Open Call

The Meerkat Telescope is a 64-dish Antenna Radio Telescope that was built in the Karoo, a semi-desert area in the Northern Cape province of South Africa, and was officially inaugurated on 13 July 2018. Scientists and academia throughout the world make use of the telescope to perform cutting edge radio astronomy research of the deepest and darkest reaches of the known universe, and beyond. The Meerkat Telescope is deemed to be the precursor to the Square Kilometre Array (SKA) which will consist of over 2000 antennas that will be scattered across Southern Africa and Australia.

Each year, the Lead Scientist, with the permission of the Director of the South African Radio Astronomy Observatory (SARAO), sends out an open call for proposals to all organisations around the world that may be interested in using the Meerkat Telescope to conduct observations for science research that the Meerkat Telescope is capable of performing. Each year, hundreds of astronomy science faculties submit their proposals with the hope that they will get enough telescope time to gather valuable data that they can use in their research.

The science operation team at SARAO is responsible for accepting these proposals and reviewing them to ensure that only proposals that meet the stringent requirements set out by SARAO and the Meerkat Telescope Commissioning Scientists get the precious telescope time they request. Proposals are also reviewed by an independent panel of expert scientists that are leaders in their chosen field of astronomy science. Reviews ensure that each proposal is technically feasible as well as scientifically sound.

Your job as a member of the science operations team is to ingest the proposal data for the current Open Call and make it meaningful to the Lead Scientist and the Director of SARAO.

Glossary:

PI	Primary Investigator of the proposal.
Tech Lead	Proposal team member that is responsible for the technological aspect of the proposal.
Co-I	Co-Investigator, may be a student.
Requested Time	The amount of hours requested in the proposal.
Recommended Time	The amount of hours recommended by the reviewers that are deemed to be feasible in order to fully conduct the observation that is proposed.
A-Rated Proposals	Proposals that have an average score >= 7. These proposals are guaranteed to get telescope time.
B-Rated Proposals	Proposals that have an average score >= 5.5 < 7. These proposals may be given telescope time, at the discretion of the Director. Not guaranteed.

Instruction:

Load the corresponding dataset into a RDBMS of your choice (Postgres, preferably) and use a report designer of your choice (Pentaho Report Designer, preferably) to provide the following information:

Report 1 - A-Rated Proposals
Display a table with the proposal_id, proposal_title and score for all A-rated proposals in order highest to lowest.

A-Rated Proposals		
Proposal ID	**Proposal Title**	**Score**
prop-056	MeerKAT - uGMRT Combined Survey of the Saraswati Supercluster: Towards the SKA	9.0
prop-004	The JO135 jellyfish galaxy: A MeerKAT perspective	8.9
prop-058	An X/S of rare radio morphologies?	8.8
prop-027	Using MeerKAT UHF to Bridge the Gap in Abell 2443	8.7
prop-036	The highest-redshift galaxies in the G4Jy Sample	8.6
prop-032	An HI perspective on galaxy evolution in Abell 2626 and its surroundings	8.5
prop-046	Searching for Auroral Emission in Exoplanetary Systems	8.5
prop-081	To map the Warm Ionized Medium in the Galaxy using MeerKAT and FAST	8.5
prop-042	Observations of Dwarf Galaxies with Very Extended HI Disks	8.4
prop-026	Star formation and the ISM in Nearby Galaxies with MeerKAT	8.4
prop-068	Probing star-planet interaction in the Proxima - Proxima b system with MeerKAT	8.3
prop-047	Mapping tidal interactions in nearby galaxy groups	8.3
prop-073	Duty cycle and energetics of the remnant radio galaxy MIDAS J2253-3446	8.2
prop-070	Investigating gamma-ray emitting radio galaxies	8.1
prop-087	HI intensity mapping with MeerKAT: Hunting down the power spectrum	8.1
prop-052	Exploring new regimes in particle acceleration physics: the galaxy cluster pair Abell 141	8.1
prop-086	A Southern Radio Survey of the Fast Blue Optical Transients	8.0
prop-041	A Complete Picture of Gas, Dust, and Stars in Six of the Best-Studied MeerKAT-Visible Galaxies	8.0
prop-014	MeerKAT HI imaging of two southern DustPedia galaxies	7.9
prop-028	Disentangling the History of Particle Acceleration In Ultra Steep Spectrum Relic Clusters Abell 2443 and CIZA J0719.5+0043	7.9
prop-051	Using MeerKAT for mapping cosmic shear and searching for cosmic birefringence	7.9

Report 2 - B-Rated Proposals
Display a table with the proposal_id, proposal_title and score for all B-rated proposals in order highest to lowest.

B-Rated Proposals		
Proposal ID	**Proposal Title**	**Score**
prop-003	A MeerKAT Atlas of IRAS RBGS Galaxies in the Southern Hemisphere	6.9
prop-011	Imaging new diffuse cluster radio sources selected at low frequencies	6.8
prop-037	Exo-space Weather on Late-type Stars: Impacts on Habitability of Exo-planets	6.8
prop-072	Early Radio Emission from Tidal Disruption Events	6.8
prop-075	Magnetization and kinematics in Circumgalactic Medium: Tidal vs. Gas Accretion	6.7
prop-078	Delineate the Fermi bubbles at radio with MeerKAT: a pilot study	6.7
prop-071	Investigating the properties of localised Fast Radio Bursts and their host galaxies	6.6
prop-034	Antlia Cluster in HIgh def: A study of early galaxy cluster assembly	6.5
prop-035	MERGHERS: evolution of cluster scale radio sources through cosmic time	6.5
prop-066	High redshift HI observations and a radio halo in Abell 370	6.4
prop-083	A Search for Pulsars Around Sgr A* through Rotation Measure	6.4
prop-013	A MeerKAT view on galaxies in filaments falling onto the Virgo cluster (VirgoFil)	6.4
prop-084	Accelerated evolution in the densest groups of galaxies: MeerKAT imaging of the missing HI	6.4
prop-031	Imaging the Disk and Outflow of the Starburst Galaxy NGC 253 with High-Resolution HI	6.3
prop-019	Constraining quenching scenarios in Recently Quenched Elliptical (RQE) galaxies via HI study	6.3
prop-016	Observation of galaxies discovered in the Pilot FAST Ultra Deep Survey	6.3
prop-074	Resolving the mystery of a candidate Dark Galaxy	6.3
prop-054	Exploring the large scale environment and star formation properties of the Spiderweb proto-cluster at z = 2.17 with MeerKAT	6.2
prop-045	A HI absorption search towards the brightest G4Jy sources	6.1
prop-015	Measuring the True Occurrence Rate of Jets in TDEs via Late-Time MeerKAT Observations	5.9
prop-050	Chance discovery of two radio galaxies with previously-unknown extended emission	5.7
prop-010	Magnetic field structure in the jellyfish galaxy JO194	5.5

Report 3 - Proposal with Highest Deviations
Display a table with the proposal_id, proposal_title and standard deviation value of all proposals that have a standard deviation that is greater than 1.99.

Proposals with HighStandard Deviation		
Proposal ID	**Proposal Title**	**DEV**
prop-041	A Complete Picture of Gas, Dust, and Stars in Six of the Best-Studied MeerKAT-Visible Galaxies	3.0
prop-001	The origin of ORCs: a new class of astronomical objects?	2.8
prop-031	Imaging the Disk and Outflow of the Starburst Galaxy NGC 253 with High-Resolution HI	2.7
prop-009	Resolving Ultra-Diffuse Galaxies in HI	2.5
prop-018	HI observations of ultra diffuse galaxies (UDGs) in galaxy groups	2.3
prop-069	CATCHING CLUES OF THE ENERGY TRANSPORT BY JET/WINDSIN THE NORTH TRANSITION REGION OF CENTAURUS A	2.3
prop-002	Characterising large-scale overdense structures at z = 2.2 by identifying their radio members	2.2
prop-075	Magnetization and kinematics in Circumgalactic Medium: Tidal vs. Gas Accretion	2.2
prop-087	HI intensity mapping with MeerKAT: Hunting down the power spectrum	2.2
prop-042	Observations of Dwarf Galaxies with Very Extended HI Disks	2.2
prop-005	RESOLVING HI EMISSION AT KPC SCALES OF ULTRA DIFFUSE GALAXIES	2.0
prop-011	Imaging new diffuse cluster radio sources selected at low frequencies	2.0
prop-030	Observing HI in the Reionization Epoch Analog Galaxy Haro11	2.0
prop-028	Disentangling the History of Particle Acceleration In Ultra Steep Spectrum Relic Clusters Abell 2443 and CIZA J0719.5+0043	2.0
prop-086	A Southern Radio Survey of the Fast Blue Optical Transients	2.0

Report 4 - Proposal Insights
Display the following Proposal Insights:

Proposal Insights

No. of Proposals Received	Average Hours Requested	Maximum Hours Requested	Minimum Hours Requested	No. Proposals with 100% Requested Time Allocated	No. Proposals with <100% Requested Time Allocated
#	#.#	#.#	#.#	#	#

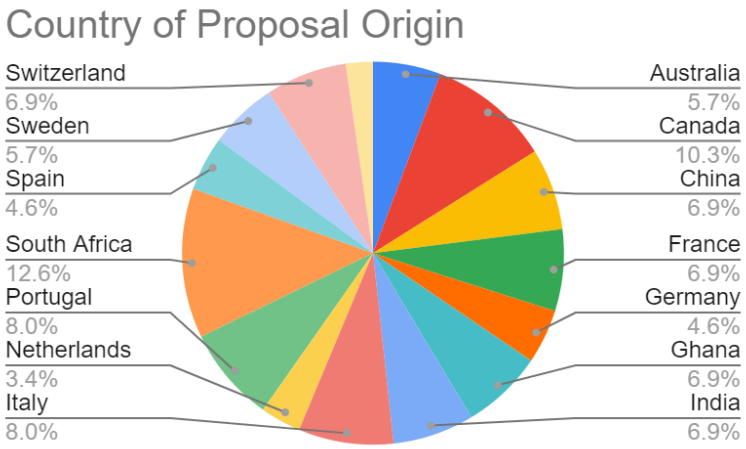
Median Proposal Score	Standard Deviation Across all Proposals	Total Hours of A-Rated Proposals	Total Hours of B-Rated Proposals	Proposals with Student Co-Is
#.#	#.#	#.#	#.#	#

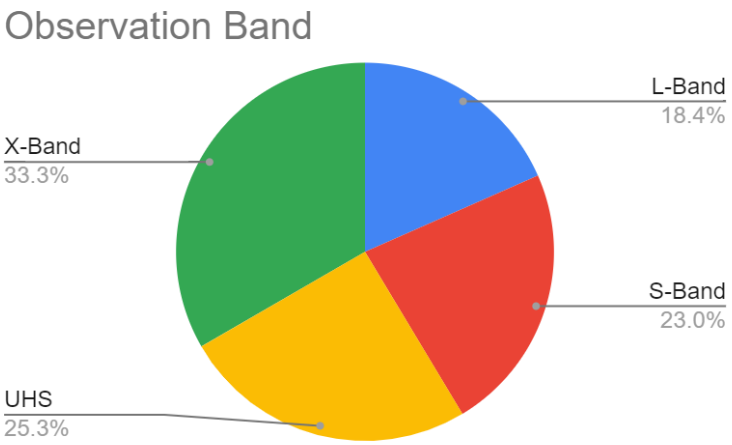
Country	Proposal Count
Australia	#
Canada	#
China	#
France	#
Germany	#
Ghana	#
India	#
Italy	#
Netherlands	#
Portugal	#
South Africa	#
Spain	#
Sweden	#
Switzerland	#
United Kingdom	#

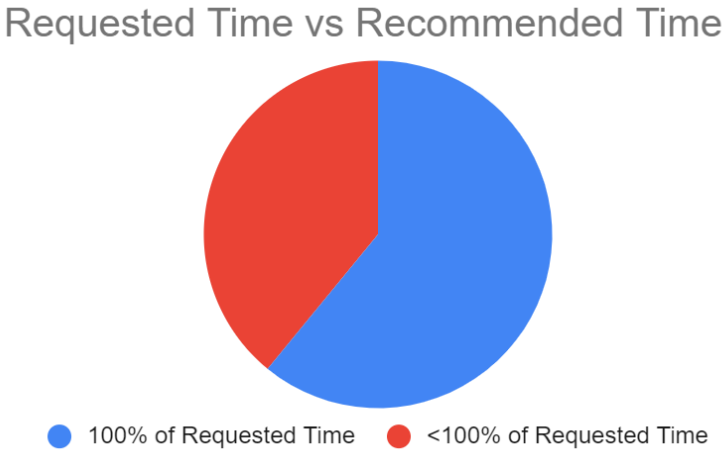
Reviewer	Average Score	Standard Deviation
A. Li	#.##	#.##
D. Piraino	#.##	#.##
K. Angioli	#.##	#.##
N. Katou	#.##	#.##
P. Fuentes	#.##	#.##
P. Norton	#.##	#.##
P. Roosevelt	#.##	#.##

Rounded Proposal Score	Count
Score 0	#
Score 1	#
Score 2	#
Score 3	#
Score 4	#
Score 5	#
Score 6	#
Score 7	#
Score 8	#
Score 9	#
Score 10	#

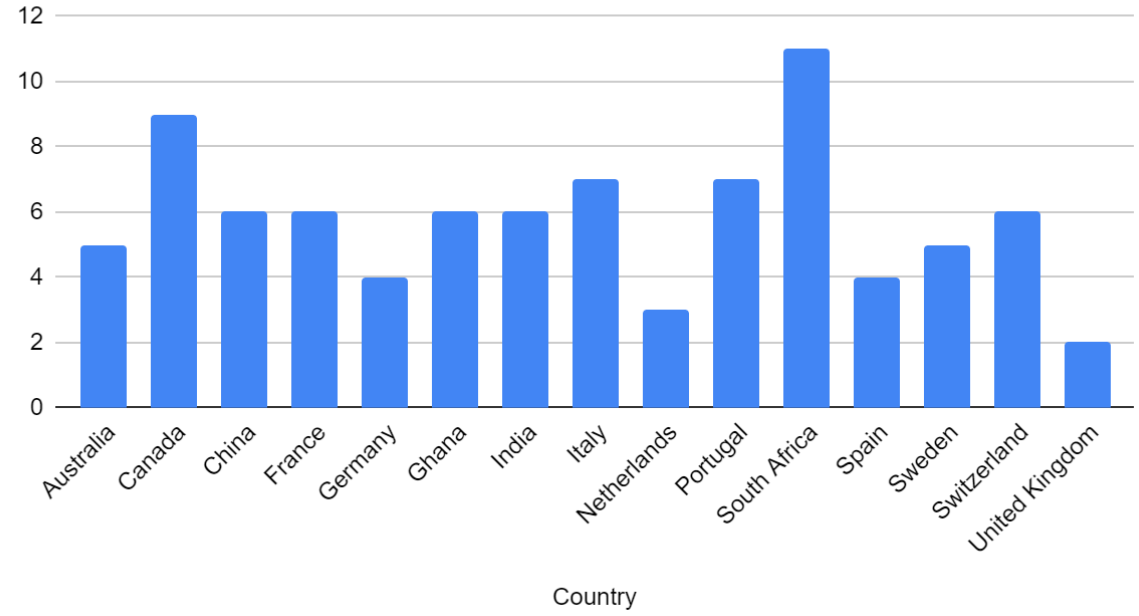
Report 5 - Director’s Report
Display the following charts and graphs in the Director’s Report:



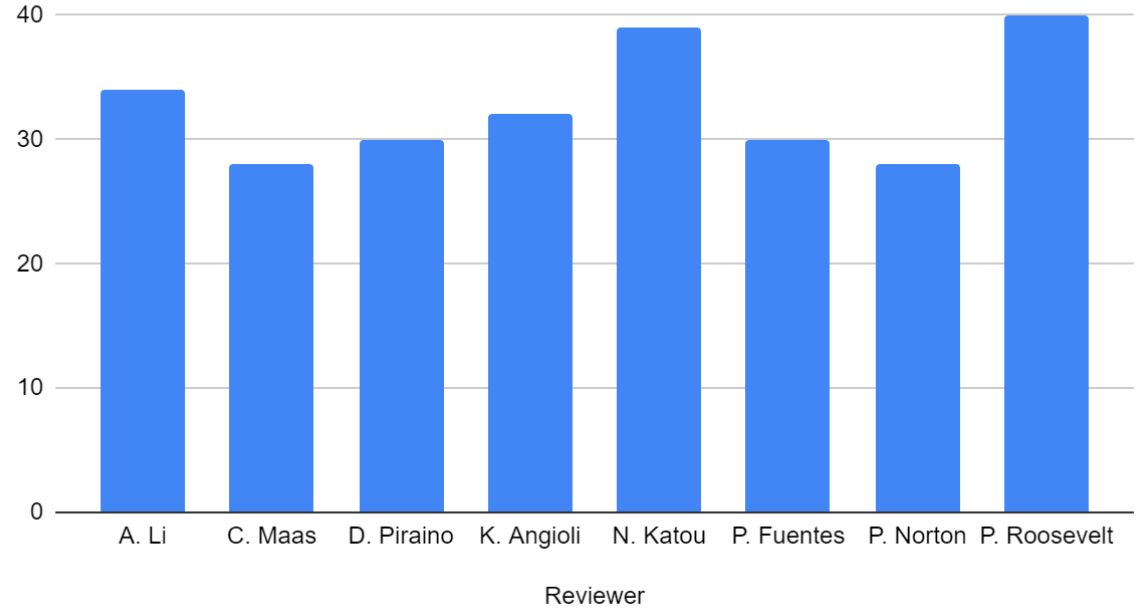




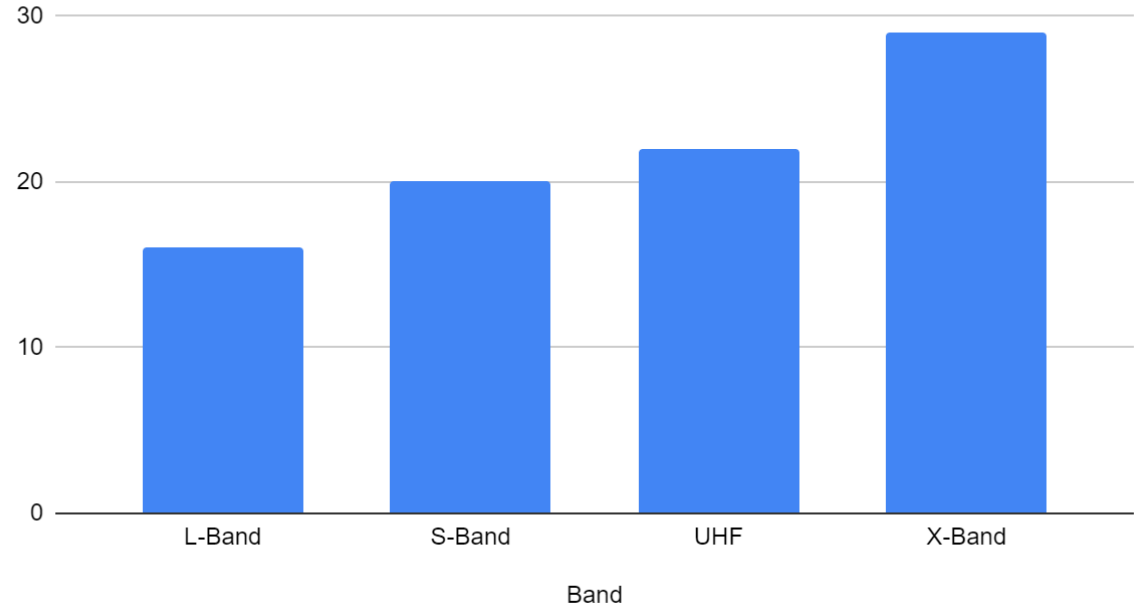
Proposal Country of Origin



Proposals per Reviewer



Proposal Bands



Proposal Scores