Bright Universe Feedback and Wish List

Discussion summarized by: M. Creech–Eakman, S. Ridgway, K. Hinkle, J. Rajagopal
Contributors:

- C. Dressing & D. Ciardi – Exoplanet Science
- J. Kollmeier – Galactic Archaeology
- C. Briceno – OB Associations
- C. Dumas & H. Hsieh – Solar System Science
- T. ten Brummelaar & G. van Belle – Long-baseline optical/infrared interferometry
- J. Fuller & S. Kulkarni – Bright Star Science
- S. Brittain & B. Monreal – Star Formation

- Some group discussion throughout
Big Questions posed to Group

- What science can be expected to show unusual growth or expansion during the decade?

- Are substantial supporting efforts required for this area to maximize benefit from LSST, JWST, others?

- What high-priority science will be impossible without new facility developments?

- What midscale facility (~$100M) could provide a breakthrough in this area?

- Are there Decadal initiatives already under discussion that NOAO should consider endorsing or supporting?
Science Driving Questions

Stellar Astrophysics

- How stars form?
- How stars evolve?
- How stars change on all time-scales?
- Detailed stellar abundances?
- Detailed stellar surfaces?
- Binarity and stellar interactions?
- Stellar motions and distributions over time?
- How stars affect exoplanets?
- How knowledge of solar system feeds back to human knowledge?

Solar System Science

Need More Details in all areas
Common Needs

- **High-spatial resolution** - speckle, high-contrast AO, interferometric images
- **Timing** - high-cadence, long-term monitoring, non-sidereal capabilities, in precision photometry and spectroscopy
- **Access and Support** - More time on telescopes, non-duplicative use of facilities, ToO, coordination effort
- **Spectroscopy** - Low-to-moderate resolutions, some high, optical/NIR/MIR, more facilities
Support/augmentation of existing facilities
  ◦ basic upgrades to detectors, AO systems, OIR interferometers, machine learning, archiving data on working telescopes

Multiplexed capabilities
  ◦ instruments covering many wavelength regimes, complimentary techniques, on multiple facilities, more public access

Maximizing use of existing facilities
  ◦ Including existing ground, existing/new space, other countries assets through coordination

No new large facilities, but more MSIP funding
  ◦ testing concepts on existing facilities and enhancing these, use of better off-the-shelf solutions
What can NOAO Provide?

- Coordination of facilities/observations through information clearing house
- More and continued access to existing facilities
- Multiple instruments (photometers, spectrometers, high-resolution imagers) on various apertures across globe
- Upgrade plans for aging instrumentation
- Support of use of machine learning, data archives, training, hosting/coordinating synergistic meetings, TAC support