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.

\[\forall \approx 90\% \text{ usable nights during summer.}\]
\[\forall \approx 70\text{-}80\% \text{ photometric nights in summer.}\]
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.
  - 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 >10Hz)
  - Small field of view (best time resolution requires 2 windows – nucleus + ref star – ~10-15” 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/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 31\textsuperscript{st} 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”/pixel.
- 80”/4’ field of view (interchangeable).
- JHKK$_s$ + narrow band (CO, K$_{cont}$, …).
- High frame rate (>10Hz with windowing).
- New monochannel photometer available in summer 2004.

Can observe bright objects in narrow-band in daylight at 2µm.
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.