

My AVN Experience..

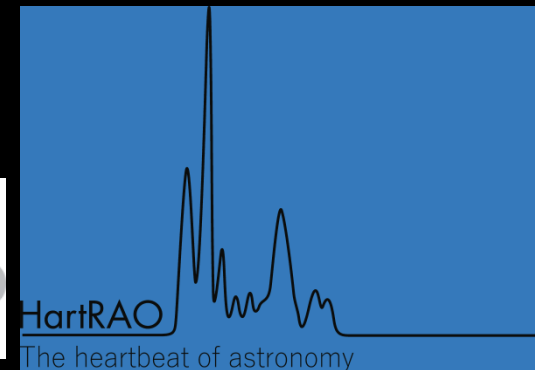
University of Nairobi (Institute of Nuclear Science)

Radio Astronomy for Development in Africa- Newton Fund (UK)

&

Hartebeesthoek Radio Astronomy Observatory.

Ann Njeri



Growing up...

**When someone says
“Nothing can be
more complicated than love”**

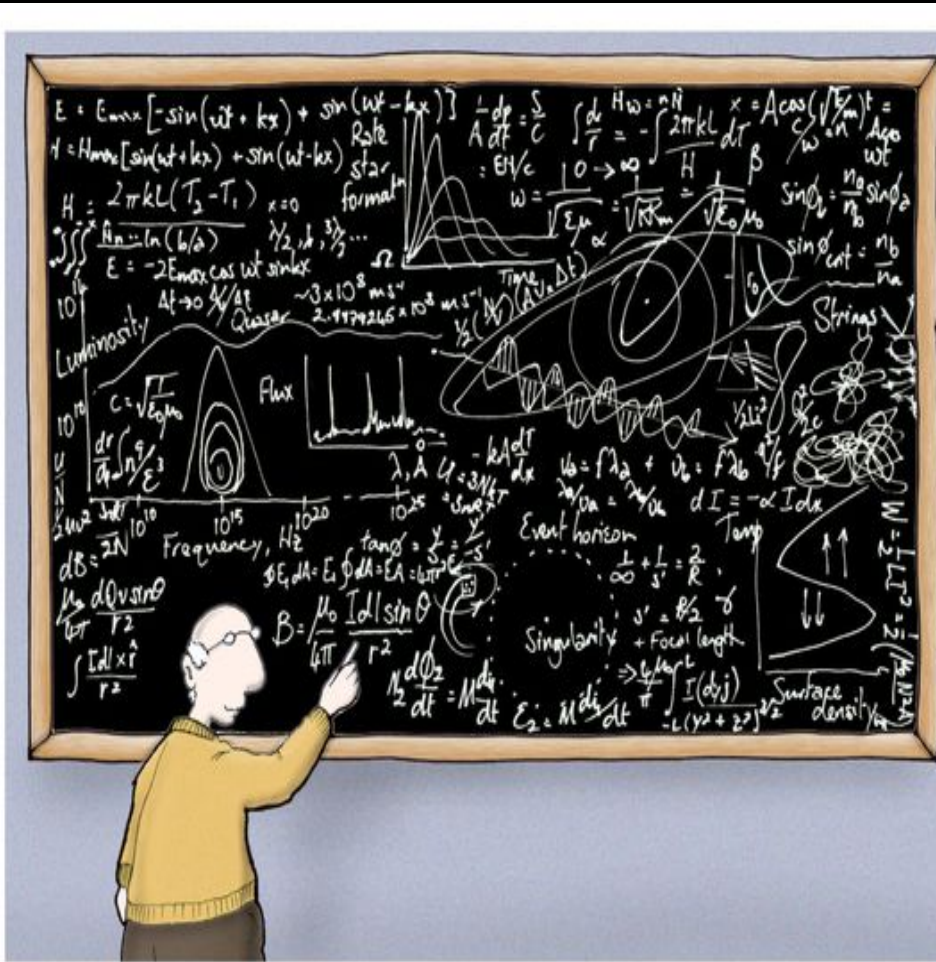


**Just Throw LAW Books
On Their Faces**

Then Columbia Space Shuttle accident happens...



Enrolls for BSc Astronomy & Astrophysics..

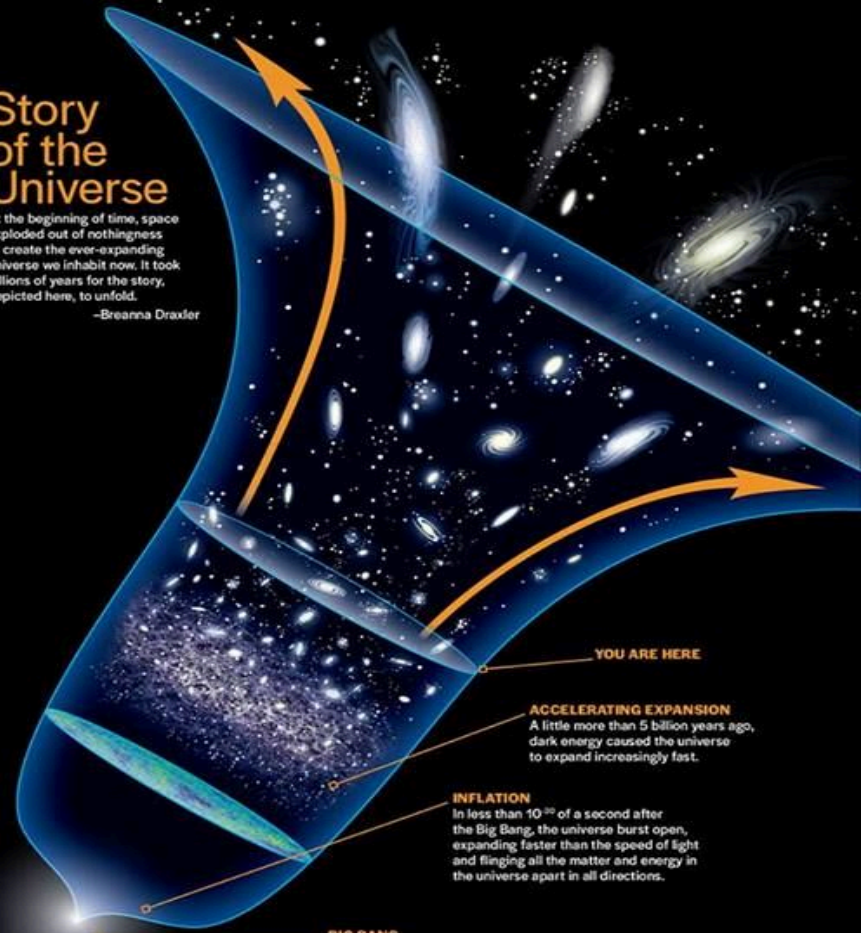


Astrophysics made simple

Story of the Universe

At the beginning of time, space exploded out of nothingness to create the ever-expanding universe we inhabit now. It took billions of years for the story, depicted here, to unfold.

—Breanna Draxler



YOU ARE HERE

ACCELERATING EXPANSION
A little more than 5 billion years ago, dark energy caused the universe to expand increasingly fast.

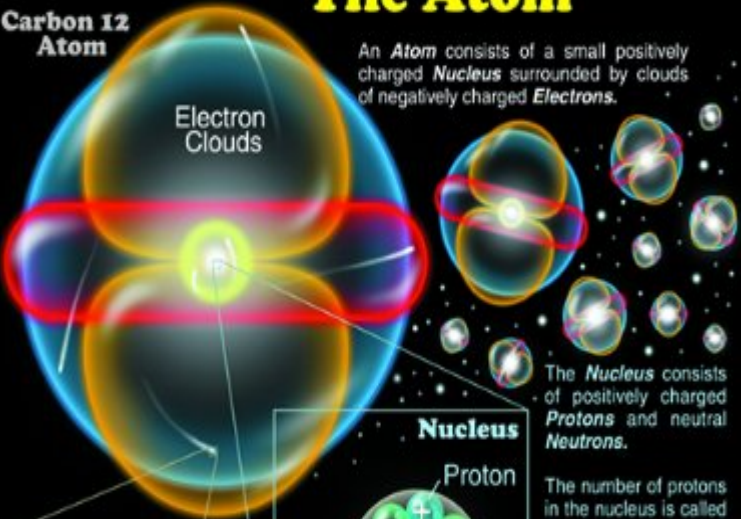
INFLATION
In less than 10^{-32} of a second after the Big Bang, the universe burst open, expanding faster than the speed of light and flinging all the matter and energy in the universe apart in all directions.

BIG BANG
The universe expanded violently from an extremely hot and dense initial state some 13.7 billion years ago.

No postgraduate degree in astronomy...

The Atom

Carbon 12 Atom

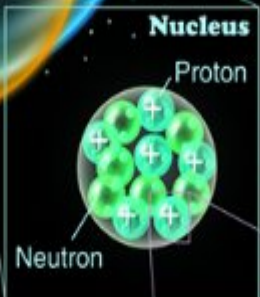


An *Atom* consists of a small positively charged *Nucleus* surrounded by clouds of negatively charged *Electrons*.

The *Nucleus* consists of positively charged *Protons* and neutral *Neutrons*.

The number of protons in the nucleus is called the *Atomic Number*. This determines which chemical element the atom is.

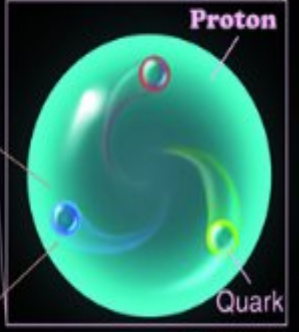
The number of protons plus the number of neutrons is called the *Atomic Mass*.



An *Electron* is a tiny *elementary particle* that carries a negative electric charge. Ordinary electric current is the flow of electrons through a wire or other conductor.



Quarks are believed to be the basic building blocks of *elementary particles* such as the *protons* and *neutrons*. They come in different "flavors" and three "colors".



Story of the Universe

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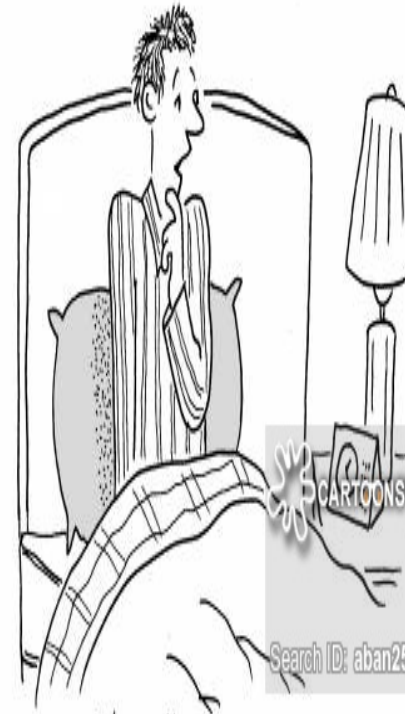


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NUCLEAR SCIENTIST HAS A RECURRING NIGHTMARE



"Did I remember to turn the atom smasher off?"

AVN 1ST Training..



Nairobi, October 2015.

AVN 2nd part of AVN Training..

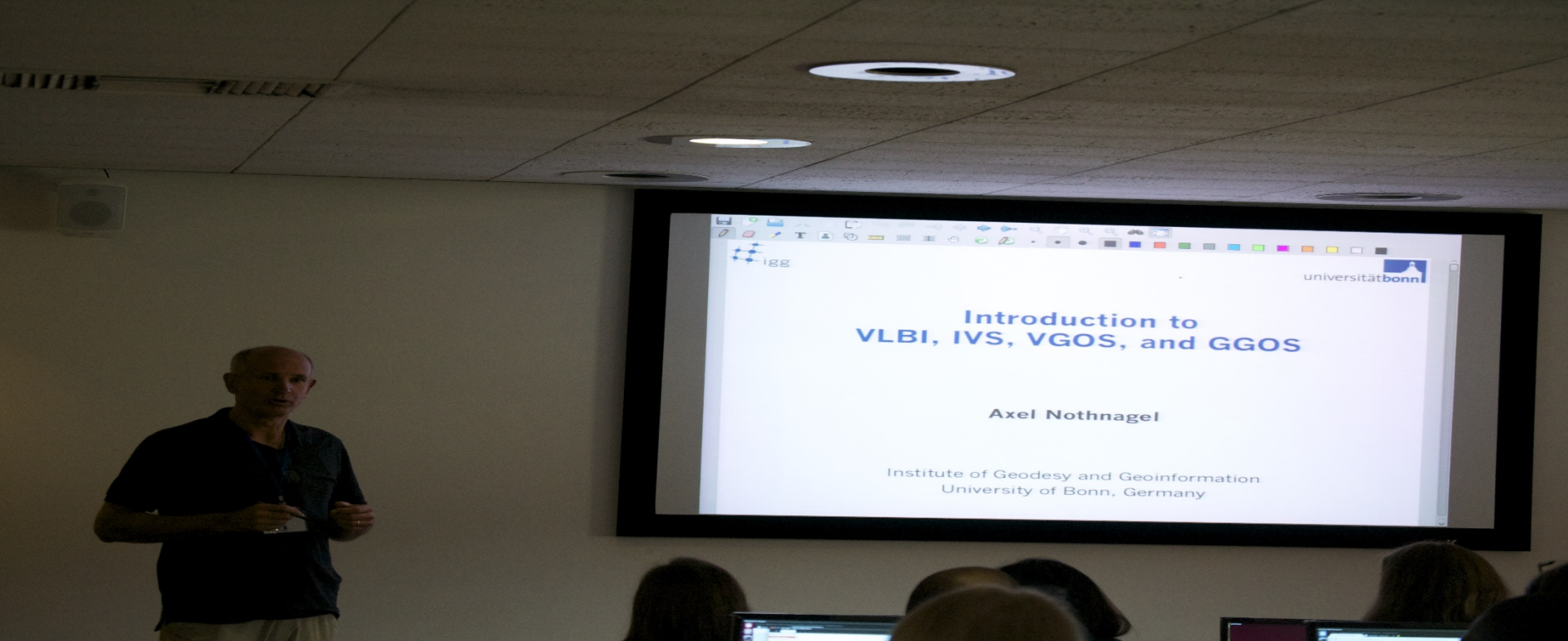


HartRAO, Feb-March 2016.

IVS VLBI SCHOOL & GM...



13 - 17 March 2016 · Johannesburg · South Africa



3rd Part of AVN Training..

➤ Data reduction methods in astronomy:

➤ CASA



➤ AIPS



Post AVN Training..

AVN NEWTON FUNDED PROJECTS:

Kenya



1. Martin Mutie (Phd)



2. Ann Njeri (MSc)

Zambia

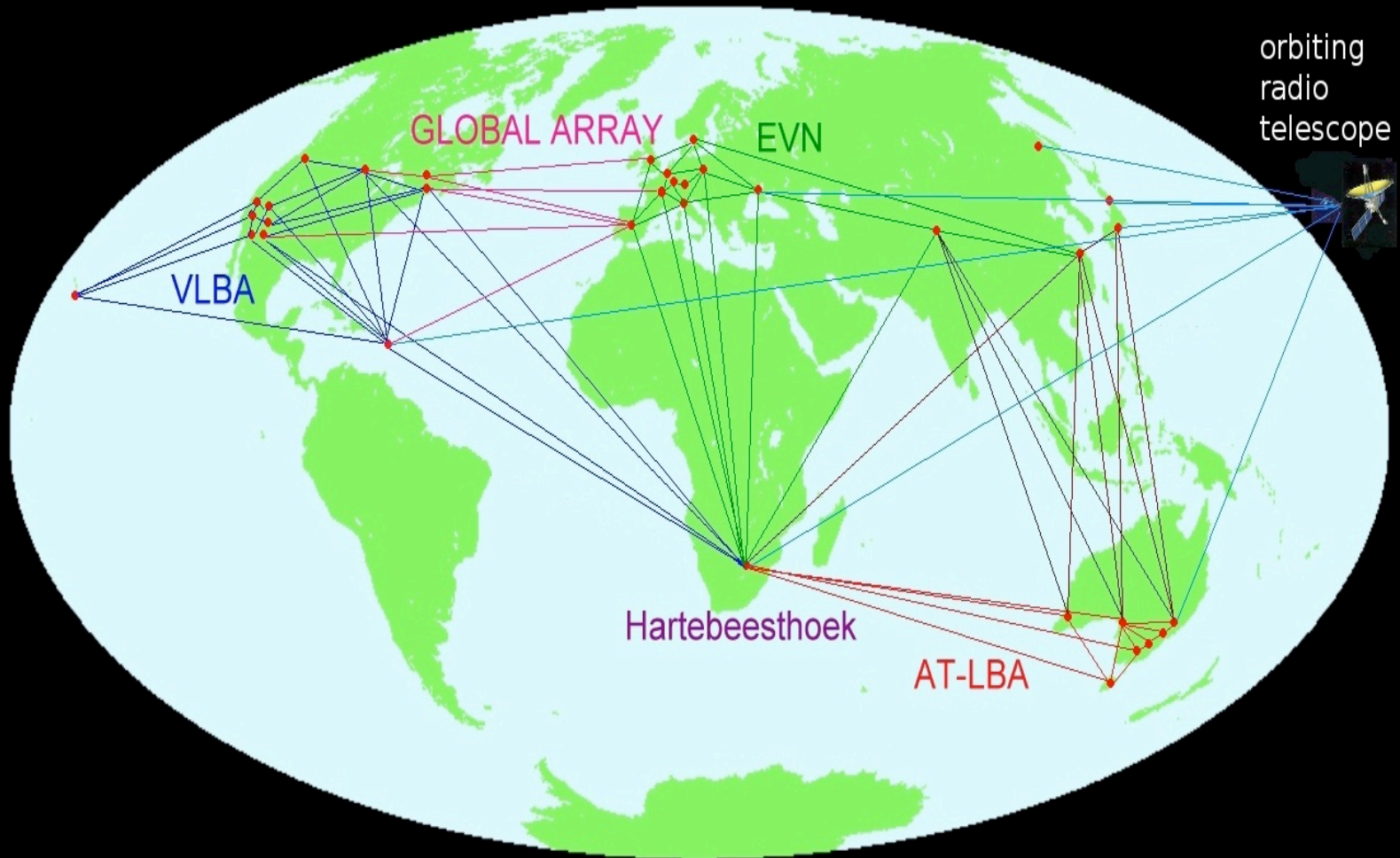


1. Peter Banda (MSc)

2. Esther (MSc-nots)

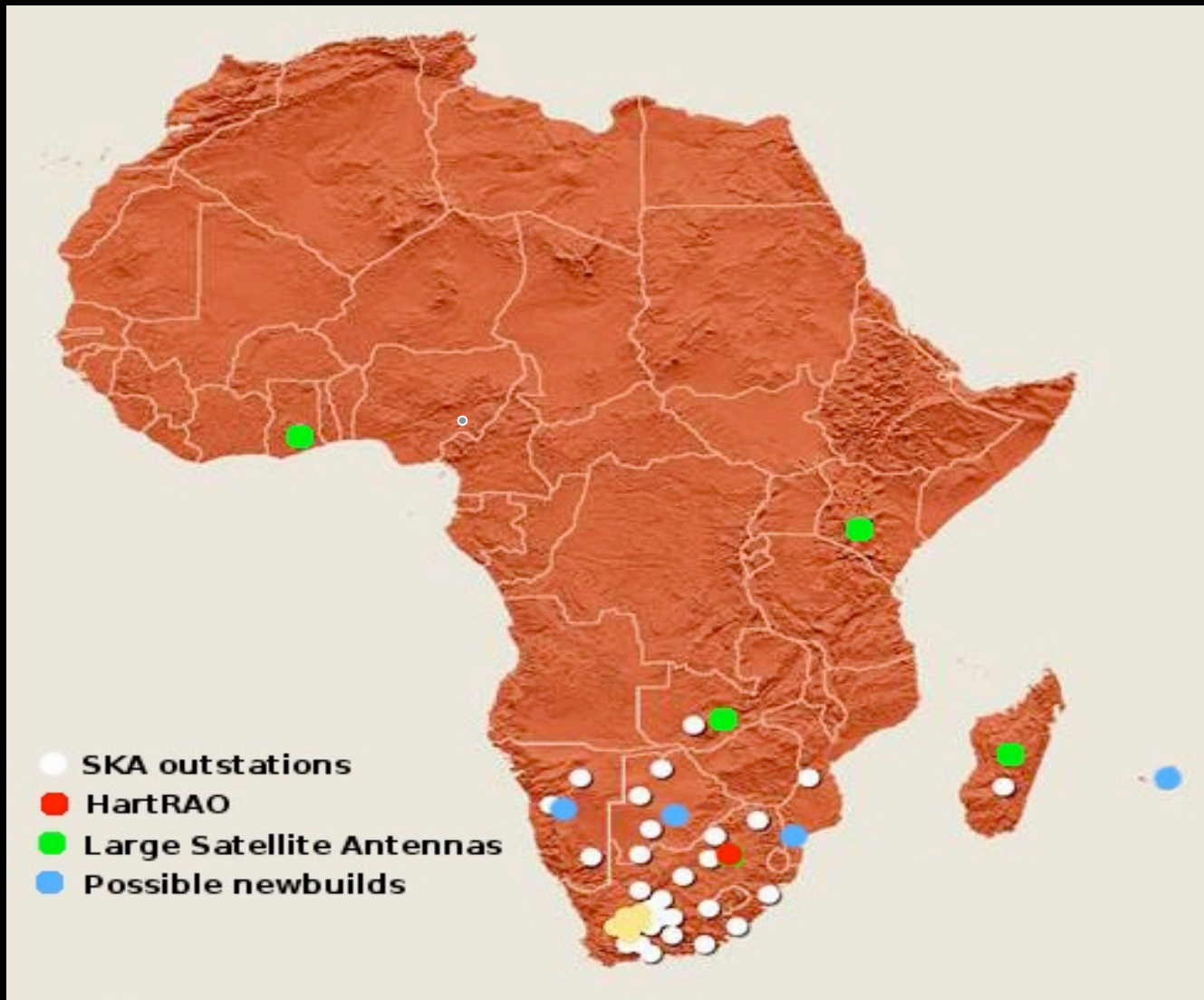
➤ Global VLBI Networks

Radio Astronomy VLBI Arrays



**My project: Optimizing
the African VLBI Network
for Astronomy, Geodesy
and Astrometry: A Case
Study for Kenya.**

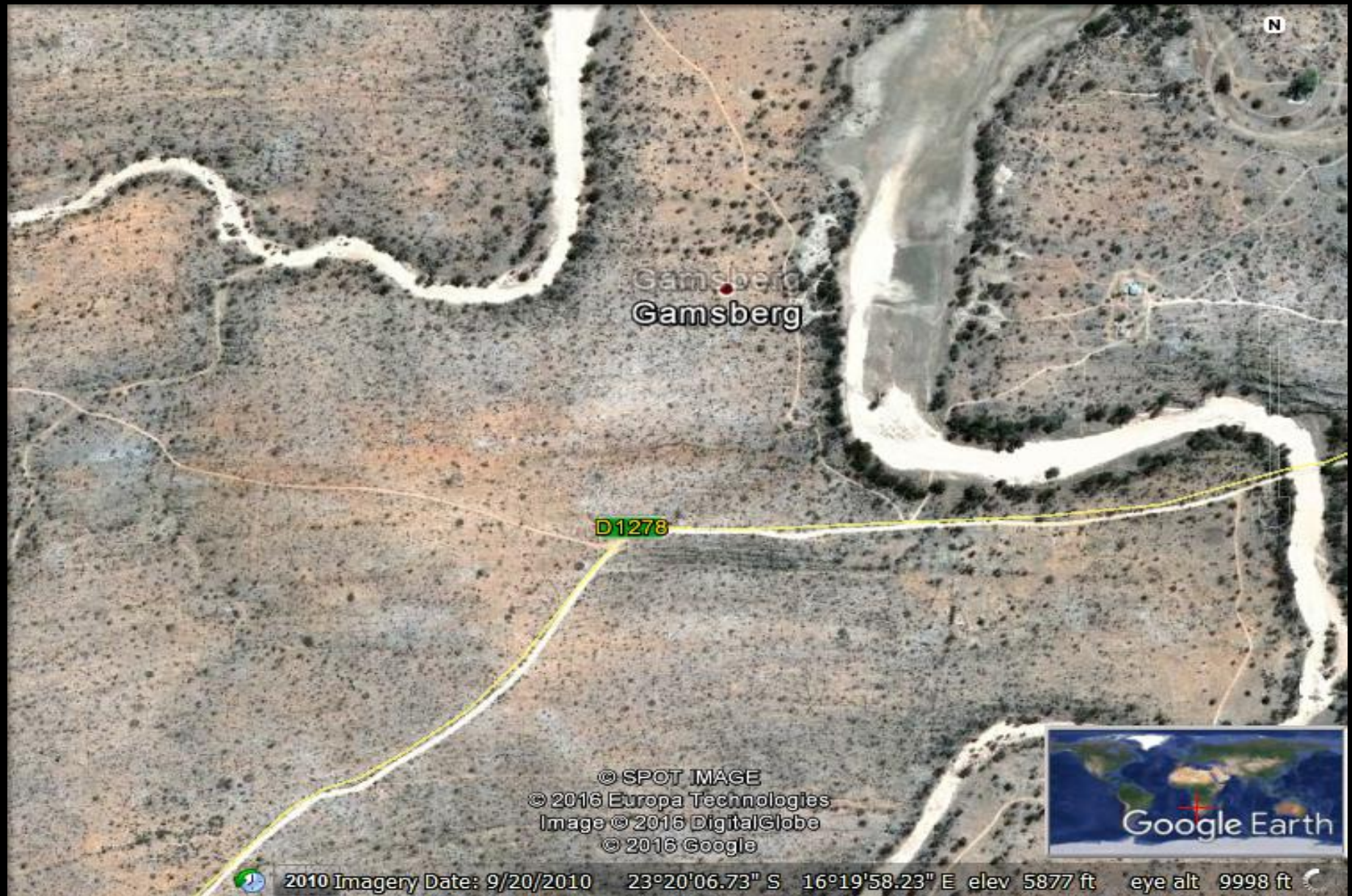
❖ AVN antennas.



Mwembeshi AVN Site .. Zambia



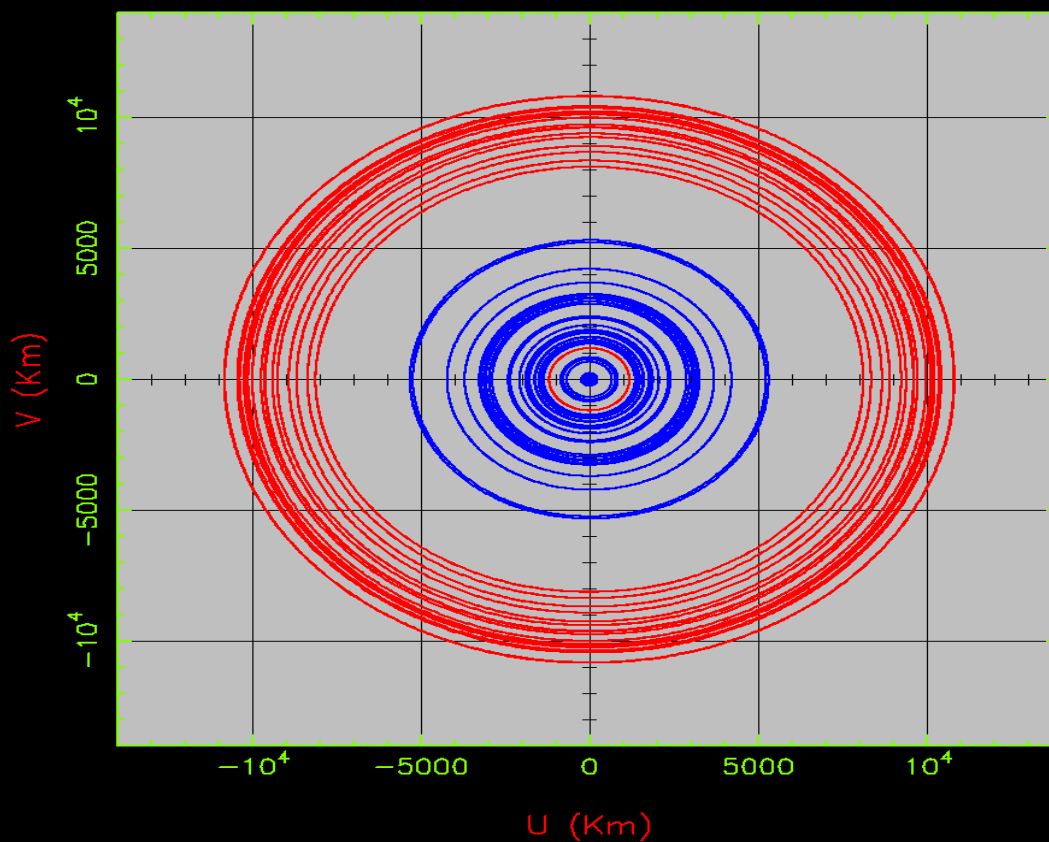
Gemsberg AVN Site.. Namibia



➤ U-V Coverage:

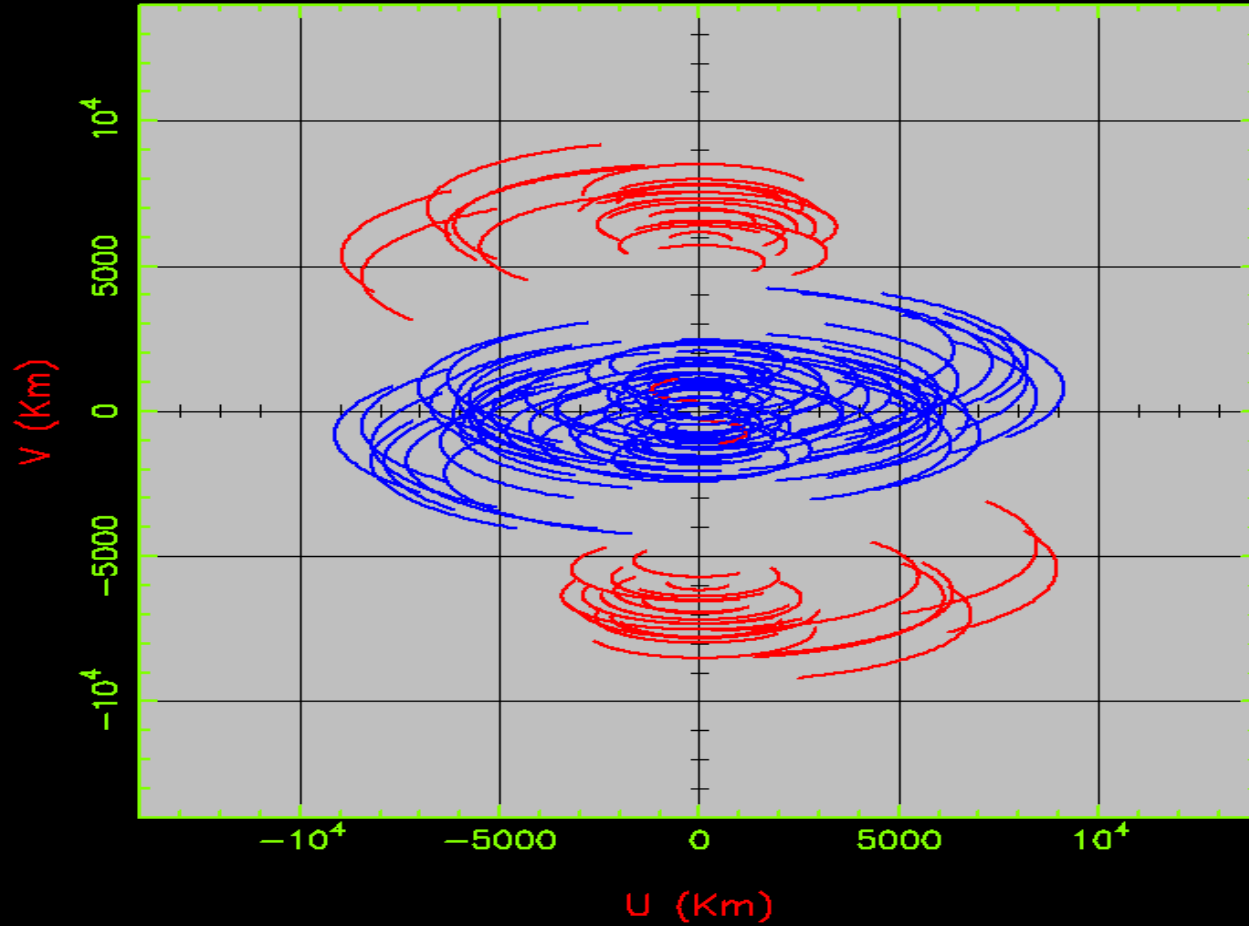
UV Coverage for Africa

- ZAMBIA
- NAMIBIA
- YARRAGAD
- KATHERIN
- ASKAP
- HART
- HOBART
- WARK12M
- CEDUNA
- MOPRA
- ATCA
- PARKES
- DECLM9

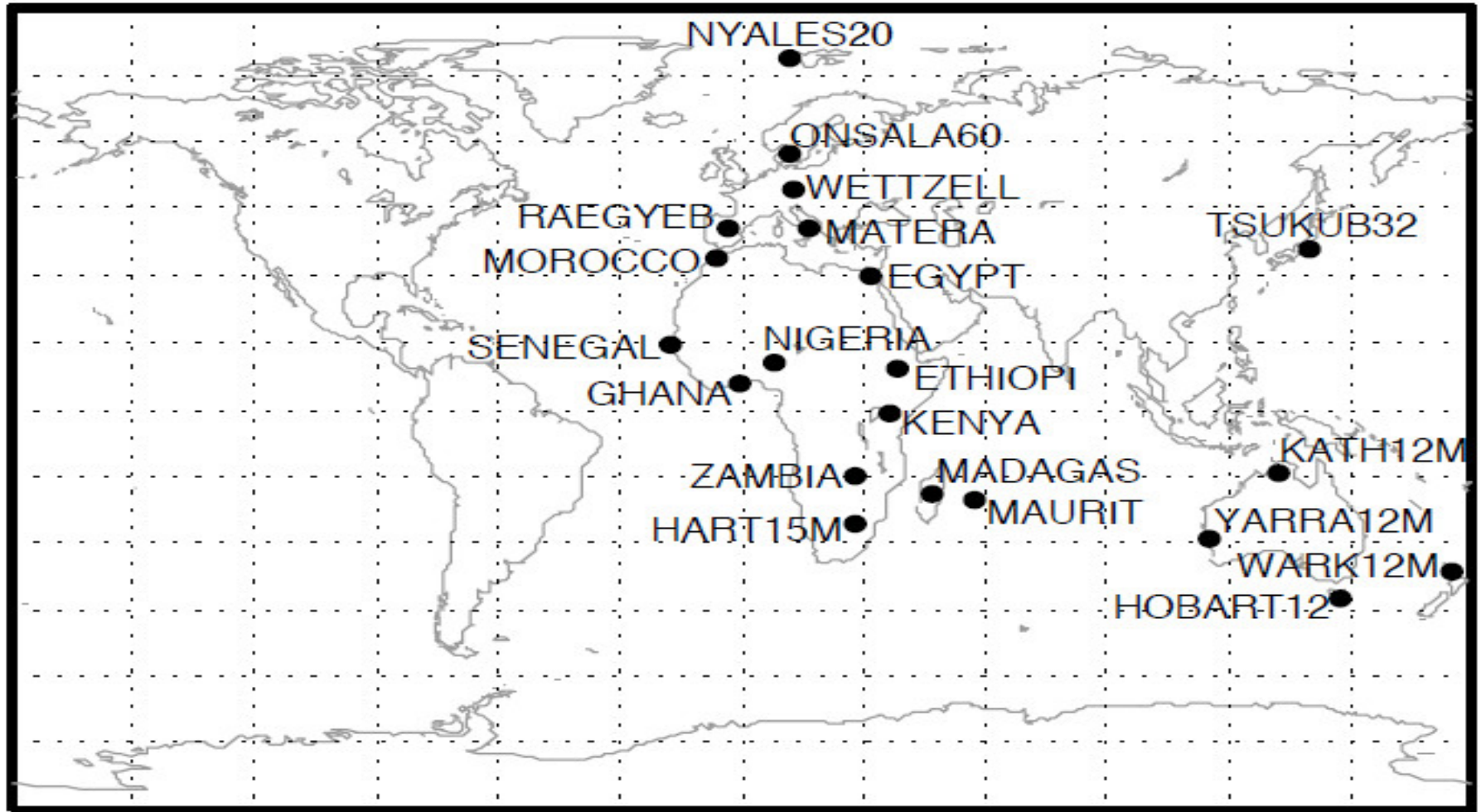


UV Coverage for Africa

ZAMBIA
NAMIBIA
TORUN
YEBES40M
MEDICINA
WSTRBORK
JODRELL1
SHANGHAI
NOTO
BADARY
ZELENCHK
SVETLOE
URUMQI
DECL20

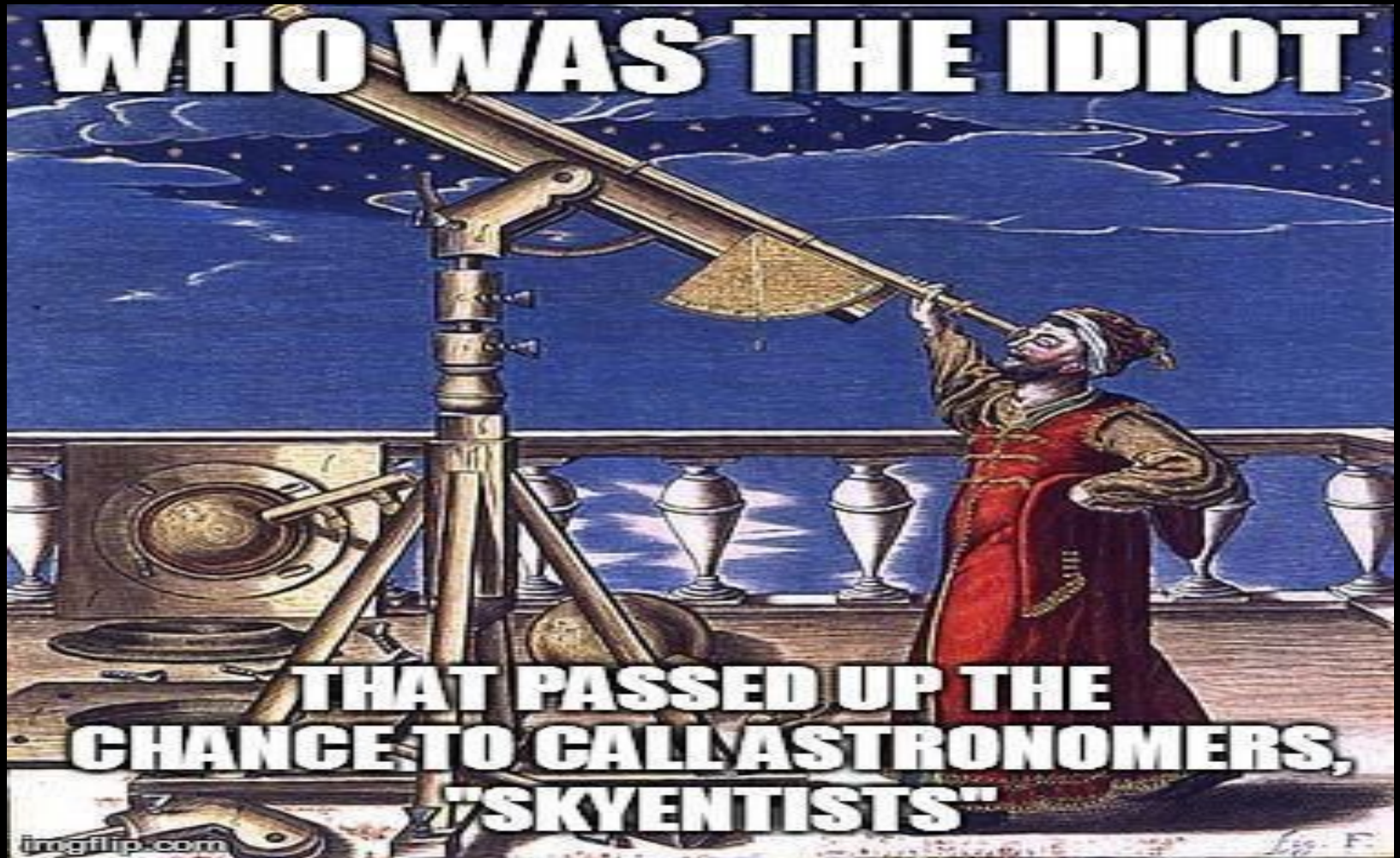


❖ R1675+AVN



➤ ***Geodetic Products***- Earth Orientation Parameters (EOPs):

Network	x_pol (μ as)	y_pol (μ as)	dut1 (ms)	nutdx (μ as)	nutdy (μ as)
R1675	41.43 ± 0.95	65.45 ± 1.49	5.12 ± 0.12	26.29 ± 0.60	25.36 ± 0.58
Group 1 + Ht	287.55 ± 6.73	170.87 ± 4.00	16.80 ± 0.39	56.66 ± 1.33	58.53 ± 1.37
Group 1 + 2 + Ht	113.61 ± 1.86	43.80 ± 0.72	7.84 ± 0.13	22.99 ± 0.38	23.64 ± 0.39
Group 1 + R1675	22.54 ± 0.37	30.65 ± 0.51	2.57 ± 0.04	14.69 ± 0.24	15.18 ± 0.25
Group 1 + 2 + R1675	21.78 ± 0.30	22.19 ± 0.31	2.13 ± 0.03	12.50 ± 0.17	12.32 ± 0.17



QUESTIONS?