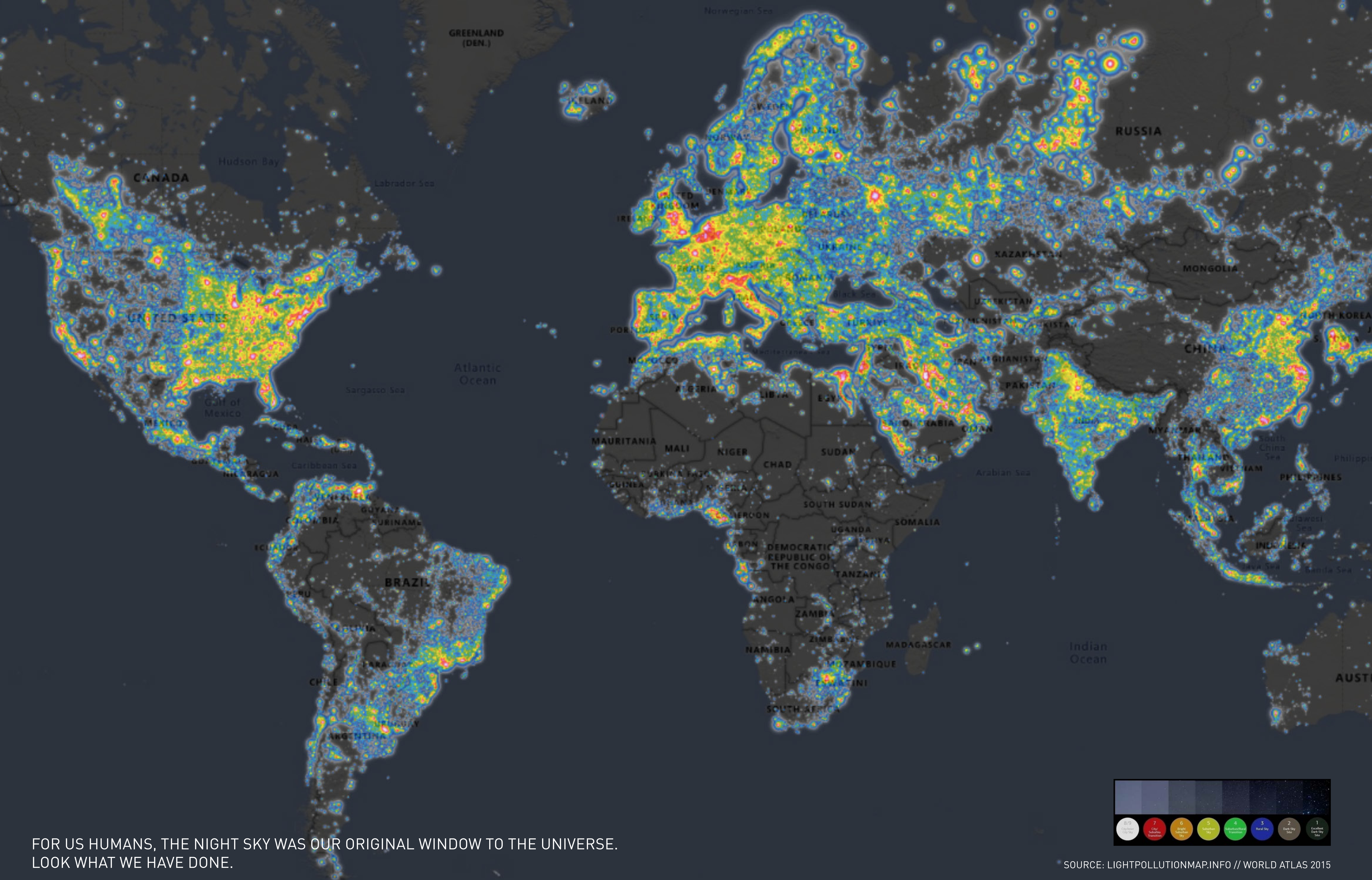


LOSING THE NIGHT

FOR 3.7 BILLION YEARS, THE BALANCE OF DAY AND NIGHT HAS BEEN THE ROCKING
CRADLE OF ALL LIFE ON EARTH ...



... UNTIL ABOUT JUST A CENTURY AGO.



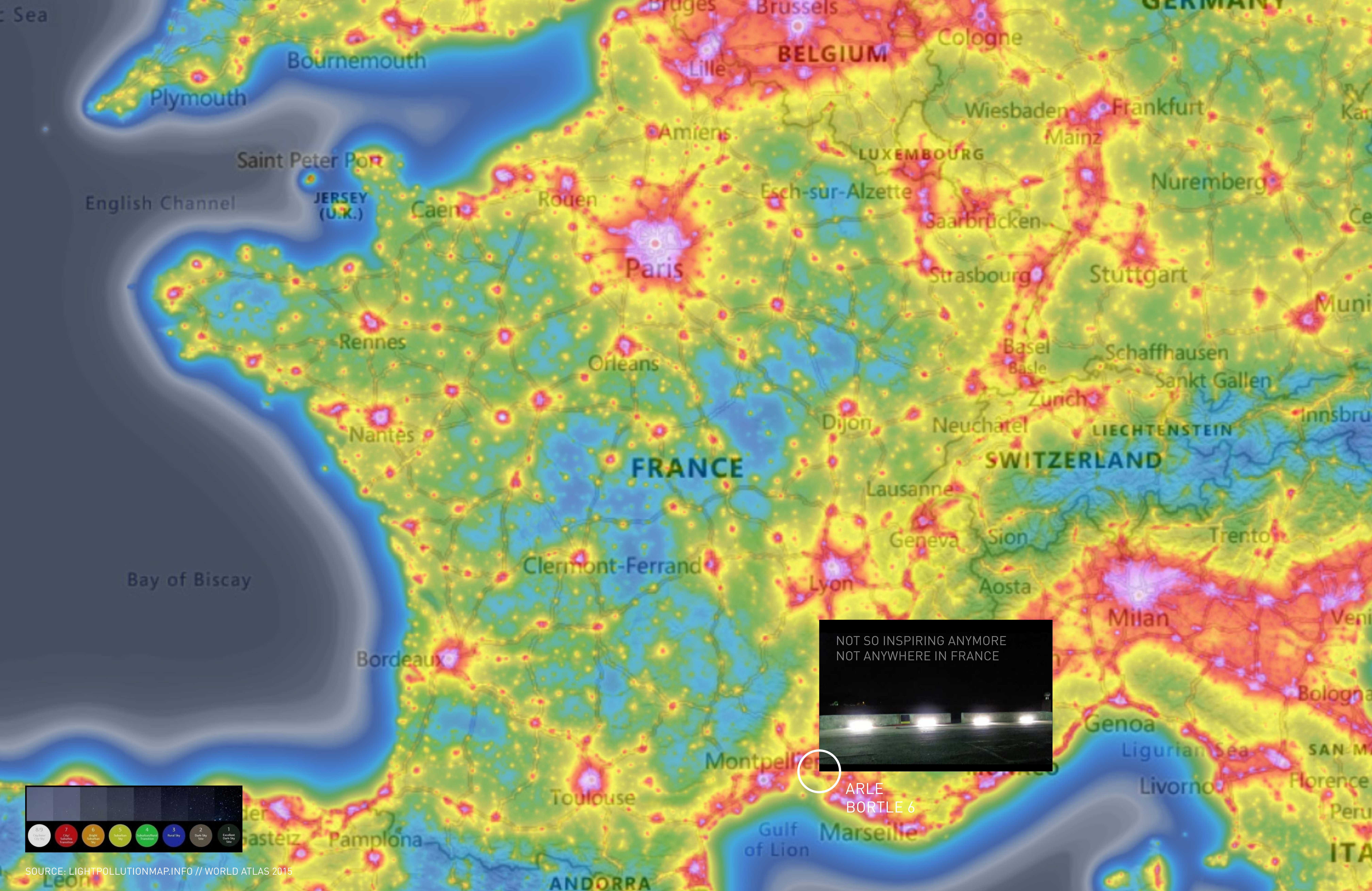
FOR US HUMANS, THE NIGHT SKY WAS OUR ORIGINAL WINDOW TO THE UNIVERSE.
LOOK WHAT WE HAVE DONE.

SOURCE: LIGHTPOLLUTIONMAP.INFO // WORLD ATLAS 2015



THAT SKY ONCE INSPIRED EVERYDAY PEOPLE WHO BECAME EXPLORERS, WRITERS, POETS, SCIENTISTS, AND ARTISTS

PAINTING: VINCENT VAN GOGH, STARRY NIGHT OVER RHONE, 1891 IN ARLES, THEN BORTLE 1, NOW BORTLE 6.
SOURCE: WIKIPEDIA



NOT SO INSPIRING ANYMORE
NOT ANYWHERE IN FRANCE



ARLE
BORTLE 6



SOURCE: LIGHTPOLLUTIONMAP.INFO // WORLD ATLAS 2015

WHAT IS LOST? — URL LINK TO MOVIE CLIP



RE-SET SCREEN BRIGHTNESS TO 50~70%

BORTLE 9 WITH SMOG



LOS ANGELES 2009

PHOTO: LOGOBOOM/SHUTTERSTOCK



POWER OUTAGE 1994, AFTER AN EARTH QUAKE — SIMULATION, A LESS SMOGGY DAY
MILKY WAY VISIBLE, BORTLE 2-3, ACCORDING TO REPORTINGS

SIMULATION: FREDRIK SILOW

1910



1925



THE EVOLUTION OF LIGHT POLLUTION FROM
LOS ANGELES OVER A CENTURY.

2002





7
CITY/
SUBURB

450 STARS
20% POP

MORE COMMON SWEDISH CITY VIEW
LUND

PHOTO: FREDRIK SILOW

BORTLE 7 SKY WITH GLARE BECOMES BORTLE 9 LOCALLY

7
CITY/
SUBURB

450 STARS
20% ROP

PHOTO: FREDRIK SILOW

WE LOSE THIS ...


1
EXCELLENT
DARK SKY

NELM 7.6-8.0
~20000 STARS (8.0)
~1% POP
MILKY WAY LIGHT
CASTS SHADOWS
ZODIACAL LIGHT,
VISIBLE AND
COLORFUL

IA STJERNKVIST/TT


urn

livet skulle se
om du väljer
dan det andra.
dilemmat dy-
ra situationer
å att säga "det
på reflektions-
t här minskar
n åltandet an-
r och kan hjäl-
nomföra mer
emlösning.
gen så många
ehövs och öva
själv så myck-
ärme och tröst
ör oavsett när,
ns om, dilem-
nar du fokuse-
hand om dig
den. Lycka till!



Klubbpris
Upp till 30%
på ljusslingor.

... FOR THIS ...

 Hitta din butik, eller shoppa

Erbjudanden gäller till och med 24 november. Se produkternas tillgänglighet i butik och alla våra erbjudanden på clasohlson.se.

PHOTO: FREDRIK SILOW

... TO GET THIS!

9+
INNER CITY
SKY + SMOG

NELM 0,9 (NAKED EYE
LIMITING MAGNITUDE)
~6 STARS (VISIBLE)
~5% POP (OF WORLD
POPULATION)
CONSTELLATIONS NOT
VISIBLE

WHICH NIGHT SKY WOULD YOU LIKE YOUR CHILDREN TO EXPERIENCE? THIS...

7
CITY/
SUBURB

450 STARS
20% POP

PHOTO: FREDRIK SILOW

OR THIS?

3
RURAL
4500 STARS
7% POP

MASTER THE BORTLE SCALE - REDISCOVER THE STARS

9+
INNER CITY
SKY + SMOG

NELM 0,9 (NAKED EYE
LIMITING MAGNITUDE)
0-7 STARS (VISIBLE)
~5% POP (OF WORLD
POPULATION)
CONSTELLATIONS NOT
VISIBLE

9
INNER CITY
SKY

NELM 1.0-3.9
7-200 STARS
-5% POP
BRIGHT
CONSTELLATIONS
VISIBLE, BUT
MISSING STARS



**9+
INNER CITY
SKY + SMOG**

NELM 0.9 (NAKED EYE
LIMITING MAGNITUDE)
0-7 STARS (VISIBLE)
~5% POP (OF WORLD
POPULATION)
CONSTELLATIONS NOT
VISIBLE

**9
INNER CITY
SKY**

NELM 1.0-3.9
7-200 STARS
~5% POP
BRIGHT
CONSTELLATIONS
VISIBLE, BUT
MISSING STARS

**8
AVERAGE CITY
SKY**

NELM 4.0-4.5
230-400 STARS
~15% POP
ORION MAIN STARS
VISIBLE

**7
SMALL TOWN/
SUBURBAN SKY**

NELM 4.6-5.0
400-750 STARS
~20% POP
MILKY WAY, NOT
VISIBLE

**6
BRIGHT
SUBURBAN SKY**

NELM 5.1-5.5
750-1300 STARS
~20% POP
MILKY WAY, VERY FAINT
M31, VERY FAINT

**5
SUBURBAN
SKY**

NELM 5.6-6.0
1300-2300 STARS
~15% POP
MILKY WAY, FAINT
M31, FAINT
ORION NEBULA, VERY
FAINT

**4
SUBURBAN/
RURAL SKY**

NELM 6.1-6.5
2300-4200 STARS
~10% POP
M33, VERY FAINT
ZODIACAL LIGHT, FAINT
ORION NEBULA, FAINT

**3
RURAL
SKY**

NELM 6.6-7.0
4200-7500 STARS
~7% POP
M33, FAINT
ORION NEBULA,
VISIBLE

**2
TRULY
DARK SKY**

NELM 7.1-7.5
7500-12500 STARS
~2% POP
M33, VISIBLE

**1
EXCELLENT
DARK SKY**

NELM 7.6-8.0
12500-20000 STARS
~1% POP
MILKY WAY LIGH
CASTS SHADOWS
ZODIACAL LIGHT,
VISIBLE AND
COLORFUL

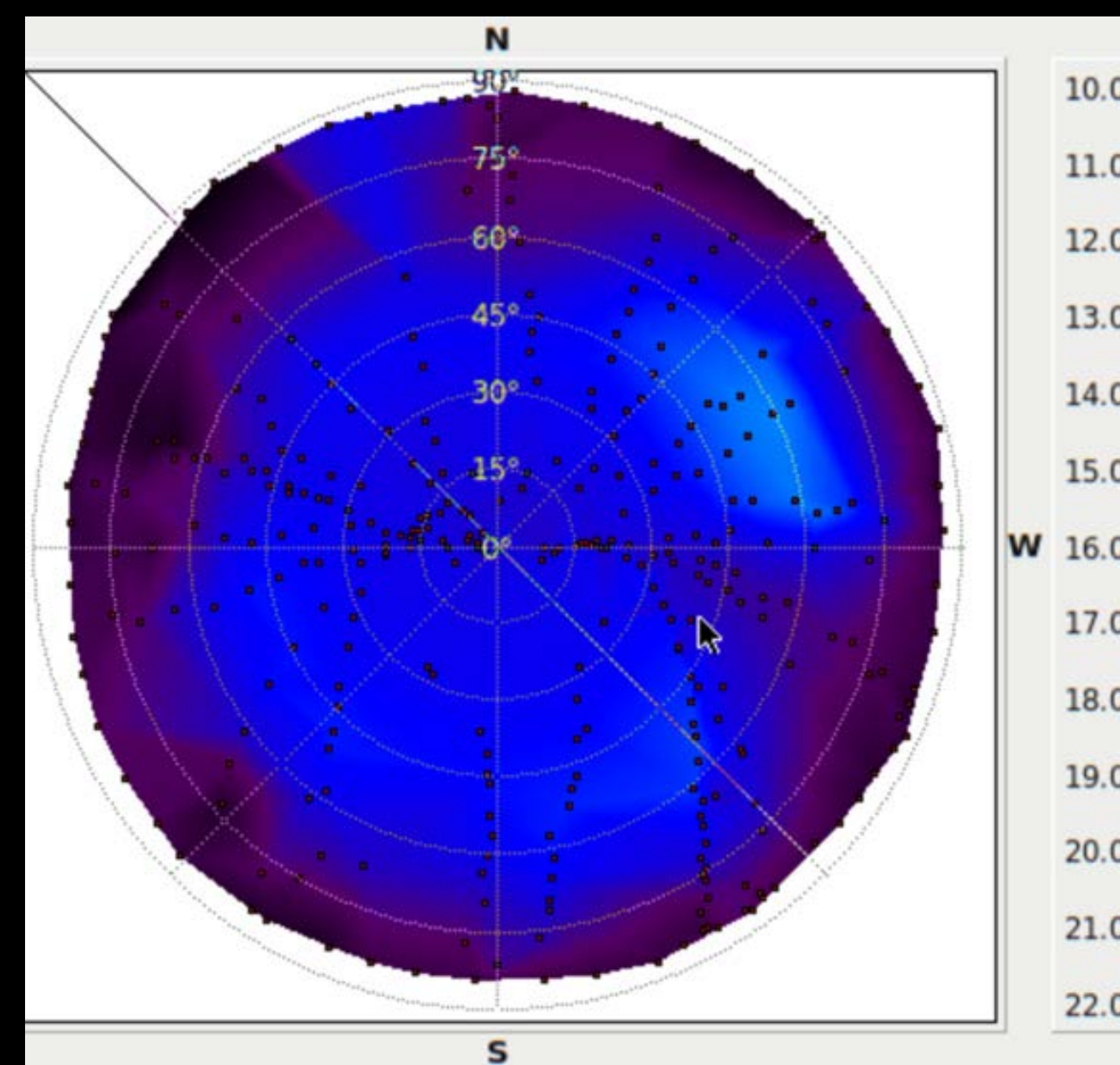
THE BORTLE SCALE – AN INTUITIVE AND ENGAGING TOOL TO EXPLORE THE NIGHT SKY AND UNDERSTAND THE IMPACT OF LIGHT POLLUTION

THE BORTLE SCALE, CREATED BY AMATEUR ASTRONOMER JOHN BORTLE, RANGES FROM 1 (THE DARKEST SKIES) TO 9 (SEVERELY LIGHT-POLLUTED SKIES), HERE ILLUSTRATED WITH AN ADDITIONAL STEP 9+, WITH SMOG. THIS SCALE IS A PRACTICAL TOOL FOR ASSESSING SKY BRIGHTNESS AND THE QUALITY OF NATURAL DARKNESS AT A LOCATION. WHILE THE BORTLE SCALE IS SUBJECTIVE—AFFECTED BY INDIVIDUAL EXPERIENCE, EYE HEALTH, AND PUPIL SIZE—IT REMAINS EASY TO UNDERSTAND, LEARN, AND COMMUNICATE. BY EVALUATING THE ENTIRE SKY, IT HELPS OBSERVERS UNDERSTAND HOW LIGHT POLLUTION AND SKYGLOW IMPACT THEIR VIEW OF THE STARS. CONDITIONS FOR ACCURATE ASSESSMENT: SKY DARKNESS MUST BE MEASURED AFTER ASTRONOMICAL TWILIGHT. OBSERVATIONS REQUIRE: NO MOONLIGHT, CLEAR, CLOUD-FREE SKIES, ABSENCE OF AURORAS, LOW HUMIDITY. DATA SOURCES AND SIMULATION CREDITS: SKY SIMULATION DATA: STELLARIUM. NELM AND VISIBILITY REFERENCE: JOHN BORTLE, SKY & TELESCOPE (2001). STAR DATA: VIZIER/HIPPARCOS MAIN CATALOGUE. WORLD POPULATION DISTRIBUTION DATA: CIESIN'S GRIDDED POPULATION OF THE WORLD (GPW) AND LIGHTPOLLUTIONMAP.INFO. ILLUSTRATION AND SIMULATION: © SAAF, THE SWEDISH AMATEUR ASTRONOMICAL SOCIETY.



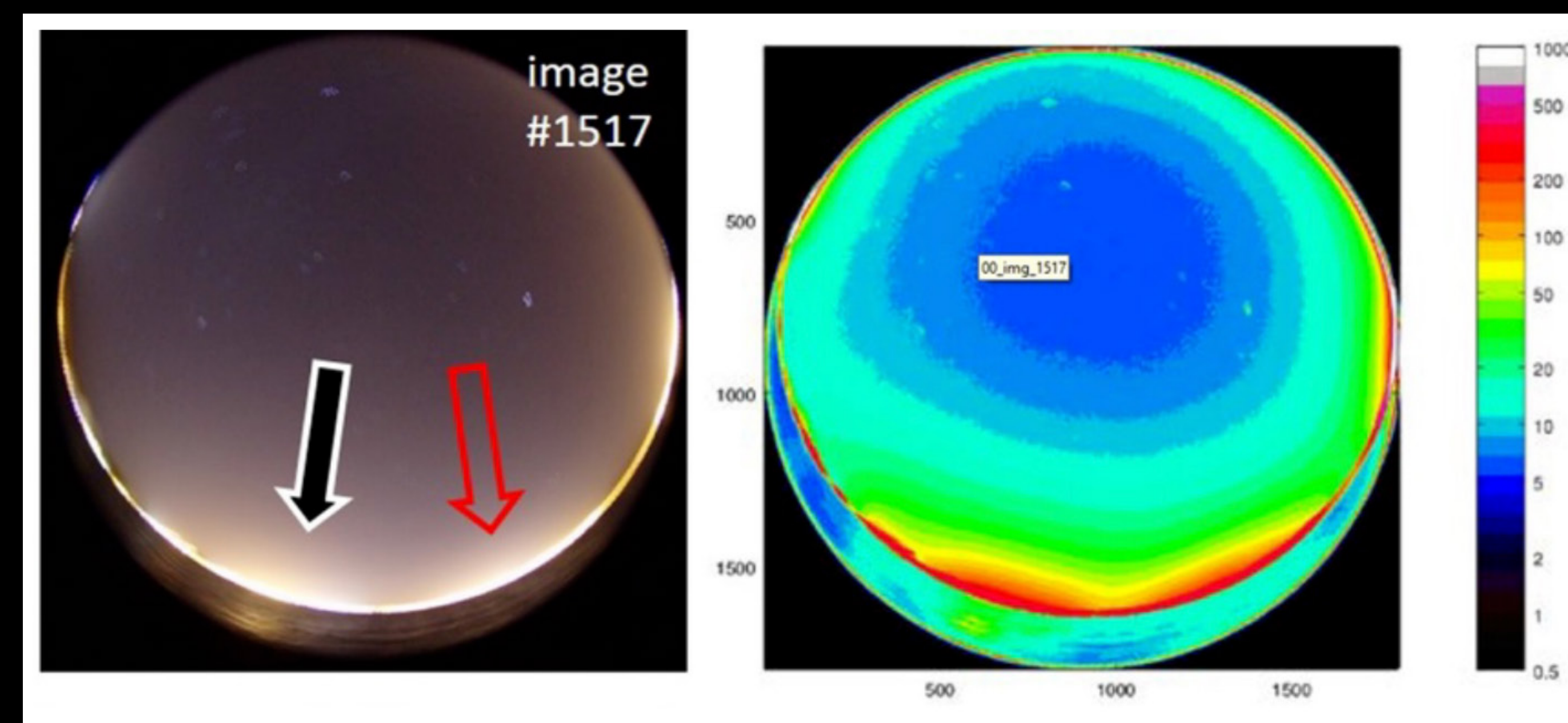
SQM – ROOF TOP FIXED ALL WEATHER MOUNT

VIEW OF THE HAND-HELD SQM PHOTOMETER AND AN AUTOMATIC SQM PHOTOMETER IN THE L VERSION MOUNTED ON THE OBSERVATION DECK OF THE FACULTY OF EARTH SCIENCES AND SPATIAL MANAGEMENT, NICOLAUS COPERNICUS UNIVERSITY IN TORÚN, POLAND. SOURCE: UNIHEDRON



SQM LU-DL-V SKY PROFILE

A USB ENABLED VECTOR DATA-LOGGING LIGHT METER FOR NIGHT-TIME SKY BRIGHTNESS MONITORING! AN AFFORDABLE METER FOR CONTINUAL, CONNECTED OR AUTONOMOUS DATA-LOGGING TO MEASURE SKY BRIGHTNESS FOR ASTRONOMERS AND LIGHT POLLUTION INVESTIGATORS. SOURCE: UNIHEDRON



ALL SKY CAMERA – MCD/M2

PHOTOGRAPH OF THE NIGHT SKY TAKEN WITH A FISHEYE LENS (LEFT); PHOTOGRAPH PROCESSED TO A METRIC FORM USING THE SPECTRAL COLOUR SCALE (RIGHT). SCALE IN THE FIGURE IN MCD/M². SOURCE: UNIHEDRON

SQM, SKY QUALITY METER — AN OBJECTIVE WAY TO MEASURE SKY BRIGHTNESS BUT IT IS NOT MAKING ANY ONE ENGAGING AND APPRECIATING THEIR NIGHT SKY AS BY USING THE BORTLE SCALE

OBJECTIVE METHOD — BUT UNCALIBRATED AND WITH LARGE VARIATIONS MEASURE AT ZENITH OR OTHER SPECIFIC SKY POSITIONS FOR STATISTICS AND TREND DATA. INFLUENCED BY THE POSITION OF THE MILKY WAY AND OTHER BRIGHT STARS — MUST BE MANUALLY ADJUSTED FOR TRANSPARENCY (CLOUDS, HUMIDITY, AEROSOLS, ETC.). GOOD AS A MEASUREMENT STATION, PROVIDING STATISTICS AND HIGHLIGHTING CHANGES.

CREATE STAR SPOTS!

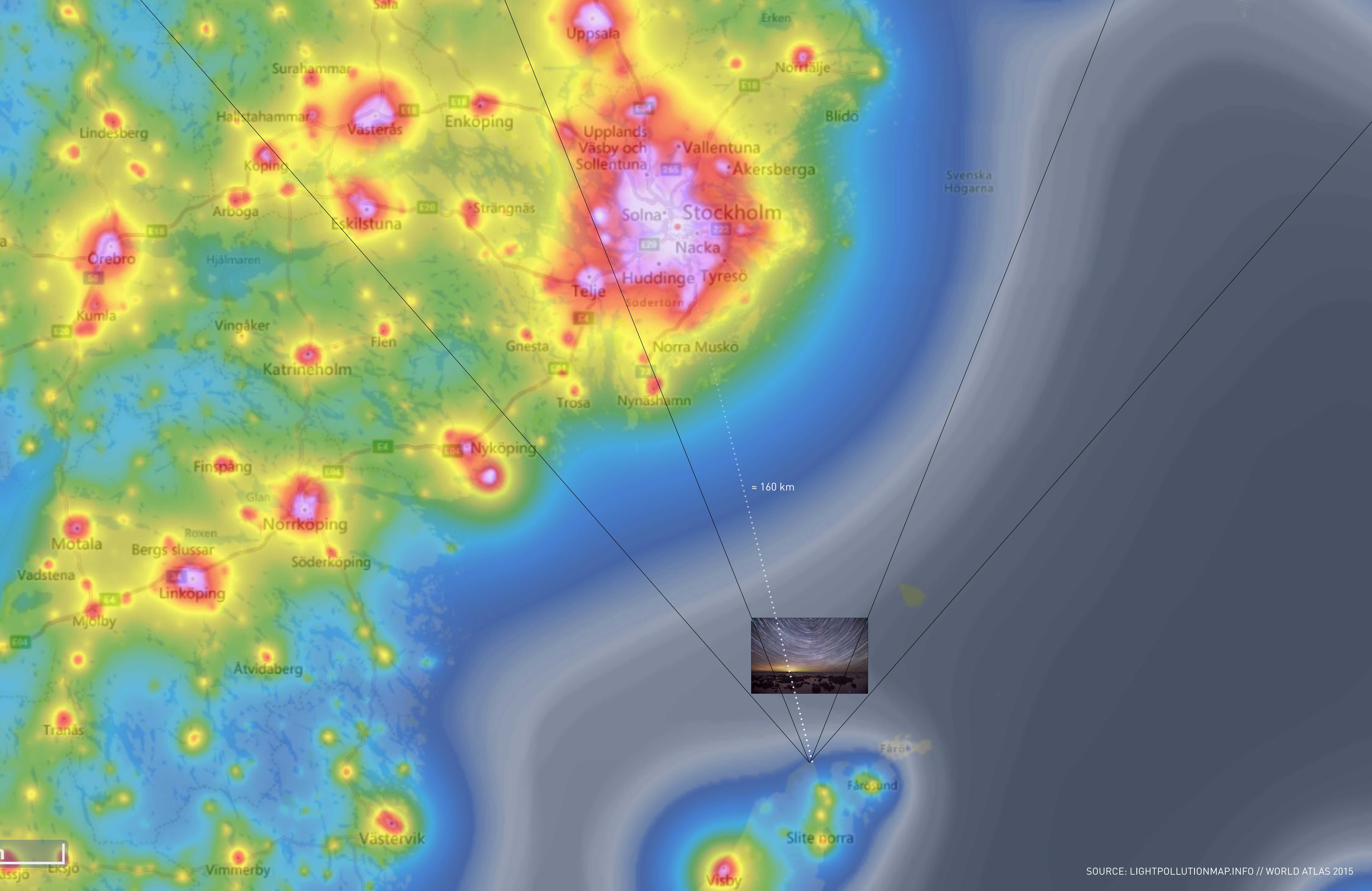
BORTLE 7
LUND

PRESERVE THE BEST SPOTS IN OUR CITIES, ADJUST SURROUNDING LIGHTING, MINIMIZE LOCAL LIGHT POLLUTION SOURCES, ELIMINATE GLARE, IMPLEMENT RED-LIT PATHWAYS, AND COMMUNICATE TO INSPIRE ACTION.



LIGHT POLLUTION IS NOT A LOCAL THING

BORTLE 2
HALLSHUK, GOTLAND
LIGHT POLLUTION FROM
STOCKHOLM
DISTANCE 160 KM
03.00 AT NIGHT

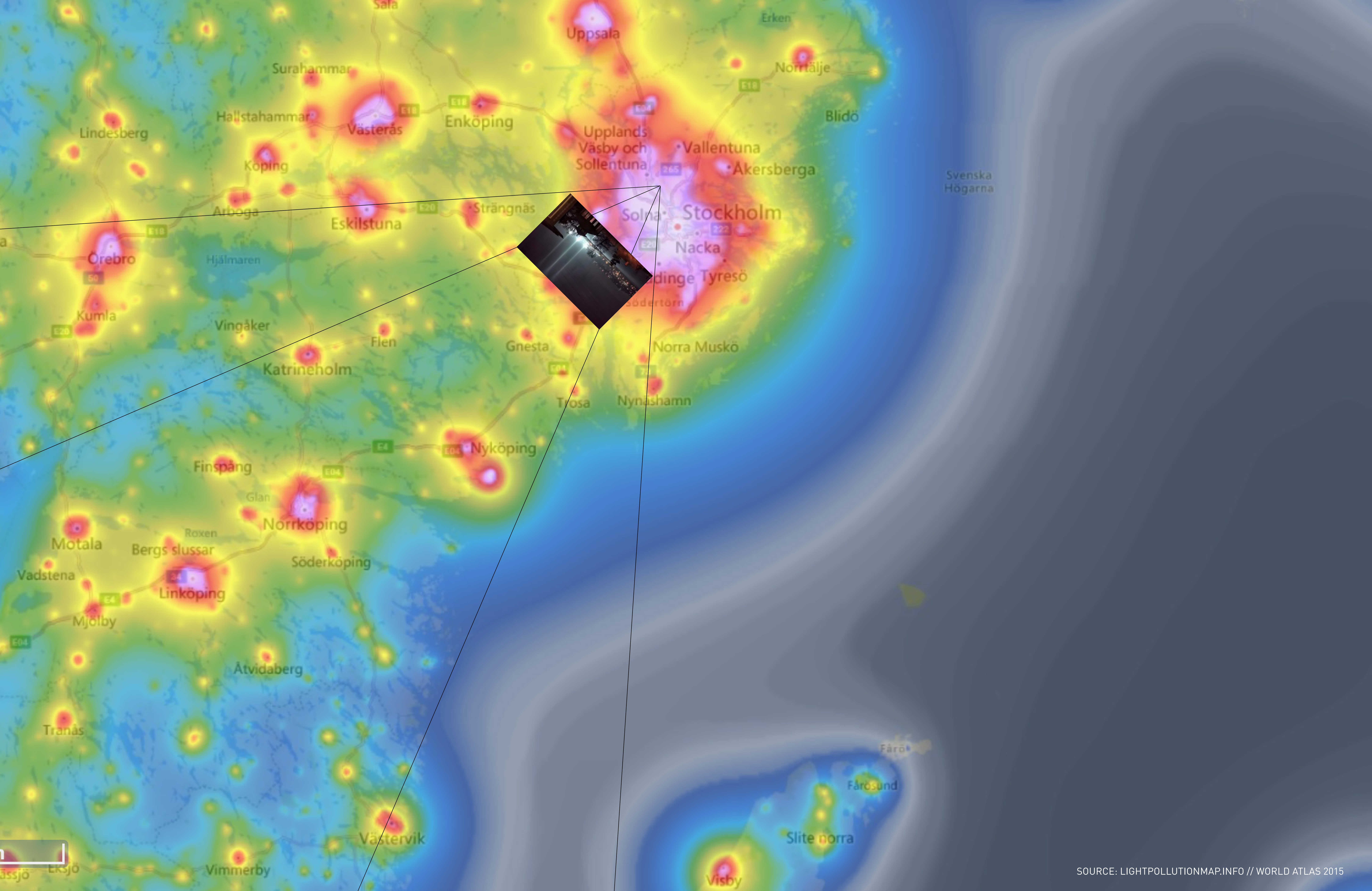


≈ 160 km



WASTE OF ENERGY, SKY AND SLEEP





$$B = B_{\text{natural}} + \frac{L}{r^2} e^{-\frac{r}{d_0}}$$

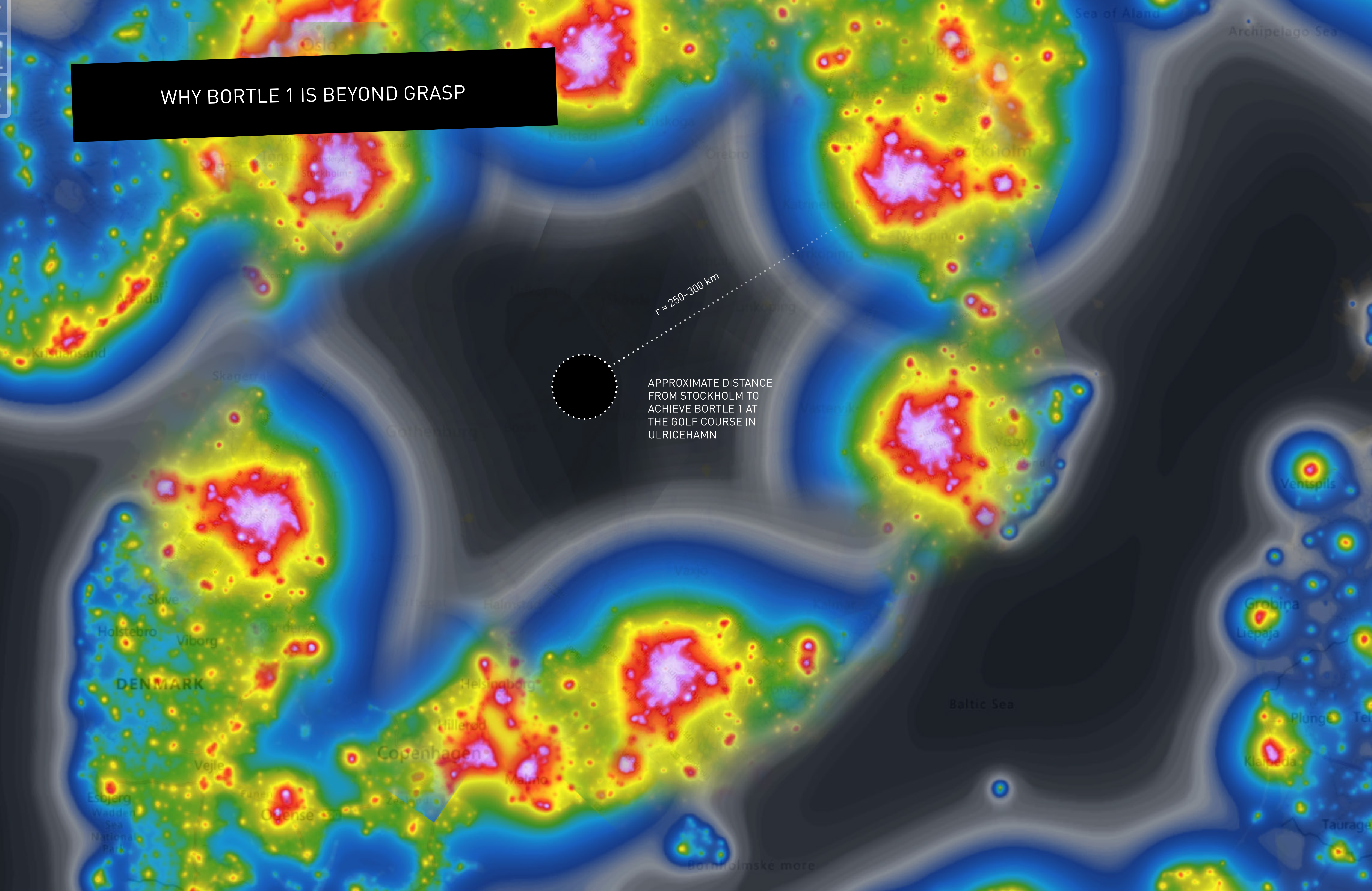
HOW FAR TO BORTLE 1 — IF SURROUNDED BY "STOCKHOLMS"?

DERIVED FROM THE LIGHT SCATTERING FORMULA: THE EXPONENTIAL DECAY MODEL
 $r \approx 250\text{--}300$ km IS REQUIRED TO REACH A BORTLE 1 SKY

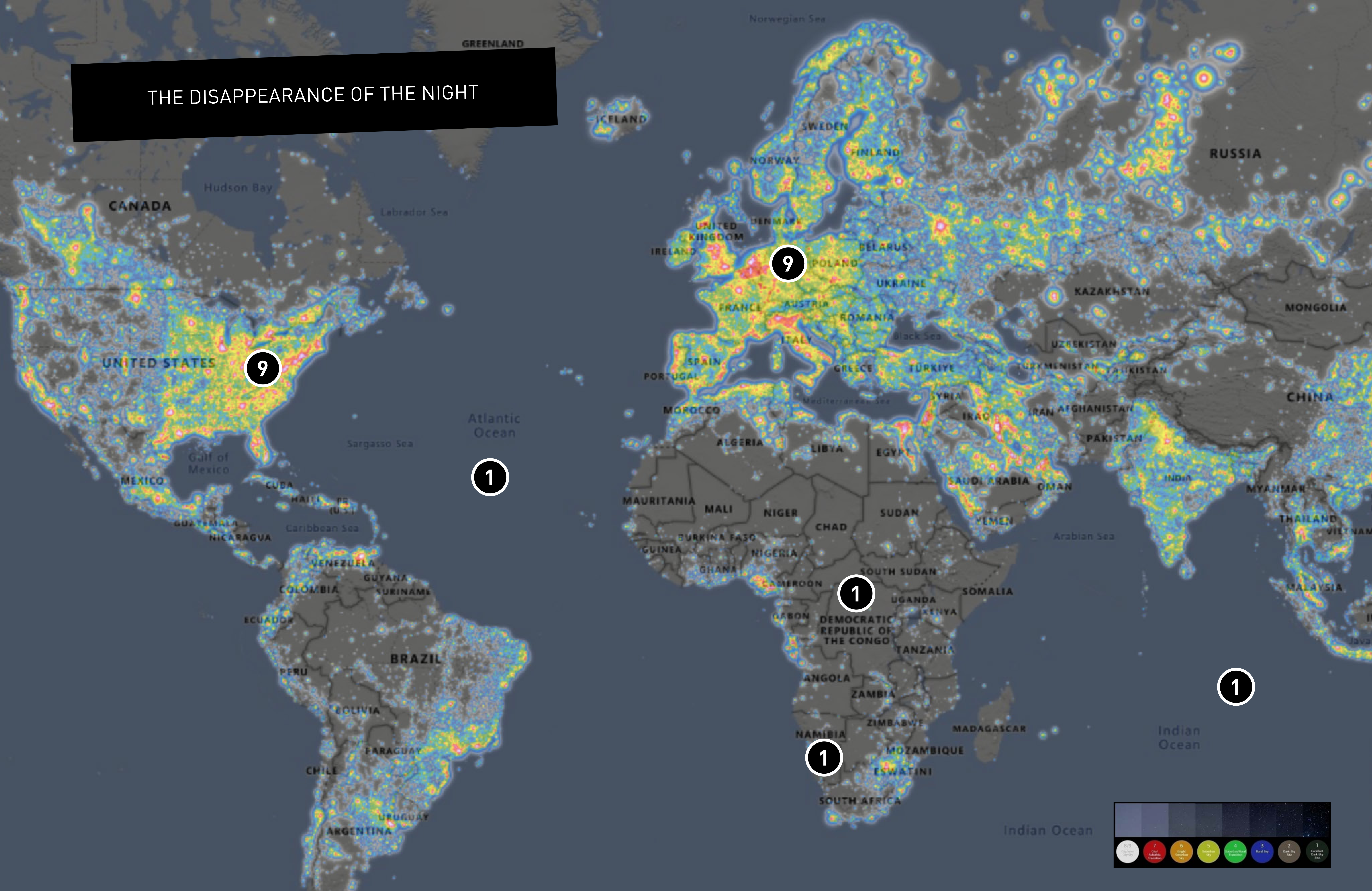
WHY BORTLE 1 IS BEYOND GRASP

$r \approx 250-300$ km

APPROXIMATE DISTANCE FROM STOCKHOLM TO ACHIEVE BORTLE 1 AT THE GOLF COURSE IN ULRICEHAMN



THE DISAPPEARANCE OF THE NIGHT



AIM FOR 1 STEP DARKER ZONES IN RURAL AREAS



BORTLE 7

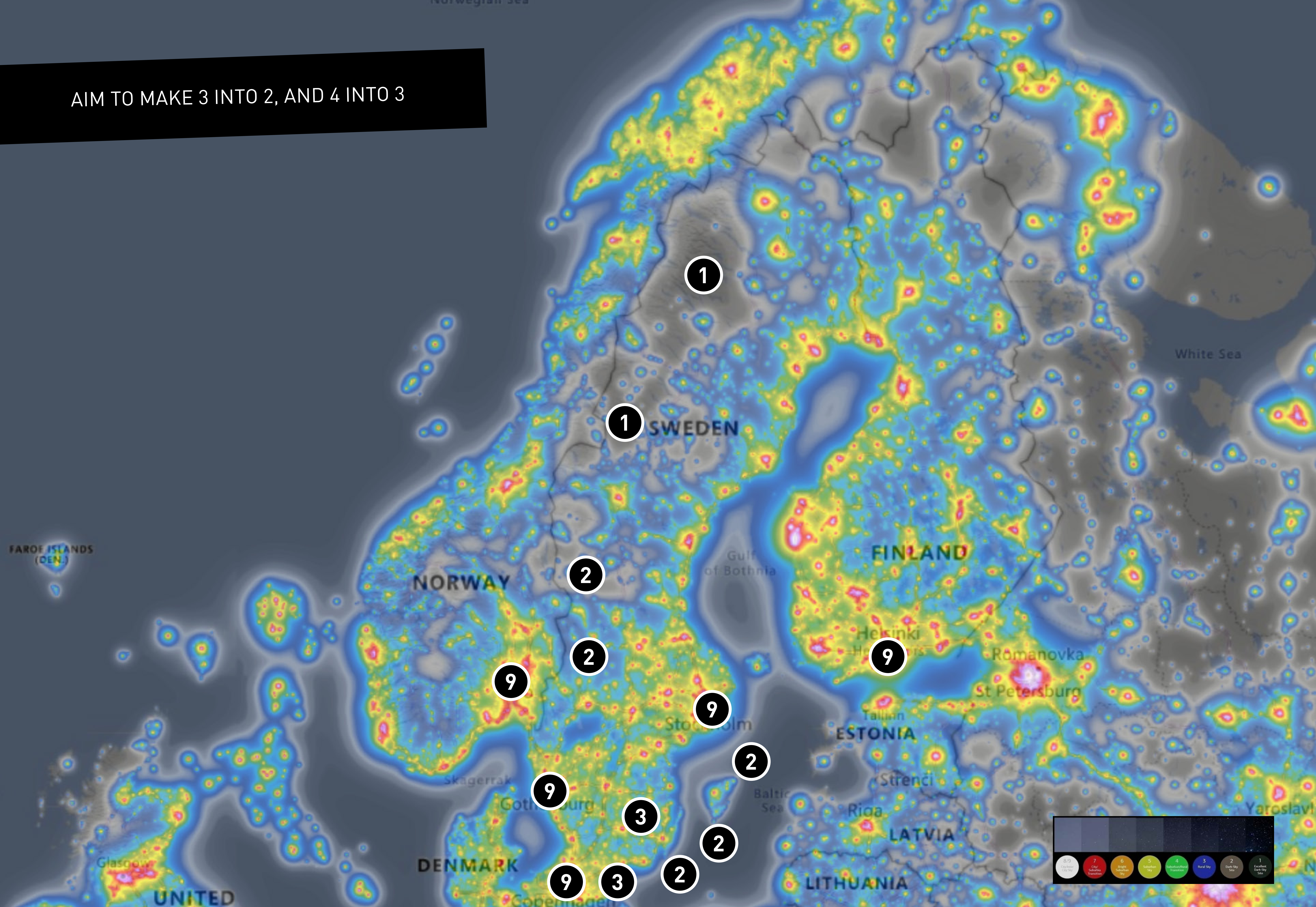


BORTLE 5



BORTLE 3

AIM TO MAKE 3 INTO 2, AND 4 INTO 3



PRESERVE 2 AND 1-SITES

2

NORTHERN VÄRMLAND

2

VÄRMLANDS NÄS

2

SOUTH AND NORTH POINTS OF GOTLAND

3

SOME SMALL AREAS OF SMÅLAND

2

2

ÖLAND'S SOUTHERN POINT

3

SANDHAMMAREN



ONE OF OUR LAST EASILY
ACCESSIBLE DARK SKIES

KARLSKRONA LIGHT DOME

GRÖNHÖGEN

ÖLAND'S SOUTHERN POINT — THE MILKY WAY, PHOTO
BORTLE SCALE 2

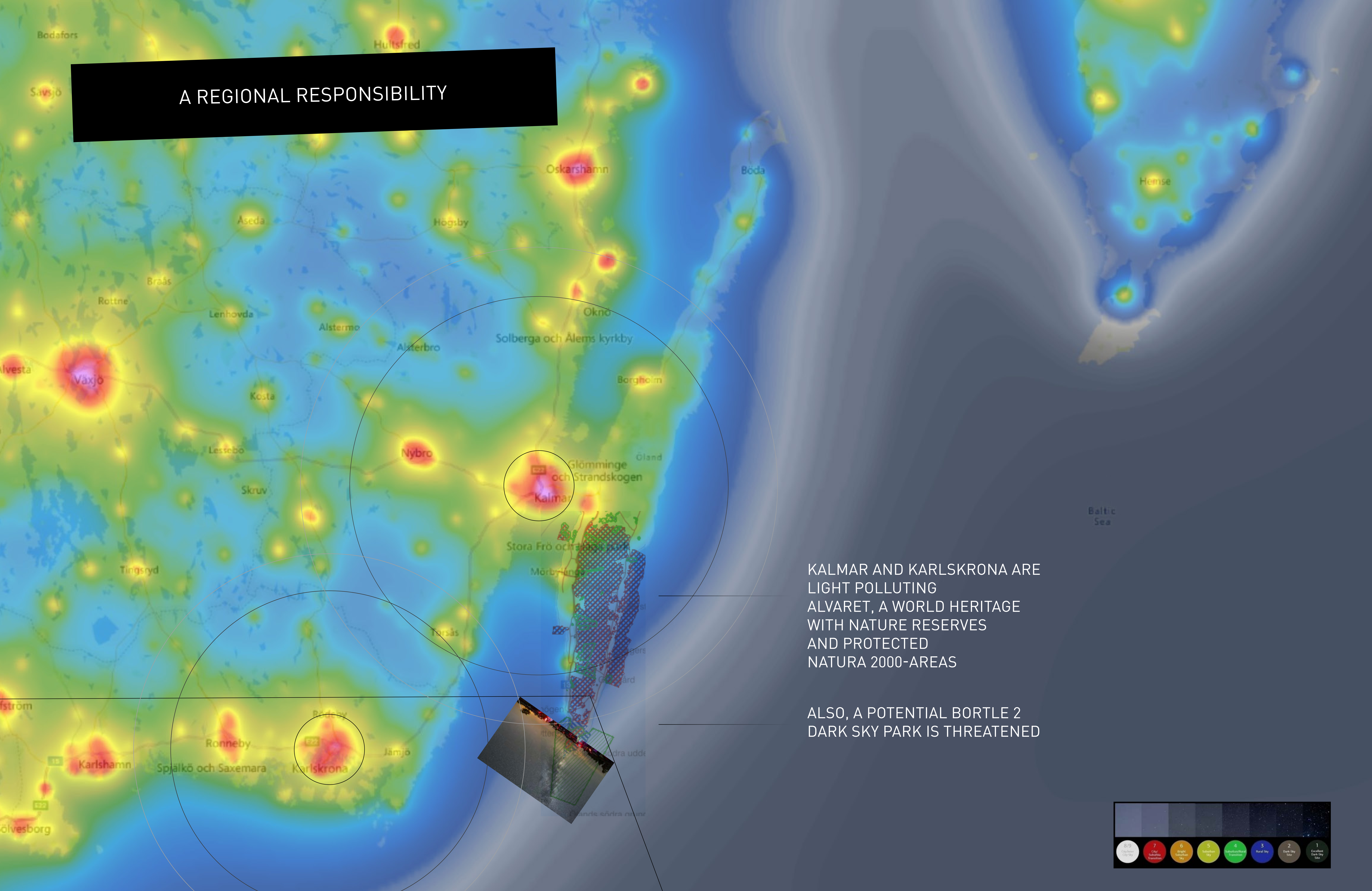
PHOTO: GÖRAN STRAND // SAAF



ÖLAND'S SOUTHERN POINT — THE MILKY WAY, VISUAL (SIMULATION)
BORTLE SCALE 2



A REGIONAL RESPONSIBILITY



KALMAR AND KARLSKRONA ARE LIGHT POLLUTING ALVARET, A WORLD HERITAGE WITH NATURE RESERVES AND PROTECTED NATURA 2000-AREAS

ALSO, A POTENTIAL BORTLE 2 DARK SKY PARK IS THREATENED



WHAT TO DO?



FALSE SENSE OF SAFETY

DON'T GET LOST IN LIGHT





EXPAND YOUR UNIVERSE

CO-LAB WITH SAAF

NIGHT SKY COMMUNICATION

USE THE BORTLE SCALE

DIRECTED DOWN AND SHIELDED

DIMMED OR SWITCHED OFF

TIME-, PRESENCE- AND NEED CONTROLLED

SPECTRAL ADAPTED — NARROW BAND AMBER

LOWERED, NO-GLARE ADAPTED

QUANTITY-REGULATED

TOOLBOX

BAN VISIBLE GREENHOUSE LIGHTING AT NIGHT

RESTRICT UP-LIGHTS

RESTRICTIONS ON FACADE AND FLOOD LIGHTING

RESTRICTIONS FOR COUNTRY ROADS

RESTRICTIONS ON DECORATIVE LIGHTING

DEMAND SHIELDINGS ON ALL LIGHTING

WARM NBA LED

BAN FIXED LIGHTING AT NIGHT FOR OFFICE BUILDINGS,
INDUSTRIAL PARKS AND PARKING LOTS

NO LED-BILLBOARDS OR COMMERCIAL
SIGNS AT NIGHT AT NIGHT

REGULATIONS

LET'S CREATE A DARK SKY PARK ON ÖLAND

MAKE GREY RURAL AREAS DARK AGAIN

CREATE STAR SPOTS IN CITIES

CREATE SUBURBAN/RURAL DARK ZONES

READ THE DARKNESS MANIFESTO

MAKE THE SKY YOUR FRIEND

BASE MORE SCIENCE TEACHING ON ASTRONOMY

INSPIRING GOALS



LET'S

REIGNITE THE MAGIC OF DARKNESS

FREDRIK SILOW

CREATIVE DIRECTOR

PRESIDENT OF SAAF



EXTRAS

BASIC NORTHERN NIGHT SKY ORIENTATION

MILKY WAY

ANDROMEDA GALAXY

CASSIOPEIA

URSA MINOR

Polstjärnan
POLESTAR

BIG DIPPER

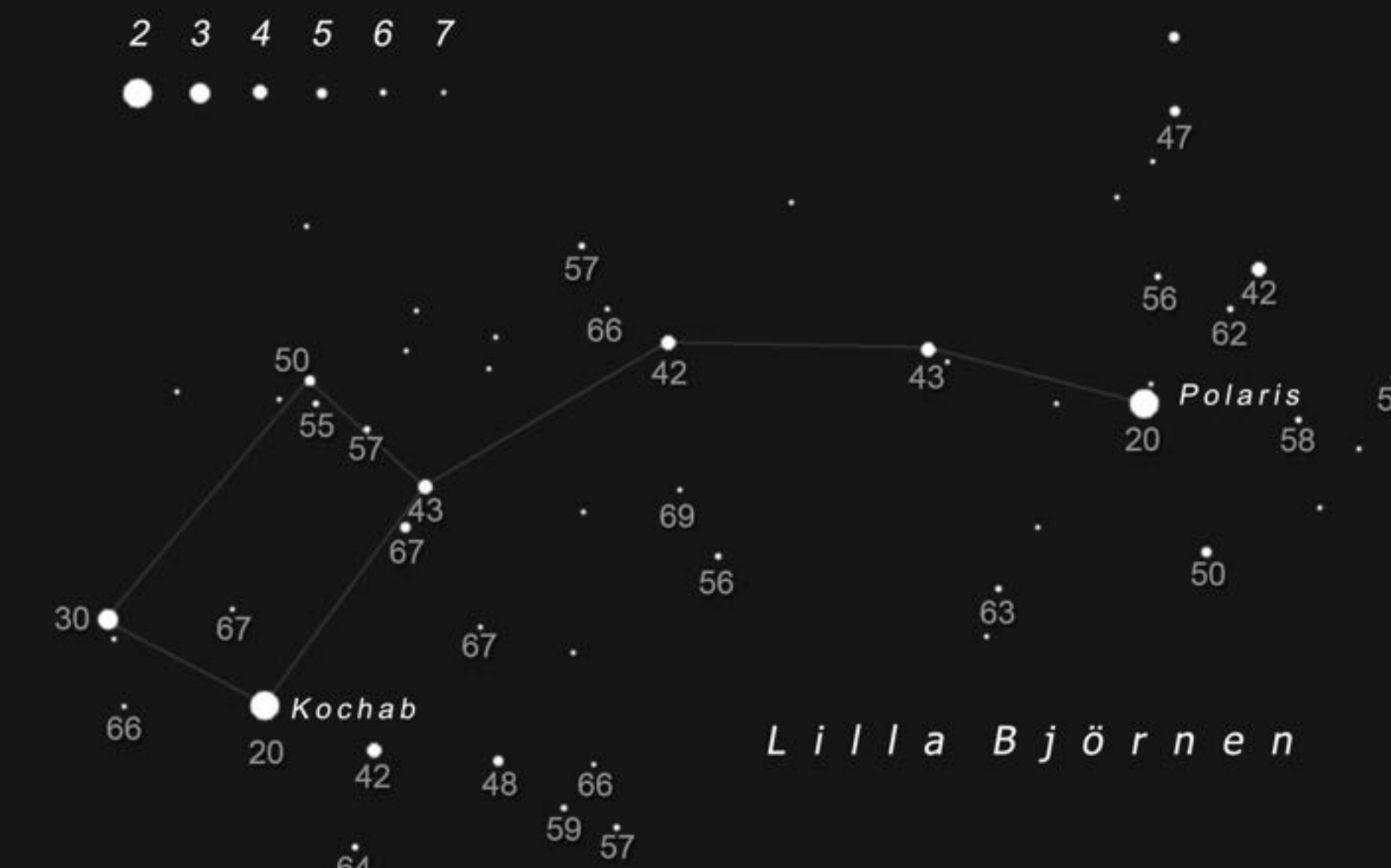
NORTH

NAKED EYE LIMITING MAGNITUDE

Magnituder

2 3 4 5 6 7

● ● ● ● ● ●



FIND THE BIG DIPPER, FIND THE NORTH STAR, CUP YOUR HAND, ABOUT 25-30° AROUND URSA MINOR.
BETWEEN SEPTEMBER AND MARCH, MIDNIGHT, MOONLESS AND CLEAR SKY.
COUNT STARS, TAKE NOTES, PHOTOGRAPH. SEE IF YOU CAN ESTIMATE THE FAINTEST VISIBLE STAR.

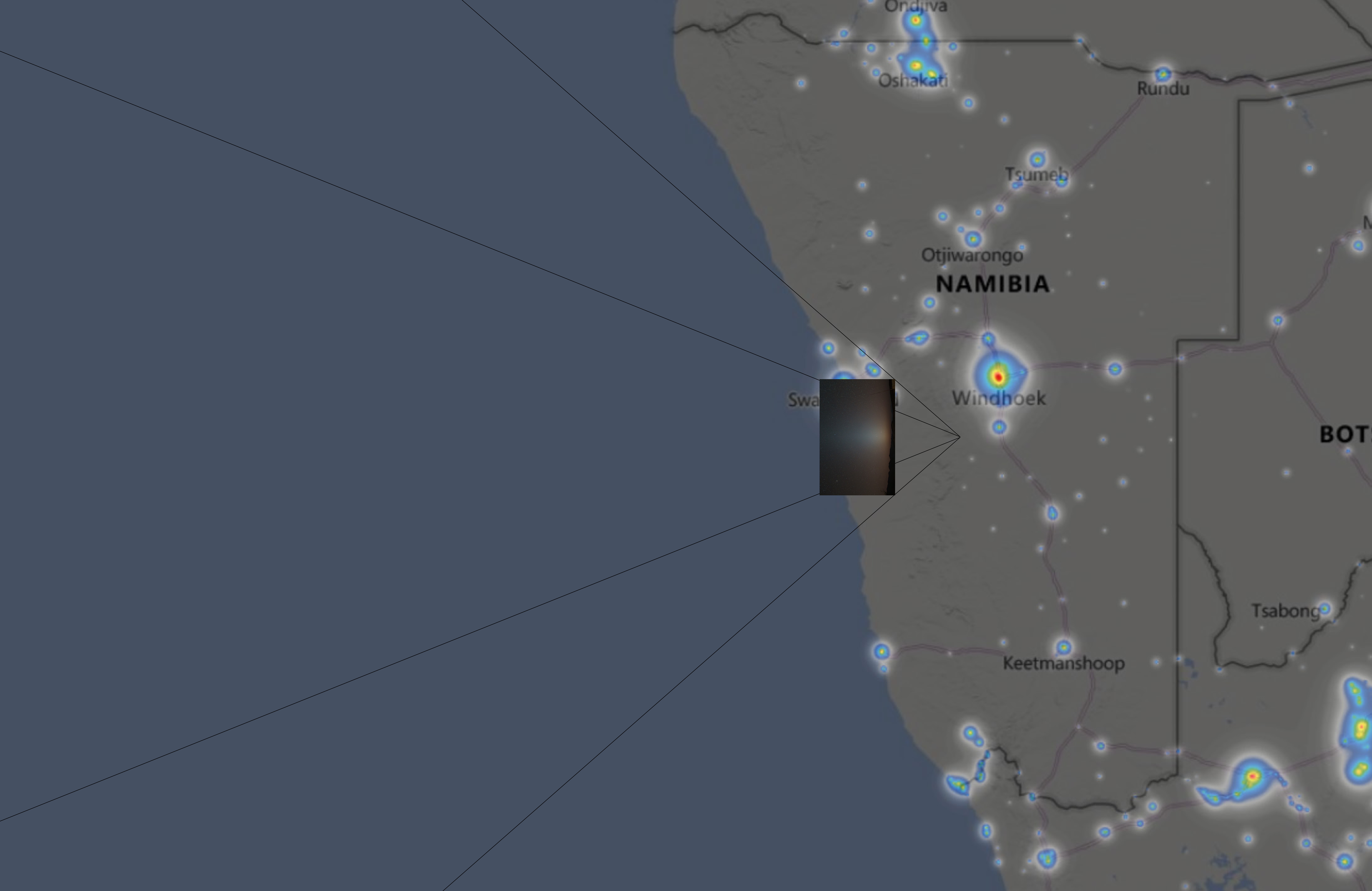
AS GOOD AS IT GETS

THE MILKY WAY UNDER BORTLE 1 — PHOTO
BARELY VISIBLE AT BORTLE 5

PHOTO: TORBJÖRN HOLMQUIST // SAAF



ZODIACAL LIGHT UNDER BORTLE 1 — PHOTO/VISUAL
BARELY VISIBLE AT BORTLE 4



Ondjiva

Oshakati

Rundu

Tsumeb

Otjiwarongo

NAMIBIA

Swakopmund

Windhoek

BOTSWANA

Tsabong

Keetmanshoop

LUND LIGHT DOME DESTROYING BORTLE 5

5
SUBURB

2000
15%





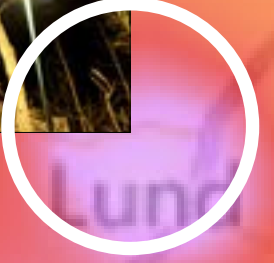
HORGEMO/LYSVIK
BORTLE 3
SQM 21,83



EVERÖD/KOPPSLAHYTTAN
BORTLE 4
SQM 21,17



LÖNSHULT
BORTLE 3(4)
SQM 21,67



LUND
BORTLE 7
SQM 18,90



MALMÖ
BORTLE 8-9
SQM 18,15



SANDHAMMAREN
BORTLE 3
SQM 21,79



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