

BRUNO DIAS

bdias@eso.org

www.sc.eso.org/~bdias

**ESO-LA SILLA/NEON SCHOOL
PUBLISHES PAPER ON THE PECULIAR
GLOBULAR CLUSTER NGC3201**

WFI@ESO/MPG 2.2m



NTT INAUGURATION 1990



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2013: LEARNING



2016: TEACHING



2013: LEARNING



- ▶ Benz = test prototypes and new ideas
- ▶ Molinari: 1st time at La Silla as student = life-changing
- ▶ Groot: E&E = educate & experiment
- ▶ Spite = new projects (SPIAKID camera)
- ▶ Jehin = 1m robotic tel. for European high schools
- ▶ Barbieri = quantum optics (IQUEUEYE)
- ▶ Lopriore = test bed telescope
- ▶ Ortolani = 1st time in La Silla when phot.plates were just changed to CCD: took the challenge
- ▶ Melo = ESO to inspire next generations around the world
- ▶ Kaufer: VA + student to learn
- ▶ Dennefeld: Train also Master stud.
- ▶ Kotak: ePESSTO internal training
- ▶ Ederoclite: Medium-small telescope = formation of students

THE FUTURE OF LA SILLA: TECHNOLOGY AND STUDENTS

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THE FUTURE OF LA SILLA:

STUDENTS

- ▶ Calar Alto, Spain (2000,2005,2010)
- ▶ Haute-Provence, France (2001,2006)
- ▶ Asiago, Italy (2002,2007,2012,2015)
- ▶ La Palma, Spain (2008, 2011 remotely, 2013)
- ▶ Moletai, Lithuania (2011)
- ▶ Rozhen, Bulgaria (2014)
- ▶ ESO-Garching, Germany (archive) (2004,2006,2008)

NEON SCHOOL: 2000-2015

- ▶ Asiago, Italy (2018)
 - ▶ La Palma, Spain (2017)
 - ▶ Rozhen, Bulgaria (2019)
- ▶ ESO-La Silla (2016,2018): finally an experience using ESO telescopes, not only archival data.
- ▶ D'Odorico = "EFOSC was the 'inspirator'" ... also for students

NEON SCHOOL: 2016-TODAY

Santiago and La Silla Observatory, Chile, February 22 - March 4 2016



We are pleased to announce the ESO-NEON La Silla Observing School 2016, sponsored by ESO and Opticon.

During two weeks of intense work, the participants will have the chance to have hands-on real-life experience on the full cycle, from proposal preparation to data reduction. Each group of participants will be guided by a tutor and possibly by a tutor assistant. The school is preferentially targeted to PhD students from South America.

After a preparatory work done at the ESO Headquarters in Chile, where the students will have lectures on the basics of observing techniques and how to prepare observations for ESO telescopes, the group will go up to the La Silla Observatory for three observing nights with the ESO NTT and Danish 1.54-m telescopes. Back in Santiago with the data in hand, the participants will reduce and analyse their datasets.

While having lectures on hot-topics of the present day astrophysics, the teams will prepare the presentation of their results to the ESO audience. Additional training on aspects of career development is also foreseen.

ESO | NEON

LA SILLA

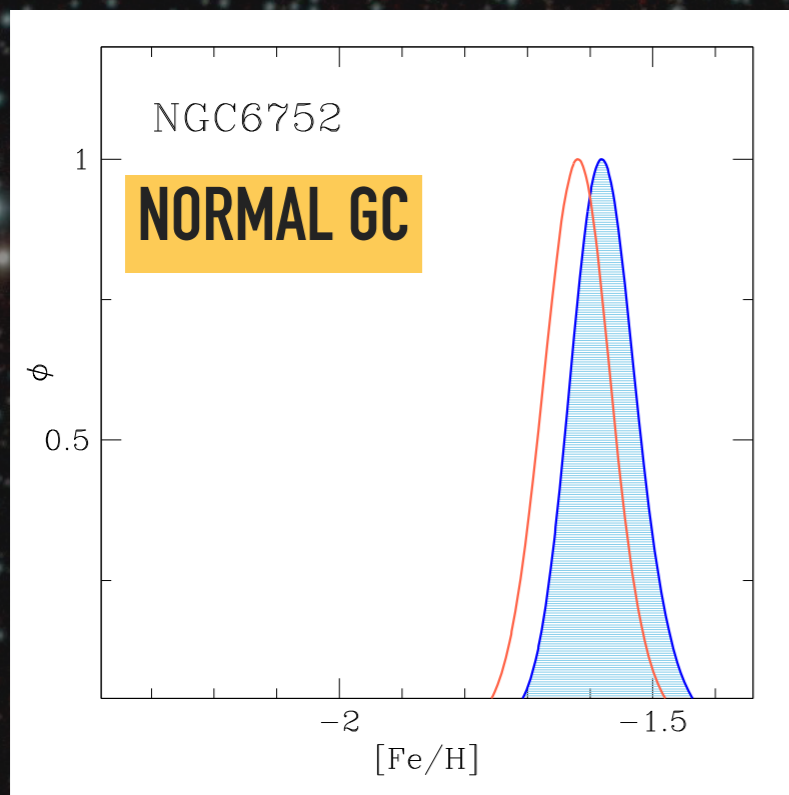
OBSERVING SCHOOL

2016



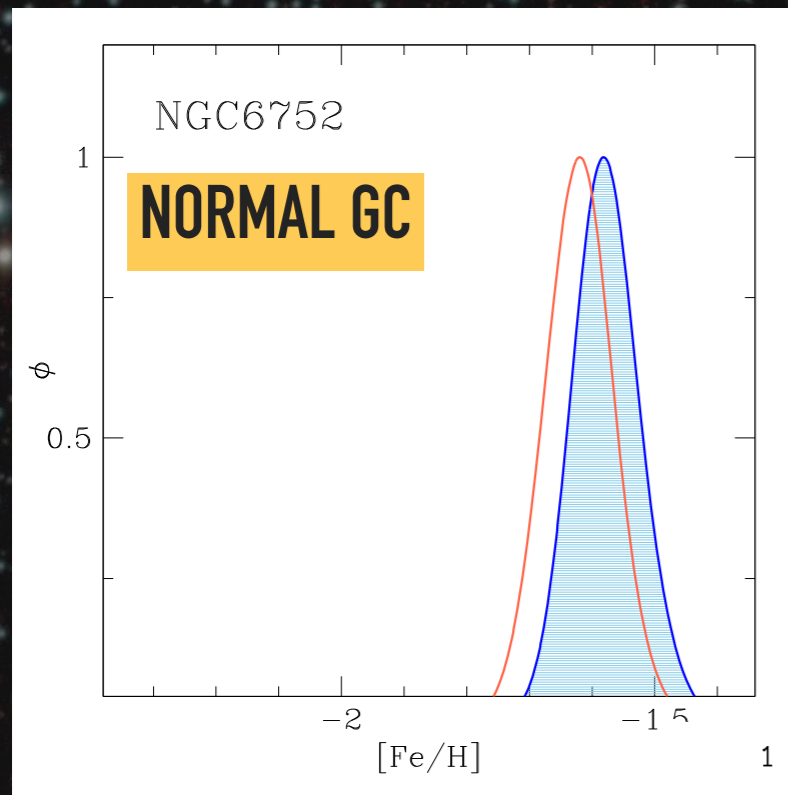



STAR-TO-STAR [Fe/H] DISPERSION = ANOMALOUS GLOBULAR CLUSTERS

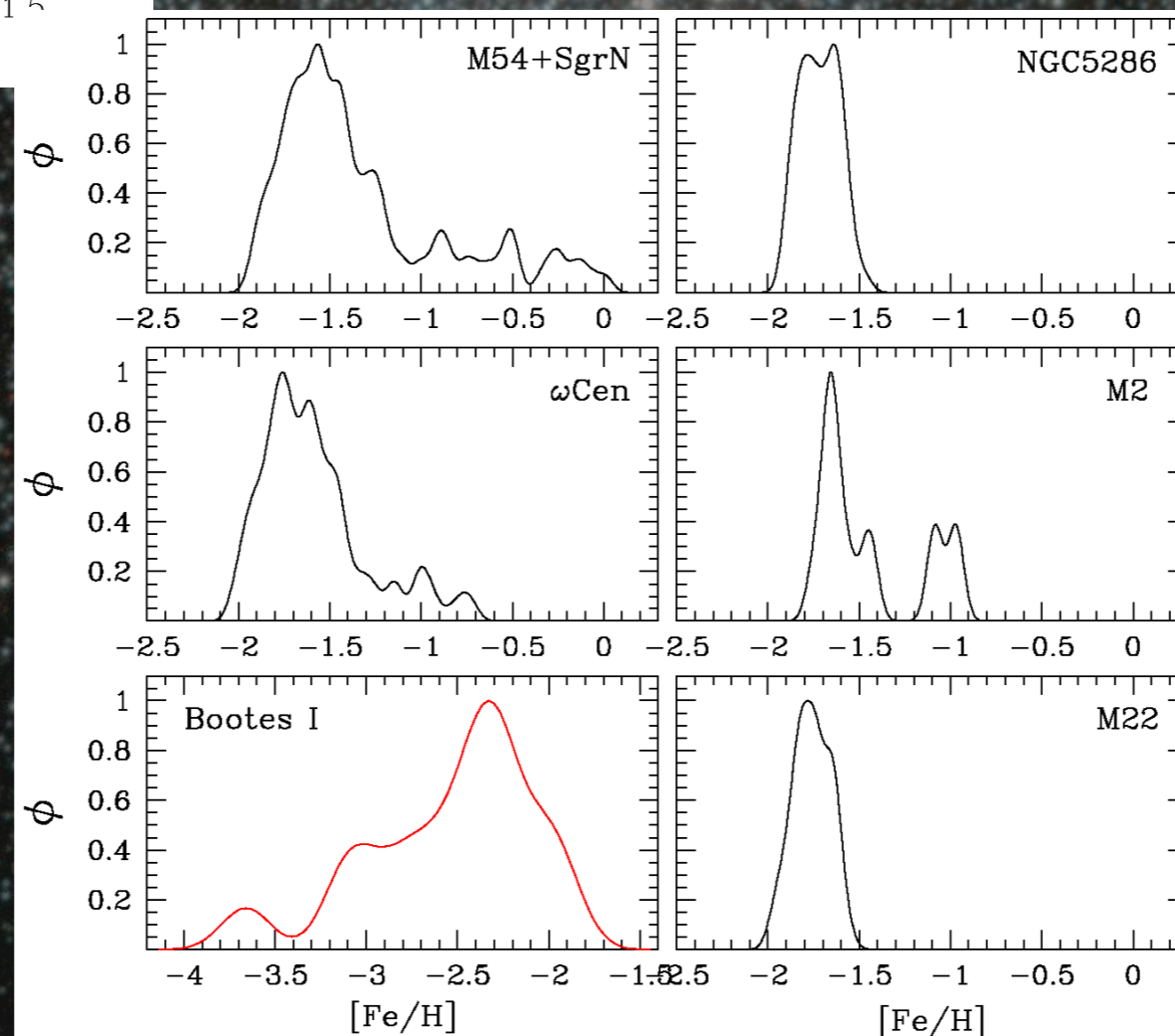


Mucciarelli et al. (2015a)

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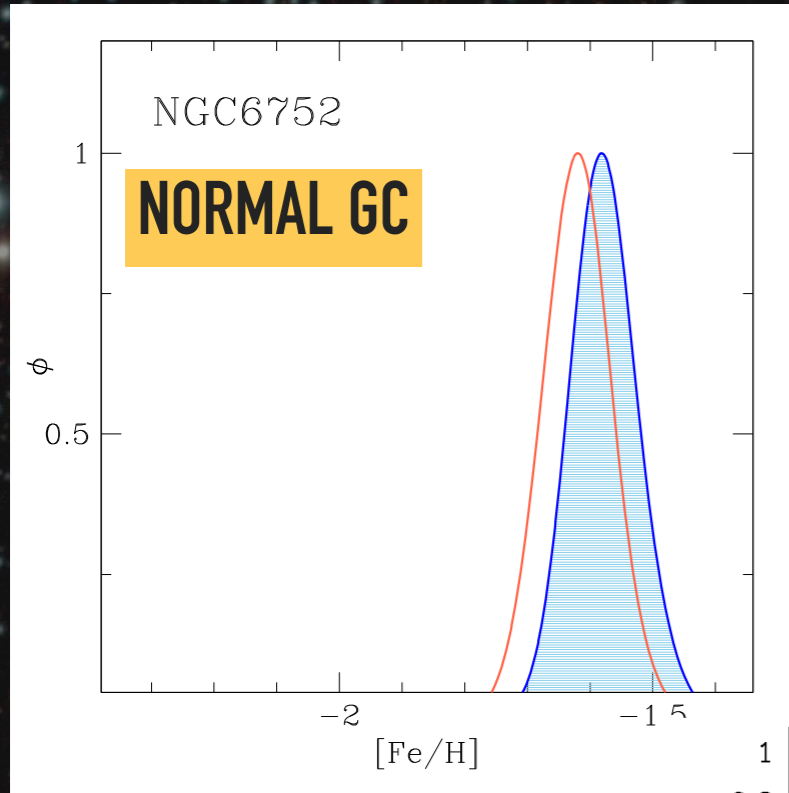


Mucciarelli et al. (2015a)

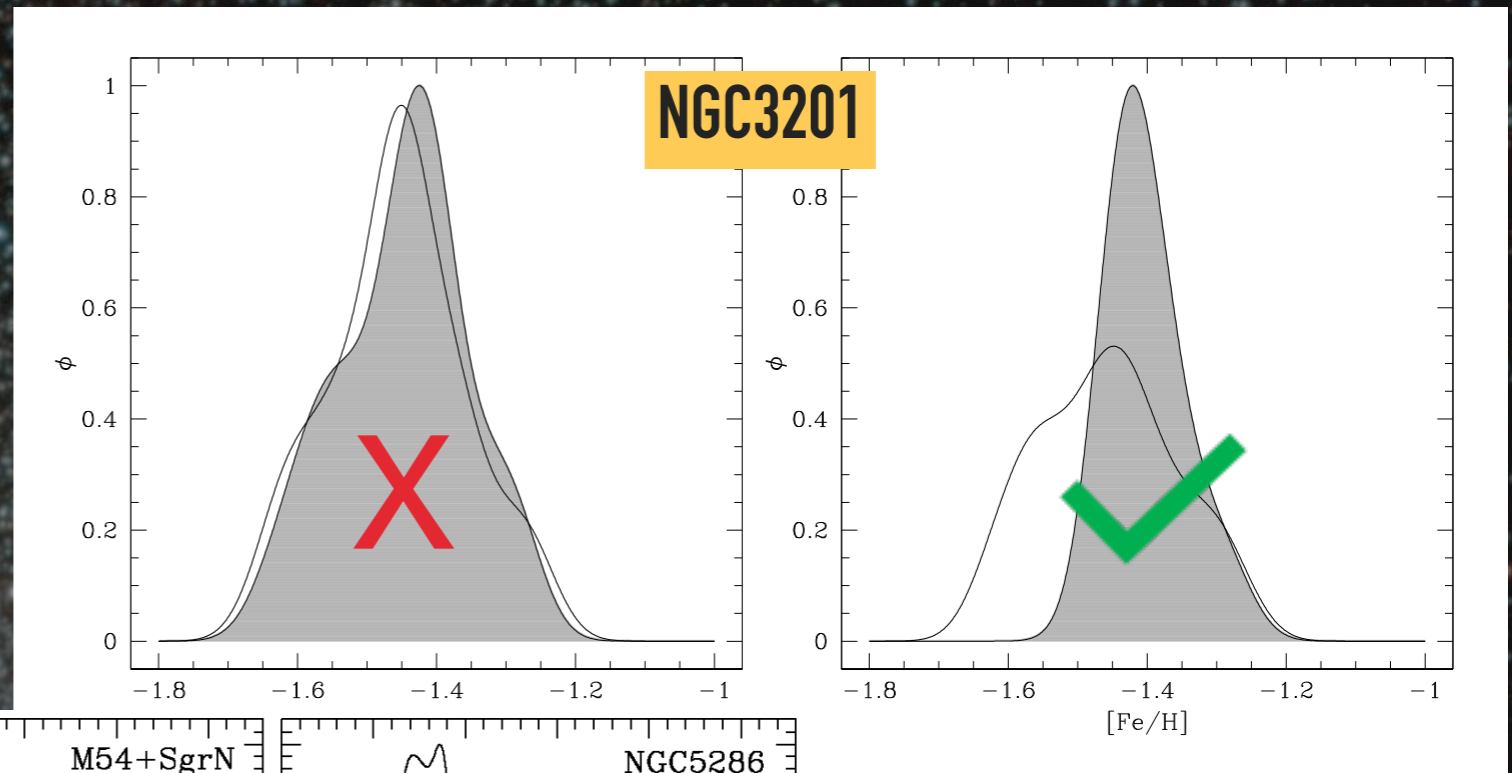


Marino et al. (2015)

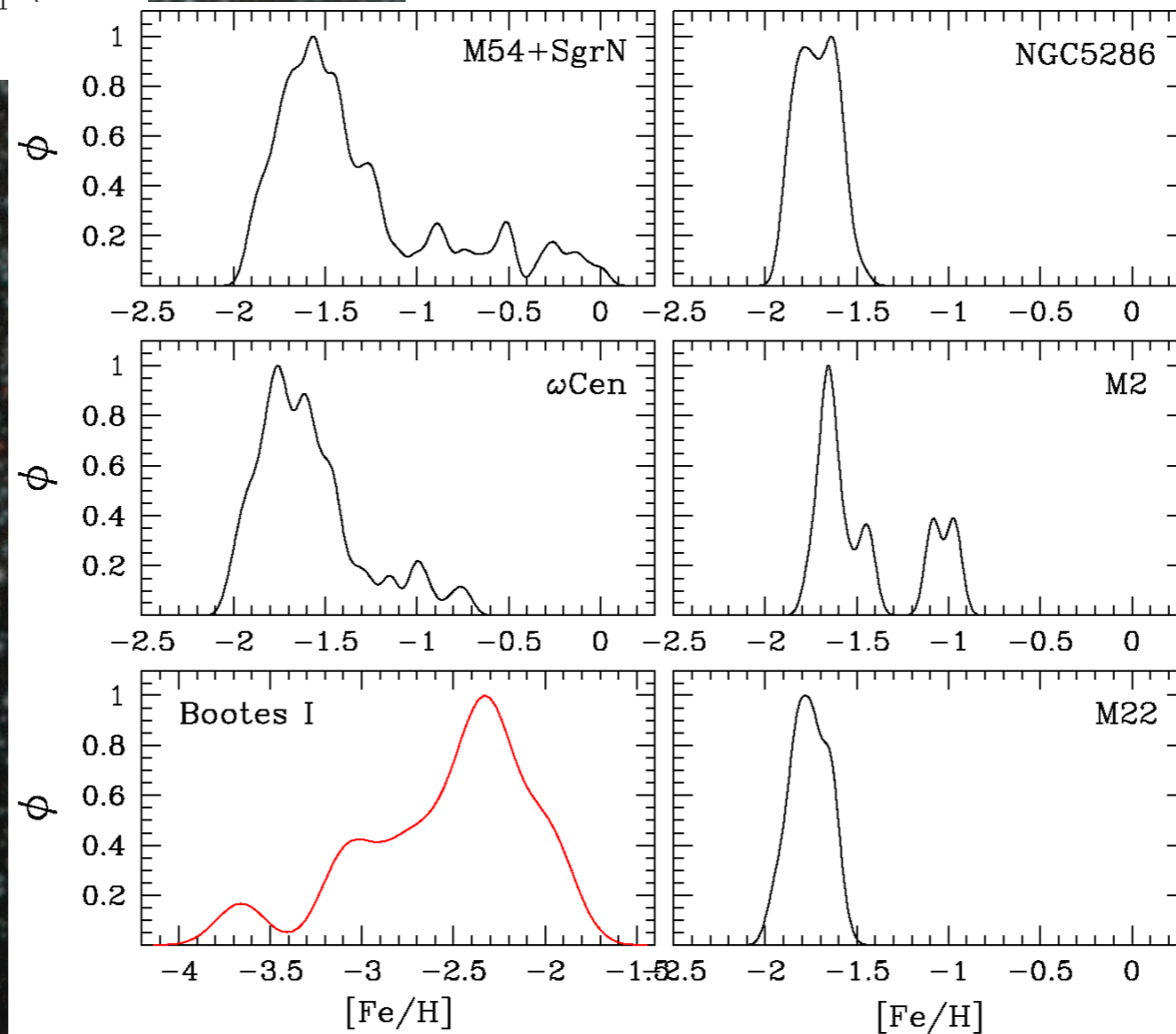
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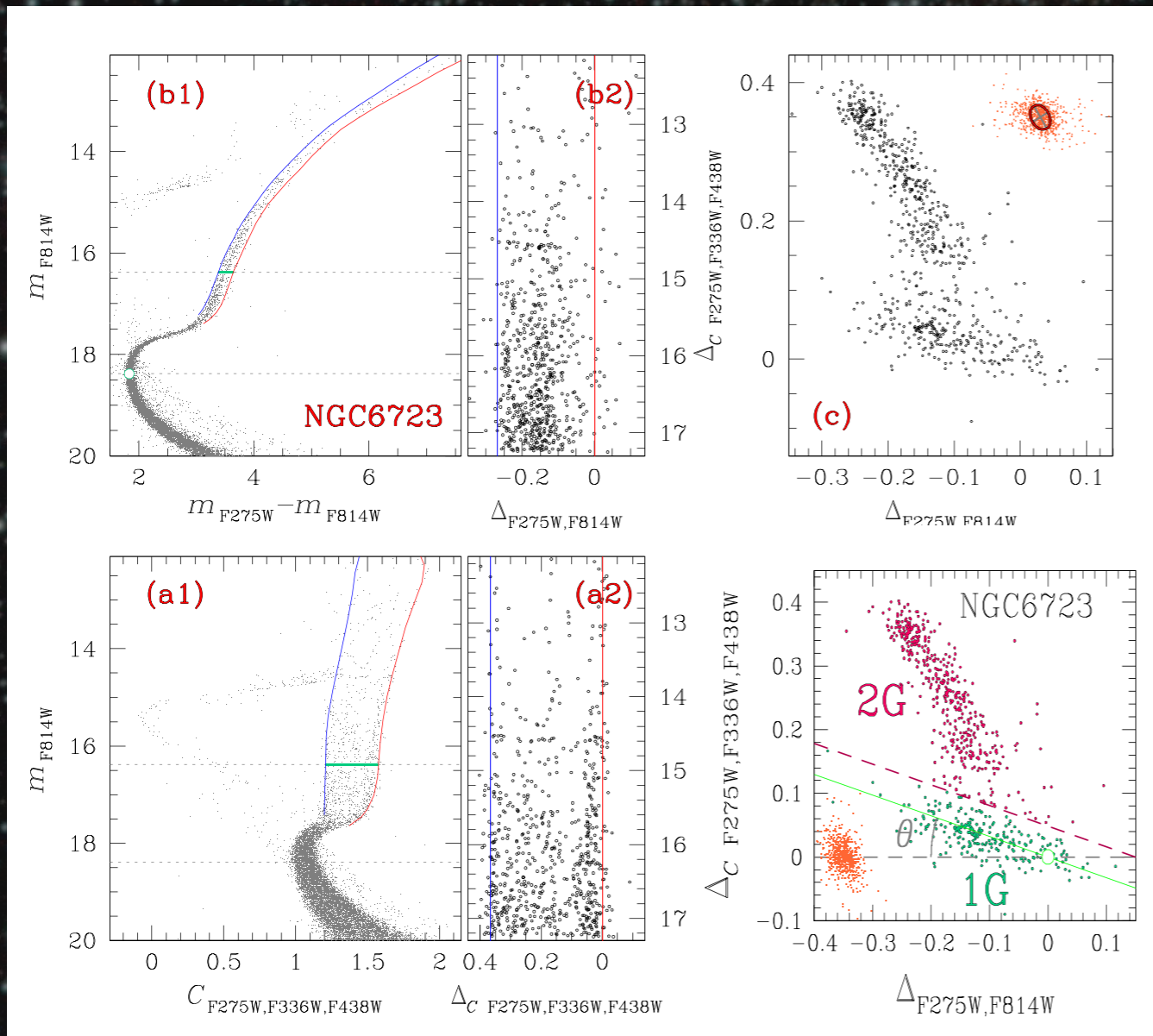


Mucciarelli et al. (2015b)



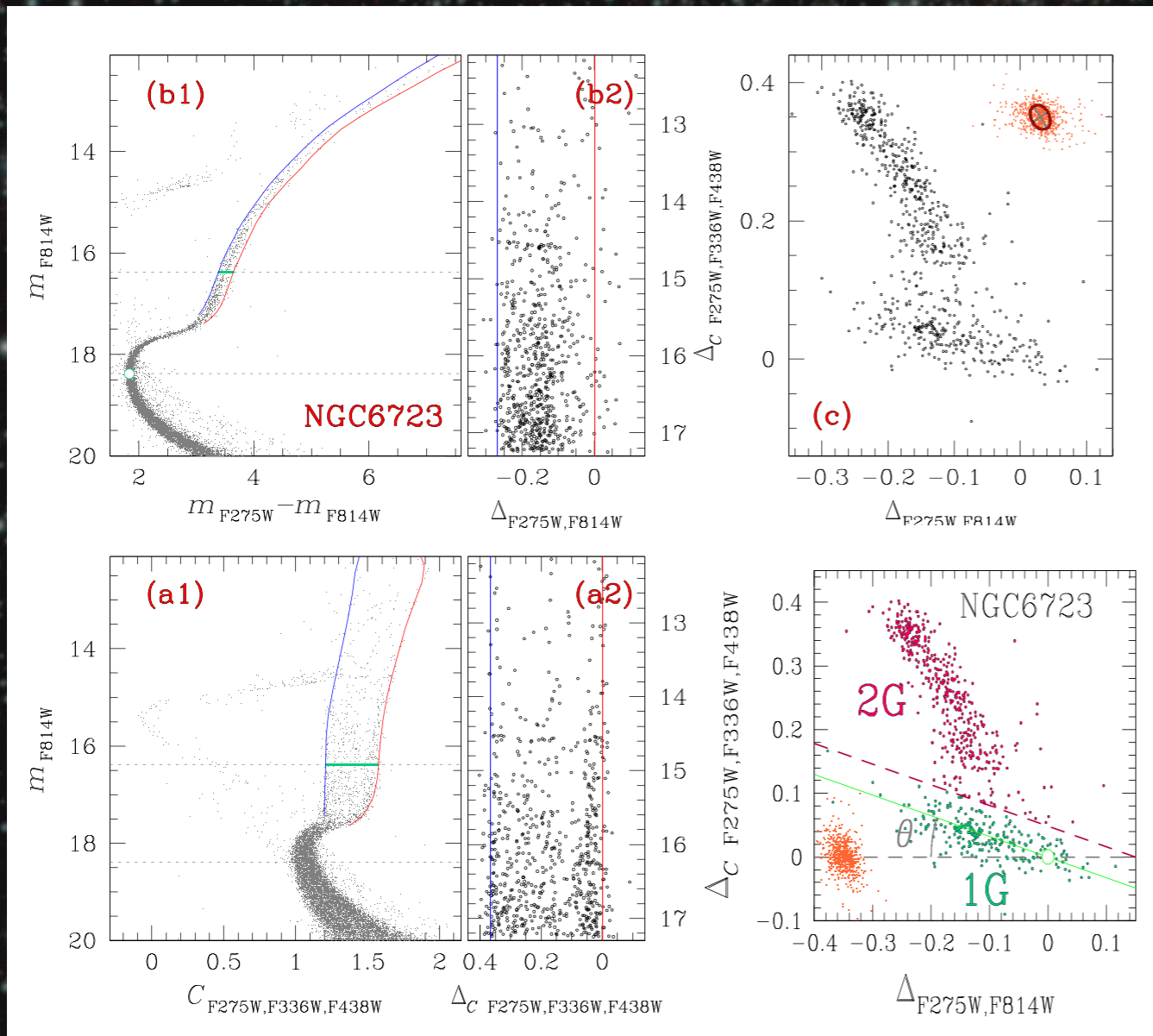
Marino et al. (2015)

UV HST PHOTOMETRY = CHROMOSOME MAP

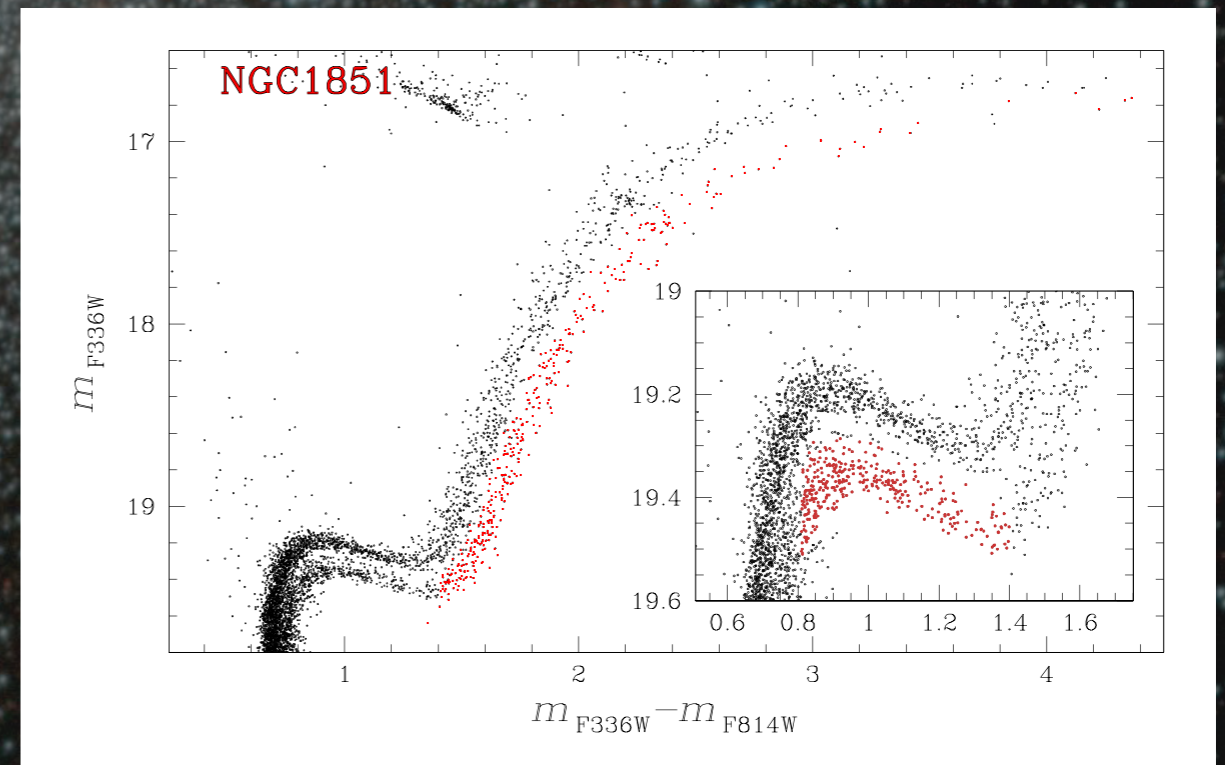
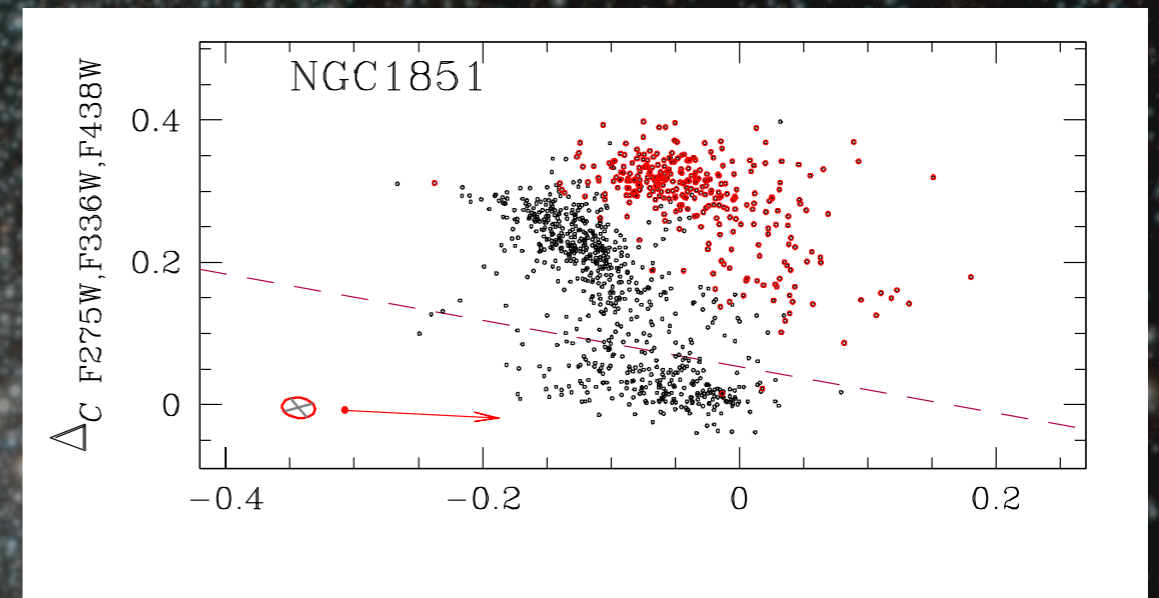


Milone et al. (2017)

UV HST PHOTOMETRY = CHROMOSOME MAP

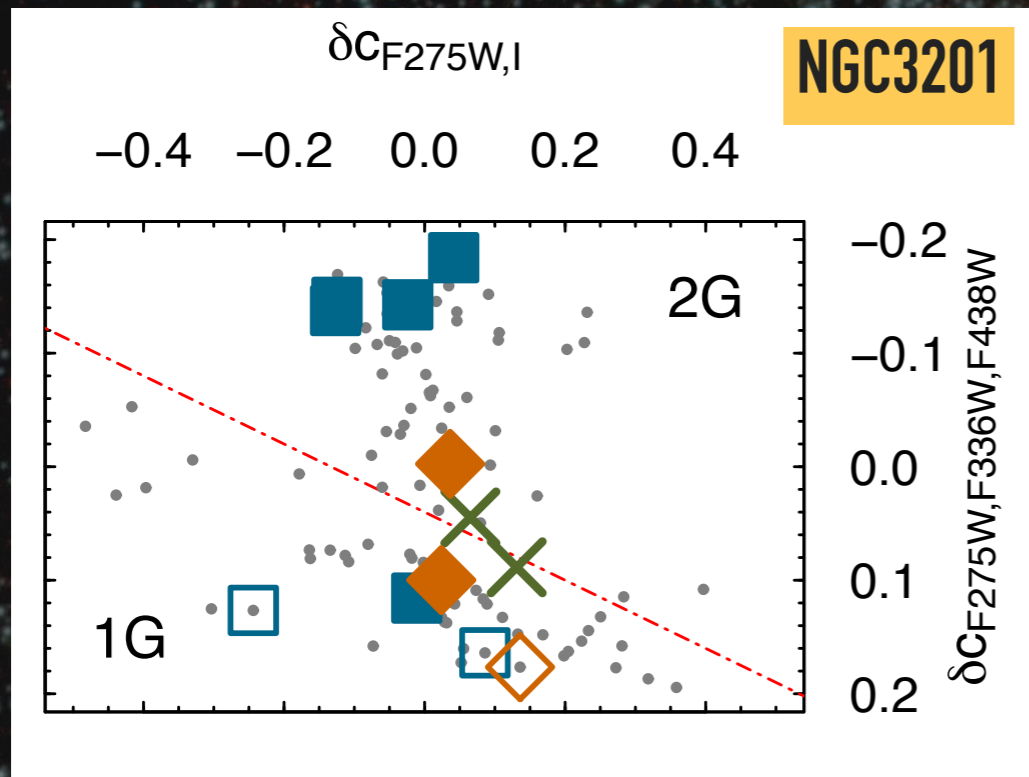


Milone et al. (2017)



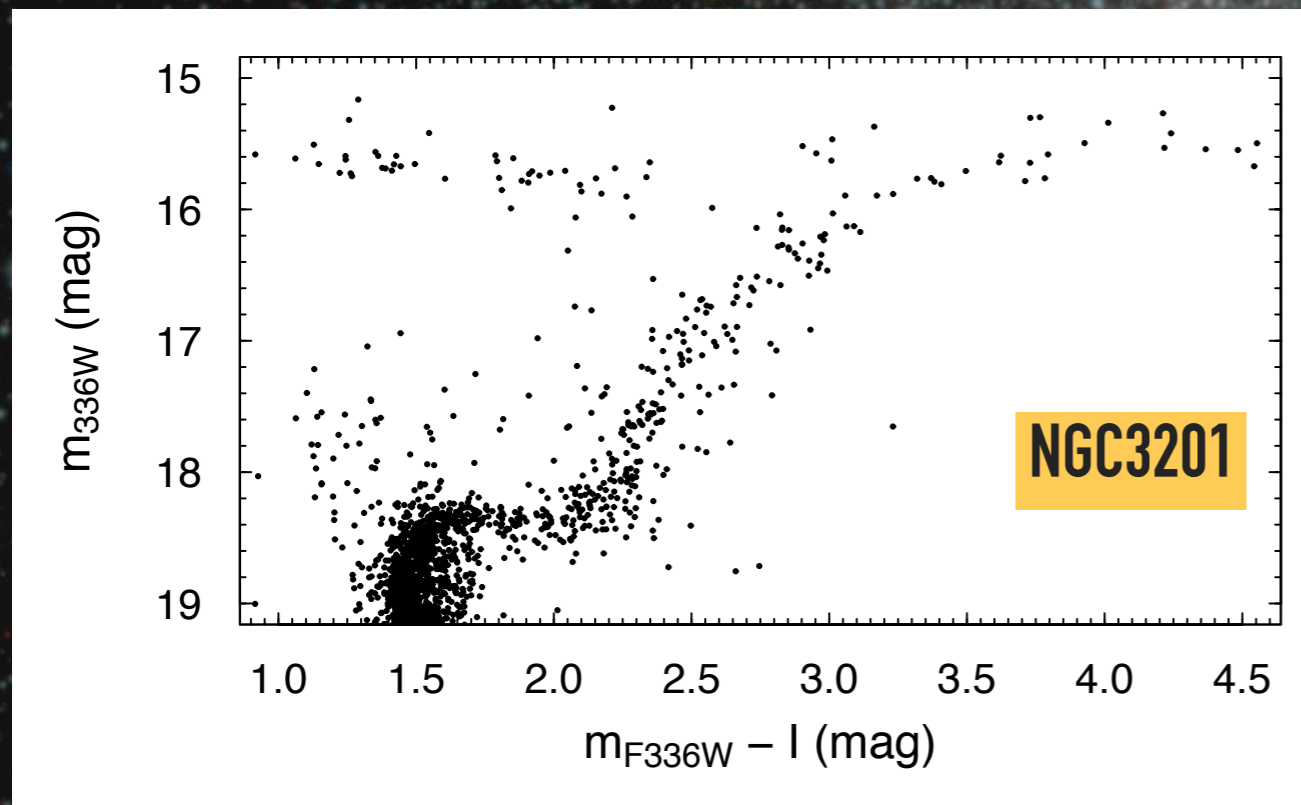
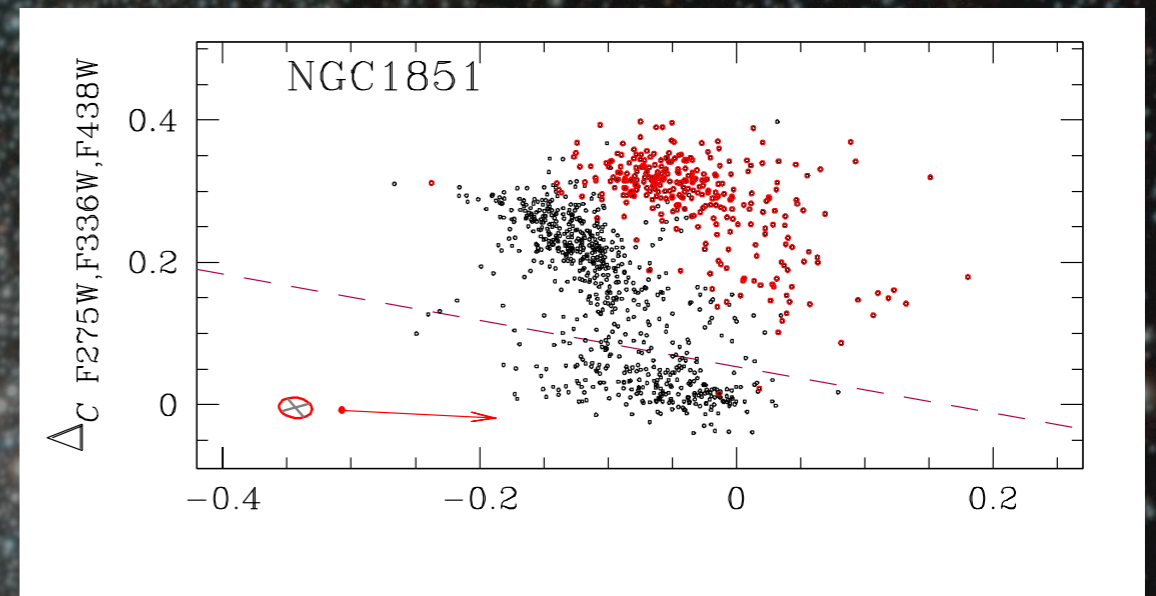
Milone et al. (2017)

UV HST PHOTOMETRY = CHROMOSOME MAP

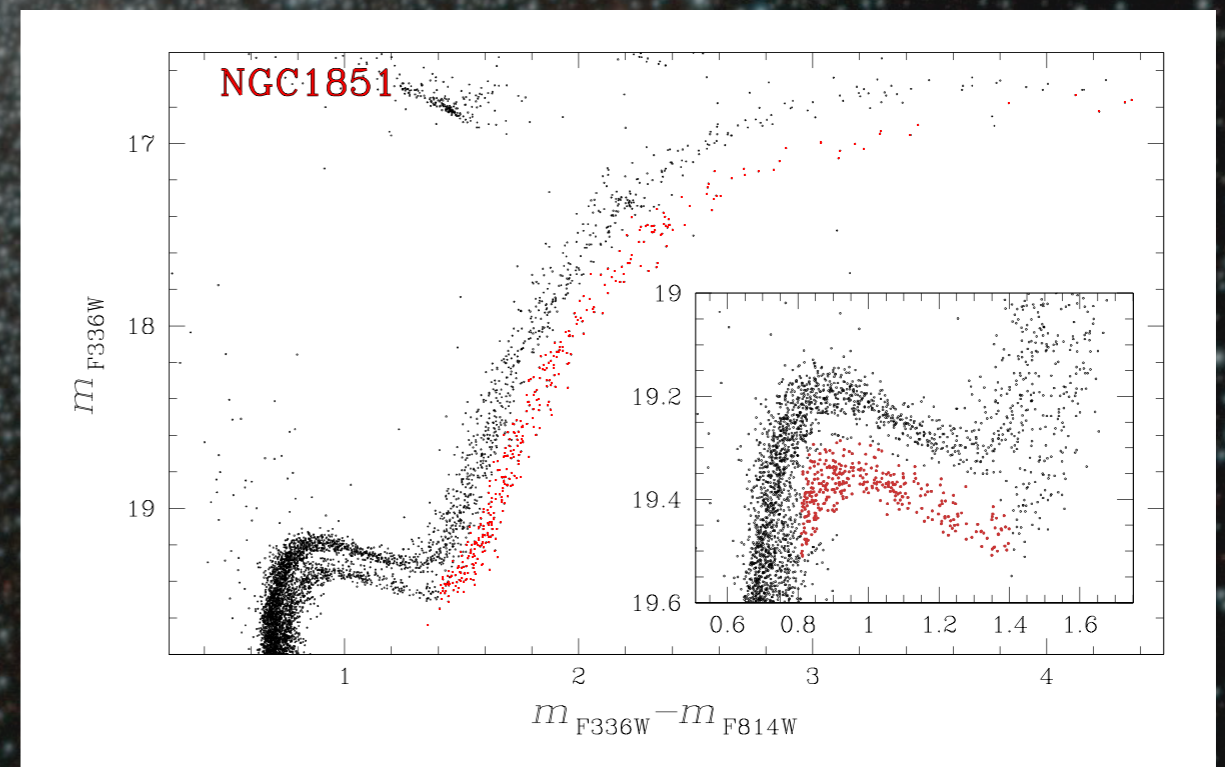


Dias et al. (2018)

NGC3201 SEEMS A NORMAL GC

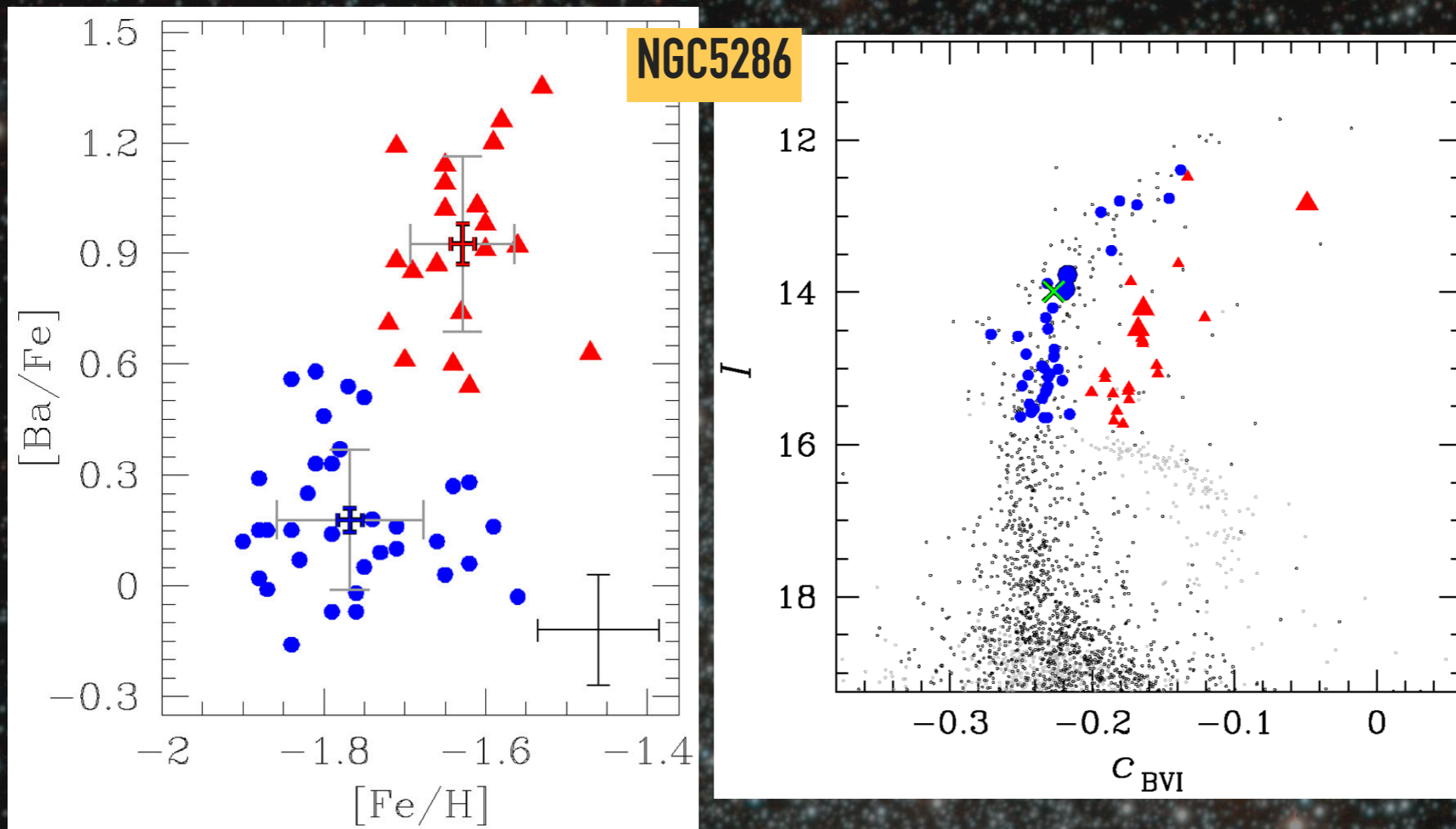


Piotto et al. (2015)



Milone et al. (2017)

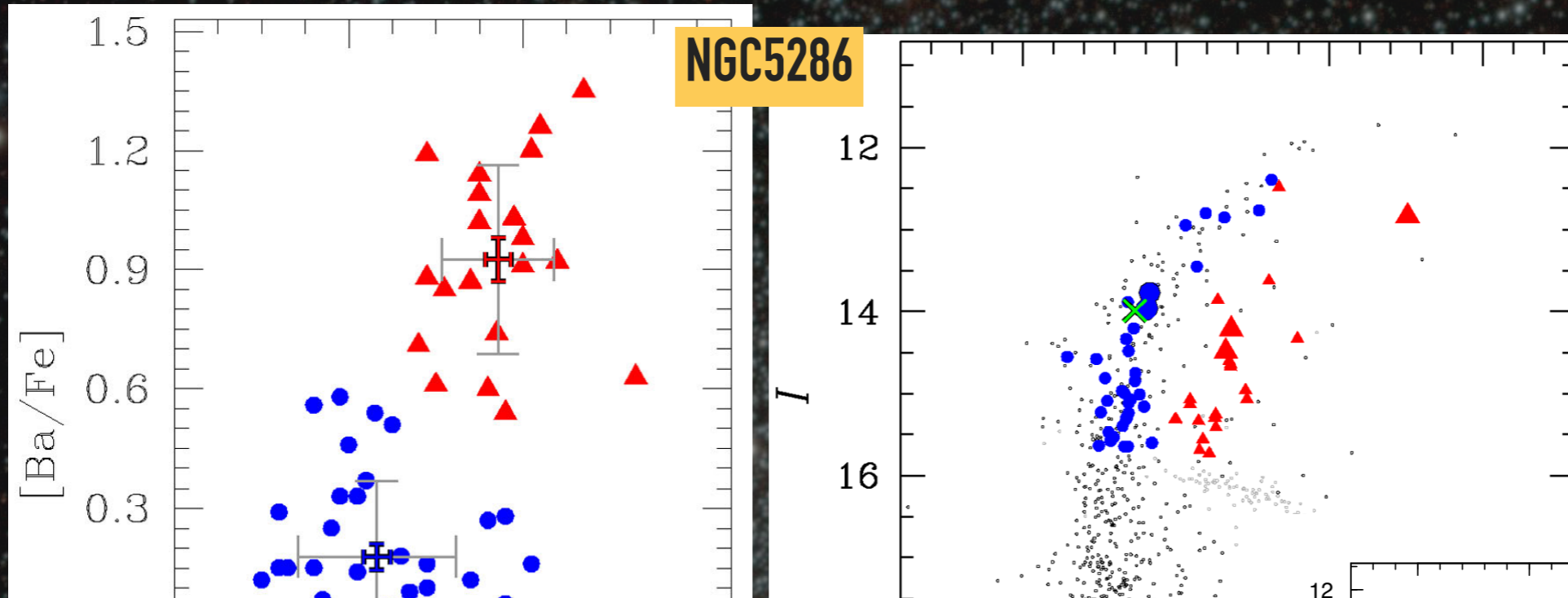
S-PROCESS ELEMENTS AND C+N+O



Marino et al. (2015)

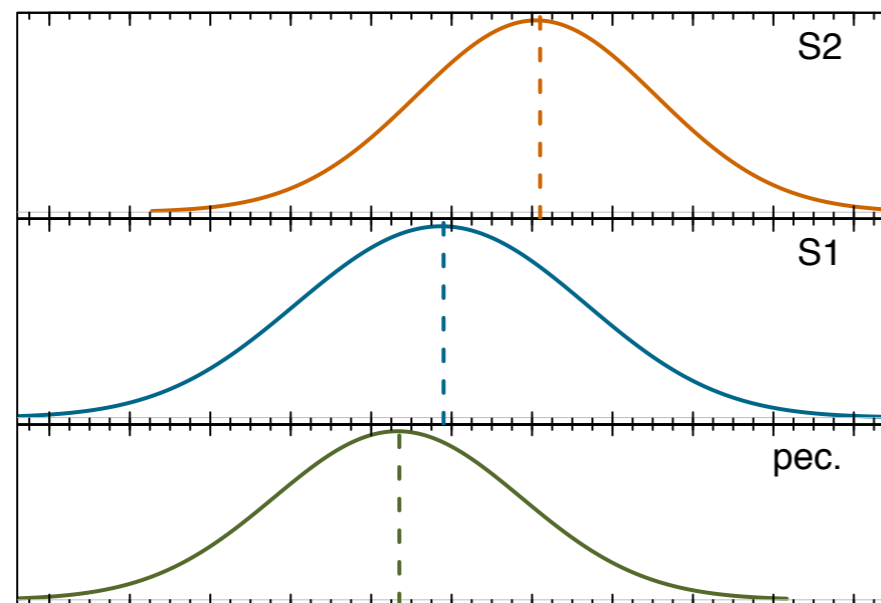
S-PROCESS ELEMENTS AND C+N+O

NGC3201 MAYBE AN ANOMALOUS GC

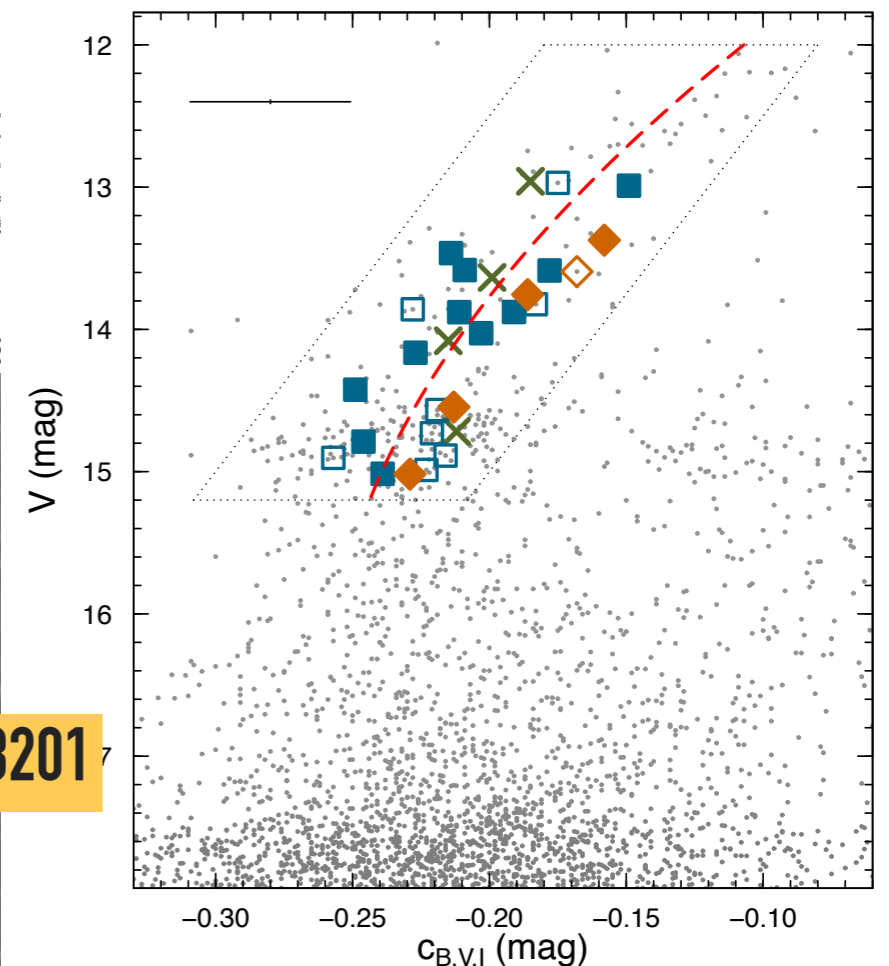


Dias et al. (2018)

$\delta c_{B,V,I}$ (mag)



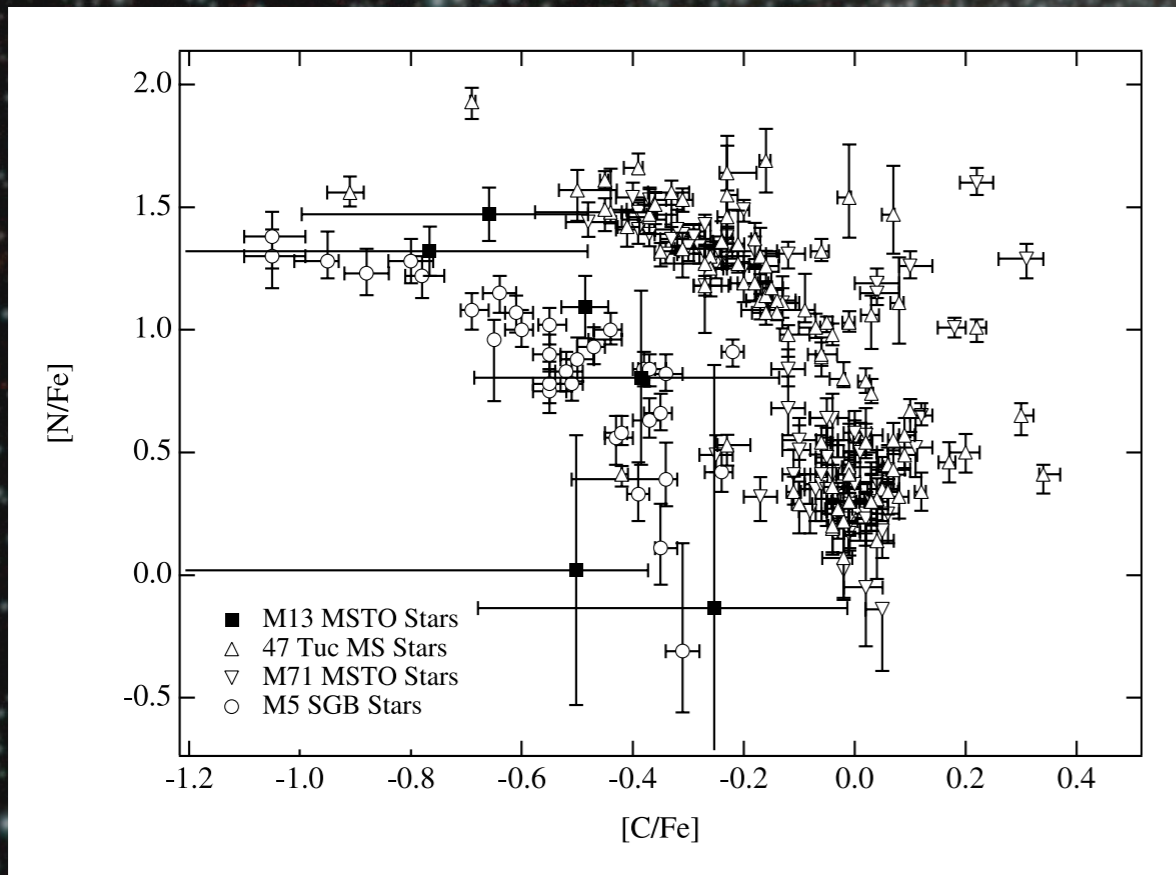
NGC3201



Marino et al. (2015)

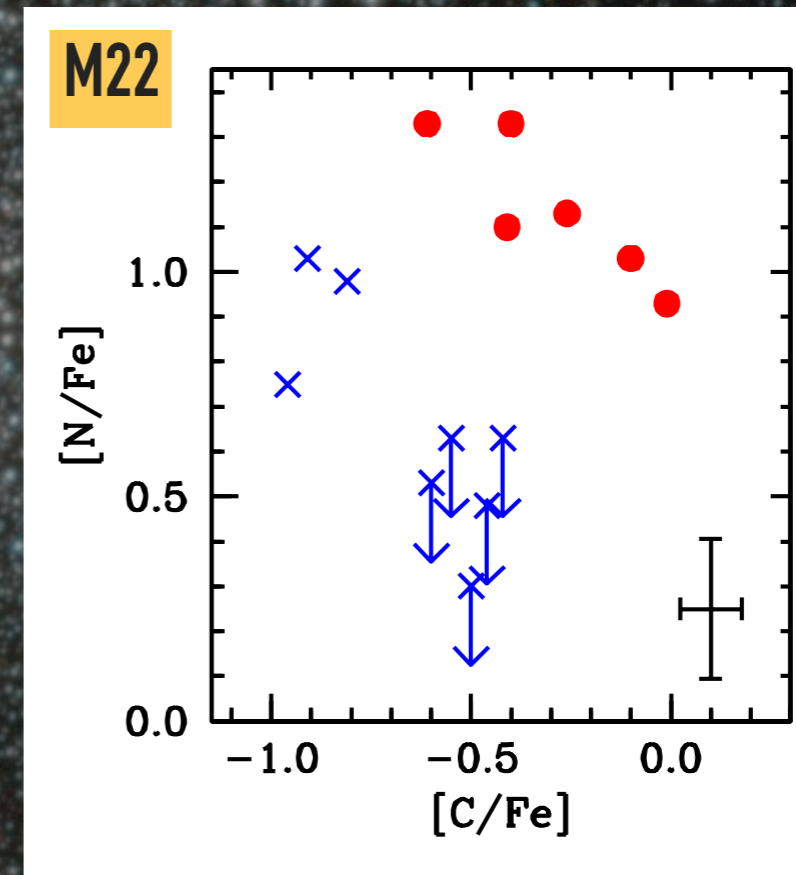
C-N ANTI-CORRELATION, METALLICITY DEPENDENT

MANY NORMAL CLUSTERS
[FE/H] = -1.5 TO -0.6 DEX



Briley et al. (2004)

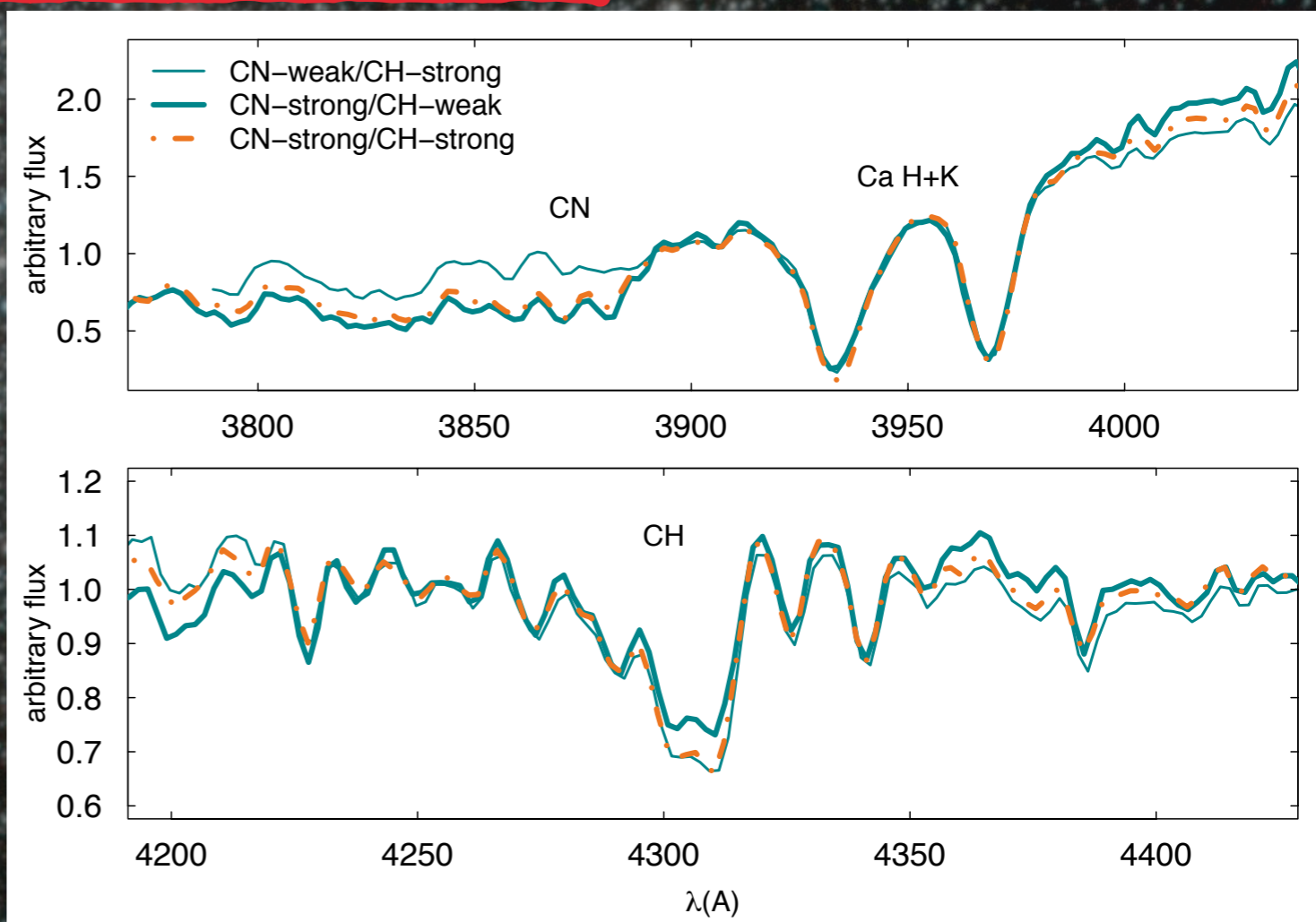
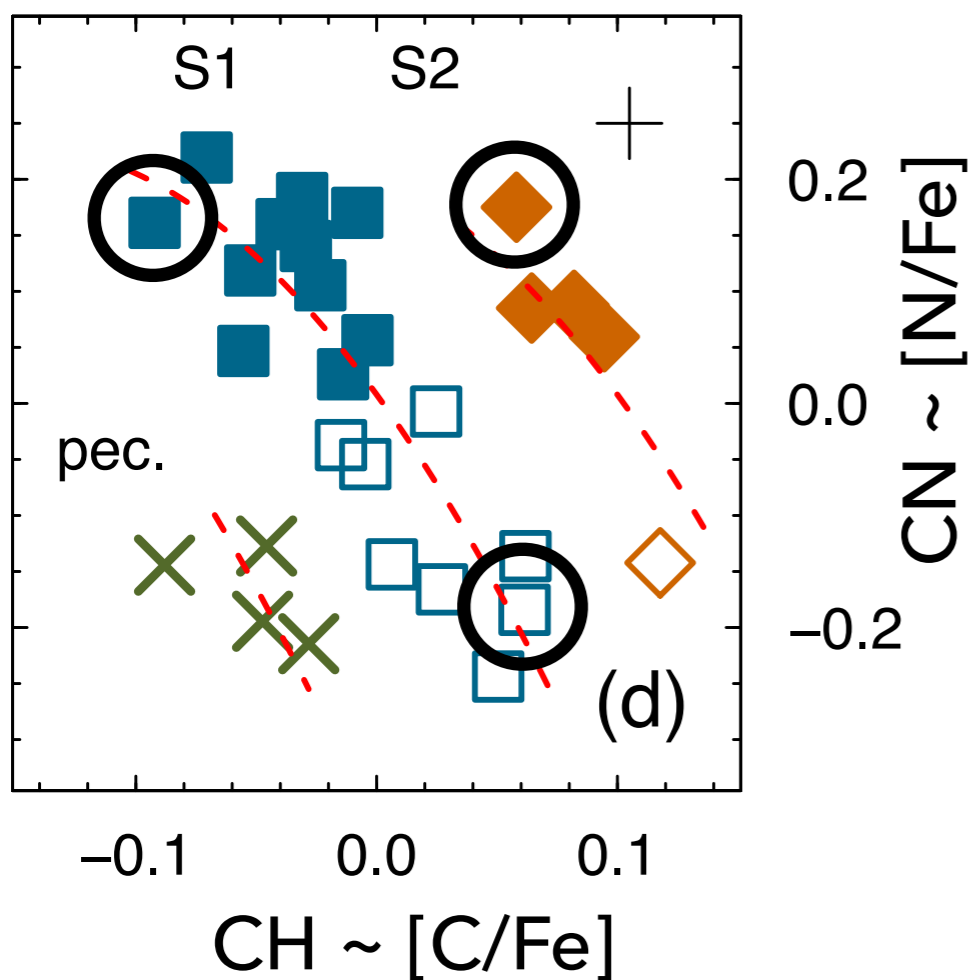
ANOMALOUS CLUSTER
[FE/H] = -2.0 TO -1.6 DEX



Marino et al. (2011)

NGC3201 HAS 3 SEQUENCES OF C-N ANTI-CORRELATION (DESPITE THE DEBATED METALLICITY SPREAD)

THE BIG DISCOVERY



Dias et al. (2018)

LECTURES ON OBSERVATION TECHNIQUES, CAREER...



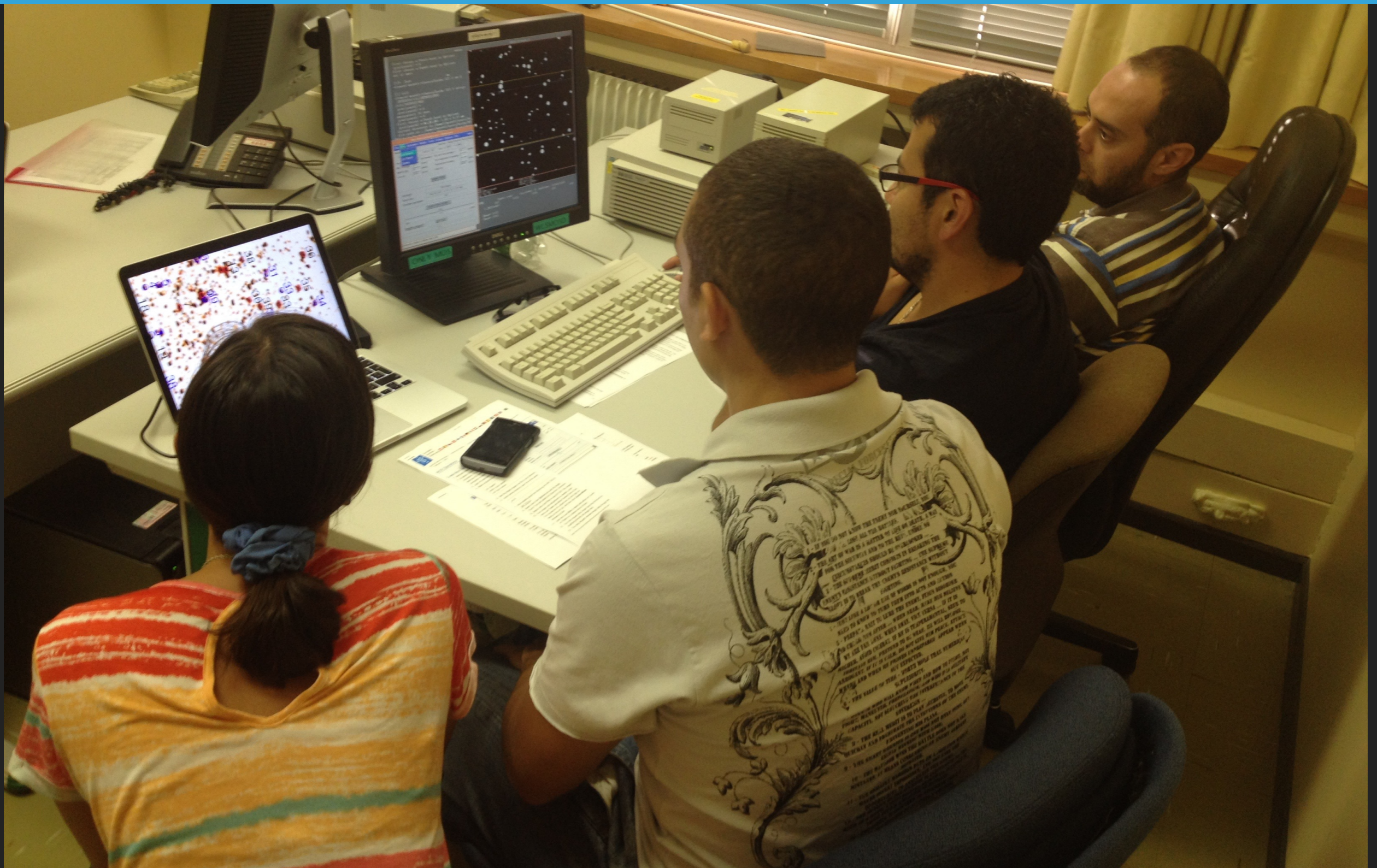
PROPOSAL: SCIENCE CASE, TECHNICAL REQUIREMENTS, OB... = PHASE I + II



PRE-IMAGE OBSERVATION, DATA REDUCTION, PHOTOMETRY, TARGET SELECTION...



MASK PREPARATION...



MASK PUNCHED ON TIME...



CHECKING THE INSTRUMENT...

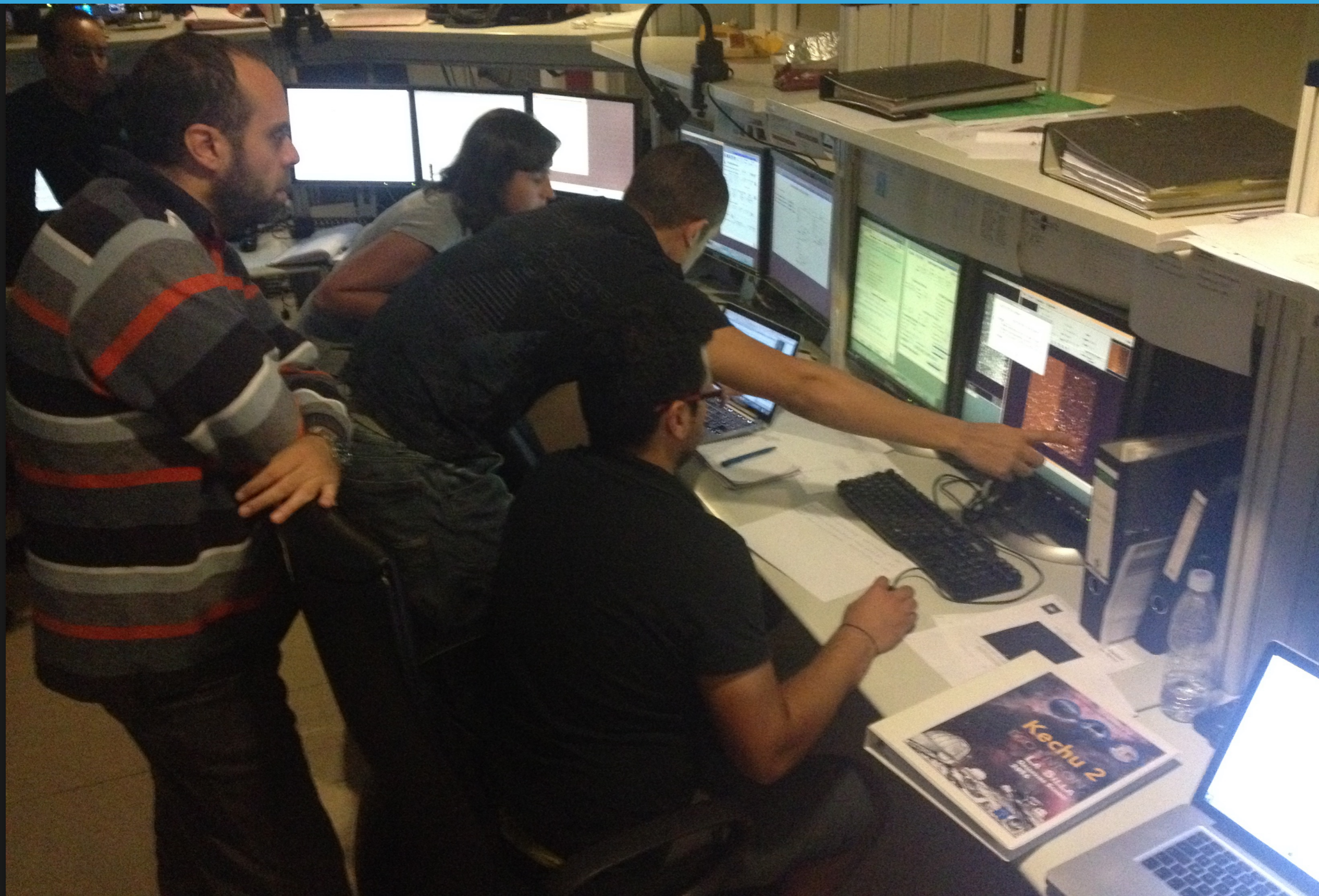


COFFEE + SUNSET BEFORE OBSERVING...

CLEAR SKIES,
GOOD SEEING



EFOSC2/NTT MOS OBSERVATIONS...



DATA REDUCTION AND (QUICK) ANALYSIS...



PRESENTATION OF THE RESULTS...



PRESENTATION OF THE RESULTS...

**EVERYTHING DONE WITHIN
2 WEEKS OF DEDICATED WORK!!**

PRESENTA

E
2 W



Bruno Dias, bdias



N
RK!!



, La Serena, Chile

CONCLUSIONS

- ▶ 2 weeks of focused hard work was very productive
- ▶ Teamwork, collaboration!!! (organization and students groups)
- ▶ Life-changing for all students
- ▶ Beginning: ESO+Opticon 50%+50%, future: ?



THE ROLE OF ESO ON SHAPING THE NEXT GENERATION

LA SILLA ERA

▶ ESO science fellowship: >1976 (258+176=434 so far)

▶ ESO studentship: > 1990 (200 students so far)

PARANAL ERA

▶ ESO on-site observing training programme: > 2016

ELT + ALMA ERA

▶ ESO engineering and technology fellowship: > 2018

▶ Internships, short-term students, astro camp (high school)

▶ Topics: research, engineering, communication, diversity, data reduction, observation, programming languages, statistics, paper writing, archive, VO etc

INTERVIEW WITH X.BARCONS: [HTTPS://WWW.ESO.ORG/PUBLIC/BLOG/ESO-TRAINING-PROGRAMMES/](https://www.eso.org/public/blog/eso-training-programmes/)