



DARA NETWORKING MEETING, MAY 2-4, 2018

ASTRONOMY ACTIVITIES IN KENYA

Paul Baki

Director, School of Physical Sciences and Technology
Technical University of Kenya

Outline

- **SKA Preparedness**
 - Longonot Telkom Dish
 - Big Data Infrastructure
- **Capacity Building**
 - DARA
 - SKA Bursaries/NASSP
 - Optical Telescope
 - Astrolab
- **Potential DARA Spin-Offs**
 - STFC
- Acknowledgements

1. SKA Preparedness

(a) Longonot Telkom Dish

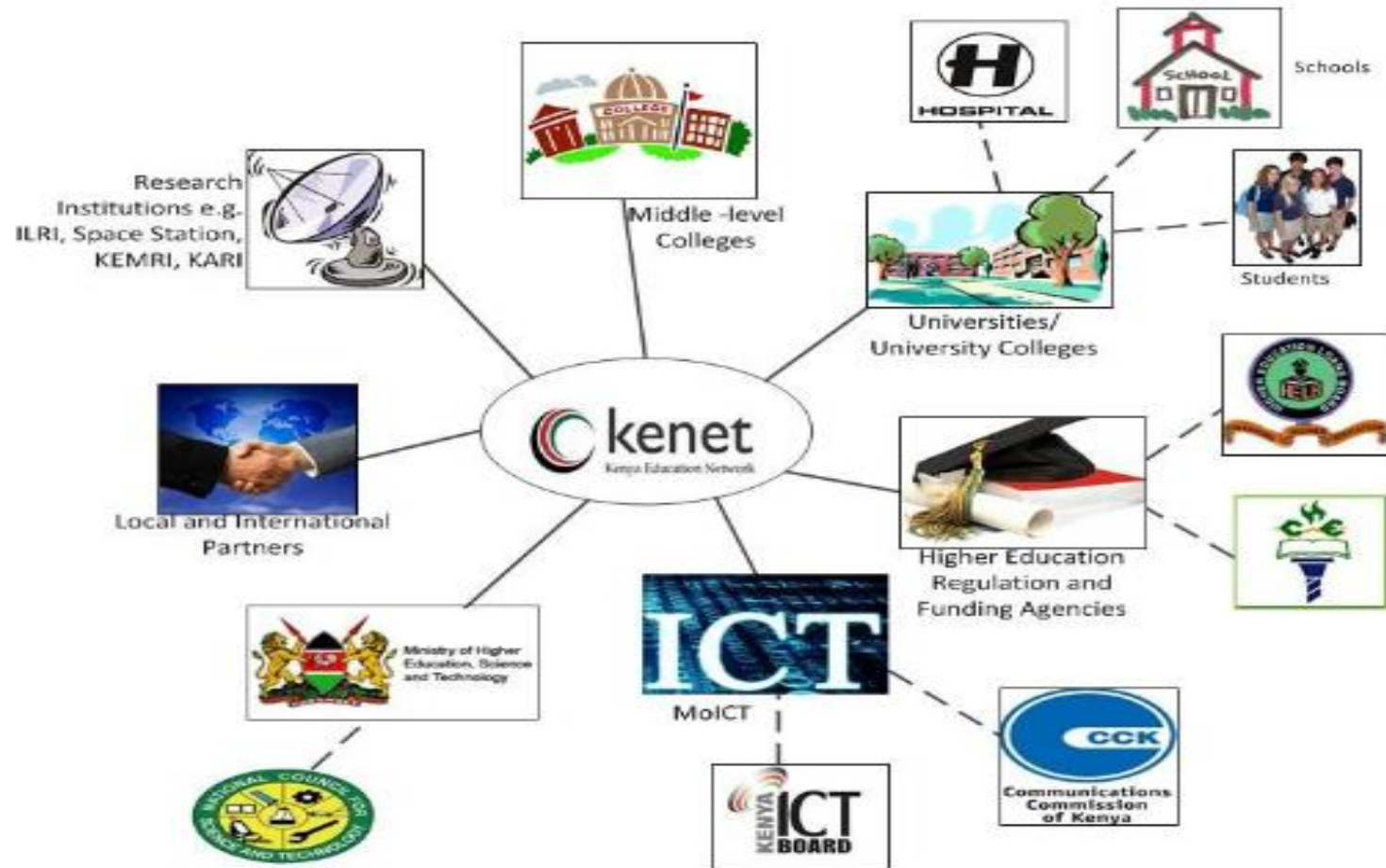


- ☐ March 2018: Kenya signs partner country MoU in Kigali, Rwanda.
- ☐ March 2018-Valuation of Longonot facility completed.
- ☐ Treasury sets aside Ksh 200M (**USD 1,982,000**) for purchase of facility from Telkom Kenya.
- ☐ Facility may be handed over to Ministry of Education in the course of 2018.

(b) Big Data Infrastructure-KENET

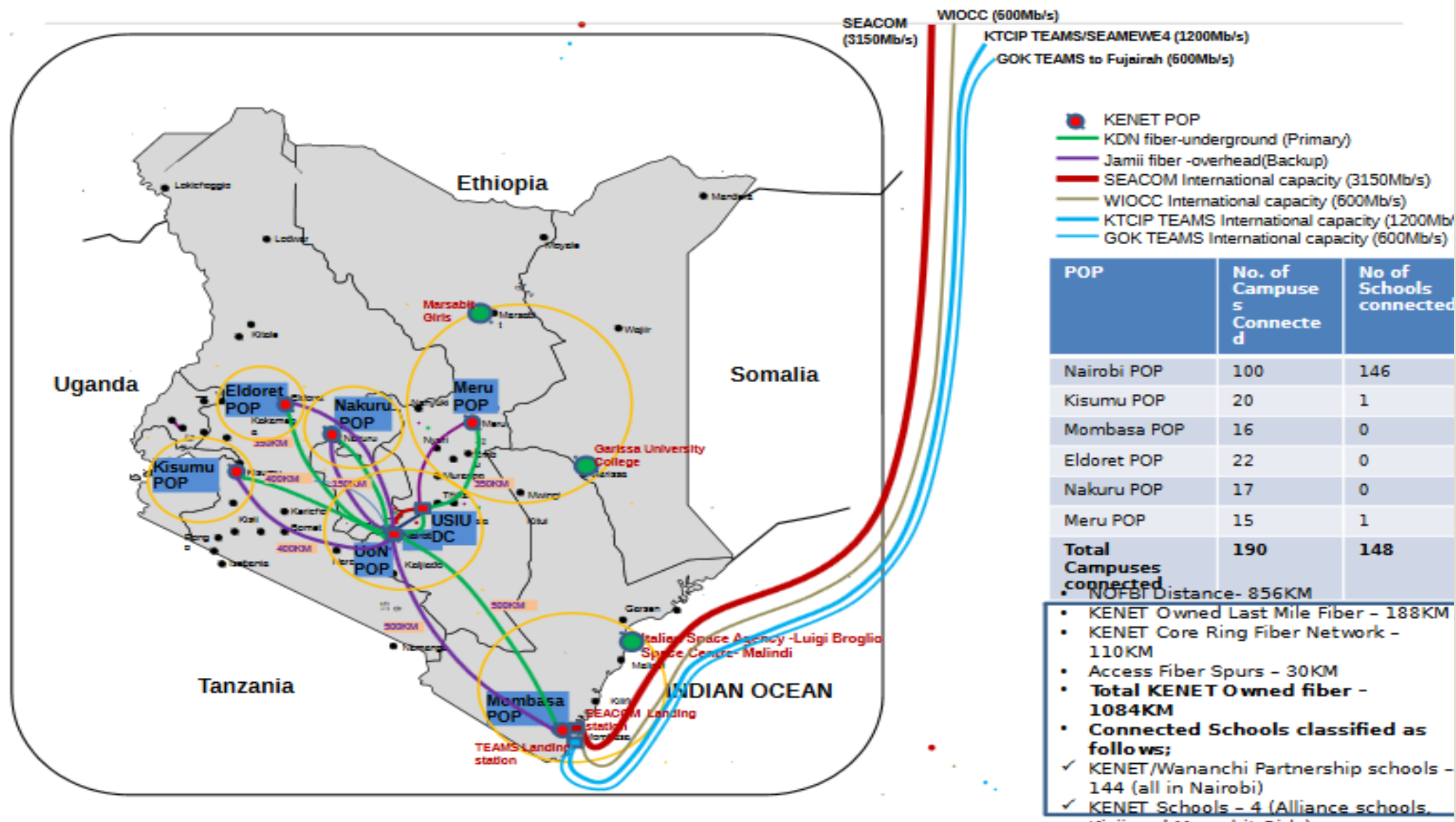
- ❑ KNREN) of Kenya. KENET is licensed by the Communications Authority of Kenya (CA) as a not-for-profit operator serving the education and research institutions.
- ❑ KENET provides Kenya Education Network, (KENET), is the National Research and Education Network (affordable, cost-effective and low-congestion Internet bandwidth services to member institution campuses in Kenya. They have setup a gateway to the advanced e-infrastructures for research that are available exclusively within the Research and Education Community anywhere in the world.
- ❑ Provides shared services such as; co-location of servers, dedicated Virtual servers for e-learning systems, video and web conferencing, and capacity building for technical staff. KENET is the Computer Emergency Response Team (CERT) for the academic community.

KENET supports the Kenyan Higher Education and Research Ecosystem

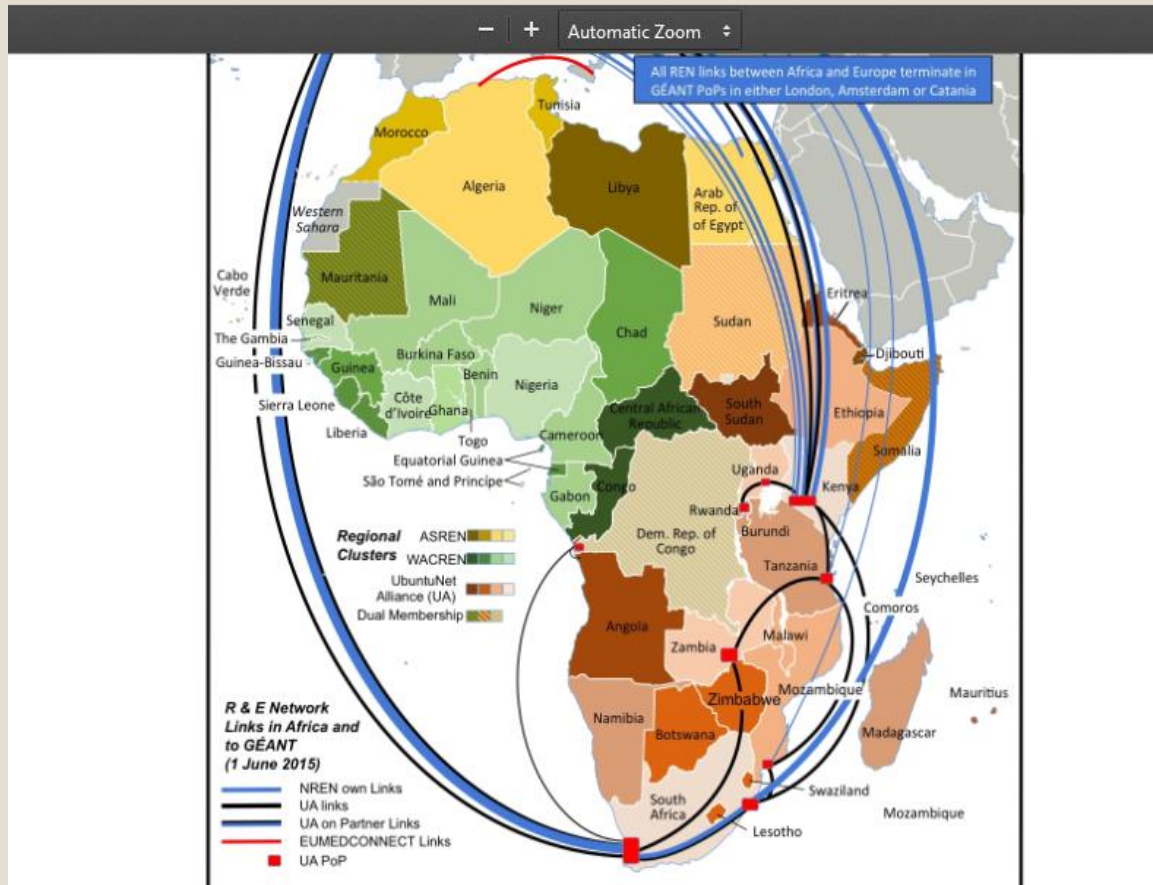


Transforming Education with ICT

KENET National Broadband Network Coverage



(c)Fibre Optics Links to Africa and Beyond



- ❑ The Kenya Education Network (KENET) provide researchers within its community with short term storage of big data in areas of science such as astronomy, materials science, among others.
- ❑ Community members with research data from high performance computing facilities or long term acquisition within limited storage period conditions can request KENET for storage for use in the short term. This should also apply to researchers who wish to make remote transfer large data.

2. Capacity Building

(a) DARA

- ✓ 20 trained to completion; 10 in pipeline

Beneficiaries

- Willis Obonyo (Ph.D -in progress) – Astrophysics (University of Leeds)
- Nancy Atieno Omolo (MSc completed; Ph.D- in progress)- Electrical Engineering (Stellenbosch University)

SKA Bursaries

- ✓ Over 24 Kenyans trained at Dip. Tech, B.Tech, MSc and Ph.D levels.
- ✓ Philip Kibet- Ph.D E/Eng (Stellenbosch)
- ✓ Geoffrey Okengo – MSc Astrophysics (UCT; Ph.D (U.Western Cape)
- ✓ Willice obonyo – MSC Astrophysics (UCT)
- ✓ Edgar Okova- Dip. Tech, B.Tech (DUT)
- ✓ Austine Gumba- Dip Tech, B.Tech (DUT)
- ✓ Enoch Rotich- Ph.D

Cont..

- ✓ Ann Njeri Ngendo (MSc- yet to begin)- Astrophysics (University of Manchester)
- ✓ Isaac Mumo Mutie (MSc- in progress)- Astrophysics (University of Manchester)
- ✓ Martin Mutie (Ph.D- in progress) - Astrophysics (Technical University of Kenya)
- ✓ Desmond Kipruto Rotich- B.Tech (DUT)
- ✓ Emmanuel Mukubwa
- ✓ Gladys kemei
- ✓ Duncan Kiboi Boiyo
- ✓ Stanley Kuja, Msc, Ph.D E/Eng (Stellenbosch)
- ✓ Nancy Omollo –MSc, Ph.D- in progress Stellenbosch)
- ✓ Paul Wanjohi – MSc Astrophysics (U. Rhodes)
- ✓ Miriam Mumboa Nyamai- MSc

(b) Potential DARA Spin-offs & Impacts

Joint UK-Kenyan institutions STFC Global Challenge Research Fund (GCRF) research proposals for funding to carry out research in astrophysics to support real life applications of astrophysical techniques e.g

- ☐ Banking and financial markets
- ☐ Use of deep space observing equipment for earth observation.

3. Optical Astronomical Observatory

- ❑ Site survey funding provided by National Commission for Science and Technology (Kenya) and NRF (South Africa) – USD 30,000
- ❑ Final Site testing funding obtained through funding by STFC -GCRF- UK £ **89794.40**
- ❑ Initiative by Technical University of Kenya, Kenyatta University, UK Astronomy Technology Centre Royal Observatory and South African Astronomical Observatory (SAAO)
- ❑ Final site between Mount Kulal and Mount Nyiro in North Western Kenya to be selected by 2019/2020.

4. Astrolab

- Astrolab Practical Activities for Scientific Skills- for advanced undergraduate and graduate students
- Colaboration between TUK, Institut d'Astrophysique de Paris (IAP)- Miche'le Gerbaldi & Dept. of Physics and Astronomy, Vrije Universiteit Brussel
- Brussels, Belgium - Jean-Pierre De Greve

- Run by DARA graduate- Calvince Juma.

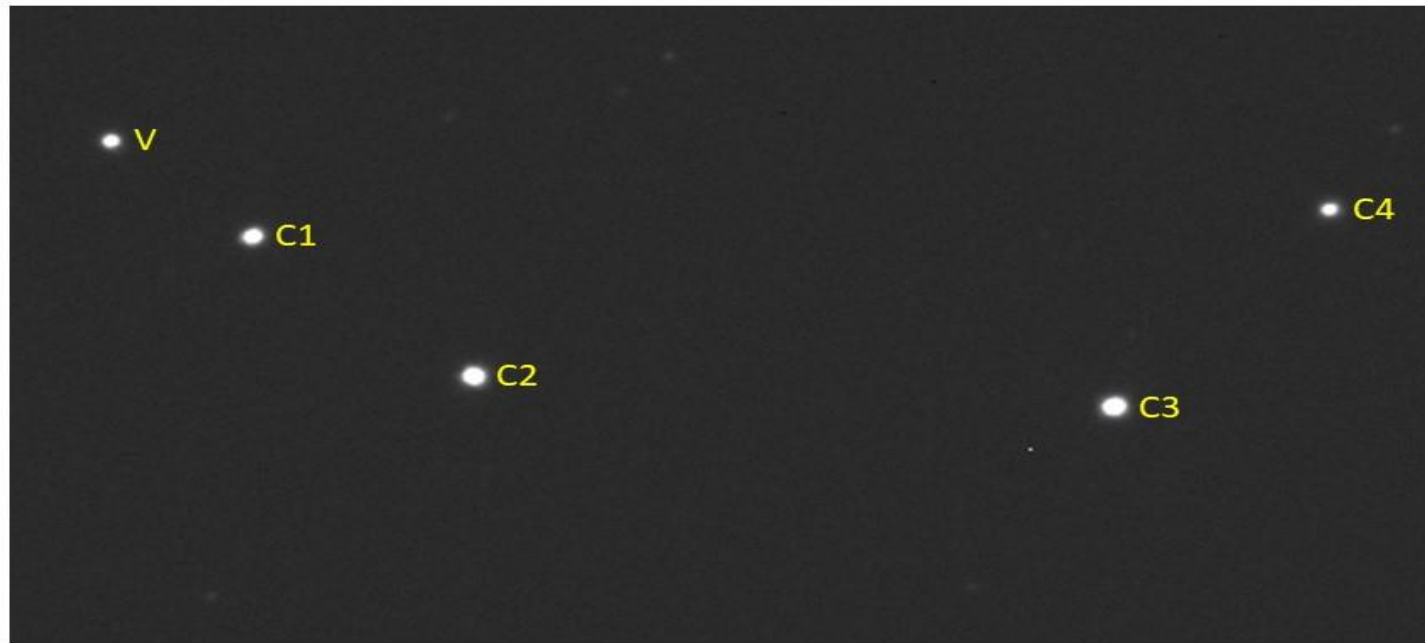


Binary Star Systems (V)

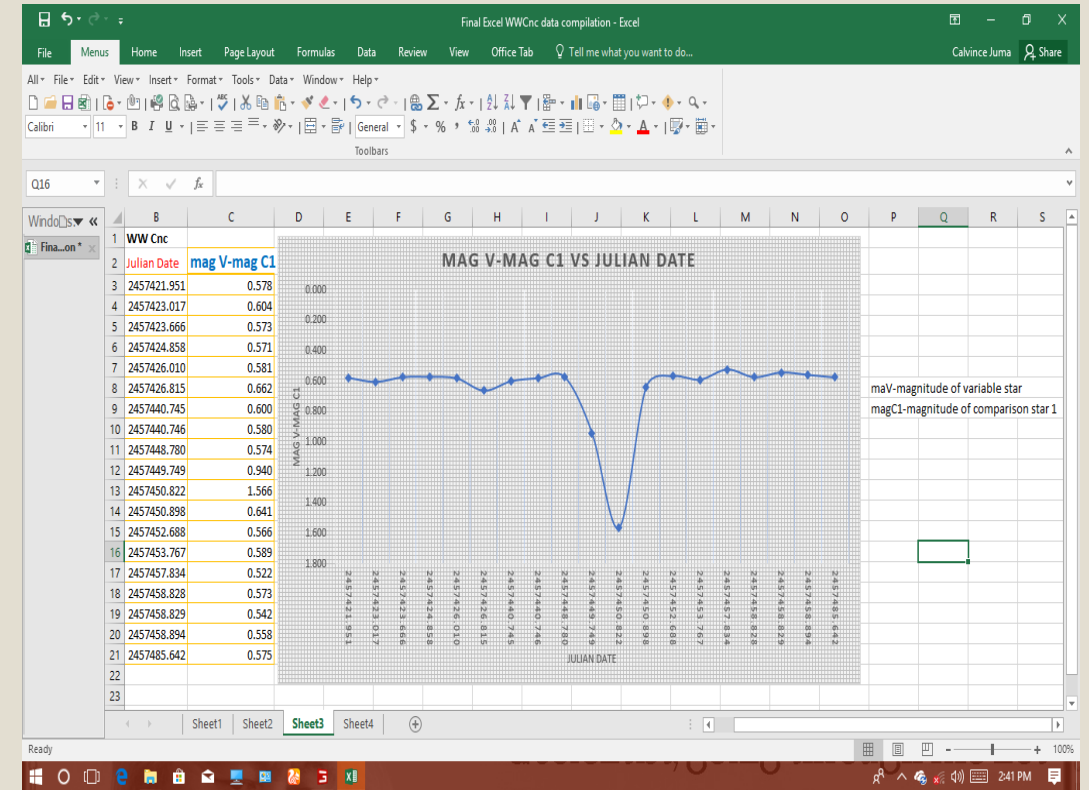
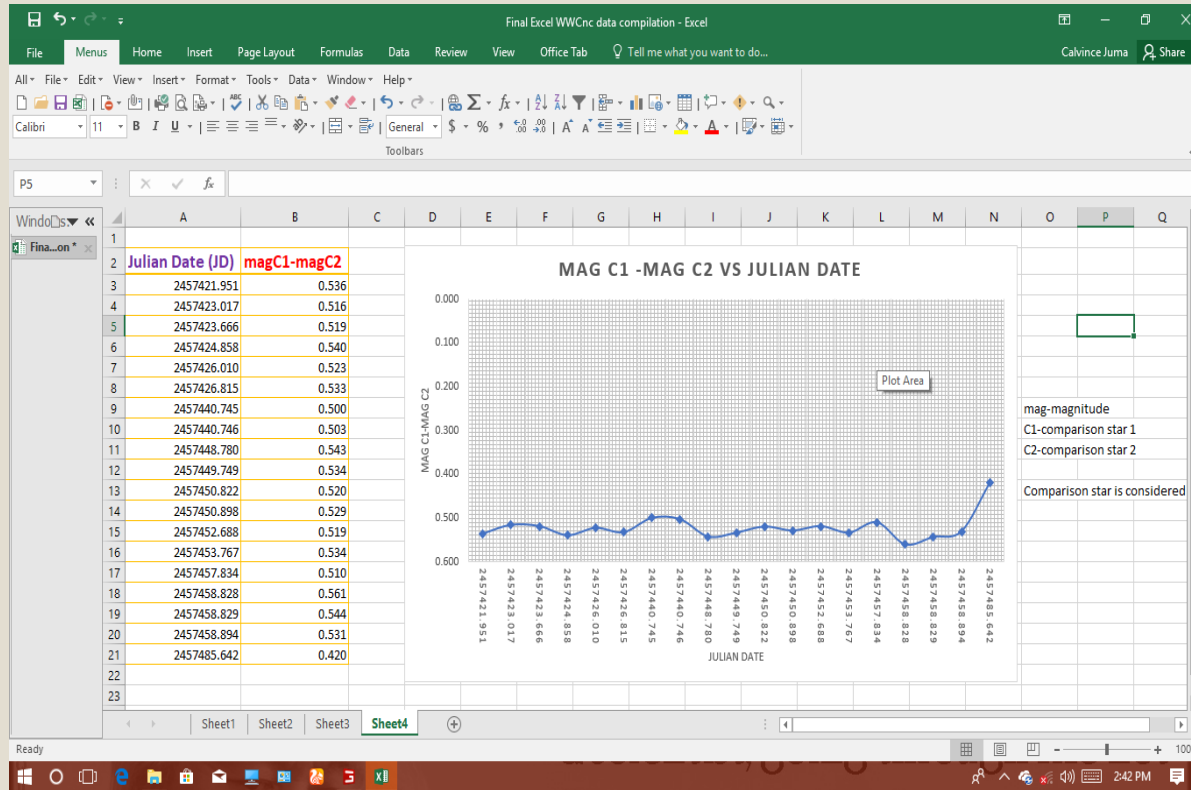
WW Cnc

V-Variable Star (WW Cnc)

C-Comparison Star (Assumed to be non-variable)



Data Access, Analysis and Interpretation



Acknowledgements

- DARA PI- Prof. Melvin Hoare
- HaRTRAO
- SKA
- CHPC

*ASANTENI KWA KUNISIKILIZA– THANK
YOU FOR LISTENING*