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Astrophysics outreach

in Namibia:

H.E.S.S. and beyond

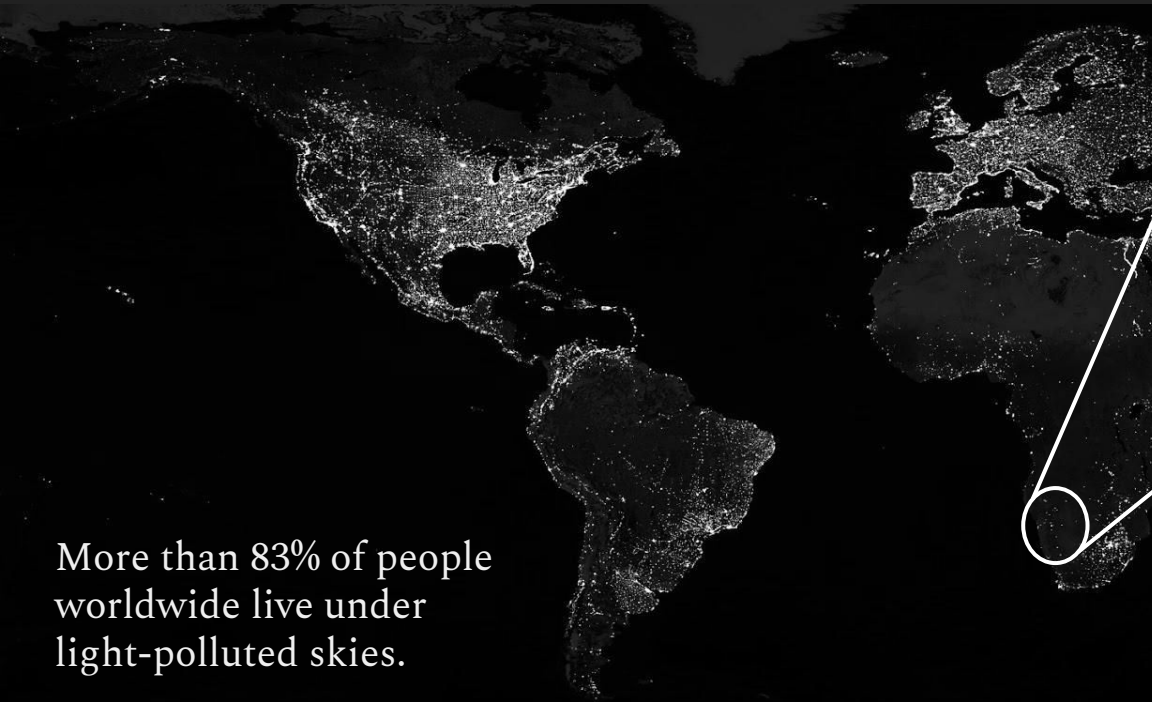


SUSTAINABLE DEVELOPMENT GOALS

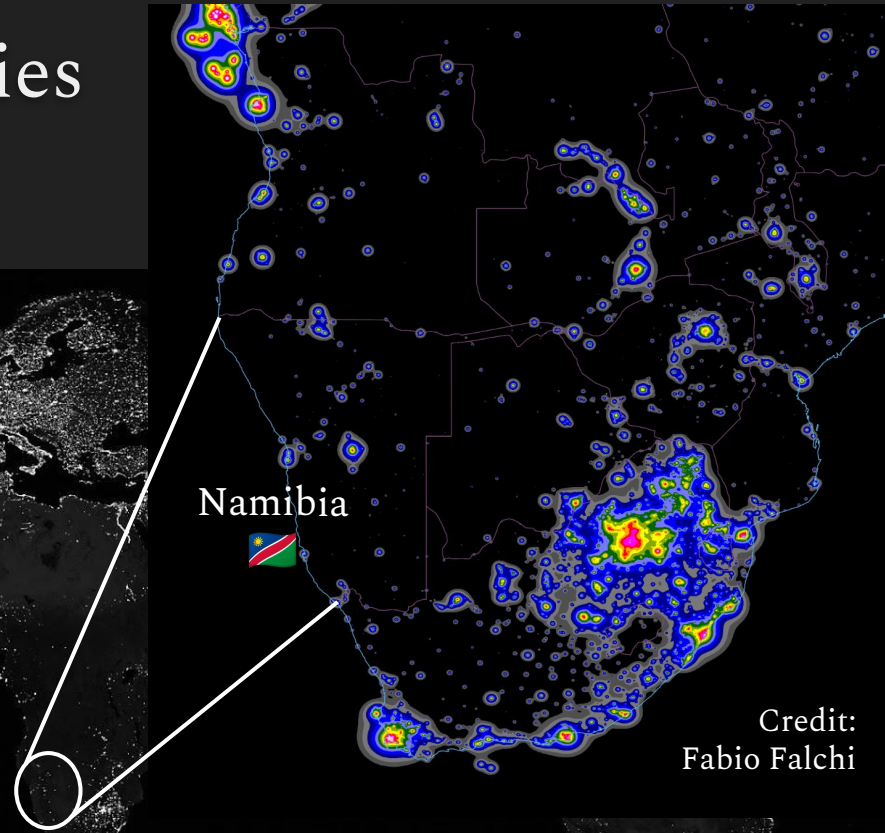


Dalgleish, H. (2020). Astronomy for development, A&G, 61 (6) doi.org/10.1093/astrogeo/ataa084

Namibia's dark (and dry) skies



More than 83% of people worldwide live under light-polluted skies.



Credit:
Fabio Falchi

High Energy Spectroscopic System: H.E.S.S.

- Five Cherenkov telescopes
- Located in Khomas highlands
- In operation since 2002
- 41 institutes across 15 countries: 230+ scientists



Credit: Sabine Gloaguen



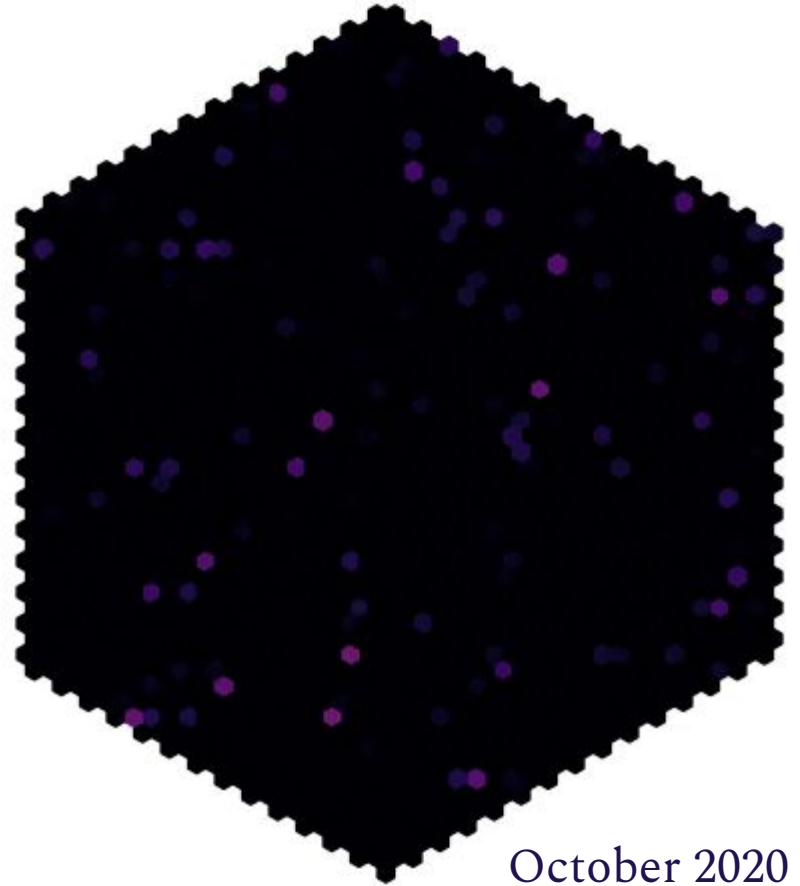
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H.E.S.S. Source of the Month

- Started in October 2004
- Features a TeV gamma ray source in a blog-like format
- More than 170 features



October 2020

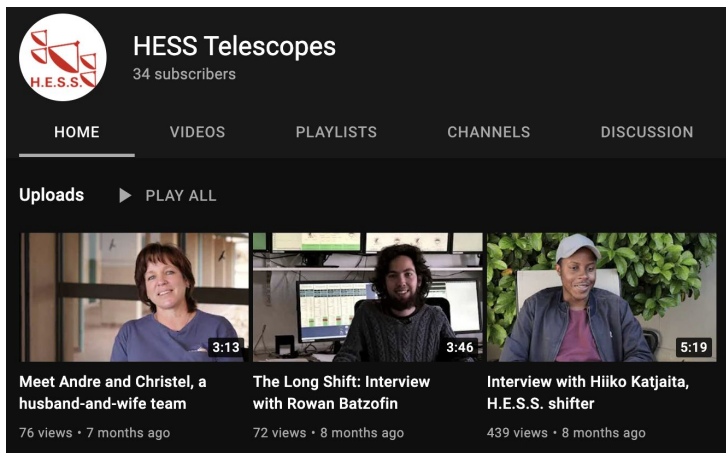


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H.E.S.S. Social Media



HESS Telescopes
34 subscribers

HOME VIDEOS PLAYLISTS CHANNELS DISCUSSION

Uploads ▶ PLAY ALL

Meet Andre and Christel, a husband-and-wife team
76 views · 7 months ago

The Long Shift: Interview with Rowan Batzofin
72 views · 8 months ago

Interview with Hiiko Katjaita, H.E.S.S. shifter
439 views · 8 months ago



hesstelescopes

Message



18 posts

277 followers

30 following

H.E.S.S.

H.E.S.S. is a system of Imaging Atmospheric Cherenkov Telescopes that investigates cosmic gamma rays in the energy range of 10s of GeV to 10s of TeV.

www.mpi-hd.mpg.de/hfm/HESS

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hesstelescopes
652 Tweets

H.E.S.S.

Following

hesstelescopes
@hesstelescopes

The H.E.S.S. Collaboration operates the H.E.S.S.-II array of Cherenkov telescopes, investigating cosmic gamma rays with energies between 50 GeV and 100 TeV.

Namibia mpi-hd.mpg.de/hfm/HESS/HESS... Joined November 2010

69 Following 1,222 Followers

H.E.S.S. Outreach

- School visits
- Tourists
- Open days



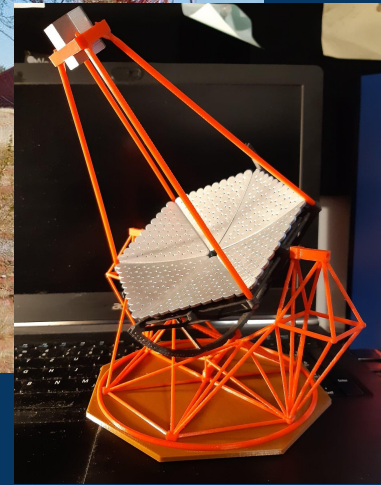
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H.E.S.S. Outreach

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forumonline.unam.edu.na/namibia-increasingly-a-popular-destination-for-world-leading-astronomical-observatories



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Astronomy as a tool for capacity-building

- School visits → inspiring the next generation of scientists and engineers
- Tourism → fostering trust in science and supporting/training tour guides
- Open days → generating excitement and raising support for science and astronomy



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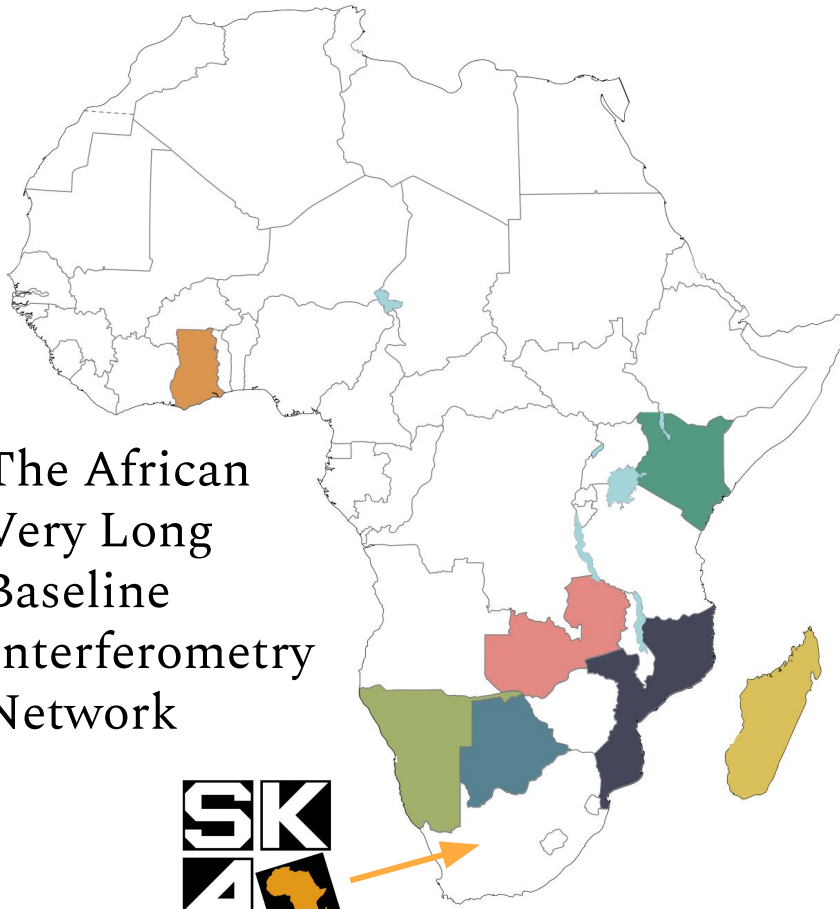
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Future telescopes on the horizon: the AMT



Gamsberg
plateau





The African Very Long Baseline Interferometry Network



- Namibia
- Botswana
- Zambia
- Mozambique
- Kenya
- Madagascar
- Mauritius
- Ghana

Event Horizon Telescope (EHT)

A Global Network of Radio Telescopes

2018 Observatories

- ALMA** Atacama Large Millimeter/submillimeter Array
CHAJNANTOR PLATEAU, CHILE
- APEX** Atacama Pathfinder EXperiment
CHAJNANTOR PLATEAU, CHILE
- 30-M** IRAM 30-M Telescope
PICO VELETA, SPAIN
- JCMT** James Clerk Maxwell Telescope
MAUNAKEA, HAWAII
- LMT** Large Millimeter Telescope
SIERRA NEGRA, MEXICO
- SMA** Submillimeter Array
MAUNAKEA, HAWAII
- SMT** Submillimeter Telescope
MOUNT GRAHAM, ARIZONA
- SPT** South Pole Telescope
SOUTH POLE STATION
- GLT** The Greenland Telescope
THULE AIR BASE, GREENLAND, DENMARK
- Kitt Peak** Kitt Peak 12-meter Telescope
KITT PEAK, ARIZONA, USA
- NOEMA** NOEMA Observatory
PLATEAU DE BURE, FRANCE

Observing in 2020

- Kitt Peak** Kitt Peak 12-meter Telescope
KITT PEAK, ARIZONA, USA
- NOEMA** NOEMA Observatory
PLATEAU DE BURE, FRANCE



AMT: Social Impact Plan



- Making astronomy relevant to and sustainable in Namibia
- Building capacity for the AMT
- Masters research project on astronomy education
- Historical research (Sanne de Jong): was Hendrik Witbooi on the Gamsberg mountain?
- Rössing Foundation: education in schools
- Mobile Planetarium
- Coordinating with and learning from other African projects



Dark sky tourism (DST)

DST has the potential to empower marginalised communities, *sustainably*.

For example, through diversifying income and the sharing and preservation of their cultural heritage.

Meanwhile, tourists experience new, non-Western perspectives via stories of indigenous star lore.

Tourists also learn about the harmful effects of artificial lighting at night upon humans and other living things.

Dalgleish, H., et al. (2021). Dark sky tourism and sustainable development in Namibia, *IAUS367 Proceedings* arxiv.org/abs/2102.07088

Astronomy training



EXETER
COLLEGE
OXFORD



GCRF
Global Challenges
Research Fund



Astronomy course for tour guides

The course entails the following topics:

- Our place in the Universe
- Astrophysics in Namibia
- Indigenous star lore
- Practical astronomy
- Light pollution and sustainability

We are also working with policy makers, the tourism industry, and tourism researchers in Namibia to maximise our impact.

Future Prospects with H.E.S.S.

- Additional Open Days
- Securing funding to support, e.g.
 - School visits
 - Outreach coordinator
 - Teacher training
- Collaboration and more discussion on social impact!

Thank you!



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