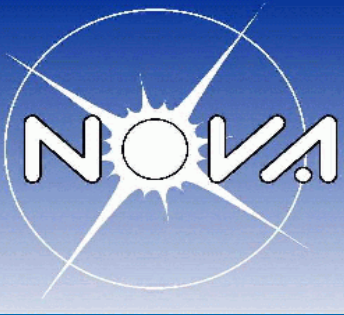


NOVA Overview



Ewine van Dishoeck, Scientific Director NOVA
ESSC Plenary Meeting, May 9 2019



NOVA introduction

- Netherlands Research School for Astronomy

- Alliance of university astronomy departments
Amsterdam, Groningen, Leiden, Radboud
- Research school for all PhDs in astronomy
- 365 fte scientific staff: ~64 permanent/tenure-track, ~90 postdocs,
~170 PhD students, ~40 staff working on instrumentation projects, NOVA funds ~15%

- Mission

- Carry out top astronomical research in the Netherlands
- Train young astronomers at highest international level
- Share discoveries with society

NOVA is not a funding agency!

NOVA top-research school

- History

- Long term **joint program**: *Unravelling the History of the Universe: The Life-Cycle of Stars and Galaxies* funded by Ministry of OC&W as **top-research school** in 1999 for 10 yr
- Funding at ~5 M€/yr following (competitive) reviews, renewed 3 times
- Budget more than doubled with external grants
- NOVA phase 5 (2019-2023) approved

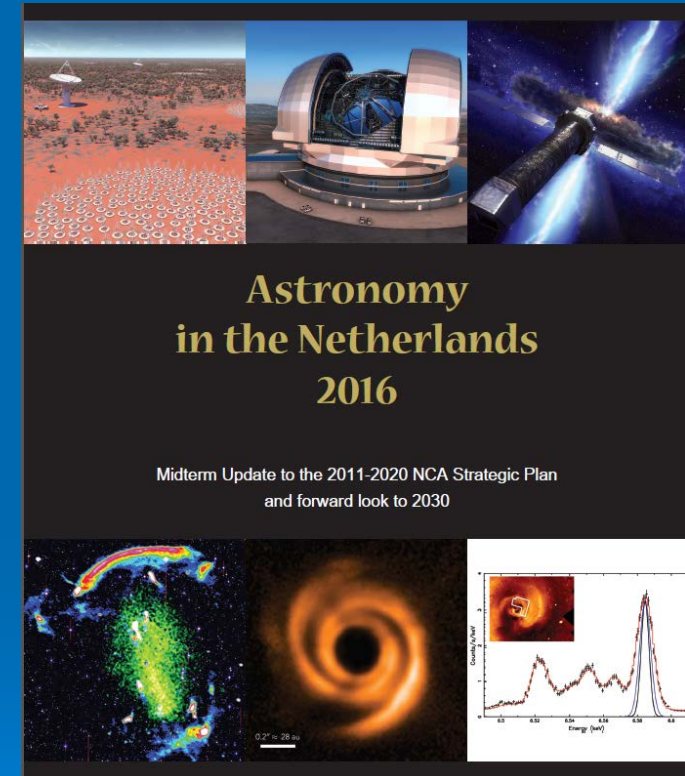
- Three interlinked components (45-45-10% of budget)

- Research: overlap positions staff, PhDs, PD, science support
- Instrumentation (with focus on ESO)
- Outreach and (lean) office

Coherent national program

- Netherlands Committee for Astronomy sets the priorities
 - Long term planning: 10-20 years
 - Modern astronomy requires access to multi-wavelength and multi-messenger facilities
- Access to telescopes
 - Space telescopes: ESA and SRON
 - Radio telescopes: SKA and ASTRON
 - Op-IR and Submm: **ESO and NOVA**, NWO-EW
 - GW + astroparticle: under development

NOVA + SRON + ASTRON + NWO

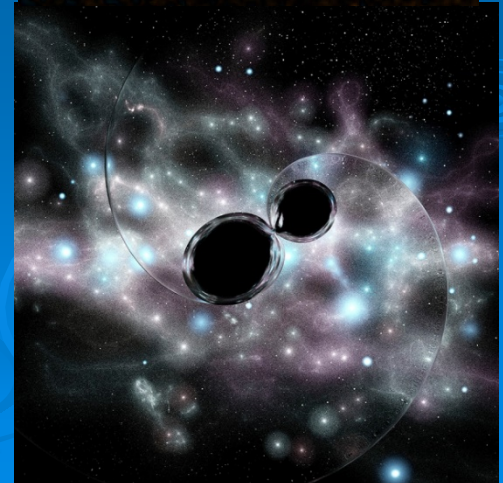
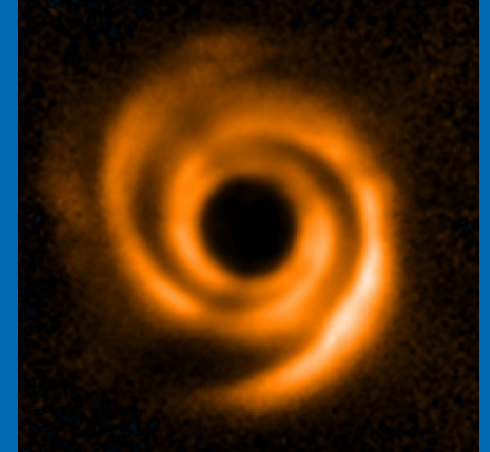


NOVA coordinates Dutch university astronomy and makes it possible for them to have a national presence in big international projects

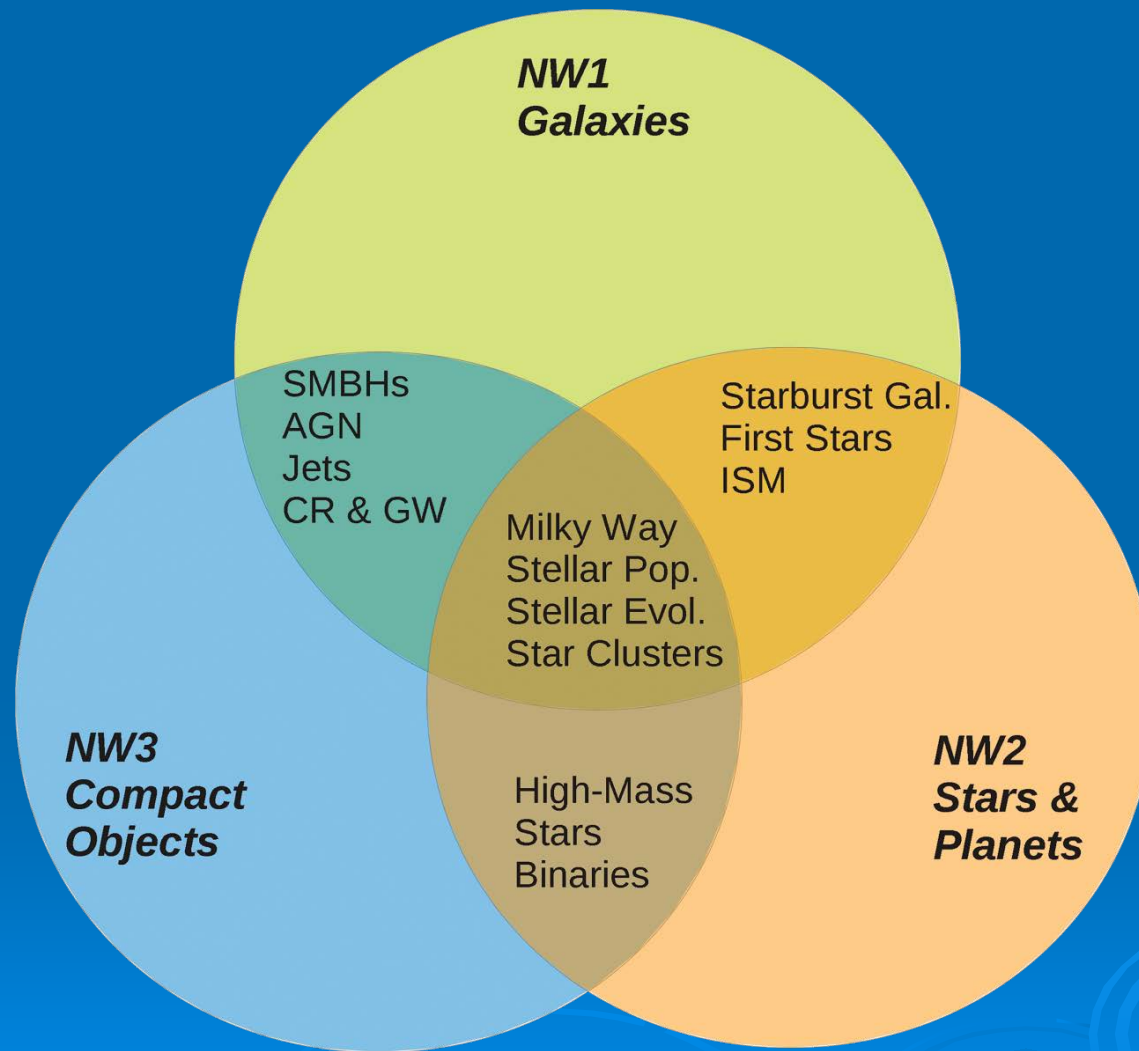
Three research networks

- NW1: Formation and evolution of galaxies
 - From high redshift to the present
- NW2: Formation and evolution of stars and planets
- NW3: Astrophysics in extreme conditions

***All NL PhD students are part of NOVA
Joint educational activities***



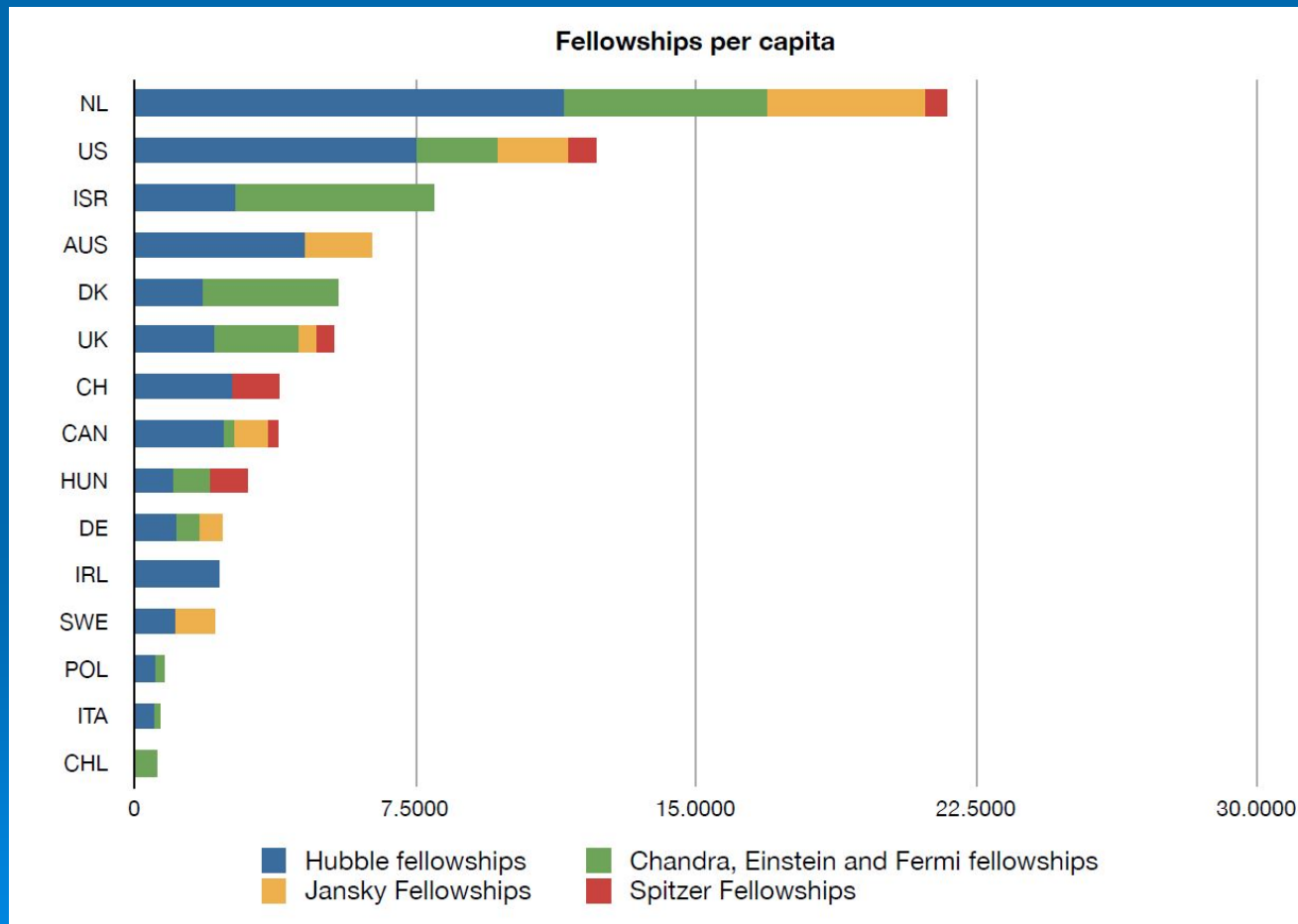
Cross network projects



Also: multidisiplinary programs: Astroparticles, Astrochemistry, Astrobiology, Big Data,

We are proud of our PhD students!

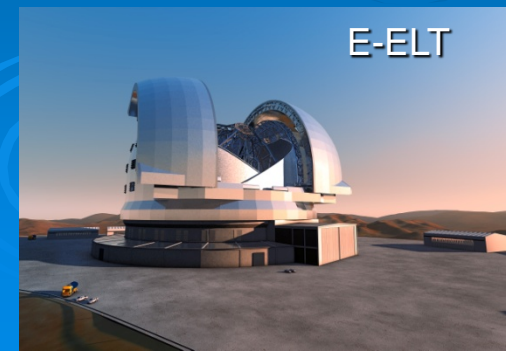
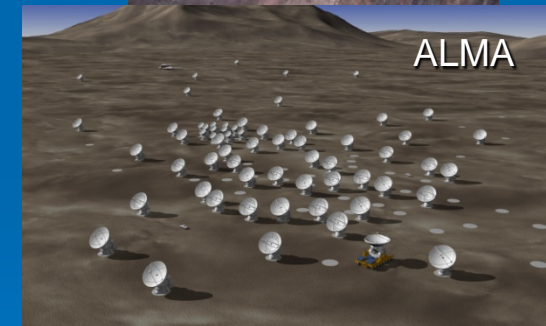
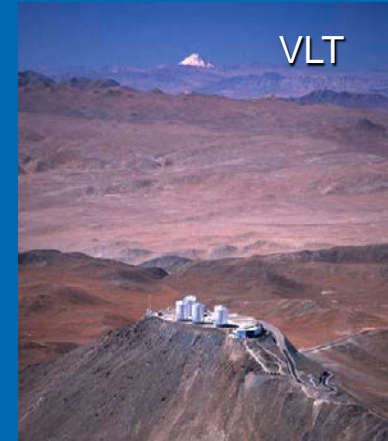
- PhDs get top fellowships abroad



60-70% of PhD students continue in astronomy

Key aspect of NOVA strategy: build instrumentation for top telescopes

- Ensure key scientific capabilities
 - Science drives instrument design
 - Ensure early priority access (guaranteed time)
 - Ensure in-house instrument knowledge
- Capitalize on Dutch investments in world-class facilities
- Strengthen technical expertise *at the universities*
- Focus on ESO facilities
 - Science exploitation of *all* facilities, incl. ASTRON and SRON, e.g. LOFAR, HIFI



Top astronomy = Top Talent + Top Instrumentation

Netherlands Research School for Astronomy

Instrumentation

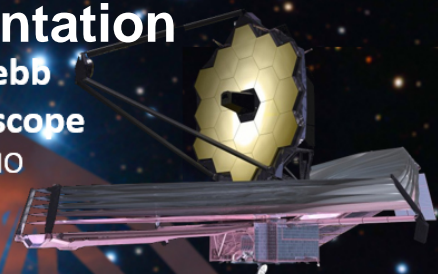
James Webb

Space Telescope

MIRI - SMO

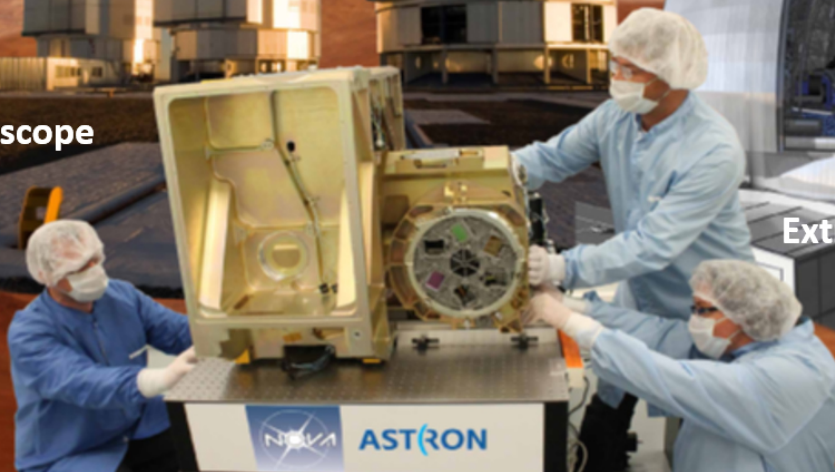


ALMA



ESO Very Large Telescope

- MIDI
- VISIR
- SPIFFI
- X-Shooter
- Sphere-ZIMPOL
- MATISSE



ESO European -
Extremely Large Telescope

- MICADO
- METIS (PI Institute)
- MOSAIC
- EPICS

*NOVA Optical-IR group in Dwingeloo and Submm group in Groningen
R&D at the Universities, e.g. optics, polarization in Leiden*



NOVA and ESO

'Hofleverancier'



ELT

Metis

Micado

Mosaic

La Silla

BlackGem

VLT(I)&VST

X-shooter

Sphere

Muse

OmegaCam

MIDI

Matisse

ALMA

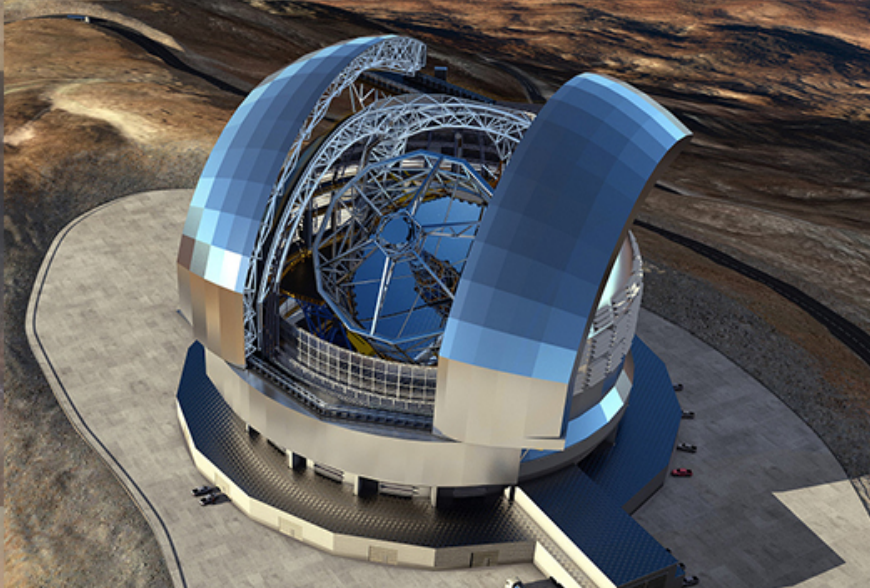
Band 5

Band 9

NOVA participates in world class facilities, primarily ESO



GAIA



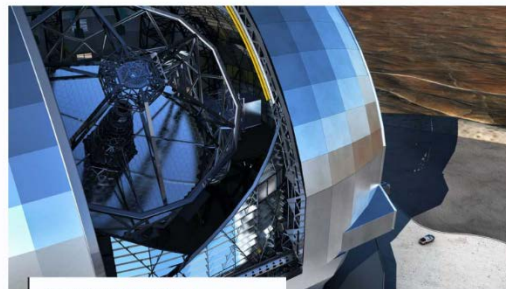
JWST-MIRI



EUCLID



Outreach program



VDL-ELT contract 19-04-18

Inclusiviteit

Conclusions

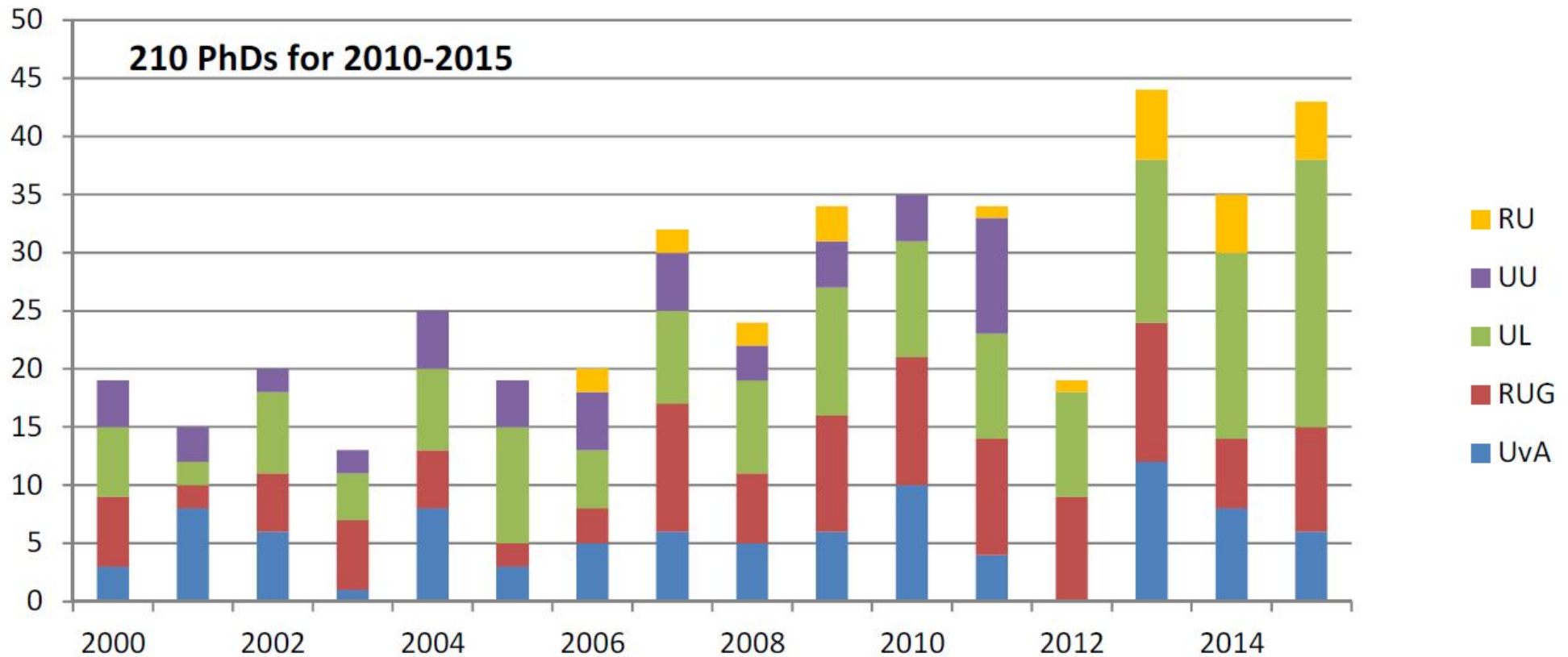
- NOVA allows a leading role on the world stage through a strategically chosen research and instrumentation program
- Well positioned for next generation of discoveries with major facilities of this and the next decade
- Collaboration among universities essential, enabled by NOVA grant

www.nova-astronomy.nl

www.astronomie.nl



Total number of PhD degrees

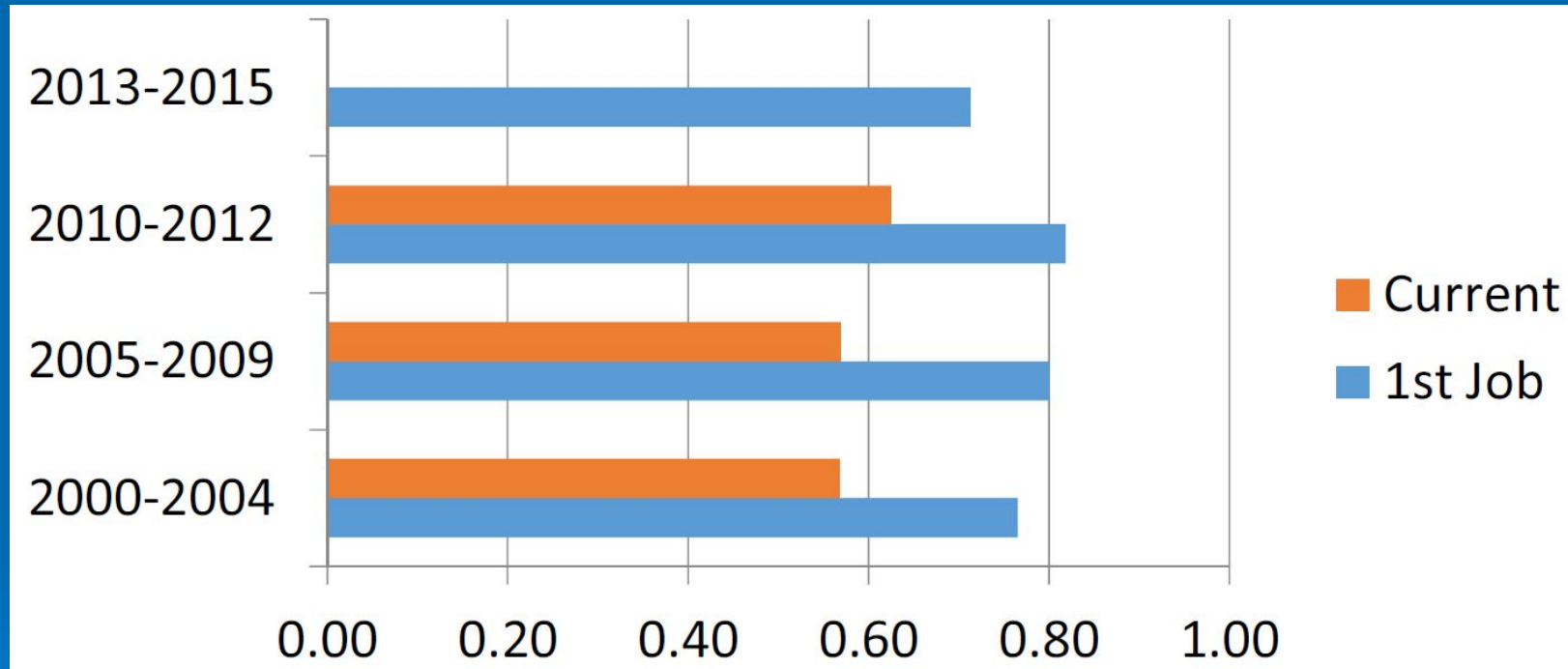


- 431 PhDs 2000 – 2015; 210 PhDs 2010-2015
- Median PhD length ~4.4 yr
- PhD completion fraction ~92%

Where do our PhDs go?

Entire group 2000-2015 (421 PhDs)

Continuation in astronomy



Number of PhD students continuing in astronomy is ~70-80%
About 20% choose a different career after first or second postdoc