THE ONLINE TELESCOPE

OBSERVATORIES AND TELESCOPE SPECIFICATIONS

CANARY ISLANDS OBSERVATORY

Located at the Institute of Astrophysics of the Canary Islands (IAC), Observatorio del Teide, Izaña, Tenerife.
Latitude: 28.29970 N (28° 17' 58.92" N)
Longitude: 016.50826 W (016° 30' 29.736" W)
Altitude: 2,372.298m (7,783.13ft)
Time zone: WET
MPC Observatory Code: G40

Basic System Information					Detailed Specification														
					Telescope						Imaging Device			Filters		Image Specification			
Telescope Name:	Description:	Code Designation:	Type and Size:	Optimised For:	Type:	Effective Aperture:	Nominal Focal Length:	Nominal Native Focal Ratio:	Focal Reducer:	Nominal Effective Focal Ratio:	Model:	CCD Type:	Pixel Size:	Manufacturer:	Type:	Image Scale at 1x1 binning:	North Angle:	Field-of-View arcminutes:	Resolution:
Canary One Half Meter	This is Slooh's premier telescope. Its 20" mirror gives it incredible light gathering capabilities. It's ideal for larger faint objects such as galaxies and nebulae.	T1-HM-508	Planewave CDK20 (508mm)	Wide-Field DSO CCD imaging.	Corrected Dall-Kirkham	508mm (20")	3454mm (135.98")	f/6.8	None	f/6.8	FLI PL09000	Kodak KAF-09000	12x12µm	Astrodon Generation II E-Series	Luminance, Red, Green, Blue, Hα, U-Band (Bessel), I-Band (Bessel)	0.717 arcsecs/pixel	0° (North-Up)	37x37	Binning 1x1: 3056x3056 Binning 2x2: 1528x1528 Binning 3x3: 1018x1018
Canary Two Wide-Field	Second only to the Half Meter telescope, this huge telescope is ideal to capture large faint objects such as galaxies and nebulae.	T2-WF-432	Planewave CDK17 (432mm)	Wide-Field DSO CCD imaging.	Corrected Dall-Kirkham	432mm (17")	2938mm (115.71")	f/6.8	None	f/6.8	FLI PL16803	Kodak KAF-16803	9x9µm	Astrodon Tru-Balance Generation II E-Series	Luminance, Red Green, Blue, Hα, B-Band (Bessel), V-Band (Bessel), R-Band (Bessel)	0.63 arcsecs/pixel	0° (North-Up)	43x43	Binning 1x1: 4096x4096 Binning 2x2: 2048x2048 Binning 3x3: 1365x1365
Canary Two Ultra-Wide-Field	Slooh's smallest telescope but it has a huge field-of-view so it's ideal for very large objects such as large bright galaxies and nebulae. It also provides full disk views of the Moon.	T2-UWF-85	TeleVue 85GXF (85mm)	Very Wide-Field DSO CCD imaging.	Apochromatic Doublet Refractor Telescope	85mm (3.3")	595mm (23.4")	f/7	0.8x	f/5.6	SBIG ST-10XME	Kodak KAF-3200E (Class 1)	6.8x6.8µm	Astrodon Tru-Balance E-Series	Luminance, Red, Green, Blue, Hα	2.94 arcsecs/pixel	0° (North-Up)	107x72	Binning 1x1: 2184x1472 Binning 2x2: 1092x736 Binning 3x3: 728x490
Canary Three Deep Sky	This astrograph instrument provides a large field-of-view and is equipped with a colour CCD camera (colour FITS and PNG images). It is ideal for most larger object types such as galaxies, nebulae and comets.	T3-DS-279	Celestron RASA (279mm)	Wide-Field DSO Single-Shot-Colour CCD imaging.	Rowe-Ackermann Schmidt Astrograph	279mm (11")	620mm	f/2.22	None	f/2.22	ZWO ASI 294MC Pro Single-Shot-Color	Sony IMX294 CMOS	4.63x4.63µm	Not Applicable	Not Applicable	1.54 arcsecs/pixel	0° (North-Up)	106x72	Binning 1×1: 4144×2822 Binning 2×2: 2072x1411 Binning 3×3: 1381x940
Canary Four Solar System	This telescope is optimised to capture smaller objects such as the planets and planetary nebulae. It also provides excellent close-up views of the Moon. The small field-of-view makes it unsuitable for many galaxies and larger nebulae.	T4-SS-358	Celestron Edge-HD 1400 (356mm)	High Magnification planetary and lunar, and smaller DSOs such as planetary nebula CCD imaging.	Schmidt-Cassegrain Catadioptric (SCT) Edge-HD	355.6mm (14")	3910mm (154")	f/11	None	f/11	SBIG STT-8300M	Kodak KAF-8300	5.4x5.4µm	Baader	Luminance, Red, Green, Blue, Hα (7nm), OIII (8.5nm), SII (8nm)	0.28 arcsecs/pixel	0° (North-Up)	16x12	Binning 1x1: 3358x2536 Binning 2x2: 1679x1268 Binning 3x3: 1119x845
Canary Five Solar	This specialised telescope is equipped with a high-frame-rate video camera that provides unrivalled live views of the Sun in the H-Alpha bandwidth (<0.5 Ångström bandpass). This allows us to see amazing high contrast views of active solar regions, flares, filaments and other surface features such as prominences on the solar limb. Members will be able to capture images from the live video.	T5-SHa-60	Lunt H-Alpha (60mm)	Solar H-Alpha video stream.	H-Alpha Double Stacked Refractor	60mm (2.36")	500mm (19.7")	f/8.3	None	f/8.3	Celestron Skyris 236C High-Frame-Rate Video	Sony EXMOR IMX236 CMOS	2.8x2.8µm	Not Applicable	Not Applicable	1.16 arcsecs/pixel	0° (North-Up)	37x21	1920x1080
Canary Six Half Meter [COMING 2024]	Slooh's premier telescope, the Canary One Half Meter telescope, now has a twin! The Canary Six Half Meter's 20" mirror gives it incredible light gathering capabilities. It's ideal for larger faint objects such as galaxies and nebulae. Unlike the Canary One telescope, the Canary Six telescope will run 5-minute Missions.	T6-HM-508	Planewave CDK20 (508mm)	Wide-Field DSO CCD imaging.	Corrected Dall-Kirkham	508mm (20")	3454mm (135.98")	f/6.8	None	f/6.8	FLI PL16803	Kodak KAF-16803	9x9µm	Chroma Technology	Luminance, Red Green, Blue, Hα, B-Band (Bessel), V-Band (Bessel), R-Band (Bessel)	0.54 arcsecs/pixel	0° (North-Up)	37x37	Binning 1x1: 4096x4096 Binning 2x2: 2048x2048 Binning 3x3: 1365x1365

CHILE OBSERVATORY

Located at the La Pontificia Universidad Católica de Chile (PUC), Santa Martina Observatory, La Dehesa, Santiago, Chile
Latitude: 33.269 S (33° 16' 8.4" S)
Longitude: 070.534 W (070° 32' 2.4" W)
Altitude: 1,449.7m (4,756.2ft)
Time zone: CLST
MPC Observatory Code: W88

Basic System Information					Detailed Specification														
					Telescope						Imaging Device			Filters		Image Specification			
Telescope Name:	Description:	Code Designation:	Type and Size:	Optimised For:	Type:	Effective Aperture:	Nominal Focal Length:	Nominal Native Focal Ratio:	Focal Reducer:	Nominal Effective Focal Ratio:	Model:	CCD Type:	Pixel Size:	Manufacturer:	Type:	Image Scale at 1x1 binning:	North Angle:	Field-of-View arcminutes:	Resolution:
Chile One Wide-Field	Slooh's workhorse southern hemisphere telescope is ideal to capture some of the finest objects in southern skies, including galaxies and nebulae as well as the fine globular clusters.	C1-WF-358	Celestron EdgeHD 1400 (356mm)	Wide-Field DSO and planetary CCD imaging.	Schmidt-Cassegrain Catadioptric (SCT) Edge-HD	355.6mm (14")	3910mm (154")	f/11	None	f/11	SBIG STL-11000M	Kodak KAI-11000	9x9µm	Astrodon	Luminance, Red, Green, Blue, Clear	0.47 arcsecs/pixel	0° (North-Up)	31x21	Binning 1x1: 4008x2672 Binning 2x2: 2004x1336 Binning 3x3: 1336x891
Chile Two Wide-Field	Slooh's largest southern hemisphere telescope is huge, and is perfectly suited to capture the plethora of southern hemisphere celestial gems.	C2-WF-432	Planewave CDK17 (432mm)	Wide-Field DSO CCD imaging.	Corrected Dall-Kirkham	432mm (17")	2938mm (115.71")	f/6.8	None	f/6.8	FLI PL16803	Kodak KAF-16803	9x9µm	Astrodon Tru-Balance Generation II E-Series and Photometric Johnson/Cousins Filters	Luminance, Red Green, Blue, B-Band, V-Band, Rc-Band, Ic-Band	0.63 arcsecs/pixel	0° (North-Up)	43x43	Binning 1x1: 4096x4096 Binning 2x2: 2048x2048 Binning 3x3: 1365x1365
Chile Three Lunar	This specialised telescope is equipped with a high-frame-rate video camera that provides unrivalled live views of the Moon at high magnification. The telescope operates for special events and members are able to capture images from the live video stream.	C3-Lu-358	Celestron EdgeHD 1400 (356mm)	Lunar high magnification video stream.	Schmidt-Cassegrain Catadioptric (SCT) Edge-HD	355.6mm (14")	3910mm (154")	f/11	0.56	f/6.2	Celestron Skyris 236C High-Frame-Rate Video	Sony EXMOR IMX236 CMOS	2.8x2.8µm	Not Applicable	Not Applicable	0.26 arcsecs/pixel	0° (North-Up)	8.4x5.3	1920x1080

AUSTRALIA OBSERVATORY - COMING 2024

Located at the Springbrook Remote Observatory Facility, Siding Spring, New South Wales, Australia.
Latitude: 31.2816709° S (31° 16' 54.0" S)
Longitude: 149.0801825° E (149° 04' 48.7" E)
Altitude: 805m (2,641 ft)
Time zone: AET
MPC Observatory Code: E09 (a new obs code will be assigned when we launch)

Basic System Information					Detailed Specification														
					Telescope						Imaging Device			Filters		Image Specification			
Telescope Name:	Description:	Code Designation:	Type and Size:	Optimised For:	Type:	Effective Aperture:	Nominal Focal Length:	Nominal Native Focal Ratio:	Focal Reducer:	Nominal Effective Focal Ratio:	Model:	CCD Type:	Pixel Size:	Manufacturer:	Type:	Image Scale at 1x1 binning:	North Angle:	Field-of-View arcminutes:	Resolution:
Australia One Half Meter	This is Slooh's premier southern hemisphere telescope due to come online in 2023. Its 20" mirror gives it incredible light gathering capabilities. It's ideal for larger faint objects such as galaxies and nebulae.	A1-WF-508	Planewave CDK20 (508mm)	Wide-Field DSO CCD imaging.	Corrected Dall-Kirkham	508mm (20")	3454mm (135.98")	f/6.8	None	f/6.8	FLI PL16803	Kodak KAF-16803	9x9µm	Chroma Technology	Luminance, Red Green, Blue, Hα, B-Band (Bessel), V-Band (Bessel), R-Band (Bessel)	0.54 arcsecs/pixel	0° (North-Up)	37x37	Binning 1x1: 4096x4096 Binning 2x2: 2048x2048 Binning 3x3: 1365x1365

SCIENCE AND RESEARCH OPPORTUNITIES WITH SLOOH'S TELESCOPES

ADVANCED STUDENT ACCOUNTS

ADVANCED STUDENT ACCOUNT

High School Astronomy and Higher Education advanced student accounts can schedule advanced missions where they select the **telescope, date, time, object (or coordinates), and the processing option** to use. They can have five standard and **one advanced mission** scheduled at any one time.

GRADUATE STUDENT ACCOUNT

Higher Education Graduate accounts provide access to **all Slooh astronomical catalogs and the Luminance filter-only processing options**. They can have five standard and one advanced mission scheduled at any one time.

RESEARCH STUDENT ACCOUNT

Higher Education Research accounts provide access to the above and **photometric filter-only processing options**. The **advanced mission quota is increased to five** at any one time.

MISSION QUOTA

There are no nightly, weekly, or annual limits on the number of missions students can schedule. The only limit is the number they can schedule concurrently. As soon as their first mission runs, they can schedule another.

FITS DATA

The FITS format was designed specifically for astronomical data and includes provisions such as describing photometry and spatial information, together with image origin metadata. FITS data is commonly used to process astrophotos and for scientific measurements such as photometry and astrometry.

Slooh educator and advanced student accounts can access the fully calibrated FITS data and the processed PNG images created by Slooh's patented real-time processes. You can learn how to access the FITS data here: https://support.slooh.com/6-photos#fits

ASTROMETRY

Astrometry is a branch of astronomy that involves precise measurements of the positions and movements of stars and other celestial bodies.

Using the FITS data generated by Slooh's telescope systems, students can perform astrometry to measure the position of celestial objects. A group of members called "The A-Team" developed a course that teaches members how to use astrometry to track Near-Earth Asteroids and comets. Graduates from the course receive official permission from Slooh to make submissions to the Minor Planet Center and other organizations using Slooh data. **A Higher Education Research account is required to join the NEA course.**

Although it is possible to track NEAs and comets with a standard student account (using the PNG images), an advanced student account provides access to FITS data, which is essential for more serious astrometry. A Higher Education Research account is ideal for conducting astrometry of moving targets because it offers additional advanced missions (a minimum of three astrometric measurements are required to determine an object's trajectory). However, groups of students with Higher Education Graduate accounts could collaborate to schedule multiple advanced missions and acquire the necessary data.

PHOTOMETRY

Photometry, from Greek photo- ("light") and -metry ("measure"), is a technique used in astronomy that is concerned with measuring the flux or intensity of light radiated by astronomical objects. This light is measured through a telescope using a photometer, often made using electronic devices such as a CCD photometer or a photoelectric photometer that converts light into an electric current by the photoelectric effect. When calibrated against standard stars (or other light sources) of known intensity and color, photometers can measure a celestial object's brightness or apparent magnitude.

Using the calibrated FITS data generated by Slooh's telescope systems, students can perform photometry to measure the flux of celestial objects. Students using Slooh typically use photometry to monitor variable stars, Near-Earth Asteroids, comets, and novae/supernovae.

Although it is possible to conduct photometry with a standard student account (using the PNG images), an advanced student account provides access to FITS data, which is essential for more accurate photometry. A Higher Education Research account is required to conduct advanced photometry because it gives access to the advanced photometric filter processing options.

CASE STUDY

Read how 9th-grade student Michelle Park used Slooh's telescopes for a research project into RR Lyrae variable stars. The project culminated in the publication of her first scientific paper.
https://www.slooh.com/post/michelle-park-s-journey-from-high-school-to-stanford-with-slooh

SPECTROSCOPY

Astronomical spectroscopy is the study of astronomy using the techniques of spectroscopy to measure the spectrum of electromagnetic radiation, including visible light, ultraviolet, X-ray, infrared and radio waves that radiate from stars and other celestial objects. A stellar spectrum can reveal many properties of a star, such as its chemical composition, temperature, density, mass, distance, and luminosity. Spectroscopy can show the velocity of motion towards or away from the observer by measuring the Doppler shift. Spectroscopy is also used to study the physical properties of many other types of celestial objects, such as planets, nebulae, galaxies, and active galactic nuclei.

Astronomical spectroscopy requires dedicated telescopes equipped with spectroscopes. Slooh doesn't currently have plans for dedicated spectroscopic instruments. However, Slooh is considering the installation of diffraction gratings in several existing telescope systems, allowing students to conduct low-resolution spectroscopy of brighter targets.