

original Palomar Sky Survey or Southern Sky survey. A number of the stars have large proper motions so that up-to-date images would be preferred. [I would welcome images from other sources (e.g. EFOSC or EMMI acquisition images) to replace these finding charts.] The standard star data are usually tabulated as narrow band magnitudes, and in converting the monochromatic AB magnitudes to flux the definition:

$$AB \text{ mag} = -2.5 \times \log_{10}(F_{\nu}) - 48.59$$

(e.g. Hamuy et al., 1992) was used.

Each standard star 'page' also carries clickable entries to the ST-ECF anonymous ftp account where the data are held. For each star and data source (some stars are covered by more than one set of measurements), there are ASCII files of the AB magnitude vs. wavelength and flux ( $\text{ergs cm}^{-2} \text{s}^{-1} \text{\AA}^{-1}$  and  $\text{ergs cm}^{-2} \text{s}^{-1} \text{Hz}^{-1}$ ) vs. wavelength. Depending on the data reduction system used, AB mag. or flux ( $F_{\lambda}$  or  $F_{\nu}$ ) is required. There is a readme file in each directory of the anonymous ftp account describing the contents. In addition there is a MIDAS command file to convert all the ASCII (flux) files in each directory into MIDAS tables. Clicking from the standard star 'page' to the ftp area moves to the appropriate directory, rather than opening a single file. In each directory there are two files for each star (one for magnitudes, one for fluxes) and there may be other files in another ftp directory for the same star. The user must exercise some judge-

ment here – the data retrieved depend somewhat on the application.

#### 4. Prospects

The WWW provides an ideal method of access to such data and the observing astronomer can display the output on the same screen as the data-viewing tool. It should enable observers to select the most suitable spectrophotometric standard appropriate to their particular observation. When service observing (or queue scheduling) is implemented, the spectrophotometric standard may be automatically chosen. However there are a number of considerations to address in choosing the 'best' standard, as I have emphasised. There should also be allowance for user preference, for example when it is found that a particular standard with a particular instrument combination always gives a consistent value for the Balmer decrement.

Even if an astronomical instrument is internally well calibrated, observation of spectrophotometric standards is still required. The atmosphere, even at optical wavelengths, has time-varying emission and transmission properties, necessitating at minimum zero point calibration. The presence of water vapour, cloud and dust can give a wavelength-dependent atmospheric extinction, which can only be corrected by a calibrator above the atmosphere. Thus ground-based pipeline calibration must always make allowance for night-to-night variations in a way not needed by orbiting telescopes. Good sky coverage by high quality spectrophotometric standards

will thus remain a necessity.

I would welcome comments on this tool and in particular suggestions for additional standards to include.

#### Thanks

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## Planning for La Silla in the VLT Era: What Came Out?

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As readers will be aware, an ESO Working Group has been engaged in charting the future of the La Silla observatory at the time when it will operate jointly with the VLT. The final (6th) version of the report of the WG was presented to Council and the Director General at the Council meeting in Milan in November 1995. Thus, it is now part of ESO's mid- and long-range scientific and technical planning and available as document ESO/STC-174 rev. (22 Nov. 1995) and from the ESO WWW home page.

Earlier articles (*The Messenger* **78**, 3 and **80**, 4) have described the charge and composition of the Working Group and the procedures it adopted to involve the views and ideas of the community in the preparation of its plan. These included a questionnaire survey of the entire community and discussions of drafts of the plan with the ESO committees in

several iterations. The input of the OPC on the scientific aspects was especially appreciated.

Colleagues interested in the detailed recommendations of the WG are advised to consult the report itself. Here, I should like to share with readers a few general points, especially such as have emerged in the discussions over the last few months. I should also like, on behalf of the WG, to thank the many colleagues inside and outside ESO who have contributed to making the report as comprehensive and thorough as possible.

#### The Impact of the VLT

The VLT will not be an exclusive toy, reserved for a small elite: With a number of foci exceeding the total number of telescopes on La Silla and a collecting area some seven times as large, the VLT will make a major impact on virtually

all sections of ESO's user community.

Hence, already for scientific reasons *per se*, La Silla and other observatories with 1–4-m class telescopes will not be conducting "business as usual" in the VLT era. While all analyses show that a broad complement of such intermediate-size facilities will continue to be needed, their work will be largely conditioned by the research done at the 8-m giants, and their tasks then will be different from now. It is therefore appropriate for the community to begin preparing its scientific plans for the use of intermediate-size telescopes in the VLT era, and for ESO to begin preparing to provide the facilities that will be needed.

#### Future Needs for Intermediate-Size Telescopes

Many of the projected highest-priority uses of intermediate-size telescopes in

conjunction with VLT projects involve direct imaging or spectroscopic surveys. Some of these needs can be met by existing ESO telescopes with suitably upgraded instrumentation, and a new state-of-the-art infrared imager/spectrograph (SOFI) and upgraded high-resolution optical imager (SUSI-II) have been approved and are under construction for use at the upgraded NTT from late 1997. The longer-term use of the 3.6-m telescope might also be in such (spectroscopic) surveys.

It is, however, also one of the findings of the WG that ESO does not possess a truly competitive wide-field imaging telescope. Plans must be developed to provide such a facility, perhaps in collaboration with other communities with parallel interests. It is also concluded that multifibre spectroscopy is an area in which La Silla simply cannot become competitive before FUEGOS comes on line at the VLT, and the community's needs in this field will have to be satisfied elsewhere.

### Long-Term vs. Medium-Term Planning

The WG estimates that in the steady-state era, when the VLT is fully operational, ESO should operate about four telescopes in the 1–4-m class in addition to the VLT, carefully optimised to complement it as well as possible. The remaining, mostly smaller, telescopes need not necessarily be closed outright at that time, but can be turned over for certain periods to institutes or consortia who want to operate them on a self-contained basis to carry out specific projects, as happens on La Silla already today.

Despite the hypnotic effect of the magic number 2000, ESO will not be in the steady state yet by that year. During the transition period, i.e. for almost another decade from now, La Silla will remain the bread and butter of a sizeable, if decreasing fraction of the ESO community. The WG has attempted to lay out a plan for a gradual change in the complement of facilities offered on La Silla during that period, synchronised with the commissioning of new instruments on the VLT and tuned to obtain the most

cost-effective operation. Readers are referred to the report itself for the details.

### Paranal vs. La Silla

Suggestions have repeatedly been made that in the somewhat longer term it would be preferable to move some La Silla telescopes to Paranal, or replace them by new ones there, and subsequently close La Silla, since operating only one observatory would be substantially cheaper. However, the practical aspects of this suggestion have not been worked out. Accordingly, the report requests that an assessment be made of the number of sites actually available in the Paranal areas for potential new telescopes, and the cost of building them there.

While this work is still going on, it appears that, first, the number of such sites is actually close to one. Second, in an organisation with a transparent cost structure and low fixed overheads, there is *no a priori* reason why operating a given telescope should in fact be cheaper on Paranal than on La Silla. And telescopes are not built or moved without substantial costs. In other words, while a possible future telescope providing new scientific capabilities and based on modern technical and operational experience might be best placed in the Paranal area, the long-term closure of La Silla is by no means a foregone conclusion.

### What is the Plan?

First, it is important that discussions of the plan be based on the final version, which incorporates important modifications requested at the joint meeting of the ESO committees on November 2, 1995. The existence of several versions of the plan does carry some risk of confusion, but is the inevitable result of a real interaction with the community and incorporation of the feedback received. The gain is a reasonable degree of certainty that all constructive ideas and legitimate concerns have been given full opportunity to be expressed and taken into account.

Second, the WG report is a scientific and technical review, not an organisa-

tional or financial plan, although it cannot of course be removed from these realities. Organisational and financial aspects were not directly included in the WG's charge, and they cannot be considered separately for La Silla, but must involve ESO as a whole. Thus, the plan addresses the perceived future scientific needs for La Silla and the facilities required to fulfil them, and attempts to assign an order of priority. As ESO's structure and financial situation evolve, due to internal reorganisation and changes in the world around us, circumstances will dictate how far down the priority list it will be possible to go.

### How to Use It?

It would be naive to pretend that a first round of addressing such a complex subject as the development of La Silla over the next decade can produce a definitive list of detailed answers. A premier research organisation must be able to adapt to changing scientific priorities and opportunities and exploit new technical developments that we cannot now foresee. And the world outside science is not static either.

Accordingly, what actually happens will no doubt differ from the present description in several respects. Some technical aspects are already identified in the plan for further study and clarification (e.g. the optimal long-term use of the 3.6-m and 2.2-m telescopes); others will find better solutions along the way than those now proposed. Clearly, the actions eventually taken should take such developments into account.

Thus, the goal of the present report is basically to initiate a continuing process of forward planning for La Silla, and to provide a general framework for the detailed elaboration of such plans. It is the final recommendation of the report that it be taken up for revision at regular intervals, e.g. in a three-year cycle. A deliberate approach to the future development will, we hope, benefit both the scientific output of La Silla, ESO's financial planning, and the morale of the staff.

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