ING La Palma – 2020 vision

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WHT

- Excellent dark site, 75% nights clear, median seeing 0.7 arcsec, good infra-structure
- Broad range of opt/IR imagers and spectrographs
- 8 focal stations, some with multiple cameras -> rapid response, and flexibility to take advantage of changing observing conditions
- Popular platform for visiting instruments
- Strong UK/NL/Spanish user community, over-subscription ~ x3
- Low technical downtime, ~ 2%, high level of user satisfaction

WHT common-user instruments

- ISIS med-res opt spectrograph (incl pol), 4’ slit (ISIS + LIRIS account for ~ 70% of the observing nights)
- LIRIS near-IR imager and med-res spec, with MOS and spectropolarimetry, fov 4’
- Aux-port imager, fov 1.8’, being upgraded to ACAM imager/spectrograph, fov 8.3’, permanent at Cass
- PF imager, fov 16’
- AF2 med-res multi-fibre (150 obj), fov 1-deg
- INGRID near-IR imager with optional NGS/LGS AO, fov 40”, optional coronagraph OSCA (service mode only)
- OASIS IFU spectrograph with optional NGS/LGS AO, fov 3 – 10” (service mode only)

Visiting instruments / experiments

- (1) Instruments built with specific science goals in mind, e.g. SAURON (IFU), PNS (PN mapper), EXPO (reflected light from exoplanets)
- (2) Extensions of photon parameter space e.g. in time-resolution (ULTRACAM) or spatial resolution (FASTCAM)
- (3) Technology tests e.g. AO-related for E-ELT e.g. EAGLE prototype
- ~ 6 visiting instruments / semester
- See poster

FASTCAM visiting instrument

FASTCAM lucky imager

0.07-arcsec binary resolved

FASTCAM team

INT

- Instruments: WFC imager (fov 34’) and IDS long-slit spectrograph
- Differential cost of running INT is ~ 3% of ING budget
- Evening support is provided by students; there’s no telescope operator
- Many of sub-systems are in common with WHT
- (JKT currently used mainly for SCIDAR experiments)

Student training

- Visiting observers
- 1-year INT support astronomers
- NEON school etc.

Access

- Observers from any country can apply to TACs for time on ING telescopes
- OPTICON access office now run by ING (Juan Pablo Garcia) – see poster

SCIENCE IMPACT

- On the basis of publications 1999-2003, the 5 most-cited 4-m optical telescopes are AAT, CFHT, CTIO, Hale, WHT
- (Each garnered > 0.7% of all citations to all ground-based and space telescopes combined)
- For 1995-8, the top 5 are AAT, CFHT, CTIO, KPNO, WHT (Benn & Sanchez 2001, PASP 113 385)

WHT and INT papers 2007

	WHT	INT
Solar system	4	1
Exoplanets	0	4
Stars	34	21
Supernovae/GRB	8	3
Galaxy + satellites	1	5
Galaxies	24	26
Active galaxies	12	2
Galaxy clusters	3	5
Dark matter	0	2
TOTAL	86	69

Papers / year (total, and in Nature) ~ constant over last 10 years

Recent WHT science highlights

- First ground-based near-IR detection of extrasolar planet, (de Mooij & Snellen 2009, A&A 493, in press)
- First spectrum of asteroid which subsequently hit earth, (Jenniskens et al 2009, Nature, 458, 485)

WHT papers by instrument

The productivities (in papers per night) of scheduled and service nights are similar

INSTRUMENT DEVELOPMENT

Current instrument development

- ISIS image slicer
- ACAM imager/spectrograph to be permanently mounted at folded-Cass – see poster
- HARPS-NEF – see poster

ACAM

- Imaging over fov 8.3’ using broad range of filters (including narrow-band); high-throughput low-resolution spectroscopy (R ~ 500)
- Permanently mounted at Cass
- Science drivers: rapid response e.g. for SNe, GRBs; imaging of fields large enough to include comparison stars e.g. exoplanets; narrow-band imaging of objects subtending few arcmin e.g. low-z galaxies
- Designed by ING
- Commissioning June 2009
- See poster

HARPS-NEF

- Improved version of HARPS on ESO 3.6-m (NEF = New Earths Facility), goal is exo-earths
- Fibre-fed from new broken-Cass focus of WHT
- HARPS team buys ~ 50 nights per year (for observing Kepler exoplanet candidates RA = 19h), implications for schedule, service mode
- Available to community
- See poster

BUILDING STRATEGY FOR 3 – 5 YEARS

- Recently-formed ING Science Advisory Committee – ING strongly welcomes input from the community
- SAC has suggested wide-field MOS for WHT prime focus, for followup of northern-hemisphere surveys e.g. PanSTARRS and LOFAR (this also features in ASTRONET infrastructure roadmap)
- STFC and other science roadmaps e.g. ASTRONET science vision, ESA cosmic visions
- Space-mission follow-up (first KEPLER-related observing proposals have just been received)
- Input to GTC
- ASTRONET review of small/medium-sized telescopes

Funding

- Old UK/NL/Spain agreement expires 5/2009, renewed until 5/2012, i.e funding probably stable at least until then
- UK share of time is 33%, with 28% for NL, 34% for Spain, 5% for ITP

SUMMARY

- Excellent dark site, good seeing
- Strong user community, consistently high science impact, broad range of topics
- Comprehensive suite of opt/IR instrumentation
- Many innovative visiting instruments / experiments
- Upcoming new instruments: ACAM, HARPS
- INT still producing good science, cost is low
- Strategy for next 3 – 5 years: in-hand; possible MOS for WHT prime focus; community input welcomed