

# WHAT IS AURA AND WHERE DOES IT SEEM TO BE GOING?

## AN AURA PRIMER AND BOARD MEMBER TEA-LEAF READING

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For potential AURA Presidential candidates and those search committee members not well acquainted with AURA, we offer a short summary of key aspects of the organization. We also offer some speculation about where we see AURA currently and into the near future.

### **KEY ASPECTS OF AURA:**

- Non-profit, established in 1957 as a consortium of universities to manage public observatories
- Membership includes 37 US institutions and 7 international affiliates; AURA is *representative* of the broader astronomical community
- Has about 1,000 employees and a combined annual budget of about 200M\$.

**THE MISSION OF AURA IS:** *“To promote excellence in astronomical research by providing access to state-of-the-art facilities.”*

AURA strives to carry out its mission through: (1) active management of a suite of ground-based and space-based telescopes, and (2) community engagement.

For the former, a **Board of Directors** and its subsidiary **Management Councils** oversee execution by the AURA corporate office of facility management contracts and cooperative agreements, and provide strategic advice. The AURA portfolio currently includes the following centers and/or projects, overseen by the indicated Management Council:

Center/Project	Name	AURA Management Council
NOAO Dr. David Silva, Director	The National Optical Astronomy Observatory	OC – Observatories Council Dr. Frederick Walter, Chair
NSO Dr. Valentin Pillet, Director	The National Solar Observatory	SOC – Solar Observatories Council Prof. Phillip Goode, Chair
ATST (Construction) Dr. Valentin Pillet, Director	Advanced Technology Solar Telescope	
Gemini Dr. Markus Kissler-Patig, Director	The Gemini International Observatory	AOC-G – AURA Oversight Council for Gemini Prof. Richard Green, Chair
STScI Dr. Matthew Mountain, Director	The Space Telescope Science Institute	STIC – Space Telescope Institute Council Prof. C. Robert O’Dell, Chair
LSST (Construction) Dr. Stephen Kahn, Director	The Large Synoptic Survey Telescope	AMCL – AURA Management Council for LSST Prof. Fred Gilman, Chair

For the latter, the goal of AURA community engagement is to identify stakeholder needs (primarily in ultraviolet/optical/infrared astronomy; UVOIR) and implement near-term, medium-term, and long-term solutions. This is done through:

- Annual meetings of the **AURA Member Representatives** (one from each AURA institutional member), including election by the Member Representatives of the AURA Board of Directors and the AURA Management Councils
- Organizing and sponsoring **workshops** on strategic positioning of astronomy infrastructure assets to address new science
- Attention within the AURA portfolio to **diversity, workforce training, and safety** issues, especially through the AURA Committee on Workforce and Diversity
- Interfacing with various Washington, DC entities (science agencies, OSTP, Congress)

## THE TEA LEAVES:

Through our association with AURA over the past many years, we have noted several trends:

- the number of AURA member institutions, including foreign affiliates, has increased
- the AURA facility portfolio has increased, both in number, and in the complexity of each organization
- the UVOIR scientific community has increased dramatically in size
- UVOIR science has diversified, but has also become more focused while involving large teams in certain areas
- for astronomy in general, there is an accelerating mismatch between scientific+technical aspirations and fiscal reality, and UVOIR is not immune to this mismatch. Legacy observatories are slated to see declining budgets over the next several years, requiring evolution of both aspirations and operations. Others (NSO, LSST, STScI) will see budget growth as new facilities turn on, but will still face constraints.
- ground-based OIR telescopes and data have seen a “free market economy” blossom in the US, but at the same time a growing erosion in capability, compared to Europe
- the volume of excellent quality data, particularly from photometric and spectroscopic surveys, has risen dramatically and will continue to do so through the “big data” era of LSST and other facilities
- concrete plans for a UV capability from space following the end of the Hubble Space Telescope (HST) are currently lacking.

**THE AURA RESPONSE TO THESE TRENDS**, in the areas touching on ground-based astronomy, has included embracing the “US O/IR System” concept, helping to shepherd LSST through a construction start, and continuing dialog with GSMT (Giant Segmented Mirror Telescope) proponents. A challenge for the new AURA President will be in sorting out the perennial problem of national UVOIR leadership (specifically whether there *will* be any agreed leadership, or if the competitive free market will reign in the US). The new AURA President will also need to pay immediate attention to the changing roles and importance of NOAO and Gemini for the US community, and how AURA can find balance given Gemini’s international heritage. Regarding NSO and ATST, the international nature of AURA should help as ATST operations cost planning matures. Overall, there are enormous opportunities in ground-based OIR, but creative solutions to the fiscal challenges must be found, including public-private and international partnerships.

In space, AURA has successfully promoted HST enhancements and JWST (James Webb Space Telescope). A much longer range UVOIR space facility plan is being developed by a community group constituted by STScI. A near-term challenge for the new AURA President will be to help delineate a realistic plan spanning HST phase-out to JWST launch and operations. There are enormous opportunities in space-based UVOIR, and these opportunities need to be realized as the JWST 'funding wedge' emerges. This includes possible use of the Astrophysics Focused Telescope Assets (AFTA) to meet the recommendation of the New Worlds New Horizons Decadal Survey for its highest-ranked new space mission (WFIRST, the Wide Field Infra-Red Space Telescope).