Final Report of the Institute for Astronomy Faculty Review Committee (FRC2013)

To: Joshua Barnes
Date: 26 August 2013
From: FRC2013 – Joshua Barnes (Chair), Fabio Bresolin, Klaus Hodapp, Esther Hu, Robert Joseph, Rolf-Peter Kudritzki

Note: Esther Hu and Fabio Bresolin were appointed by the Director, while the other four members were elected by secret ballot of the IfA's Bargaining Unit 07 faculty.

1 Procedures

The Faculty Review Committee (FRC) distributed instructions and guidelines to the Bargaining Unit 07 (BU07) faculty on 10 May, 2013, with a deadline for the receipt of FRC documents on 14 June, 2013. Following the recommendation of previous FRCs, the IfA Director strongly encouraged every member of BU07 to participate in the FRC process. The committee extended the deadline to accommodate travel schedules and other conflicting commitments, and continued to provide links to on-line resources that could be used to compile Research, Teaching, and Service & Support data.

Responding to changes proposed by the previous FRC and discussed in faculty meetings prior to the 2011 faculty retreat, the FRC form and associated instructions have been substantially revised. The call for FRC material, which includes detailed instructions, is at

`http://www.ifa.hawaii.edu/faculty/barnes/FRC/FRC_2013_CALL.pdf`

and the FAQ list is at

`http://www.ifa.hawaii.edu/faculty/barnes/FRC/REC_2013_FAQ.html`

In a departure from previous years, FRC forms were evaluated using three metrics: Research ($\mathcal{R}$), Teaching ($\mathcal{T}$), and Service & Support ($\mathcal{S}$). (Previously, Service and Support were considered separate metrics.) Scoring was done independently by each FRC member on a 0–10 (10 = best) scale.

The FRC avoided potential conflicts of interest as follows. (1) No FRC member scored their own submission. (2) To reduce peer pressure within the FRC, scores for everybody except the FRC Chair were collected by the Chair and tabulated in a form stripped of the identities of the scorers. Scores for the FRC Chair were collected by another FRC member and delivered to the Chair stripped of the identities of the scorers.

2 Results

Table 1 lists the 51 members of BU07 (as of May, 2013), all of whom were asked to submit forms. The last column indicates the outcome of this request. Four members were excused on the basis of imminent retirement or departure, one is exempt on account of an E/M position, and three did not submit forms before the FRC's final August deadline. In total, 82% (42/51) of all BU07 members participated in FRC2013. Participation by TT faculty was 81% (30/37), compared to 86% (12/14) for non-TT faculty. If the five faculty members either excused or exempted are not counted, overall participation increases to 91% (42/46).

Family Name	**Given Name**	**Email**	**Rank**	**Track**	**Report**
Aspin	Colin	caa	S5	TT	received
Barnes	Joshua	barnes	R5	TT	received
Bresolin	Fabio	bresolin	R5	TT	received
Bus	Bobby	sjb	R4	R	received
Chambers	Ken	chambers	R5	TT	received
Chun	Mark	mchun	S4	TT	received
Cieza	Lucas	lcieza	R3	R	*excused*
Coleman	Paul	gruff	S5	TT	*not received*
Connelley	Michael	msc	R4	TT	received
Cowie	Antoinette	acowie	R5	TT	received
Cowie	Len	cowie	R5	TT	received
Ebeling	Harald	ebeling	R5	R	received
Gal	Roy	rgal	S3	R	received
Habbal	Shadia	shadia	R5	TT	received
Haghighipour	Nader	nader	R4	R	received
Hall	Don	hall	R5	TT	received
Heasley	Jim	heasley	R5	TT	*excused*
Henry	Pat	henry	I5	TT	*excused*
Hodapp	Klaus	hodapp	R5	TT	received
Hope	Doug	dhope	R3	R	received
Howard	Andrew	howard	R3	TT	received
Hu	Esther	hu	R5	TT	received
Jedicke	Robert	jedicke	S5	TT	received
Jefferies	Stuart M.	stuartj	I5	R	received
Joseph	Bob	joseph	R5	TT	received
Kaiser	Nick	kaiser	R5	TT	received
Keane	Jacqueline	keane	R3	R	received
Kudritzki	Rolf Peter	kud	R5	TT	received
Kuhn	Jeff	kuhn	R5	TT	*not received*
Lin	Haosheng	lin	R5	TT	received
Liu	Michael	mliu	R5	TT	received
Magnier	Eugene	eugene	R4	R	received
McLaren	Bob	mclaren	S5	TT	*exempted*
Meech	Karen	meech	R5	TT	received
Mendez	Roberto	mendez	R5	TT	received
Morrison	Glenn	morrison	R3	R	received
Raja	Narayan S.	raja	S5	R	received
Rayner	John	rayner	R5	R	received
Reipurth	Bo	reipurth	R5	TT	*not received*
Rhoads	Pui Hin	phr	S4	R	*excused*
Robertson	Kathleen	roberts	B4	TT	received
Sanders	Dave	sanders	R5	TT	received
Schorghofer	Norbert	norb1	R4	R	received
Szapudi	Istvan	szapudi	R5	TT	received
Tholen	Dave	tholen	R5	TT	received
Tokunaga	Alan	tokunaga	R5	TT	received
Tonry	John	jt	R5	TT	received
Tully	Brent	tully	R5	TT	received
Wainscoat	Richard	rjw	S5	TT	received
Williams	Jonathan	jpw	R5	TT	received

Table 1: BU07 members.

Table 2 lists your numerical grades in Research, Teaching, and Service & Support, along with the corresponding dispersions. For example, if $\mathcal{R}_i$ is the Research score awarded to a given faculty member by FRC member i, then that faculty member's Research grade is

$$\overline{\mathcal{R}} = \frac{1}{N_{\rm FRC}} \sum_{i=1}^{N_{\rm FRC}} \mathcal{R}_i \,. \tag{1}$$

Likewise, the score dispersion is

$$\sigma(\mathcal{R}) = \sqrt{\frac{1}{N_{\rm FRC}} \sum_{i=1}^{N_{\rm FRC}} (\mathcal{R}_i - \overline{\mathcal{R}})^2} \,. \tag{2}$$

(Here, the population standard deviation is used since the set of FRC members is finite and completely sampled.) Note that this dispersion is *not* an estimate of the uncertainty in the grade $\overline{\mathcal{R}}$; rather, it is a measure of the range of scores assigned by the FRC.

	$\overline{\mathcal{R}}$	$\sigma(\mathcal{R})$	$\overline{\mathcal{T}}$	$\sigma(\mathcal{T})$	$\overline{\mathcal{S}}$	$\sigma(\mathcal{S})$
Joshua Barnes	**6.20**	**0.81**	**7.00**	**0.71**	**7.60**	**0.49**
FRC 2013 Average	5.81	0.96	4.31	1.15	6.19	1.02

Table 2: Your Research, Teaching, and Service & Support grades, along with the corresponding score dispersions. For comparison, grades and dispersions averaged over all responding faculty are also given.

2.1 Analysis

Histograms of Research ($\overline{\mathcal{R}}$), Teaching ($\overline{\mathcal{T}}$), and Service & Support ($\overline{\mathcal{S}}$) grades appear in Fig. 1. In addition, histogram in the lower right panel shows the combined grade $\overline{\mathcal{C}} = (\overline{\mathcal{R}} + \overline{\mathcal{T}} + \overline{\mathcal{S}})/3$. Table 3 compares grade distributions for 2013 and 2011; for example, $\langle\overline{\mathcal{R}}\rangle$ is the average $\overline{\mathcal{R}}$ grade for all N responding faculty, while $\sigma(\overline{\mathcal{R}})$ quantifies the width of the $\overline{\mathcal{R}}$ grade distribution. Where a direct comparison is possible, the 2013 grade distributions are generally similar to those obtained in the previous FRC cycle. The average research grades were virtually identical, while the teaching grades for 2013 are somewhat lower than for 2011. Both Research and Teaching have marginally narrower distributions in 2013 than in 2011. It's slightly more complicated to compare $\overline{\mathcal{S}}$ grades, since Service & Support were treated as two separate metrics in 2011. Adopting $\max(\mathbf{Se}, \mathbf{Su})$, the maximum of the old Service and Support metrics, as a proxy for $\overline{\mathcal{S}}$, it appears that the 2013 grades are again somewhat lower. Finally, the decrease in $\overline{\mathcal{C}}$ from 2011 to 2013 is entirely due to the already-noted changes in $\overline{\mathcal{T}}$ and $\overline{\mathcal{S}}$.

A more detailed representation of the distributions appears in Fig. 2, which presents cumulative distributions of $\overline{\mathcal{R}}$, $\overline{\mathcal{T}}$, $\overline{\mathcal{S}}$, and $\overline{\mathcal{C}}$ for all participating faculty. Some peculiarities of the FRC2013

Year	N	$\langle\overline{\mathcal{R}}\rangle$	$\sigma(\overline{\mathcal{R}})$	$\langle\overline{\mathcal{T}}\rangle$	$\sigma(\overline{\mathcal{T}})$	$\langle\overline{\mathcal{S}}\rangle$	$\sigma(\overline{\mathcal{S}})$	$\langle\overline{\mathcal{C}}\rangle$	$\sigma(\overline{\mathcal{C}})$
2013	42	5.81	2.15	4.31	2.42	6.19	2.08	5.44	1.70
2011	49	5.85	2.43	4.85	2.70	6.60	1.91	5.76	1.73

Table 3: Average grades and grade dispersions for 2013 and 2011. For 2011, $\max(\mathbf{Se}, \mathbf{Su})$ was used in place of $\overline{\mathcal{S}}$, and $(\mathbf{R} + \mathbf{T} + \max(\mathbf{Se}, \mathbf{Su}))/3$ was used in place of $\overline{\mathcal{C}}$.

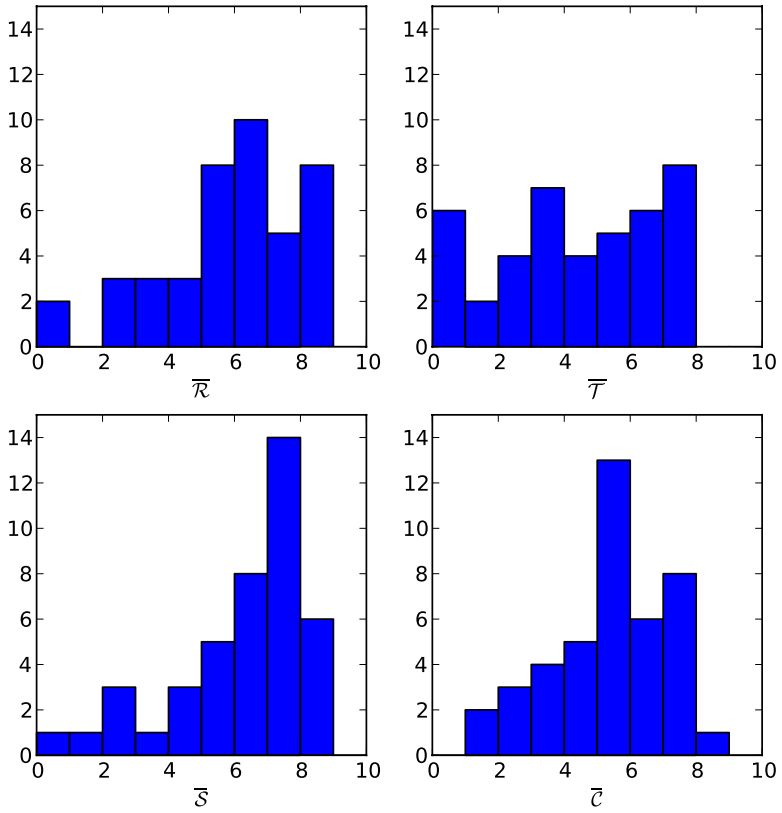

Figure 1: Histograms of grades for all participating faculty.

grades are evident in this plot. For example, no faculty member received a grade of 0 in any metric; this occurred because some FRC members did not use the full range of possible scores. (For comparison, FRC2011 awarded 3 and 7 grades of 0 for Research and Teaching, respectively.) Fig. 2 also reinforces the impression from Fig. 1 that the distribution of teaching grades is bimodal, with one segment below $\overline{\mathcal{T}} \simeq 5$ and another segment above.

Fig. 3 presents cumulative score distributions for all FRC members. These plots reveal some interesting points about the scoring process. As in previous years, this FRC found it relatively easy to assign Research scores in a consistent and uniform manner, and this is reflected in the relatively narrow range of cumulative distributions shown in the top panel of Fig. 3. Further evidence comes from the Research score dispersions; most faculty have fairly small dispersions, and a solid majority of the FRC award Research scores within ± 1 of $\overline{\mathcal{R}}$.

In contrast, the Teaching scores in the next panel of Fig. 3 display a wide range of cumulative distributions. This does not reflect an intrinsic difficulty in evaluating teaching. Rather, it arises because the individual members of the FRC hold very different opinions on the relative value of classroom and laboratory instruction on one hand and mentoring and supporting students on the other. This interpretation is strongly supported by the Teaching score dispersions; virtually all faculty with high Teaching dispersions are involved in mentoring students. Conversely, faculty who did significant amounts of classroom teaching were often graded more uniformly by different members of the FRC. The bimodal distribution of Teaching grades already noted is largely due to the split between teaching and non-teaching faculty, with the former group typically receiving grades $\overline{\mathcal{T}} > 5$.

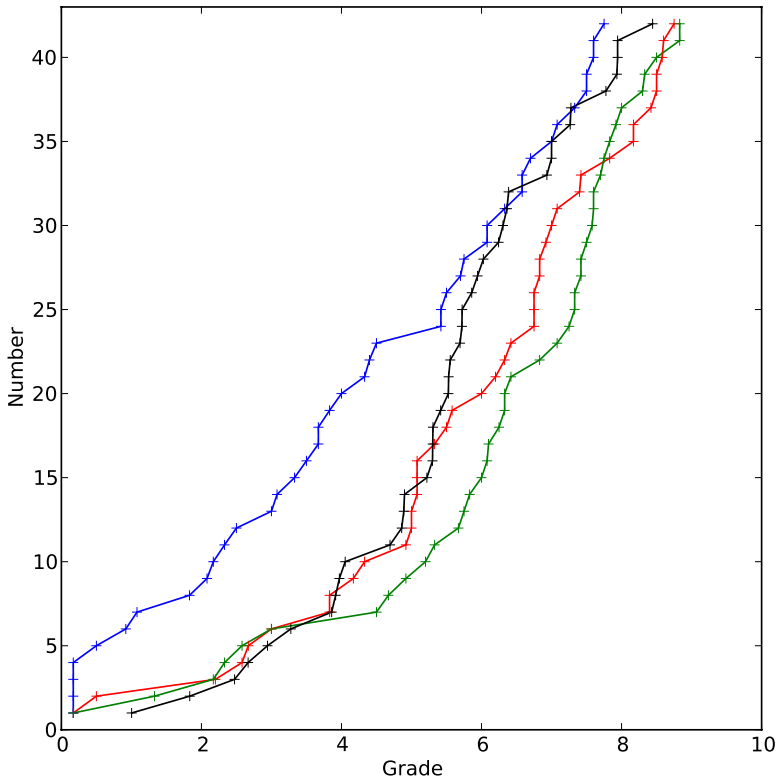

Figure 2: Cumulative grade distributions for all participating faculty. Here the horizontal axis represents an individual's assigned grade, and the vertical axis represents the number of individuals receiving that grade or less. Results are shown for $\overline{\mathcal{R}}$ (red), $\overline{\mathcal{T}}$ (blue), $\overline{\mathcal{S}}$ (green), and $\overline{\mathcal{C}}$ (black).

It would probably be possible to reduce the dispersions in Teaching scores by renormalizing the scores of each FRC member to a uniform scale. In our view, this would be inappropriate. These dispersions represent a real divergence of opinion among members of the FRC; "papering it over" with statistical tricks does nothing to resolve the underlying issue, which has long been debated within the IfA.

The cumulative distributions of Service & Support scores, plotted in the bottom panel of Fig. 3, display a range which is wider than the Research distributions but narrower than the Teaching distributions. Much of the variation in these score distributions reflects the genuine difficulty of scoring Service & Support activities, which has also been noted by previous FRCs. In contrast to Research and Teaching, which both include objective, quantifiable components (e.g., papers published, classes taught), Service & Support scores are largely based on self-reported and/or narrative information.

A more specific problem arises in assessing the activities of faculty involved in large instrumentation projects, which generally have a significant Service & Support component. As these projects mature, it becomes more difficult to determine if the fruits should be counted as Research or as Service & Support. Some FRC members followed their own judgement, while others gave more weight to the workloads reported in the FRC documents. This probably increased some dispersions in both Research and Service & Support. While it may have relatively little effect on individual combined grades $\overline{\mathcal{C}}$, it may systematically distort the overall balance between Research and Service & Support as represented in this report.

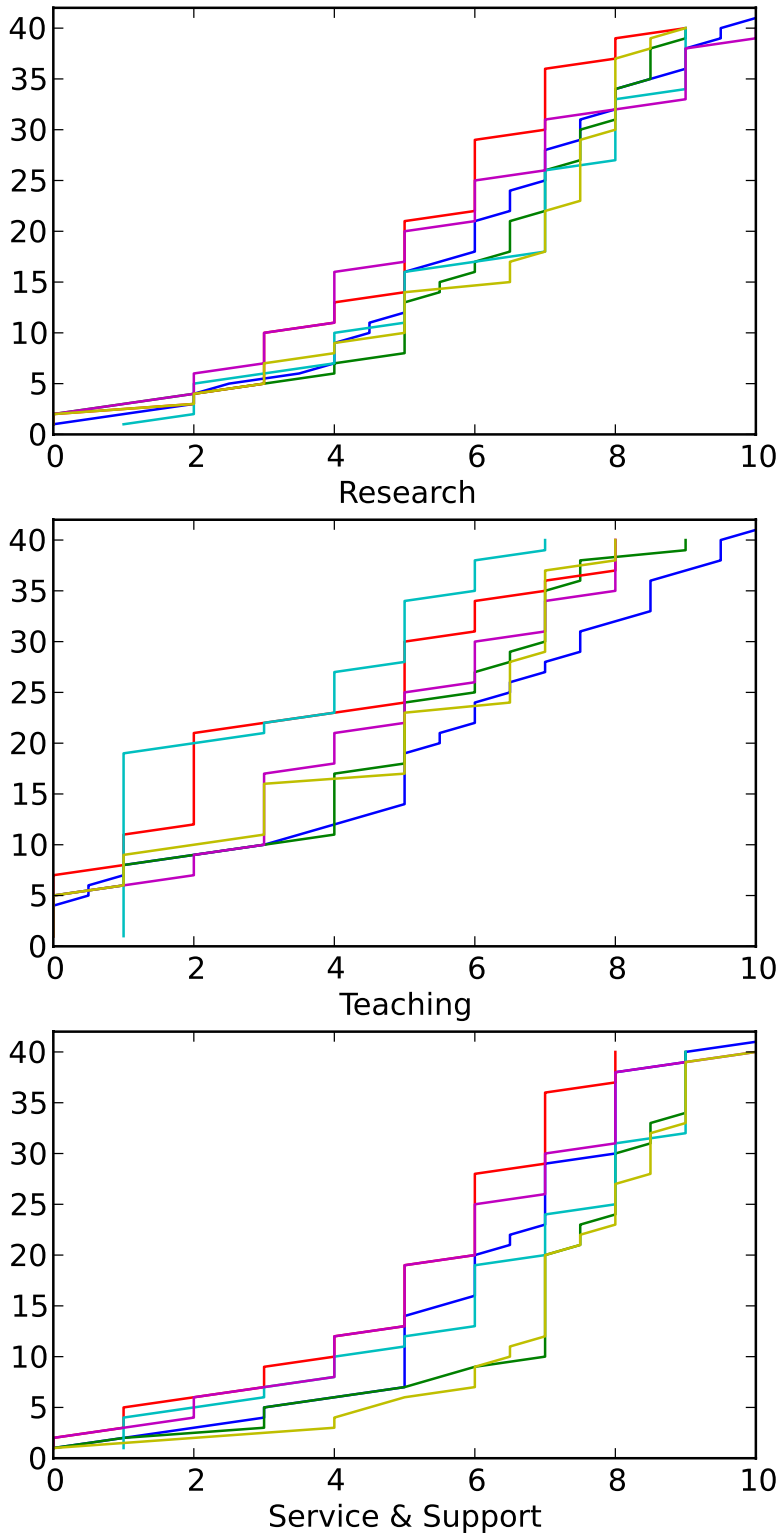

Figure 3: Cumulative score distributions for individual FRC members.

While the results of FRC2013 are not that different from those of FRC2011, some systematic changes have been noted. It's not easy to determine if these changes are due to the faculty or the FRC, although circumstantial evidence lends some support to the latter interpretation. For example, in 2013 only one faculty member got $\overline{\mathcal{T}} > 7.60$, whereas in 2011 a total of seven exceeded this value. Likewise, in 2013 only two faculty got $\overline{\mathcal{S}} > 8.50$, whereas nine did so in 2011. If these changes were entirely due to reduced faculty investment in Teaching and in Service & Support, one would expect other consequences to be evident throughout the IfA. The more detailed analysis of scoring patterns presented here may be useful in interpreting the results of future FRCs.

3 Recommendations

The FRC process was intensively discussed in preparation for the 2011 Faculty Retreat and subsequent Visiting Committee. From this discussion, a wide range of possible improvements were suggested, as detailed in the Faculty Performance Review White Paper. The present status of these recommendations is as follows:

- Resolve the long-standing ambiguity between Service and Support.
  Done, by combining them into a single metric.
- Redesign the Service & Support sections of the FRC document to provide additional scope for narratives.
  Done, inasmuch as faculty were encouraged to use more space as needed.
- Adopt a consistent 0–10 scale among all members of the FRC.
  Not done, although this issue was discussed by the FRC prior to grading.
- Separate individual research grants from grants supporting institutional goals.
  Done (but see below).
- List postdocs under research, and students under teaching.
  Done.
- Separate research talks from invited reviews.
  Done.
- To clarify relative contributions of students vs. mentors, as well as contributions to large team efforts, require faculty to state percentage effort for each publication listed.
  Not done. Given that such percentages are often required in CVs, this seems a reasonable request.
- Develop a metric for instrumentation.
  Not done, although the move to separate research and institutional grants represents a step in this direction.
- Replace the current LaTeX-based FRC document with a form-fillable PDF.
  Not done.
- Use available information on citations, publications, grants, teaching, evaluations, committee memberships, etc to automatically generate the tabular material in FRC documents.
  Not done.

FRC2013 was unanimous in its opinion that the FRC process remains a healthy and useful one for the IfA, and strongly endorses its continuation in future years. The committee offered the following recommendations to further improve the FRC process.

FRC committees should continue to be convened every two years, maintaining the pattern established in 2011. It would be helpful to start the FRC process earlier in the year; in 2013, summer travel delayed submission of forms and meetings of the FRC.

In 2013, four members of BU07 were excused from participating in the faculty review process on the basis of imminent retirement or departure. This is logical if the FRC is seen primarily as a mechanism to identify candidates for salary adjustments. However, if the FRC's purpose is to obtain as complete a picture as possible of the activities and accomplishments of the IfA faculty, then excusing faculty on this basis is counter-productive.

For the first time in 2013, individual research grants and institutional grants were tabulated separately (though not all faculty members understood and followed this directive). The FRC recommends that this be continued, since institutional grants can provide a quantifiable component of the Service & Support metric.

The IfA Director should continue to meet with every member of BU07 to discuss their performance. This should include those members of BU07 who did not submit FRC reports before the deadline.

A small number of IfA faculty have highly specialized positions supporting the IfA's mission. These individuals typically have no research or teaching obligations, and it is clearly *not* appropriate to use the combined grade $\overline{\mathcal{C}} = (\overline{\mathcal{R}} + \overline{\mathcal{T}} + \overline{\mathcal{S}})/3$ to measure their net value to the IfA.

Replacement of the current LaTeX-based FRC document with a form-fillable PDF appears feasible, although the devil is in the details. Providing a WORD-based alternative might satisfy many of those uncomfortable with LaTeX.

Automatic extraction of citations, publications, grants, teaching, evaluations, committee memberships, etc from available databases is a non-trivial problem. Harvesting data from off-site web resources will very likely require an ongoing programming commitment by CSRS personnel. On-site data could be compiled in a relatively straight-forward fashion if uniform spread-sheet/database formats were defined and adhered to. Doing so will require coordination between a number of different entities within the IfA.