UCO Board Meeting

S. M Faber, Interim Director

UCO Participants: Xavier Prochaska, Aaron Barth, Maureen Mclean, John Wareham

March 8, 2013

Outcomes and recommendations from the Feb. 25 UCOAC meeting

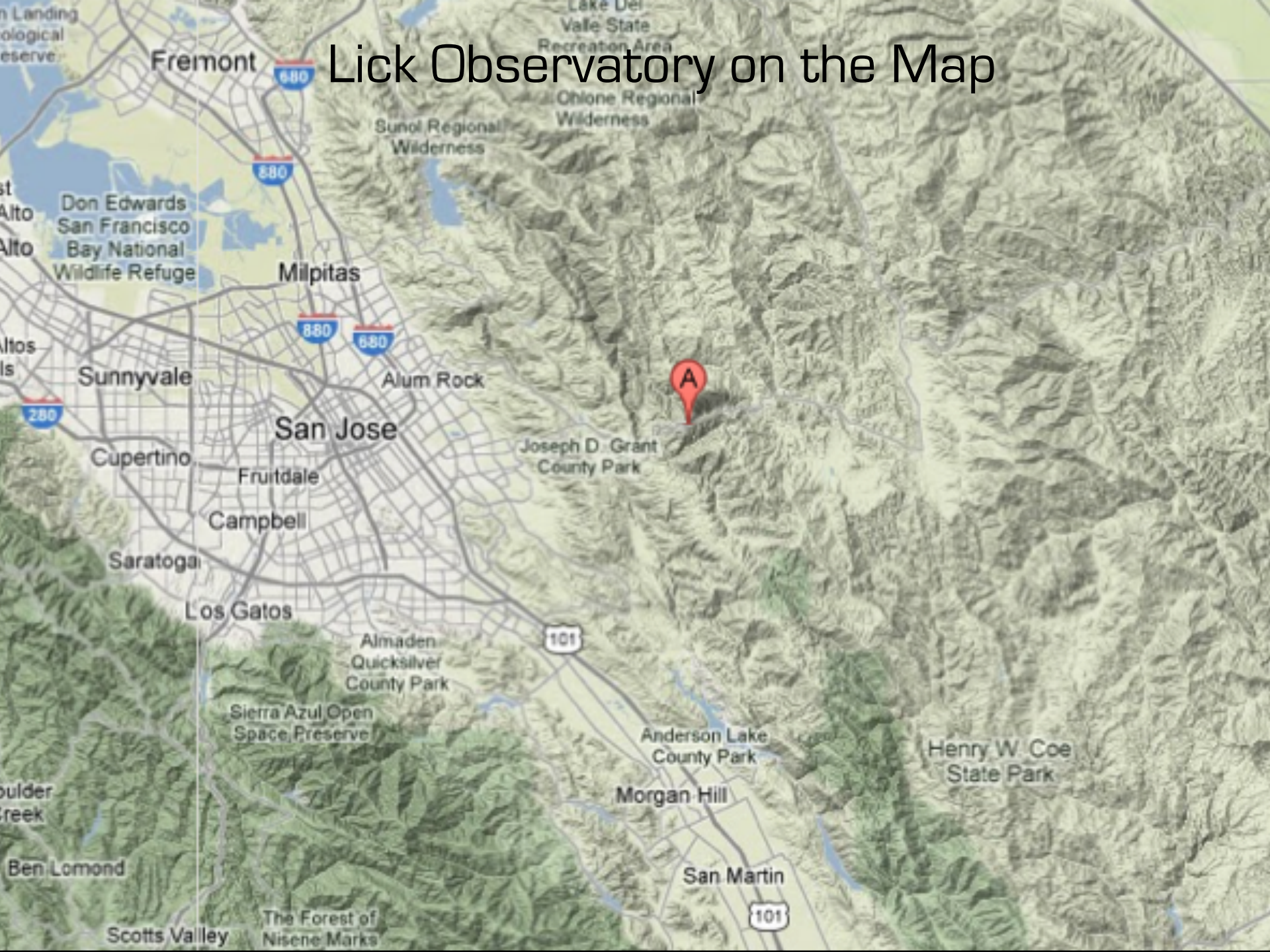
(summary by UCOAC chair A. Barth)

- UCO needs a core of strong leadership with permanence and continuity at UCSC in order to effectively lead our partnerships with Keck and TMT.
- A new senior faculty hire at UCSC to lead systemwide AO should be a high priority.
- Consider hiring a UCO Deputy Director (non-faculty) to manage internal business.
- Funding is needed in the UCO budget to support some number of critical faculty roles around the system.
  - The set of roles requiring support is still under discussion (need SPC input).
  - A system is needed for defining expectations and for performance evaluation.
- The search for the next Interim Director should begin urgently.
- UCOAC role in the Director search: consider having the search committee present top candidates to UCOAC for review and comment (as well as to Board and UCSC)? The search committee itself should include at least one member from each astronomy campus.
- Question: is the MRU description in the UC Compendium appropriate for a decades-long investment in facilities? Do we need a separate category or description for MRUs that are not intended to be temporary initiatives?

Part I: Spartan Model for Operating Lick Observatory

Lick Observatory from San Jose

Lick Observatory on the Map

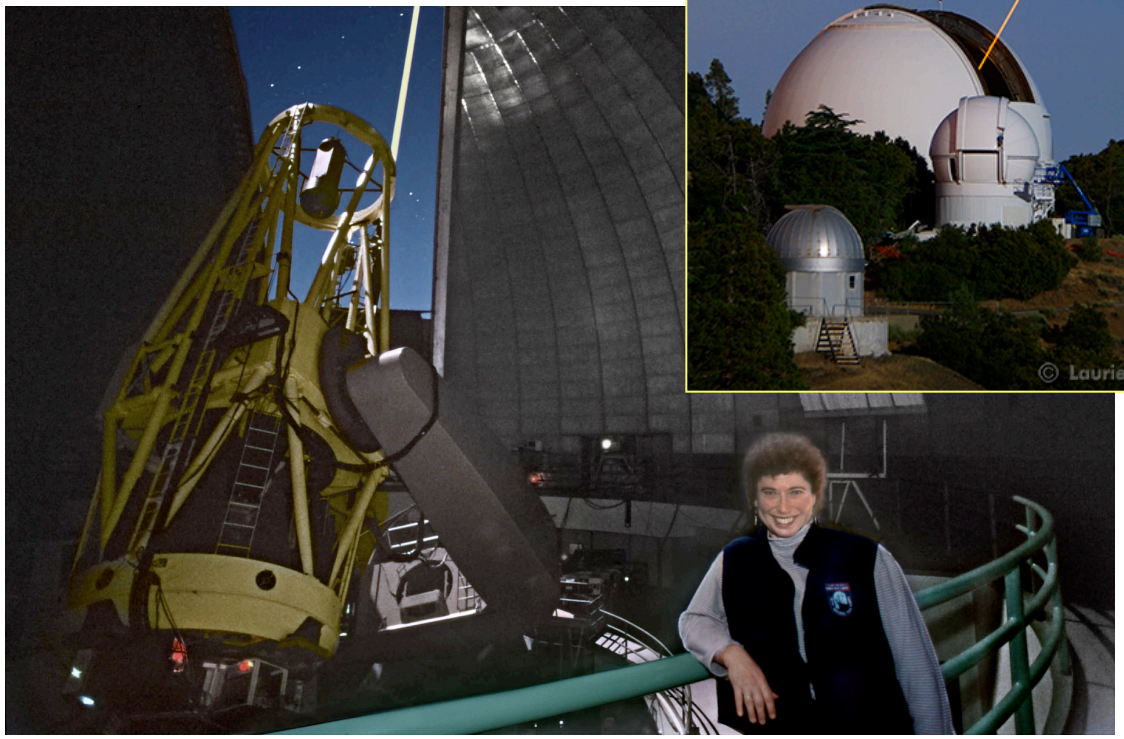


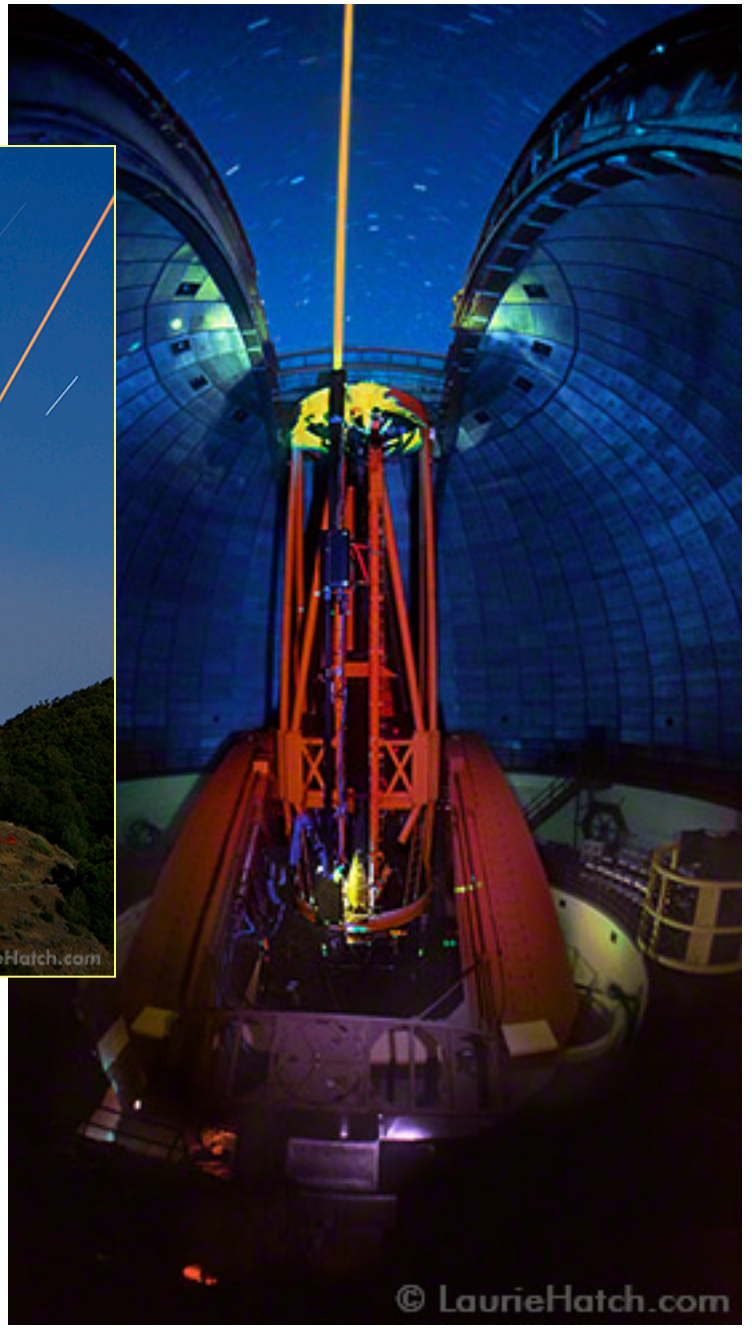
The Telescopes of Lick Observatory

- **Shane 120-inch (3-m) reflector:** general-purpose workhorse instrument
- **Automated Planet-Finder (APF) reflector (2.4-m):** dedicated to planet-finding using the Doppler technique; presently being commissioned
- **Nickel 40-inch (1-m) reflector:** imaging and photometry; remote observing for undergrad astronomy labs at UCB, UCSC, and UCSD
- **Katzman Automatic Imaging Telescope (KAIT) (0.76-m):** world's most successful nearby-supernova search engine. "The Little Engine That Could."
- **36-inch refractor:** completed in 1888, largest telescope in the world at that time; world's largest *well-maintained* refractor; a treasure of 19th century history and technology

The Shane 3-m reflector

Shown with Claire Max, co-inventor of the laser guide star, which has opened up the use of adaptive optics and super-*Hubble* resolution imaging with ground-based telescopes.

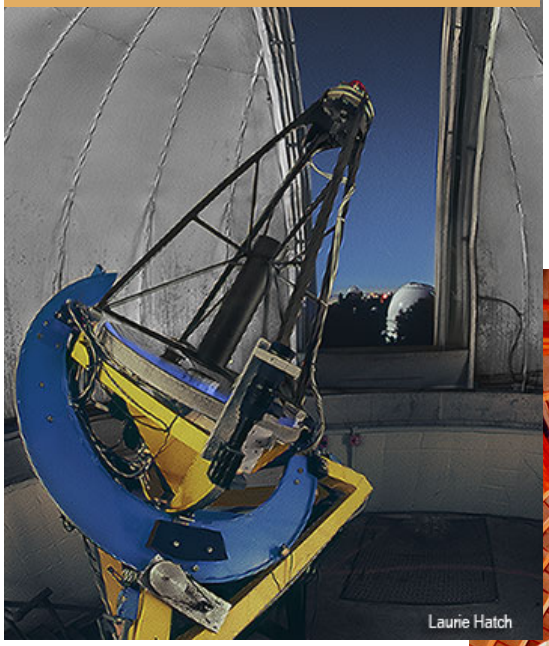


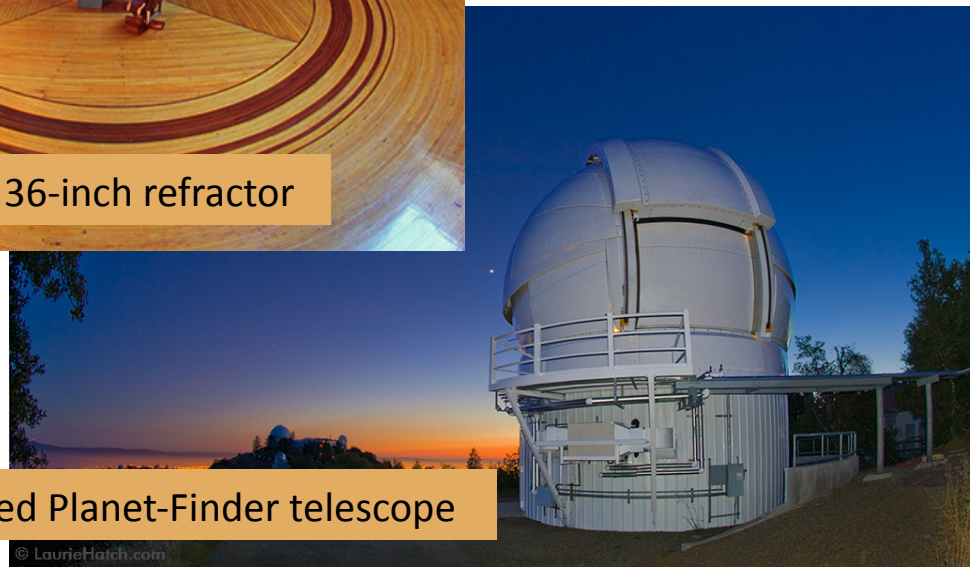


Other Telescopes at Lick Observatory

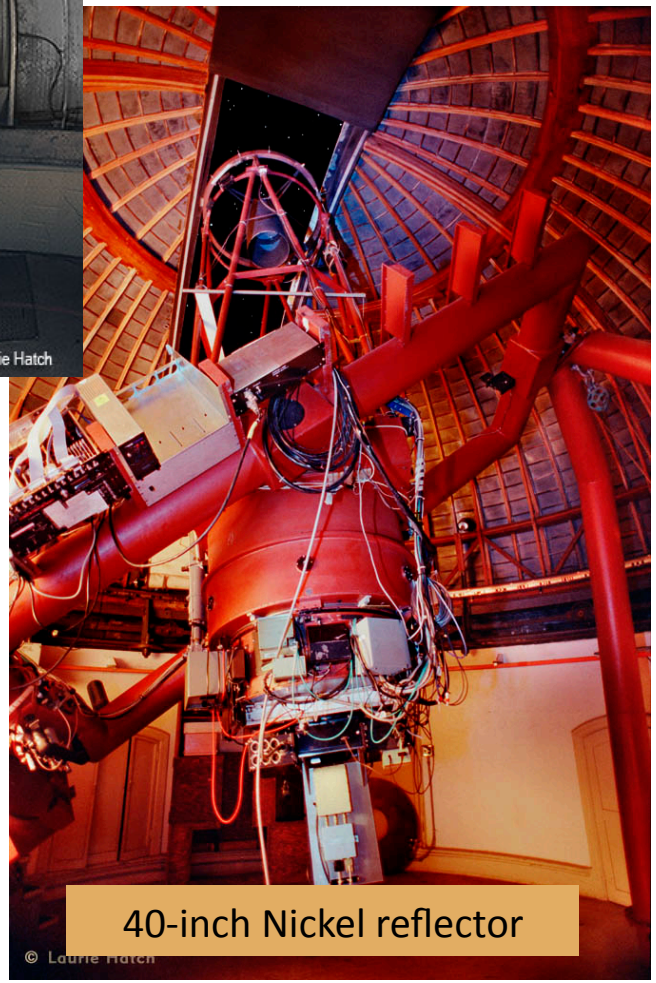
The 36-inch refractor

KAIT supernova search telescope





Automated Planet-Finder telescope



40-inch Nickel reflector

Basic Functions at Lick Observatory

- Operate the Shane 3-m telescope nightly (the “telescope operator”).
- Attach appropriate instruments to the telescopes as required by the observing schedule and reconfigure the telescope optics appropriately.
- Maintain the telescopes, domes, dewars, and instrumentation in a state of readiness for observing.
- Accept new instruments and participate in their commissioning by providing on-site repairs and adjustments and gathering test observing data.
- Instruct new observers on the use of the facilities. Provide assistance to observers in setting up, verifying, and operating telescopes and instruments. Write instructional manuals on the use of the equipment.
- Be responsible for the safety of all facilities and the personal safety of employees and visitors. Maintain competency in safety and emergency procedures.

Basic Functions at Lick Observatory

- Maintain records and documentation on the state of the scientific facilities.
- Manage infrastructure and operations for observatory and community of Mount Hamilton, including water treatment plant, electrical generation, roads, observer lodging, residential housing, public safety and emergency response.
- Perform various administrative functions related to permits, utilities, cashiering, hosting groups and interfacing with state and county public agencies.
- Maintain the local mountain computing network, buy and install new computing equipment, and install and maintain computer operating systems.
- Interface with technical and software support services at the UCO Instrumentation Laboratories at UCSC to carry out repairs and maintenance.
- Operate remote observing feeds for distribution to remote observing facilities on the eight UC Astronomy campuses.

Basic Functions at Lick Observatory

- Conduct free visitor tours, public programs and outreach events.
- Promote the observatory through social media, website, quarterly e-newsletters, hosting film crews and VIPs, and pursuit of active media relations.
- Organize and conduct annual UC graduate student workshops.
- Plan and prepare educational exhibits at Lick Observatory and at external sites.
- Stock and operate the Lick Observatory Gift Shop.
- Support educational partnerships with the San Jose Tech Museum, Center for Science Education at UCB SSL, and other external education partners.
- Actively seek revenue from donors and private philanthropy. Provide local support and leadership for the Friends of Lick Observatory group. Plan and host fund-raising events.

Basic Functions at Lick Observatory

Conclusions:

- The Observatory is an isolated outpost that in many respects has to be self-contained, self-sufficient, and self-reliant. There is a wide array of tasks to be done, and employees need to be versatile, flexible, and creative problem solvers, in addition to having detailed knowledge of large, expensive, and potentially dangerous equipment.

- It takes a very special kind of person to work and thrive in the remote environment of Lick Observatory.

- We are extremely lucky to have such a talented and dedicated crew.

Spartan Model for Lick Operations: Assumptions

- UCSC keeps maintenance funding at ~$490 k/yr
- Support from UCO Labs is capped at $231 k for software, optics maintenance, and instrument techs (at least $500 k less than in previous years).
- Additional expected cost not yet factored in: aluminizing 3-m mirror (10 man weeks = $20 k)
- Not included in the definition of “operations”:
  - UCO faculty and research scientist support time
  - Construction and commissioning of Shane AO system and new Shane AO laser
  - Commissioning of Automated Planet Finder telescope

Lick Observatory 'Spartan' Model FY14

Description	FTE	Salaries	Benefits 1	TOTAL 1	NOTES
UCOP Core Funds					
Deputy Director	0.50	$ 46,350	$ 22,086	$ 68,436	*Assumes 1.00 total with .30 funded by public programs and .20 funded by maintenance*
Tele Ops Mgr	1.00	$ 86,520	$ 41,227	$ 127,747	
SA 1	1.00	$ 109,352	$ 52,106	$ 161,458	
SA 2	0.00	$ -	$ -	$ -	*Paid on endowment funds*
Tele Op 1	1.00	$ 77,715	$ 37,031	$ 114,746	*Reduce from 5 to 4 tele op's*
Tele Op 2	1.00	$ 67,025	$ 31,937	$ 98,962	*4th tele op back in to maintain 7 day schedule*
Tele Op 3	1.00	$ 56,376	$ 26,863	$ 83,239	
Tele Op 4	1.00	$ 56,376	$ 26,863	$ 83,239	
Mechanician	0.50	$ 32,385	$ 15,431	$ 47,816	*Reduce mech to half-time*
AA 2	0.30	$ 11,826	$ 5,635	$ 17,461	
Laser Spotters	0.00	$ 4,000	$ -	$ 4,000	
Staff salary/benefit increases	0.00	$ 16,438	$ 7,776	$ 24,214	*3% increase on salary and benefits*
Total Staff	7.30	$ 564,363	$ 259,180	$ 831,319	
Winter Closure				$ (56,000)	
Non Salary Expenditures				$ 60,000	
Total Core Funds	7.30			$ 835,319	*Reflects 19% decrease of core funding from FY13*
Non UCOP Funds					
Deputy Director	0.50	$ 46,350	$ 22,086	$ 68,436	*Move half of Deputy Director to visitor revenues.*
SA 2	1.00	$ 64,404	$ 30,689	$ 95,093	*Move SA2 to endowment funds. Permission sought.*
Staff salary/benefit increases			$ 4,906	$ 4,906	
Total Other Funds	1.50			$ 168,434	
GRAND TOTAL	8.80			$ 1,003,753	*Reflects 12% decrease of all funds from FY13*
FY 13 BASELINE	9.30			$ 1,144,708	*($1,049,708 core; $95,000 other)*
				$ (140,955)	*Delta from FY13 to FY14*

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Spartan Model: Changes from FY13

Modification	Timing	Δ FTE	Savings ($k)	Risk (Impact)	Likelihood
One-month winter closure over holidays	2013B	0	56	Loss of observing nights Reduced staff morale (restricted vacation)	Definite Low
Reduce to 4 tele-ops from 5	June 2013	-1	83	Loss of observing nights (sickness, worker's comp) Reduced instrument PM Slower response to fix telescope/instrument Burn out staff	Medium Probable Medium Medium
Allocate Davidson Funds to Support Astronomer salaries	FY14	0.3	25	Reduced PhD students at Lick Reduced participation in Grad Workshop	Medium Medium
Reduced UCO Shop support	FY14	-0.6	50	Incapable of repairing instrument Incapable of recoating mirrors	Low Medium
Reduced software support	FY14	-0.63	73	No software enhancements Remote observing suspended Internet/computing insufficient for observing	High Low Medium

Total $139 k

On-site reductions are in yellow.

Spartan Model: Changes from FY13

Modification	Timing	Δ FTE	Savings ($k)	Risk (Impact)	Likelihood
Only 3 instruments on Shane: (Kast, Hamilton, AO)	2013B			Reduced scientific capability Needed to accommodate 4 tele ops and reduced mechanician; does not generate savings by itself	Medium High
Reduce mechanician hours	FY14	-0.5	48	Fewer instrument/focus changes Reduced mechanical preventive maintenance (telescope, dome) Reduced scientific capability	Medium High Medium
Reduced admin suppport	FY14	-0.2	20	Reduced purchasing staff resulting from Cruzbuy system implementation	High
Modification to Deputy Director Funding	FY14	0.4	55	Reduced monies to support other E/PO activities	High

Total $103 k

On-site reductions are in yellow.

Other Sources of Revenue and Likelihood

Source	Amount ($k)	Probability of 'Success'	Impact/Risks
Convert Hamilton Foundation endowment	58	Medium	Monies had been considered for E/PO activities; permission sought
Charge PI's for training of new observers	~10	High	Potential that PI's will send fewer observers; hardship for grads and postdocs
Charge PI's for 3-m nights ($500/night)	~180	Zero	Rejected by the UCOAC
Public program sponsorship	20	Medium	Offset ~2/3 of the 0.30 FTE funding of Deputy Director position from public program revenues
Saturday night star parties	10	Medium	7 group viewing parties on Saturday nights between Music of the Spheres nights

Realistic are in yellow.

Lick Observatory Running Costs: Recent History

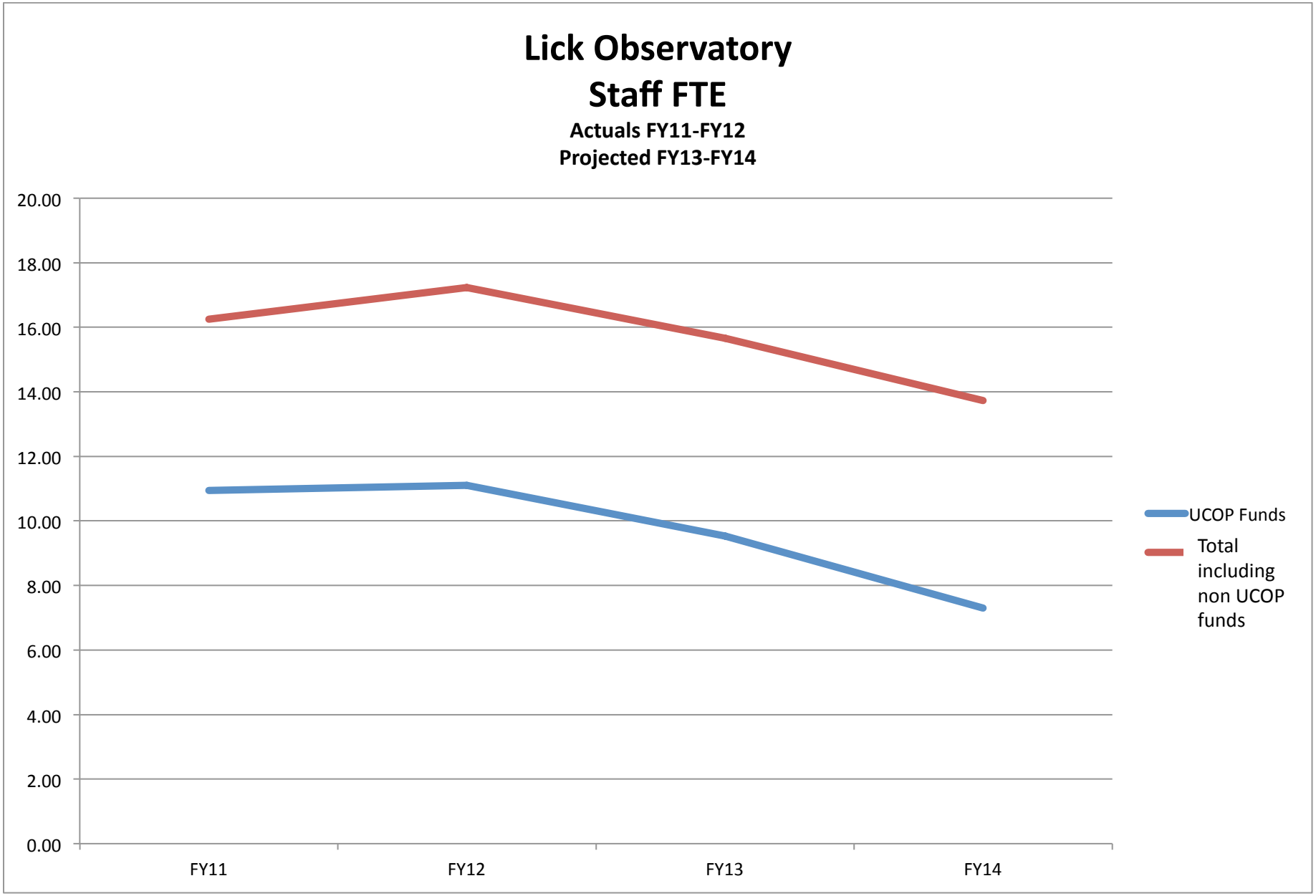
Lick Observatory Direct Running Costs

UCOP FUNDS	FY11		FY12		FY13		FY14	
Onsite Management	1.00	$ 168,306	1.60	$ 159,518	1.45	$ 154,126	0.80	$ 93,474
Telescope Operations	7.95	$ 815,373	7.50	$ 760,711	7.00	$ 735,796	5.50	$ 631,543
Science Support	2.00	$ 263,640	2.00	$ 236,484	1.08	$ 155,432	1.00	$ 166,302
Closure Salary Savings		$ -		$ -		$ -		$ (56,000)
	10.95	$ 1,247,318	11.10	$ 1,156,713	9.53	$ 1,045,354	7.30	$ 835,318
NON-UCOP FUNDS								
Onsite Management		$ -		$ -		$ -	0.5	$ 28,196
Science Support	0.17	$ 18,434	1.00	$ 89,224	1.00	$ 96,223	1.00	$ 97,945
Physical Plant	5.13	$ 505,396	5.13	$ 480,362	5.13	$ 453,000	4.93	$ 491,583
	5.30	$ 523,830	6.13	$ 569,586	6.13	$ 549,223	6.43	$ 617,724
TOTAL	16.25	$ 1,771,148	17.23	$ 1,726,299	15.66	$ 1,594,577	13.73	$ 1,453,042

Includes UCOP funds, OMP funds, endowment & public program funds.

Excludes utilities (~$150K/yr covered by UCSC), recharge and revenue funds.

Lick Observatory Running Costs: Recent History



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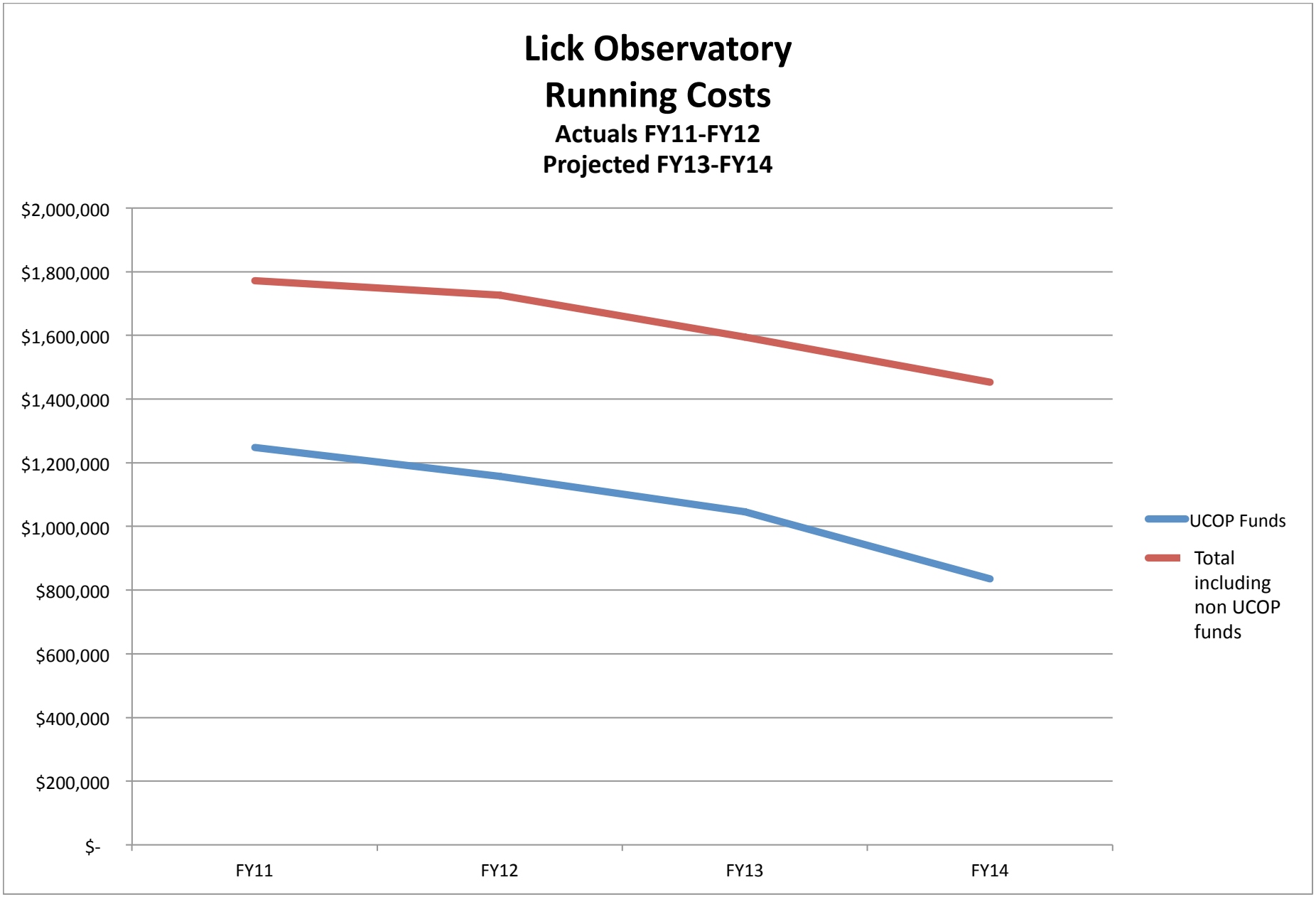

Off-site costs vs. total costs of Lick Observatory in FY14

Additional savings that would be realized from shutting down all UCOP-funded project activities and removing all UCO Instrument Labs tech support:

UCO Labs technical support:	$231 k (in budget)
Shane aluminizing:	20 k (estimated)
Research scientist support time:	258 k (in budget)
Construction and commissioning of Shane AO system:	63 k (in budget)
Administrative support (2.6 FTE):	300 k (in budget)

Total on-site	$872 k

Total cost of Lick in FY14 = $1.04 M (on site)
(UCOP funds only) 0.87 M (off site)

Total $1.91 M ===> $2.8 M

Not included is UCSC maint+util ($640 k) or faculty time ($60 k)

FY14

	TMT	TMT	Coatings	Keck	Keck	Keck	Keck	Lickops	Lickops	Lickops	Lick AO	Lick AO		
	MOBIE	TMT Software	COATINGS RESEARCH	Keck Remote Obs/ Gen support	KCWI CAMERA	DEIMOS UPGRADE	K1DM3	MH Ops	Data Archive	UCAM	Shane AO Commissioning	AO Laser	FY14 TOTAL	FY14 TOTAL FTE
ME1/Radovan	1462												1462	
ME2/Cabak					616	250	1452					160	2478	
ME3/Ratliff			360				1264						1624	
Laser E1/Dillon												900	900	
ENG TOTAL	1462		360		616	250	2716	0	0	0	0	1060	6464	4.42
EE1/Peck											200		200	
EE2/Sandford						63	46						109	
EE Tech/Saylor							72					100	172	
ELE TOTAL	0		0		0	63	118	0	0	0	200	100	481	0.33
Master Optician/Hilyard					378			48					426	
Optician Tech/DuPraw			960		48		0	112					1120	
OPT TOTAL	0		960		426	0	0	160	0	0	0	0	1546	1.06
Machinist 2/Ward			120		763		240					105	1228	
Machinist 3/Pfister			240		763		240	80				105	1428	
FAB TOTAL	0		360		1526	0	480	80	0	0	0	210	2656	1.82
Deich		731		91			142						964	
Allen				91		400		350		192	146	80	1259	
Gates								790	80		147		1017	
Lanclos				171		200		500	80		147		1098	
SPG TOTAL	0	731	0	353	0	600	142	1640	160	192	440	80	4338	2.97
PROJECT TOTAL HRS	1462	731	1680	353	2568	913	3456	1880	160	192	640	1450	15485	10.59
PROJECT TOTAL FTE	1.00	0.50	1.15	0.24	1.76	0.62	2.36	1.29	0.11	0.13	0.44	0.99	10.59	
PROJECT BUDGET, FY14	$ 191,887.50	$ 102,851.70	$ 123,228.00	$ 39,415.95	$ 248,425.80	$ 95,602.50	$ 368,529.00	$ 189,502.20	$ 15,540.00	$ 27,014.40	$ 62,853.00	$ 144,060.00	$1,608,910.05	

Color coding:

Pink: internal funds

Yellow: contracts for outside funding (obligations but most are only partial funding)

Green: contracts for ongoing projects we are likely to get; outside funding

Blue: pending NSF proposals; not likely with sequester

Breakdown of technical FTEs for FY14:
There are 19 technical non-faculty, including 4 research scientists.

TMT 2.5
Keck 7
Lick AO 3
Lick ops 1.4
Coatings 1.8

Subtotal: 15 of 19 FTE are accounted for (including research scientists)

Spartan model

FY14	TMT MOBIE	TMT TMT Software	Coatings COATINGS RESEARCH	Keck Keck Remote Obs/ Gen support	Keck KCWI CAMERA	Keck DEIMOS UPGRADE	Keck K1DM3	Lickops MH Ops	Lickops Data Archive	Lickops UCAM	Lick AO Shane AO Commissioning	Lick AO AO Laser	FY14 TOTAL	FY14 TOTAL FTE
ME1/Radovan	1462												1462	
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Conclusions:

Little flexibility in FY14 to start NEW projects or to lay off; most manpower is needed to finish existing projects, even under spartan model.

Spare manpower is mainly in electronics because we are not building a new detector system next year. But we will need these people in future (three of them).

Wedges to start new projects will open in FY15.

If Deployable Tertiary (K1DM3) project not approved by NSF, we have a $400 k deficit.

Part II: The UCO Director Position – Structure, Appointment, and Review

General Considerations

- The job is a lot of work, needs to be full-time, teaching optional, continuing scientific leadership and "presence" expected, continuing scientific activity optional

- We propose an Academic Administrator position modeled on a campus dean but reporting to the UC President or designee rather than the campus EVC

- An administrative model has several desirable features:
- Naturally full-time and focused on administration
- The FTE is held centrally on the campus and returned to the center when incumbent separates
- The need for department buy-in is reduced since the FTE is held centrally

Chain of Command

- The Director serves a systemwide clientele. It is most natural that the agent who appoints and reviews him/her should also be an agent of the system, not a single campus.

- Draft language currently being considered in the Compendium proposes that MRU directors be appointed by the President or by his/her designee. This is consistent with the above rationale for a systemwide agent for the Observatory.

- The UCSC campus has a strong stake and should not have to accept a candidate whom they do not support. This right would be protected by giving the campus Chancellor *veto power* over key aspects of the appointment. The interests of the UCSC Chancellor are stronger than they would be for a normal MRU because of the long-term nature of the Observatory and the long-term investment in it by the UCSC campus.

Stakeholders of the UCO Director

- Stakeholders and their representatives and designees:

- UC President and Provost or designee
- UCSC Chancellor and EVC (assuming that the headquarters is at UCSC)
- UCSC Astronomy faculty (Bylaw 55 unit)
- Systemwide UC astronomy faculty >> UCOAC
- UCSC Dean of PBSci
- UCO Board
- Caltech community >> Caltech Director
- Keck Observatory community >> Keck SSC co-chairs, Keck Director
- TMT community >> too soon to say who this person is

The Position

- The UCO Director is appointed by the UC President or his/her designee with the *concurrence* of the UCSC Chancellor.
- The position is a 100% time Academic Administrator with a term of 5 years and the possibility of renewal.
- The UCO Director reports to the President or his/her designee.
- The Director holds a 0% 9-month underlying professorial appt. in the Astronomy department at UCSC. This appointment is available to him/her upon separation from the Directorship.
- Teaching is optional. However, the Director is expected to maintain scientific leadership and a scientific presence. The fraction of effort on scientific research is negotiated with the candidate.
- The Director's administrative duties need to be described but are fairly well understood. The detailed wording is TBD.
- The Director's salary is paid from the UCO budget, held by UCOP.

Review of the Director

- The review process for the Director is modeled on the review process for deans except that the it is overseen by the UC President or his/her designee rather than the campus EVC.

- The Director's academic performance (research and also teaching, if any) is reviewed through the standard academic personnel review process of the UCSC campus. His/her 0% appointment is eligible for regular merit increases and advancement in professorial rank and step.

- The Director's administrative performance is reviewed by the UC President or his/her designee, with input from the UCOAC, UCO Board, and other relevant astronomical communities.

- Anything else needed here?

The Appointment Process

- The President or his/her designee leads the search and makes the appointment, with approval by the UCSC Chancellor.
- The search is fully international with broad advertisement and outreach.
- The Search Committee is appointed by the President or his/her designee. It is comprised of representatives from all eight astronomy campuses plus two extra members from UCSC.
- The committee contains a mix of astronomers who use UCO facilities and those from other areas, such as theory. At least one but no more than two members will be members from the UCO Board. One external member? A Caltech member?
- The UCSC Chancellor, the UCO Board, and the UCOAC must approve the final roster of the Search Committee.

The Appointment Process, cont'd

- The Search Committee will solicit opinions and candidates widely from throughout UC, Keck, Caltech, and other external communities.

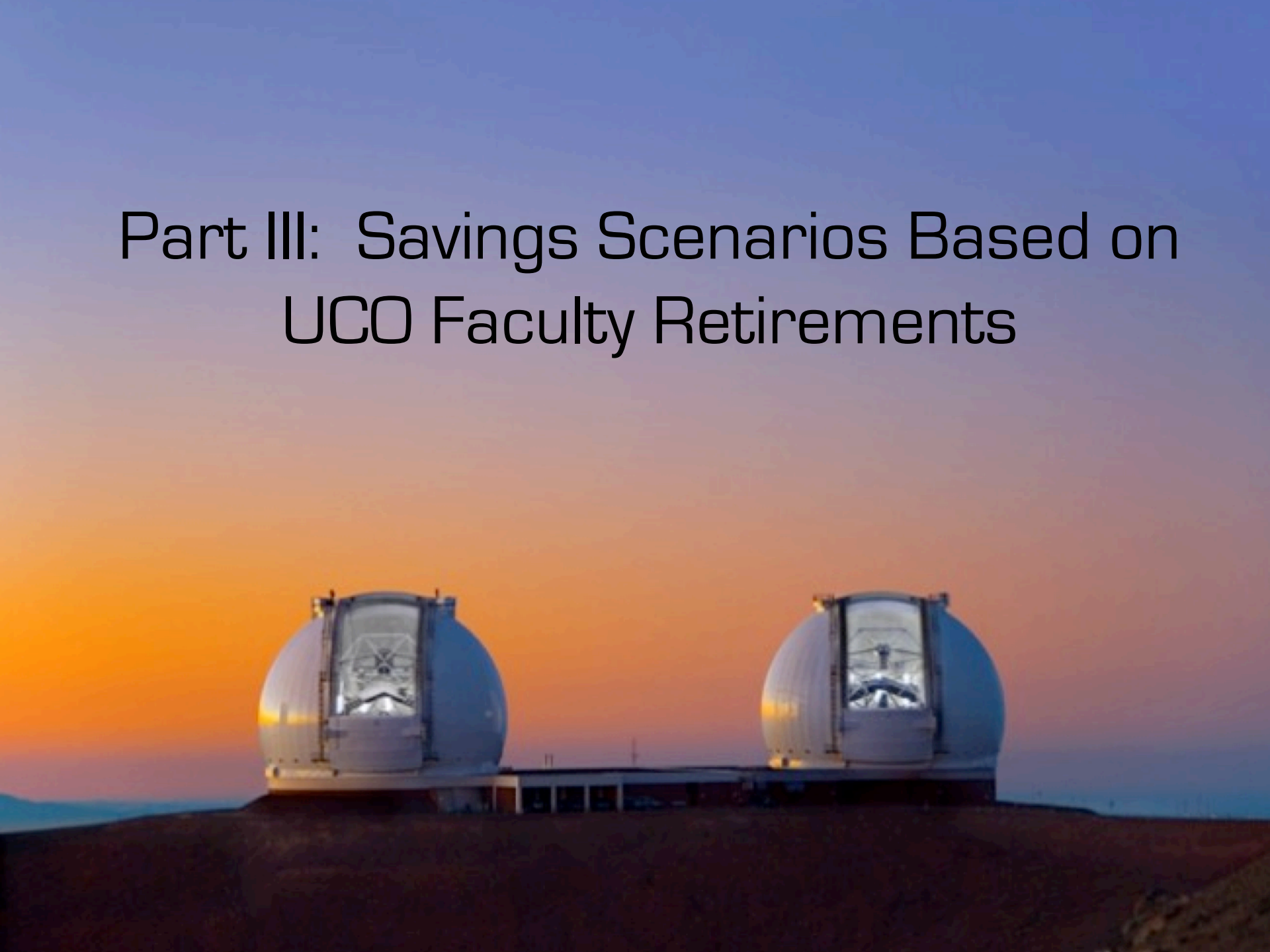
- Deliberations of the committee will be confidential until the committee has developed a list of finalists.

- Finalists will be invited to visit multiple UC campuses in both north and south to be interviewed and to discuss their research and their vision for UCO.

The Appointment Process, cont'd

- The Search Committee will solicit separate appraisals of the finalists from the UCOAC and from the UCSC Bylaw 55 Astronomy faculty.
- These comments will be incorporated into a single confidential report appraising the finalists that is written by the Search Committee and forwarded to the UC President or his/her designee and to the UCSC Chancellor.
- A copy of this report is sent to the UCO Board, who may comment separately.
- The President or his/her designee will make the final selection with approval by the UCSC Chancellor. The Bylaw 55 Astronomy unit at UCSC will be consulted regarding a joint faculty appointment before the final announcement is made.
- The President or his/her designee will negotiate salary, rank, step, and other details of the appointment.

Part III: Savings Scenarios Based on UCO Faculty Retirements



Retirement Survey Results

There are currently 13 UCO faculty at UCSC, who occupy 10.6 FTE funded by UCOP. We surveyed their retirement intentions in February 2013. Tentative retirement schedule:

3 on July 1, 2013
2 on July 1, 2014
1 on July 1, 2015
1 on July 1 , 2016
Total = 7 tentative retirements in the next four years.

If the Director is replaced and Macintosh is the only new hire in next four years, this will leave 8 UCO faculty in residence at UCSC, down from 16 provisions In 2001. This is an extraordinary downsizing. Creating **distributed** UCO faculty will be vital in addition to retaining a threshold number of faculty at UCSC.

Stipulations: Most faculty will consider retiring only if it demonstrably helps UCO and UCSC. Conditions mentioned: 1) An agreed-to floor in the number of UCO-affiliated faculty that will remain at UCSC (the "glide path"). 2) UCSC retains a core Prof Step 3 for each retirement, so that it does not lose net FTE. 3) Savings need to support the Macintosh hiring.

Retirement Scenarios

SCENARIO: UCOP retains salary & benefits savings

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCOP Savings	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 181	$ 281	$ 334	$ 397	$ 397	$ 1,590
UCOP Savings (salary)	$ 620	$ 949	$ 1,095	$ 1,253	$ 1,253	$ 5,170
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings after covering new Director FTE

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 110	$ 210	$ 263	$ 326	$ 326	$ 1,235
UCOP Savings (salary - Dir)	$ 385	$ 714	$ 860	$ 1,018	$ 1,018	$ 3,995
UCOP Director	$ 306	$ 306	$ 306	$ 306	$ 306	$ 1,530
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings after covering new Director FTE and funding UCSC 9-mo Professor III

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 110	$ 210	$ 263	$ 326	$ 326	$ 1,235
UCOP Savings (net)	$ 285	$ 414	$ 460	$ 518	$ 518	$ 2,195
UCOP Director	$ 306	$ 306	$ 306	$ 306	$ 306	$ 1,530
UCSC FTE (9-mo Prof III)	$ 100	$ 300	$ 400	$ 500	$ 500	$ 1,800
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

Retirement Scenarios

SCENARIO: UCOP retains salary & benefits savings

All funds, in each year

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCOP Savings	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings

Benefits to UCO, salaries elsewhere

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 181	$ 281	$ 334	$ 397	$ 397	$ 1,590
UCOP Savings (salary)	$ 620	$ 949	$ 1,095	$ 1,253	$ 1,253	$ 5,170
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings after covering new Director FTE

Now skim off my salary for Director

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 110	$ 210	$ 263	$ 326	$ 326	$ 1,235
UCOP Savings (salary - Dir)	$ 385	$ 714	$ 860	$ 1,018	$ 1,018	$ 3,995
UCOP Director	$ 306	$ 306	$ 306	$ 306	$ 306	$ 1,530
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings after covering new Director FTE and funding UCSC 9-mo Professor III

SCENARIO: UCO retains benefits savings, UCOP retains salary savings

Benefits to UCO, salaries elsewhere

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 181	$ 281	$ 334	$ 397	$ 397	$ 1,590
UCOP Savings (salary)	$ 620	$ 949	$ 1,095	$ 1,253	$ 1,253	$ 5,170
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings after covering new Director FTE

Now skim off my salary for Director

	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 110	$ 210	$ 263	$ 326	$ 326	$ 1,235
UCOP Savings (salary - Dir)	$ 385	$ 714	$ 860	$ 1,018	$ 1,018	$ 3,995
UCOP Director	$ 306	$ 306	$ 306	$ 306	$ 306	$ 1,530
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

SCENARIO: UCO retains benefits savings, UCOP retains salary savings after covering new Director FTE and funding UCSC 9-mo Professor III

Now skim off Prof III core for UCSC

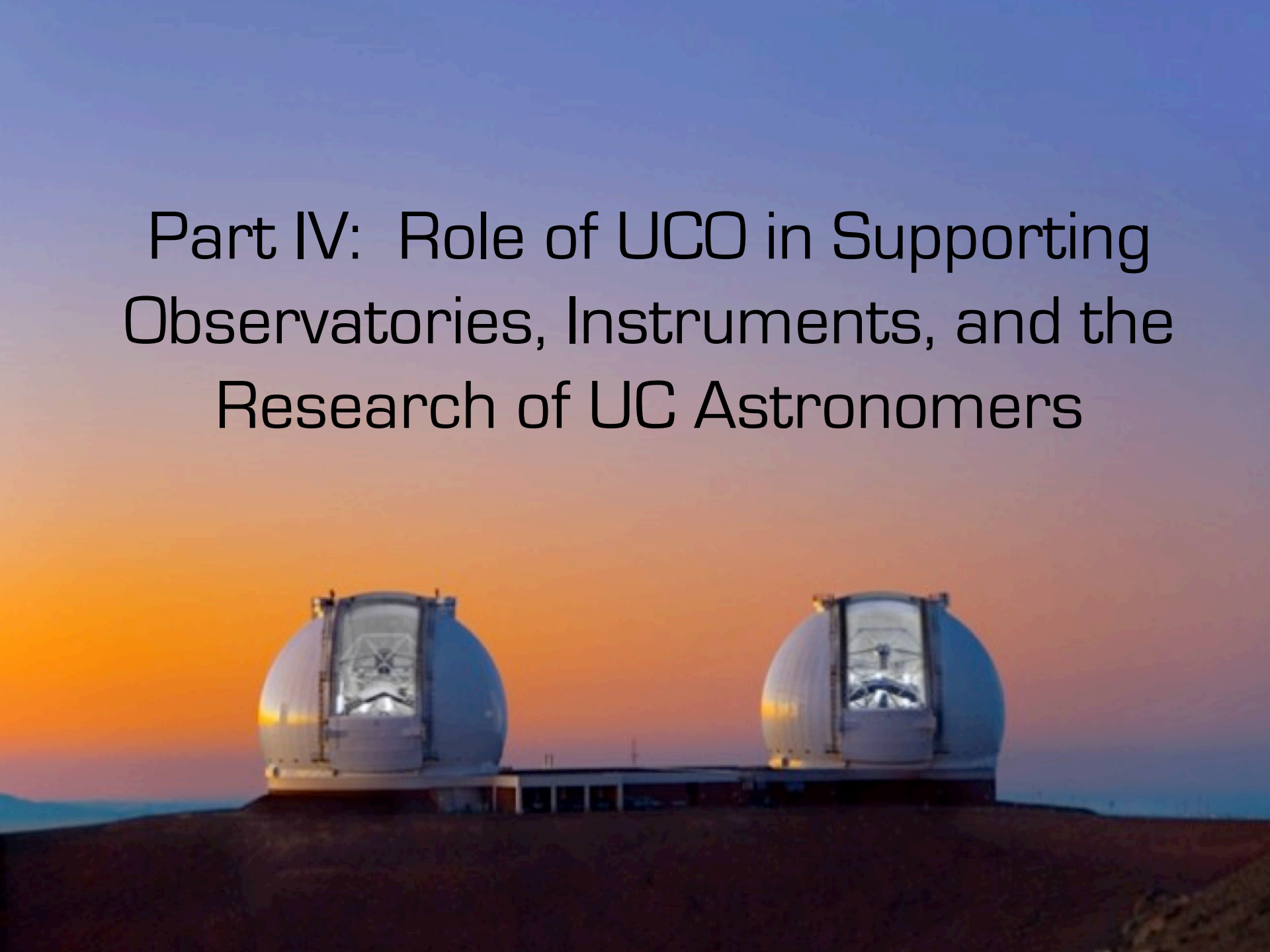
	FY14	FY15	FY16	FY17	FY18	TOTAL
UCO Savings (benefits)	$ 110	$ 210	$ 263	$ 326	$ 326	$ 1,235
UCOP Savings (net)	$ 285	$ 414	$ 460	$ 518	$ 518	$ 2,195
UCOP Director	$ 306	$ 306	$ 306	$ 306	$ 306	$ 1,530
UCSC FTE (9-mo Prof III)	$ 100	$ 300	$ 400	$ 500	$ 500	$ 1,800
	$ 801	$ 1,230	$ 1,429	$ 1,650	$ 1,650	$ 6,760

Retirement Scenarios

ANNUAL COMPENSATION FOR SERVICE THROUGH FY18 *K$*				
	No.	**Summer**	**Teaching Relief**	**TOTAL**
UCLA	3	$ 60	$ 51	$ 111
Other Campuses	6	$ 150	$ -	$ 150
UCSC	1	$ 20	$ 34	$ 54
TOTAL	10	$ 230	$ 85	$ 315

The new plan for UCO faculty "buys" their time via Compensation for Service. This chart shows the amount of money needed to create one full-time augmented faculty member at UCSC (Macintosh: 2 TRs, 1 month summer), three augmented faculty at UCLA (1 TR, 1 month summer), and six augmented faculty distributed among the campuses at $25 k per faculty.

Part IV: Role of UCO in Supporting Observatories, Instruments, and the Research of UC Astronomers



UCO Activities: UCSC

Rebecca Bernstein:

- PI of MOBIE spectrograph for TMT ($50 M project)
- MOBIE optical designer
- Chairs building committee for new UCSC Instrument Labs

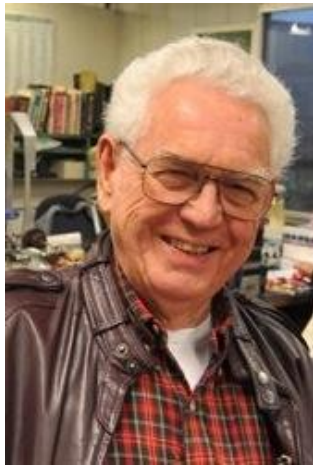
Mike Bolte:

- Assoc. Director for TMT
- Member, both TMT Boards
- UC rep, TMT Master agreement with Brostrom
- TMT rep to NSF
- Member, Director's Cabinet
- Author Keck PRG report

Jean Brodie:

- Communications Coordinator
- Author of *Cost of Astronomy* report
- Co-author Annual Report
- Member, Director's Cabinet
- Manages UCO web pages
- Co-edits Lick Newsletter

UCO Activities: UCSC



Harland Epps:

- Master optical designer
- Author of most Keck optical designs
- Designer of KCWI optics, leading fabrication of KCWI camera lenses in UCO Lab; leading purchase of coatings for KCWI

Connie Rockosi:

- Assoc. Director for Optical Instrumentation
- PI for KCWI camera fabrication
- PI IRCAL IR camera for Shane AO
- Manages technical staff manpower
- Chairs PI Coordination group
- Researched prize history for PRG report
- Co-chair internal strategic plan committee
- Member, Director's Cabinet

Garth Illingworth:

- On sabbatical
- Member, Director's Cabinet
- Co-chair TMT Science Advisory Committee
- Author "What is an Observatory?" report

UCO Activities: UCSC

Xavier Prochaska:

- Assoc. Dir. For Lick Observatory
- Scientific oversight of Lick operations
- Co-chair Lick Time Assignment Committee
- Organizer, systemwide Lick Planning Workshop
- Co-Chair Keck Science Steering Committee
- Liaison, San Jose Tech Museum: exhibits and robotic telescope

Raja Guhathakurta:

- Co-chair Keck Galactic Time-Assignment Committee
- Development Coordinator
- San Jose street lighting representative

David Koo:

- Communications Coordinator
- Liaison with Academic Senate: UCORP, UCPB
- MRU policy advisor
- Author of publications impact for PRG report
- Member, Director's Cabinet
- Co-author Annual Report

UCO Activities: UCSC

Claire Max:

- Chair, NGAO planning committee
- Co-authored prize study for PRG report
- Assoc Dir for Education and Public Outreach
- Liaison with UCB Center for Science Education
- Managing the Macintosh hire

Steve Vogt:

- PI, Automated Planet-Finder telescope
- PI and designer, APF spectrograph
- Co-manager, APF commissioning

Graeme Smith:

- Manages both Keck and Lick TAC process
- Telescope schedules, Keck and Lick
- Author, statstics of UCO users for PRG report
- Faculty liaison, *Friends of Lick*
- UCO “mother hen”

Comments by the Current Keck Science Steering Committee Co-Chair

The Keck Science Steering Committee is the scientific watchdog of Keck Observatory. The SSC meets four times a year, in CA and HI. It hears reports by Keck management and by PIs of Keck instrumentation. It judges the quality of the work being done and makes management and budgetary recommendations to the CARA Board. Once a year it sits in a separate meeting to craft the Observatory's 5-year plan.

Crystal Martin:

Professor of Physics and Astronomy at UCSB
Extragalactic observer, Keck user
Co-chair, Keck Science Steering Committee

On the SSC workload:

"Hours should be 300 hours, not 200. In addition to the 4 SSC meetings and 3 CARA Board meetings each year, there are monthly meetings with Taft and Hilton on the phone, UCOAC meetings, the January retreat for making the 5-year plan, the responsibility to lead the writing of the Keck Strategic Plan, and the responsibility to review various proposals throughout the year."

Highlights from the UCO PRG Report

Activity 1: Ensure that Keck Observatory provide world-class observing capabilities to UC researchers.

Activity 2: Design, build, and maintain state-of-the-art instrumentation to equip the telescopes at Keck.

Activity 3: Develop the astronomical technologies of the future, for Keck and beyond.

Activity 4: Support and promote graduate, undergraduate, and postdoctoral teaching and training.

Activity 5: Provide a wide array of observing services at UC's Lick Observatory on Mount Hamilton.

Activity 6: Design, build and maintain forefront telescopes and instrumentation at Lick Observatory.

Activity 8: Support science, enrich the cultural life of the community, and share the wonders of astronomy with the citizens of California.

Highlights from the UCO PRG Report

Initiative 1: Oversee the design and construction of the Thirty-Meter Telescope. Design, and build TMT instrumentation. Represent UC's interests in the TMT community to ensure success by UC astronomers.

Initiative 2: Lead construction of Keck Next-Generation Adaptive Optics.

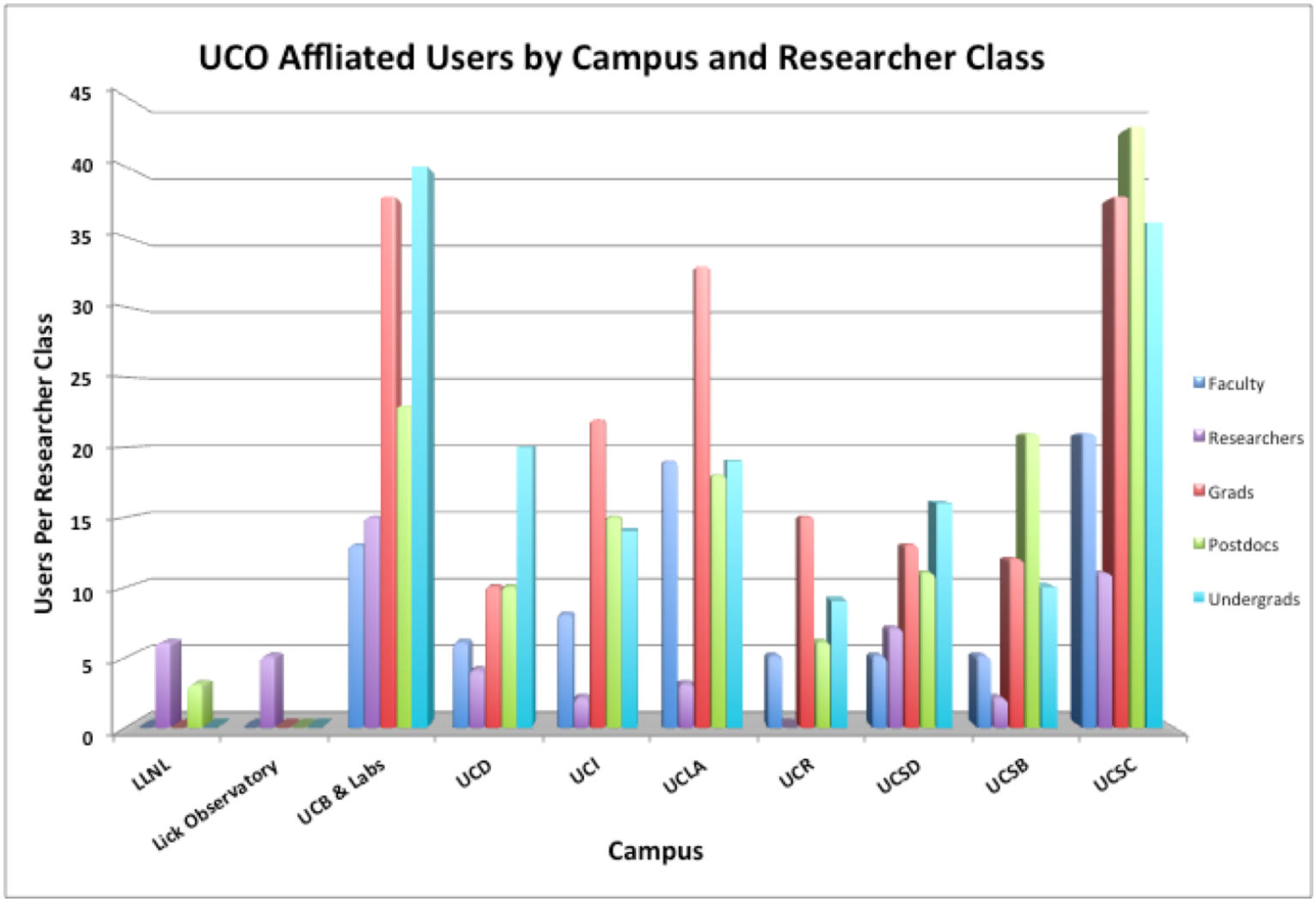
Initiative 3: Expand and invigorate training programs in astronomical instrumentation.

Initiative 4: Institute new models of doing business, at Lick Observatory and elsewhere in UCO.

Initiative 5: Exploit high public interest in astronomy for the benefit of UC and the state of California.

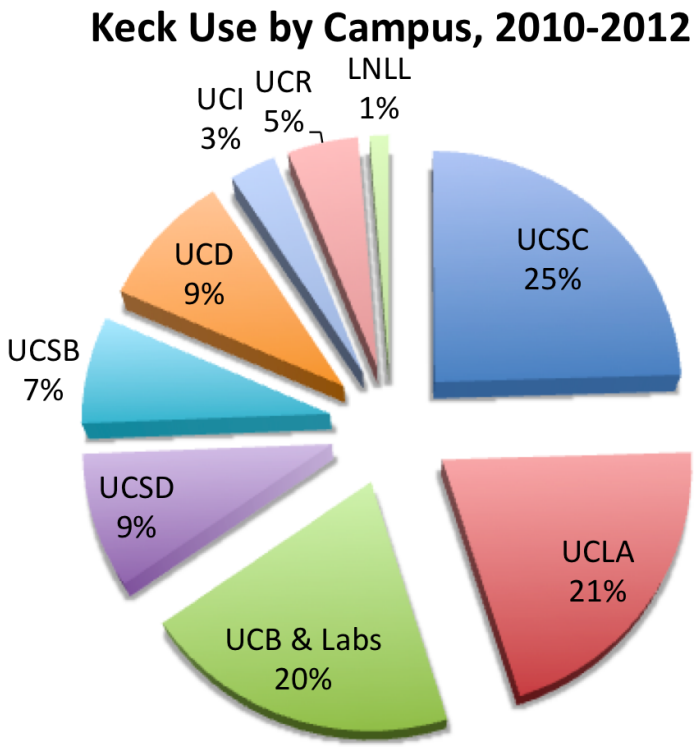
Highlights from the UCO PRG Report

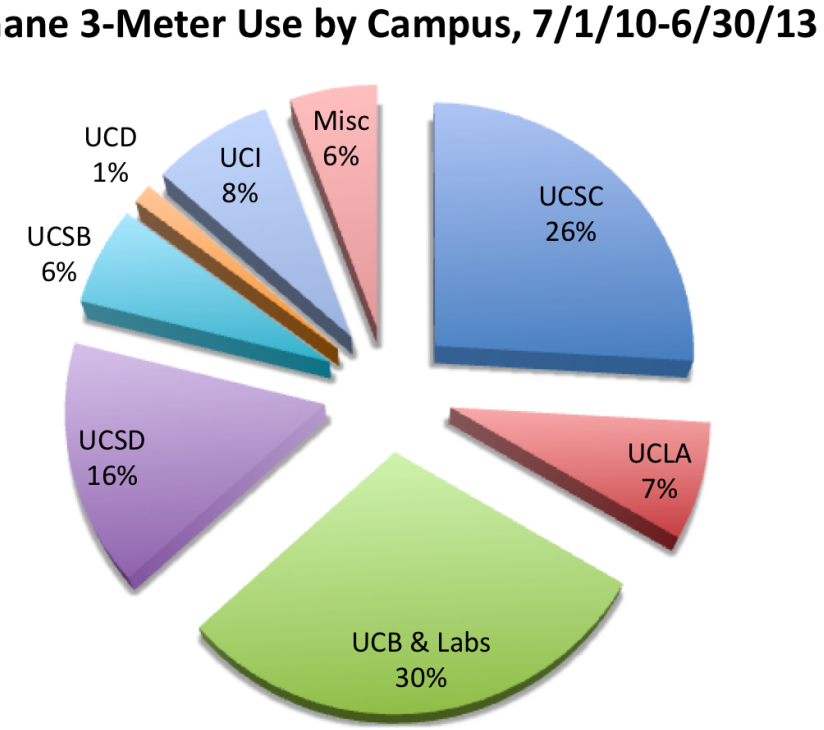
623 users from across the University of California



Highlights from the UCO PRG Report

Widespread telescope usage across 8 campuses and 2 national labs





Highlights from the UCO PRG Report

UCO has high impact on career choices and retention

Table 2. Impact of UCO on Faculty and Research Scientist Career Decisions

	Impact on coming	Impact on staying	Impact on research program
Crucial	76%	81%	91%
Important	12%	13%	6%
Crucial or important	88%	94%	97%

Quotes from the Questionnaire in Appendix 4

"Almost all of the work leading up to the discovery of the acceleration of the universe depended in a fundamental way on these facilities, and in that sense, the Nobel Prize in Physics in 2011 owes a large debt to these UCO facilities." --- Saul Perlmutter, Nobelist, UCB

"Access to Keck instrumentation was one of the primary reasons I left a tenure-track position at Princeton University (I was an assistant professor there for 2.5 years before beIng recruited to UCLA) and is one of the primary reasons I would not consider moving to a different, non-Keck institution."
--- Alice Shapley, Assoc. Professor, UCLA

"I brought several classes from intro astronomy courses from Cal to Mt Hamilton. Those were obviously very special moments for them in their studies, as many of them had not seen a telescope up-front nor really understood them to be scientific laboratories. The remote observing room transformed the way I observed with my students and postdocs. It has made the teaching/didactic nature of our mission that much easier. Keck and Mt Hamilton are precious scientific resources for the people of California."
--- Joshua Bloom, Assoc. Professor, UCB

"Having the UCLA Infrared Lab is incredibly helpful in my research. Distinguishing signal from mere noise in a cutting edge data set requires a deep understanding of the instruments. Many instruments at Keck Observatory have been built under the leadership or in collaboration with UCLA's infrared laboratory. Having the scientist (instrument users) in the same building as the instrument builders proves extremely valuable. -- Leo Meyer, Research Scientist, UCLA