

# Science and Career Opportunities at Gemini

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Gemini Observatory

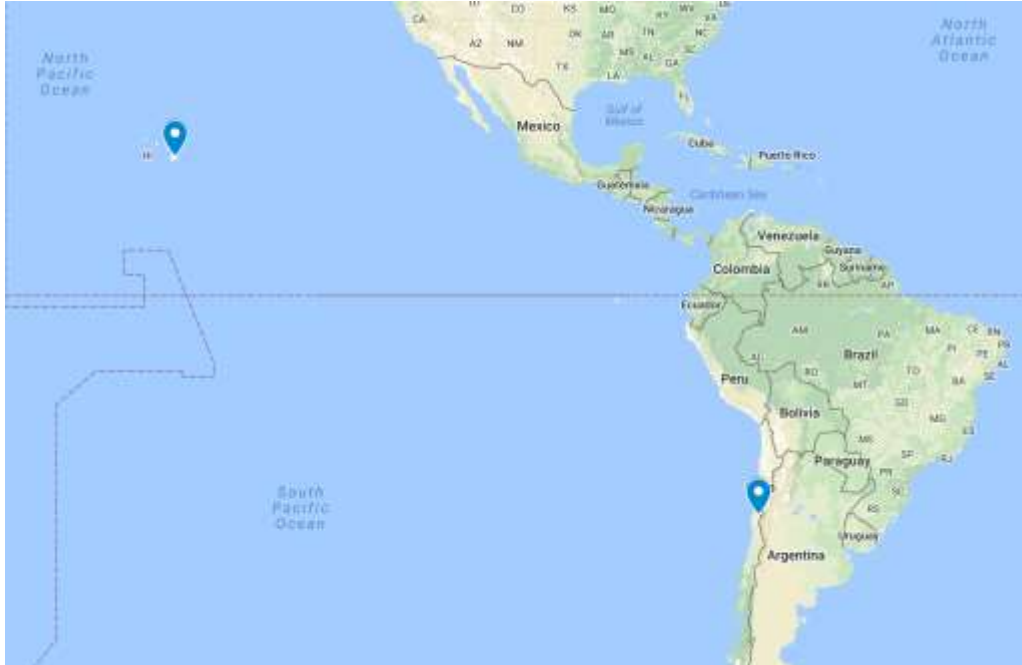
February 26, 2018 @ KASI





## Who we are

- Science Operation Staff at Gemini N/S
  - 3 Astronomers, 5 Scientists, 3 (+1) Fellows
  - 10 Science Operation Specialists
  - Based in La Serena, Chile and Hilo, HI





## Astronomer

- Tenure track
- 50/50 position
  - 50% Functional Duty + 50% Research

## Scientist

- Parallel track
- 70/30 position
  - 70% Functional Duty + 30% Research

## • Functional Duties

- Night Time Observation: Queue observations
- User Support: Contact Scientists (Phase II checks and program follow-ups)
- Queue Coordination: Making nightly queue plans
- Instrument Support : commissioning, monitoring, back-on-sky checks, HelpDesk support



## Science Operation Specialist (SOS)

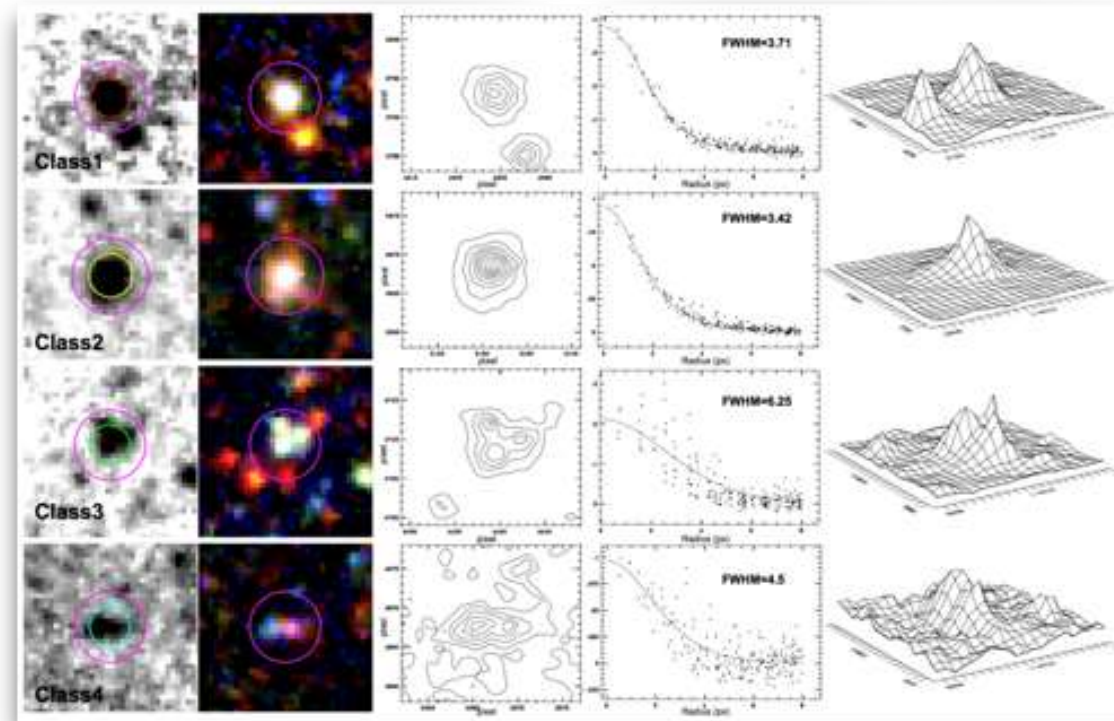
- Telescope operations and 75% of night time observations
- Daytime data checks and instrument calibrations/checks
- Mask design check support and engineering tasks





## Staff Science projects

- Research Fields (<http://www.gemini.edu/sciops/gemini-research-staff>)
  - **Solar System and Exoplanets**
    - Main-belt comets, KBOs, various Solar System bodies, low mass stars for exoplanet search, parallax, high-precision astrometry, extrasolar planetary debris
  - **Stellar Astrophysics**
    - Brown dwarf, white dwarf, binary star evolution, massive star formation and evolution, variable stars, supernovae, LBVs, stellar archaeology, IMFs
  - **Galactic Astronomy**
    - Galactic star clusters, multiple stellar populations, OB associations, ultracompact HII regions, clusters in LMC and SMC
  - **Extragalactic Astronomy**
    - Evolution of galaxies and their SMBHs, AGN feedbacks, star clusters in nearby galaxies and dwarf galaxies, distribution of dark matter in galaxies



- Cycle 21 HST Treasury Program (154 primary + 154 parallel)
- WFC3+ACS in NUV, U, B, V, I (+H $\alpha$ ; Cycle 22 program)
- 50 star-forming galaxies (D=3.5-12/18 Mpc)
- Science goals
  - Quantify how clustering of star formation evolves
  - Discriminate among models of star cluster evolution
  - investigate effects of SFH on UV SFR measurements
  - explore impacts of environments on SF and cluster evolution

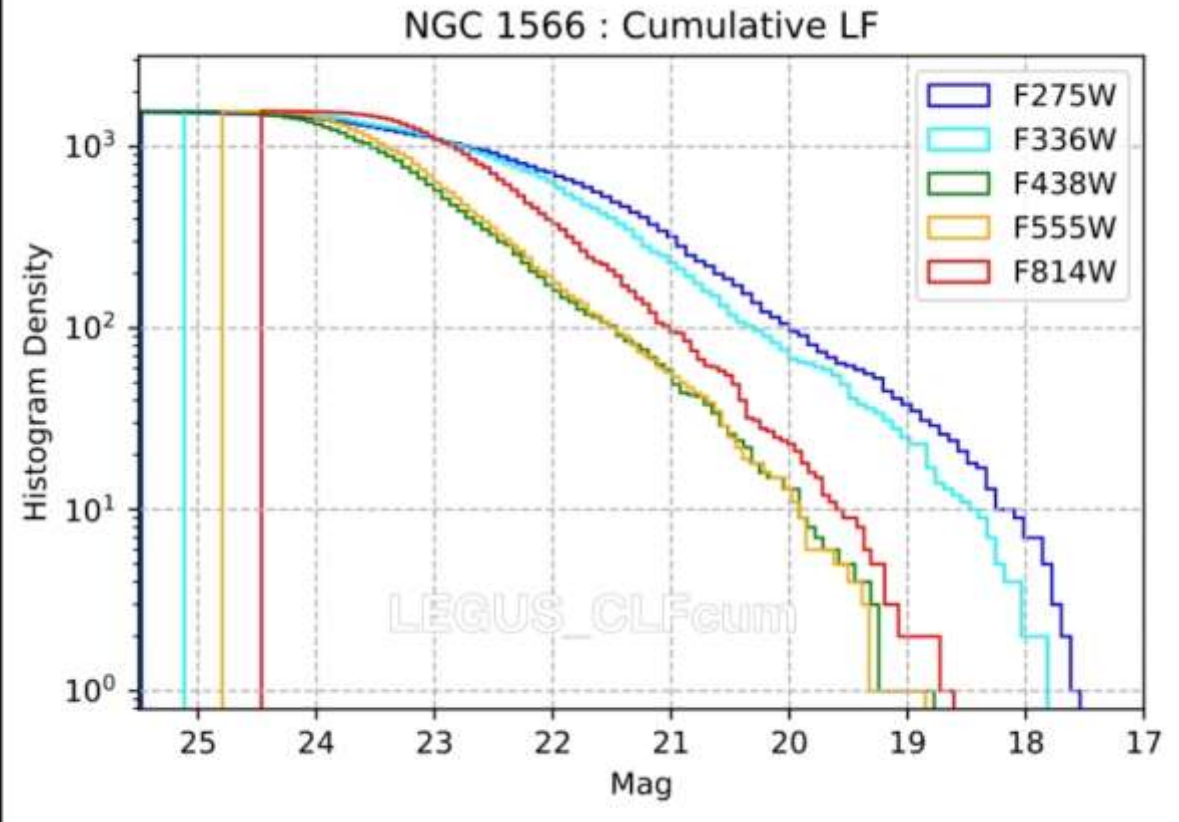
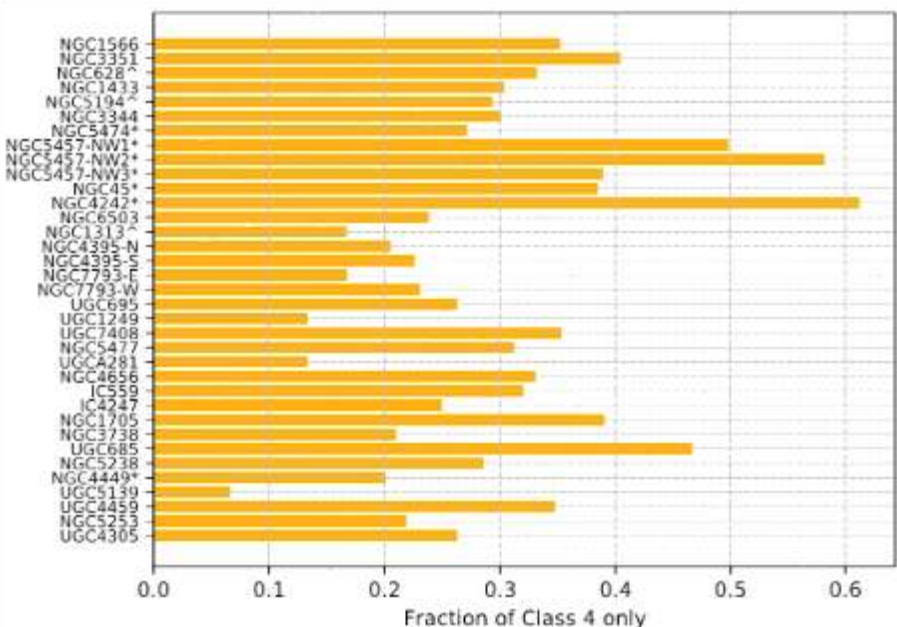
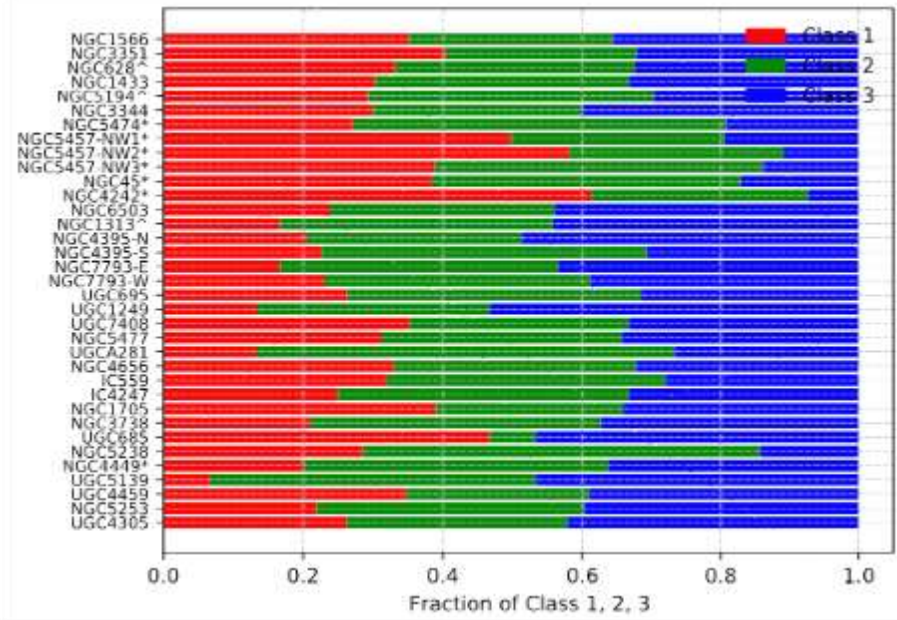
- We visually inspect cluster candidates and assign morphological classes
  - ~15,000 cluster candidates (31 out of 50 galaxies) are inspected
  - ML classifications are available for ~5 galaxies



# GEMINI OBSERVATORY



Exploring the Universe,  
Sharing its Wonders



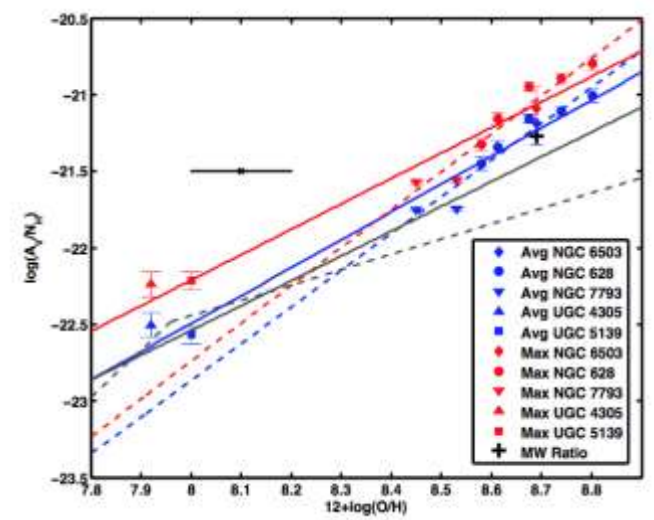
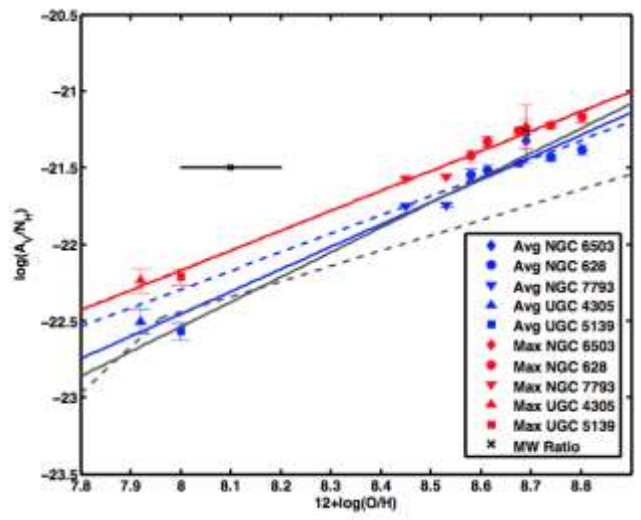
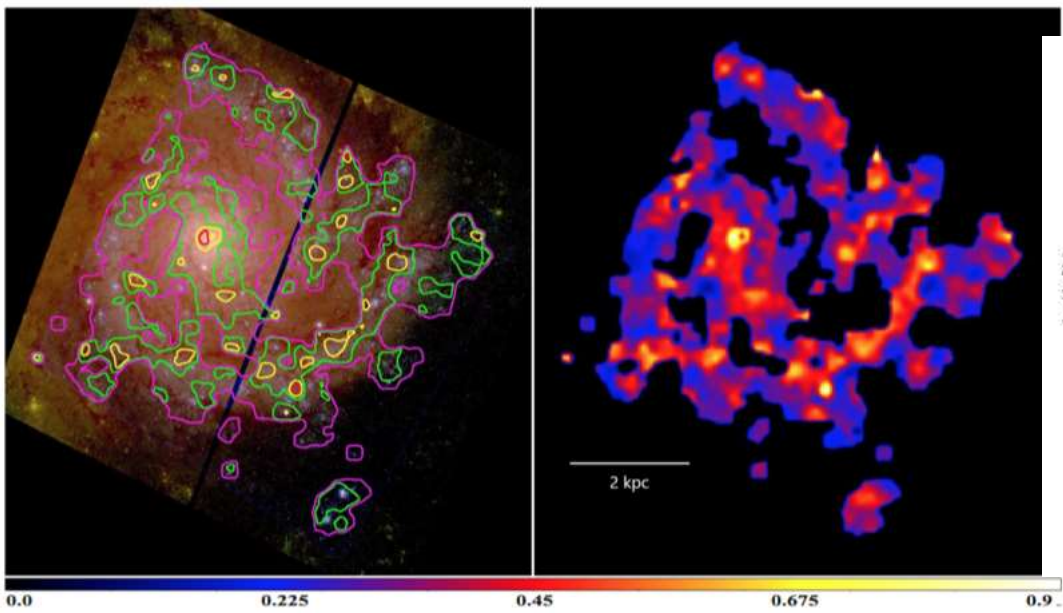
- > 50% of cluster candidates are Class 1 and 2 (left).
- More than 30% of sources in the high-fidelity catalogs are contaminants.
- Cumulative luminosity functions with Class 1 and 2 sources follow a power-law function ( $dN/dL \propto L^{-\beta}$ ) with slopes close to 2.

Kim et al. in preparation

## Work done by my intern



- Lauren Kahre (NMSU graduate student)
- “Extinction Maps and dust-to-gas Ratios in Nearby Galaxies with LEGUS” (arXiv: 1802.06915)
- Power-law relationship between the DTG ratio and metallicity in 5 star forming spiral and dwarf galaxies







## Little bit of “Fun” I had last Summer

- GW170817 was triggered during my QC shift
- Became a contact scientist to several key programs.
  - GROWTH (Global Relay of Observatories Watching Transients Happen) network team
- Invited to be co-authors on two papers
  - “Illuminating Gravitational Waves”  
<http://science.sciencemag.org/content/358/6370/1559/tab-pdf>
  - “Multi-messenger observations of a binary neutron star merger”  
<http://iopscience.iop.org/article/10.3847/2041-8213/aa91c9/pdf>



The image sequence from Flamingos-2 for a period of over two weeks.



## Gemini Science Fellow Program

- 3-year fixed term position
- 50% Functional Duty + 50% Research
- Two positions are open every year, one in Hilo and one in La Serena
- Actively involved with the instrument teams, Public Outreach, and/or Fast Turnaround Program
- No guaranteed telescope time
  - **Highly successful in the Director's Discretionary Time (DDT) and Fast Turnaround (FT) Programs**
- Application Deadline: ***early November***



## Internship Programs

- Science/Engineering/Technical/Public Outreach
  - Part-time/full-time and paid/non-paid (up to ~6months)
  - For both undergraduate and graduate students
  - Various programs with Canadian institutes and Chilean institutes
  - Fulbright Scholar programs are available in Chile
- Research Interns
  1. Mentor applying for funding with specific project ideas
  2. Search for interns: advertised on AAS job register site
  3. Review applications and select
  4. Send notification to the selected applicants
- Or simply contact Science Staff with your research interest!!



## Be part of Gemini Observatory!!

