maintained that service observing minimises the time to move to a target and gather the data, and in this sense it is the most efficient way of observing, closely followed by the Visitor Mode observing. Moreover, the spread in efficiency in Service Mode observing is much smaller than the spread observed in VIS Mode efficiency, as can be seen in the top panels of Figure 1 (2.4%, 9.1% and 13.5% for EIS, SO and VIS Mode, respectively). The histogram of the Service Mode efficiencies shows a close to Gaussian distribution, whereas the VIS mode histogram displays a clear non-Gaussian distribution, with a long tail towards lower efficiencies. The lack of this tail in the Service Mode histogram, and the smaller spread, indicate that service observers acquire the data in a more consistent way. Naturally, the EIS project has the smallest distribution because of their uniform observing strategy.

• Completion of the programmes

In a report on service observing at the NTT, Silva (1998) showed (Fig. 5) the fraction of completed programmes during service observing in Period 60. Completed means that the data passed the quality control and that all the requested observing Blocks have been successfully executed. Unfortunately, the data gathered in Visitor Mode are not subjected to a quality control and it becomes very difficult to judge from our current analysis if an observer in VIS Mode is satisfied with the quality of the obtained data. We estimated the Visitor Mode completion in two ways:

• Seeing. Does the image quality during the observing run (seeing on the DIMM2 telescope) conform to the image quality requested by the observer?

• Down time. What is the fraction of (weather) down time?

It turns out that the seeing requirements of the visiting astronomers were not so strict, and hence this parameter becomes a poor indication of the completion of a VIS Mode programme; 86% of the programmes experienced better seeing than requested and for the remaining 14% the seeing was comparable to, or marginally worse than, the initial request. In Figure 2, it can be clearly seen that the OPC-approved programmes in Service Mode (left panel in Figure 2) have a much more stringent seeing requirement, e.g. 10 programmes requested a seeing better than 0.8″, compared to their classical counterparts (right panel in Fig. 2). It shows that those programmes requiring good observing conditions have generally been assigned to be completed via service observing.

The fraction of down time is a much better indicator for the completion of visitor programmes, assuming that the initial time requested is sufficient to complete the entire programme. Figure 3 shows the fraction of completion of the VIS programmes. It cannot be directly compared to Figure 5 of Silva (1998) because of the lack of quality control, but does give an idea of the success rate of the Visitor Mode observing.

• In the long term

One final way of comparing the different observing modes and their respective efficiencies is to look at the scientific output. Has service observing resulted in making the astronomer more productive? What is the scientific impact of the NTT as a result of service observing? This, of course, can only be monitored over a larger time span, and it might still be too early to answer this question.

Out of all the programmes executed at the NTT during Period 60 (VIS and SO Mode), two papers have appeared to date in refereed journals, presenting data gathered at P 60. One paper is (partially) based on data taken during Service Mode (Sollerman et al. 1998), whereas the second paper presents data taken during Visitor Mode (Reimers et al. 1998).

Lessons Learned Redux

Silva (1998) ended with a review of lessons learned from the NTT service observing experience and how applying these lessons could improve service observing at ESO in the future. The additional analysis here reveals several new lessons.

It is obvious to all observers that, on any given night, minimising instrument-configuration changes minimises required calibration overheads and therefore maximises the amount of science acquisition time. The analysis presented here suggests that this paradigm can be extended to instrument switches. Although rapid instrument switching is possible at the NTT and will be possible at the VLT UTs, it is not clear whether this is the most efficient use of nighttime hours. During Period 60 service observing, instrument switching frequently consumed 10% or more of the night. The lesson is clear: unless the science priority is very high, switching between instruments on any given night should be avoided.

It is equally clear that the benefits of service observing become most significant for programmes that need special observing conditions (e.g. exceptionally good seeing or water vapour content) or have special scheduling constraints (e.g. rapid follow-up of transient events like gamma-ray bursters). Programmes that require worse than median conditions (as all the NTT Period 60 VIS programmes did) can typically be efficiently executed in Service or Visitor Mode. Nevertheless, it is important to schedule enough loosely-constrained programmes in Service Mode that the entire range of observing conditions delivered on nights dedicated to service observing can be used efficiently.

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"First Light" of UT2 !

Following the installation of the main mirror in its cell and a 20-hour working session to put the complex secondary mirror and its support in place, the UT2, now Kueyen, achieved (technical) first light in the morning of March 1, 1999, when an image was obtained of a bright star. It showed this telescope to be in good optical shape and further adjustments of the optical and mechanical systems are expected soon to result in some "astronomical" images.

The announcement of this important event was made by the ESO Director General during the opening session of the VLT Symposium that was held in Antofagasta during March 1–4, 1999.

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