

Canary Islands' Facilities for Support of the Deep Impact Mission

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Telescopes in La Palma

- Large suite of telescopes available
 - 4.2-m, 3.6-m, 2.56-m, 2.5-m, 2-m, 1.2-m
 - 11.4-m Gran Telescopio CANARIAS (GTC) *possibly* available during commissioning phase.
 - Future of the 1-m telescope uncertain.
 - Wide range of instrumentation in the visible and near-IR. Mid-IR options may be available for an impact campaign, if required.
- ▽ $\approx 90\%$ usable nights during summer.
- ▽ $\approx 70\text{-}80\%$ photometric nights in summer.

Telescopes in Tenerife

- Three nocturnal telescopes available
 - 1.5-m – Near-IR imaging or photometry
 - 1-m – Visible imaging
 - 82-cm – Visible imaging
- The 82-cm will receive a major upgrade during 2004, with a new CCD camera.
- The 1.5-m will receive a new photometer.
- Service mode available in 82-cm
 - Up to 2 hours per night, 2-3 nights per week for monitoring programmes.

International Time Projects

- Give access to 5% of the time on all the common-user nocturnal telescopes in Tenerife and La Palma.
- Designed for large science projects that require monitoring of an object or objects over time.
- Equivalent to approximately 7-8 nights on each of 9 telescopes over 6 months.
- Call for proposals for Spring/Summer 2005 in November 2004.
 - Deadline for proposals is **late 2004**.
 - Observing time starts in February/March 2005.

A Summary of Instrumentation



- A brief review of the most interesting instrumental options.
- Many more instruments are available.

4.2-m William Herschel Telescope

- ISIS – Intermediate dispersion spectrograph
 - Two arms (blue and red)
 - 300-1000nm
 - 0.11-2.90Å/pixel
- LIRIS – 0.9-2.4 micron imaging spectrograph
 - R=1000-3000
 - 0".25/pixel
 - 12 broad and narrow bands
 - Polarimetry



4.2-m William Herschel Telescope

- If we were to observe the impact itself...
 - ULTRACAM
 - 3 CCDs, simultaneous RGB
 - Very high time resolution
several Hz (can be $>10\text{Hz}$)
 - Small field of view (best time resolution requires 2 windows – nucleus + ref star – $\sim 10\text{-}15''$ each).



3.6-m Galileo National Telescope

- NICS – 0.9-2.5 micron spectrograph
 - R=50-2500
 - 4'.2 field of view
- SARG – 370-900nm high-resolution spectrograph
 - R=29000-164000
 - Long slit (30")
 - Polarimetry available



2.56-m Nordic Optical Telescope

- Exceptional image quality
- ALFOSC – Imaging grism spectrograph
 - 320-1100nm
 - $R=190-4500$
 - $0''.19/\text{pixel}$
- SOFIN
 - High-resolution echelle spectrograph



2.5-m Isaac Newton Telescope

- Wide field prime focus camera
 - 4 x 4kx2k mosaic
 - 0.33"/pixel
 - 35' field of view
 - Broad and narrow filters
- This telescope will probably be closed on July 31st 2005... Deep Impact would be its send-off party!



2-m Liverpool Telescope

- Robotic telescope
 - 2048x2048
 - 0".135/pixel camera with Sloan filters
 - 4' field of view
- 1-2.5 micron NICMOS-type camera
 - 256x256
 - 0".4/pixel



1.2-m Mercator Telescope

- Cassegrain CCD
- 6'.5x6'.5 field
- 0".2/pixel
- 16 filters



1.5-m Carlos Sánchez Telescope

- Dedicated infrared telescope.
- NICMOS-type detector.
- $0''.4$ or $1''/\text{pixel}$.
- $80''/4'$ field of view (interchangeable).
- JHKK_s + narrow band (CO, K_{cont}, ...).
- High frame rate ($>10\text{Hz}$ with windowing).
- New monochannel photometer available in summer 2004.



Can observe bright objects in narrow-band in daylight at $2\mu\text{m}$.

1-m OGS

- ESA Telescope
- 4096x4096 camera
- Field of view 50'
- Single, fixed filter



82-cm IAC-80

- 1024x1024 CCD
- 0".4/pixel
- 7'.1 field of view
- 8 broadband and narrow filters may be mounted simultaneously.
- Major upgrade of the CCD camera in 2004.
- Long-term service mode available for monitoring.
- 2hrs/night, 2-3 nights per week (can be more nights if interest is great).



11.4-m Gran Telescopio CANARIAS (GTC)?

- *May* be available during telescope commissioning phase.
- Probably equivalent to a ~6-m mirror.
- Commissioning camera and Intermediate Dispersion Spectrograph.
- Request direct to Director.



Why the Canaries?

- 9P will be a northern hemisphere object.
- Wide range of telescopes and instruments
- Excellent weather conditions (summer!).
- Deep Impact is ideal for an International Time Project that would give approximately **70 nights** of telescope time for monitoring over a 6 month period.
- High probability of success for proposal.