GENIUS

Gaia status

gaia

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Overview

- Gaia in routine operations since July 2014
- Scanning operations with observing strategy of continuous measuring
- Dead-time: orbit maintenance,micrometeoroids, decontaminations, groundstation weather
- Nominal 5-year mission ends mid-2019
- Estimated end of mission due to cold gas exhaustion end-2023 (±1year)
- Process started to seek funding for mission extension (mid-2019 till the end)

Astrometry

- Astrometric measurements: >600 billion
- G<20.7 mag (fainter than original G=20 limit)
- In crowded regions on-board resource allocation exhausted
- Selected crowded regions imaged with Gaia Sky Mapper
- Bright limit around G=2-3 mag
- All bright stars imaged (G<3 mag) (Gaia SM)
- Looking into more complete data collection for these stars

Photometry

- Photometric measurements: >130 billion
- G<20.7 mag
- Spectrophotometry
  - 330-680 nm BP
  - 640-1050 nm RP
- Astrometric measurements also photometric in G-band
- In crowded regions on-board resource allocation exhausted
- Bright limit around G=2-3 mag
- Looking into more complete data collection for these stars

Spectroscopy

- Spectroscopic measurements: >12 billion
- GRVS<16.2 mag
- 845-872 nm with R about 11,000
- Radial Velocity Spectrometer for >100 million radial velocities
- Spectroscopy till about GRVS=12 mag
- In crowded regions on-board resource allocation exhausted to some extent, but crowdedness sets in earlier
- Bright limit around G=2-3 mag
- More complete data collection for these stars may take place

Scientific performance

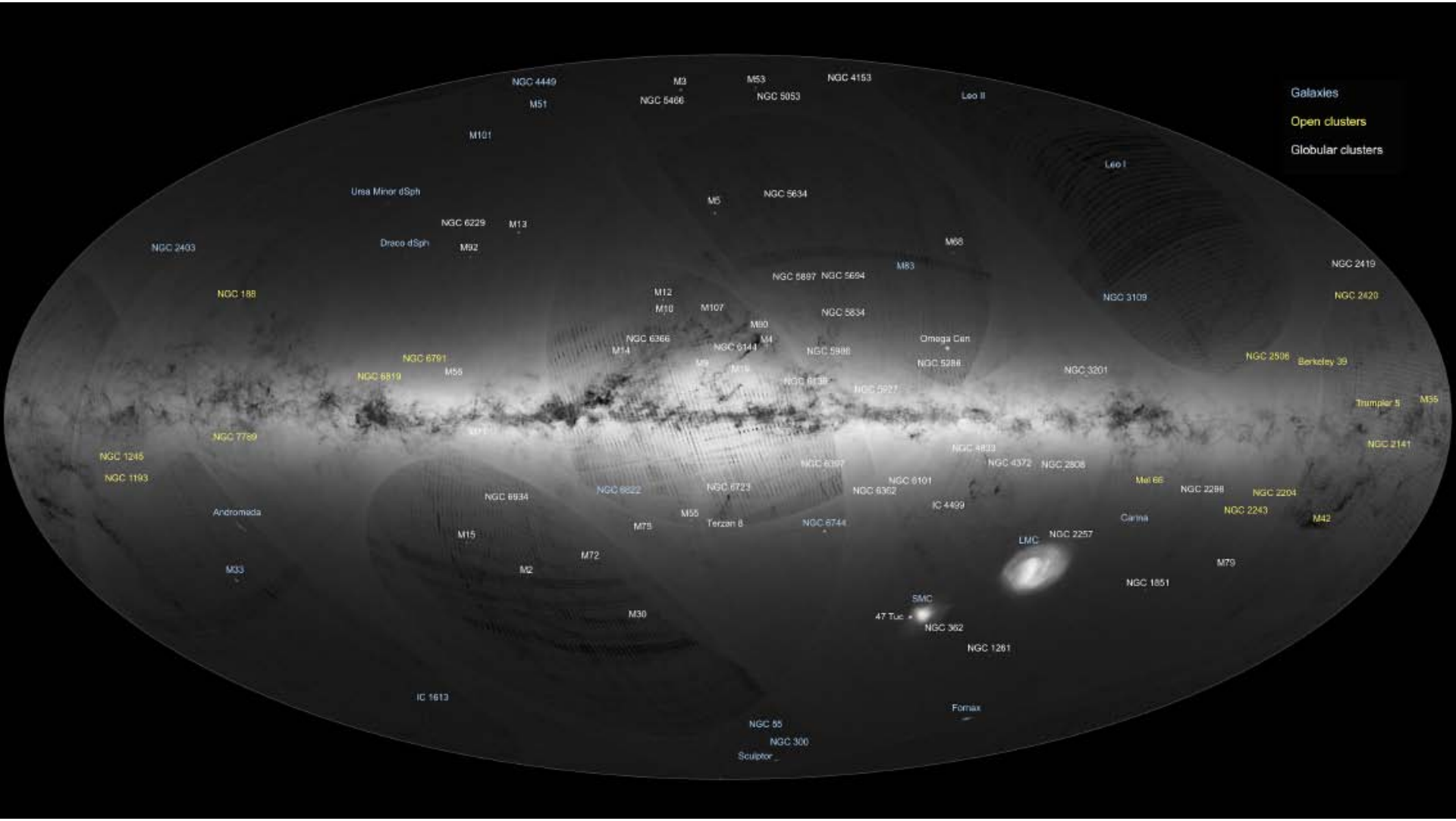
End of mission scientific performance estimates for an unreddened Solar type (G2V) star

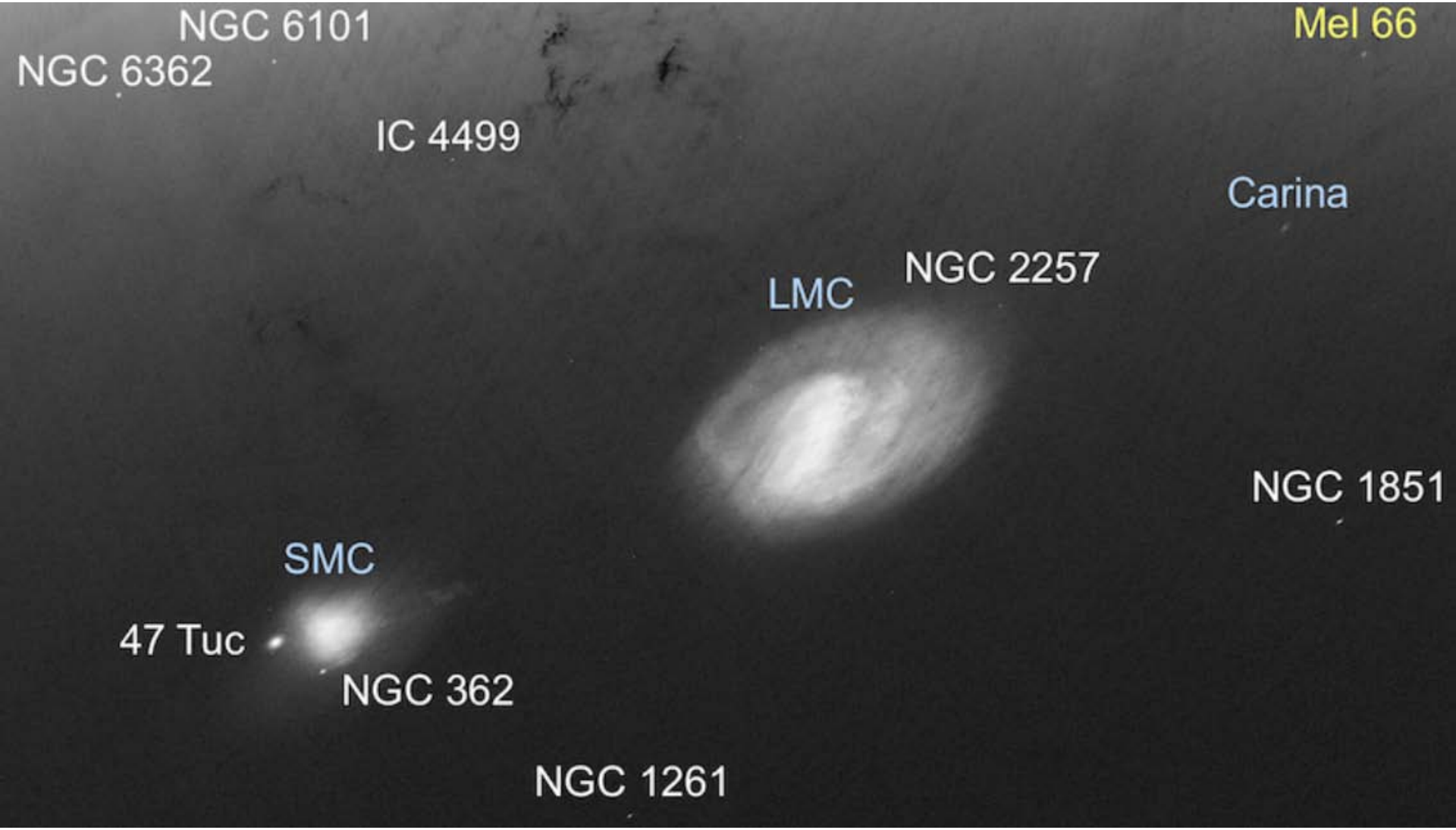
V-magnitude	Astrometry (parallax)	Photometry (BP/RP integrated)	Spectroscopy (radial velocity)
6 to 12	5-14 μas	4 mmag	1 km/s
15	25 μas	4 mmag	13 km/s
20	540 μas	60 (RP) – 80 (BP) mmag	

DR1 has been published (next presentation)

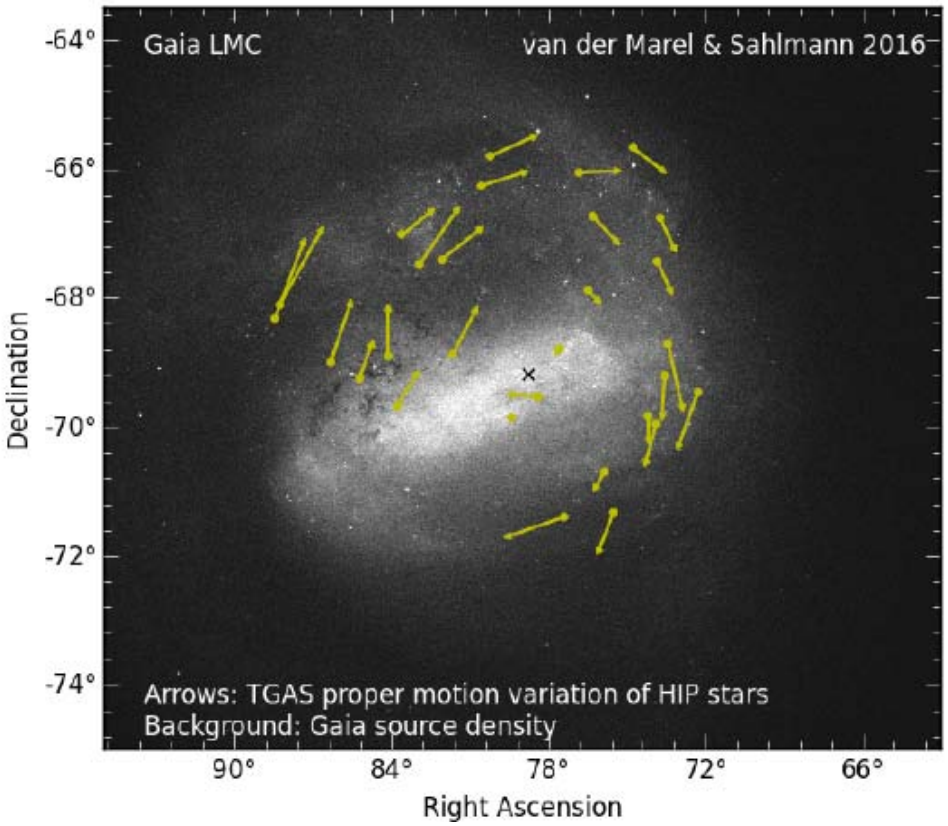
Scientific results already arriving

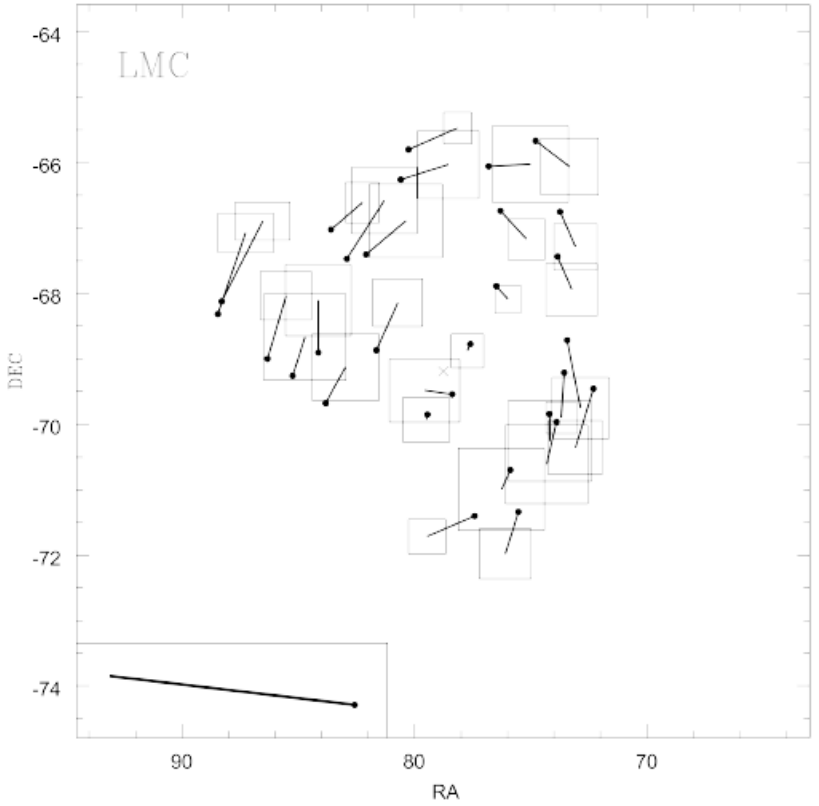
DR1 all-sky composition



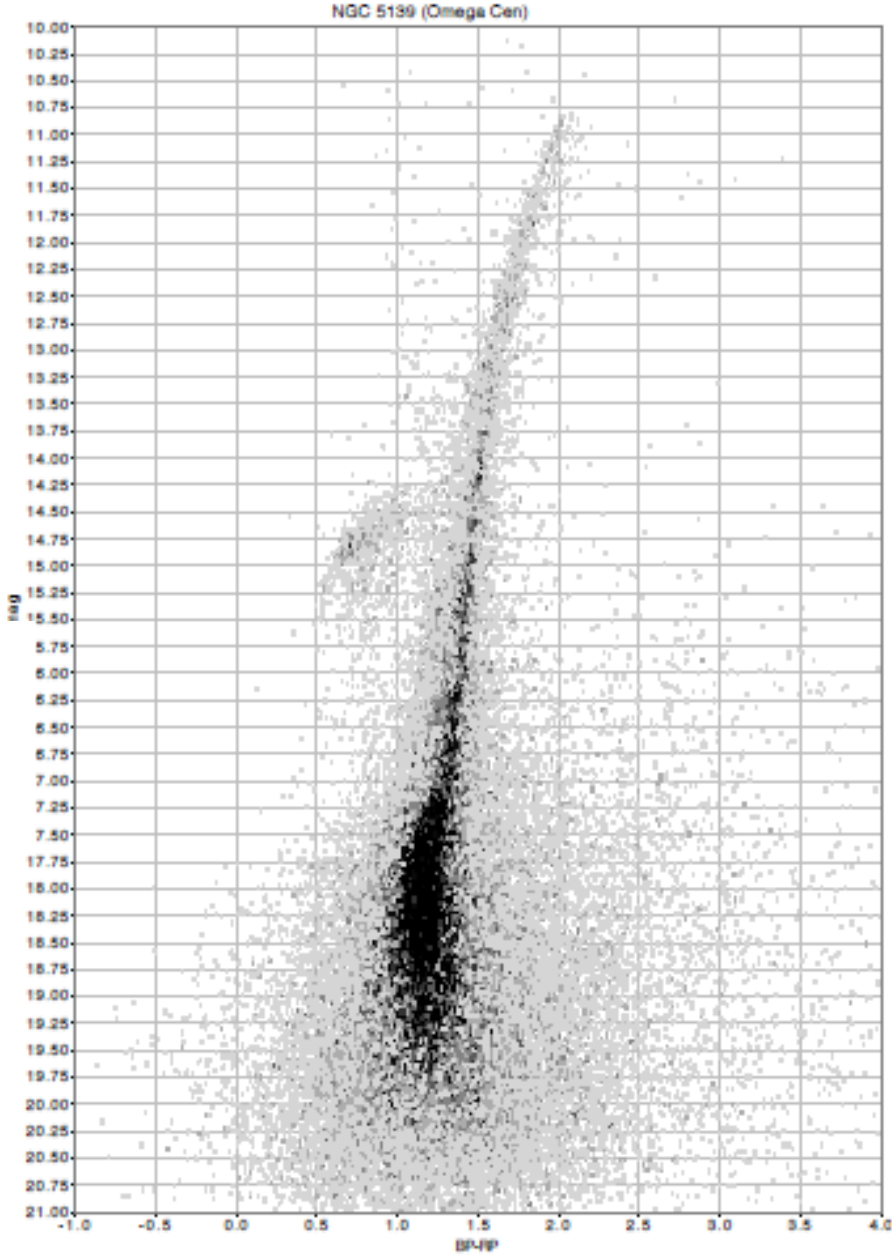

NGC 6101
Mel 66
NGC 6362
IC 4499
Carina
NGC 2257
LMC
NGC 1851
SMC
47 Tuc
NGC 362
NGC 1261

van der Marel &
Sahlmann, 2016



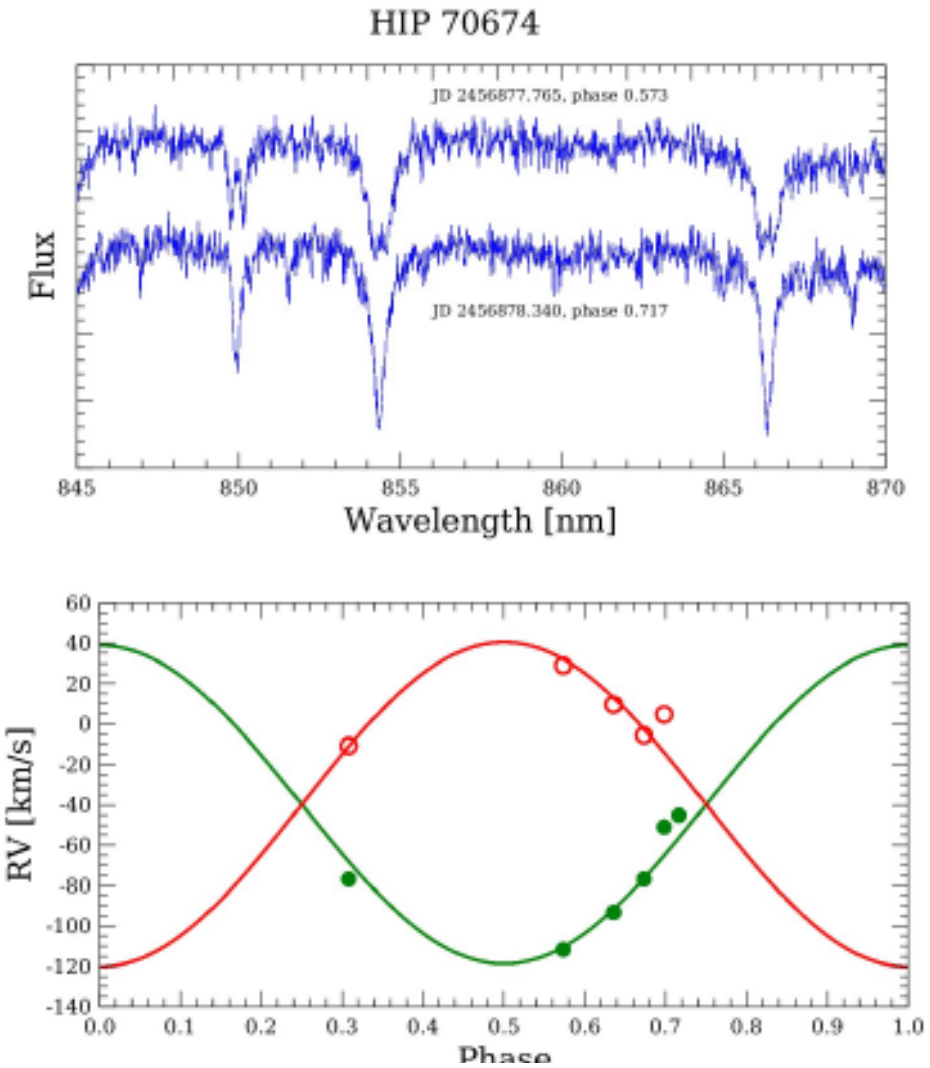


Preliminary photometry



ESA/Gaia/DPAC/CU5/F. De Angeli,
D.W. Evans, M. Riello (University of Cambridge)

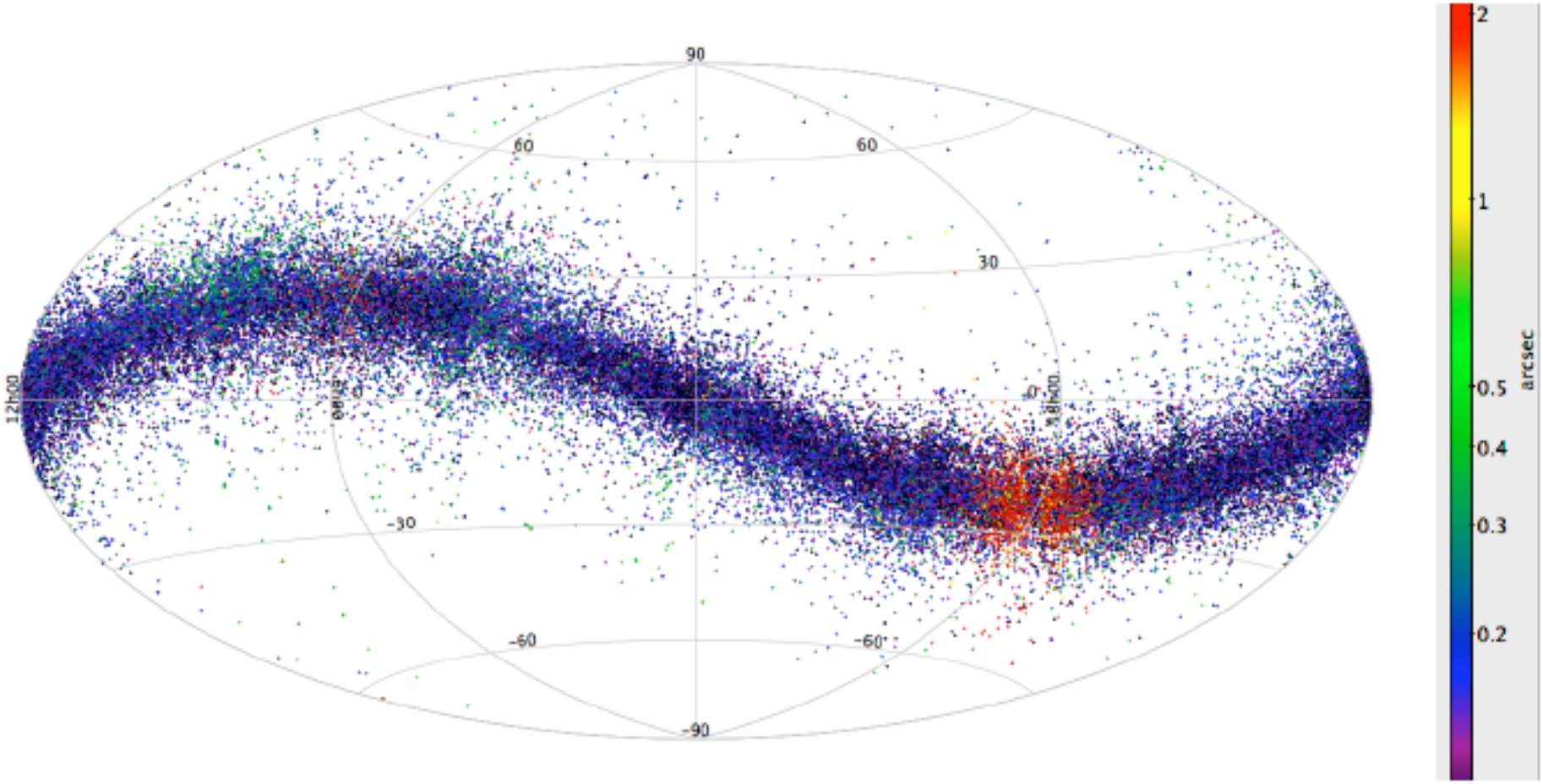
Double lined spectroscopic binaries



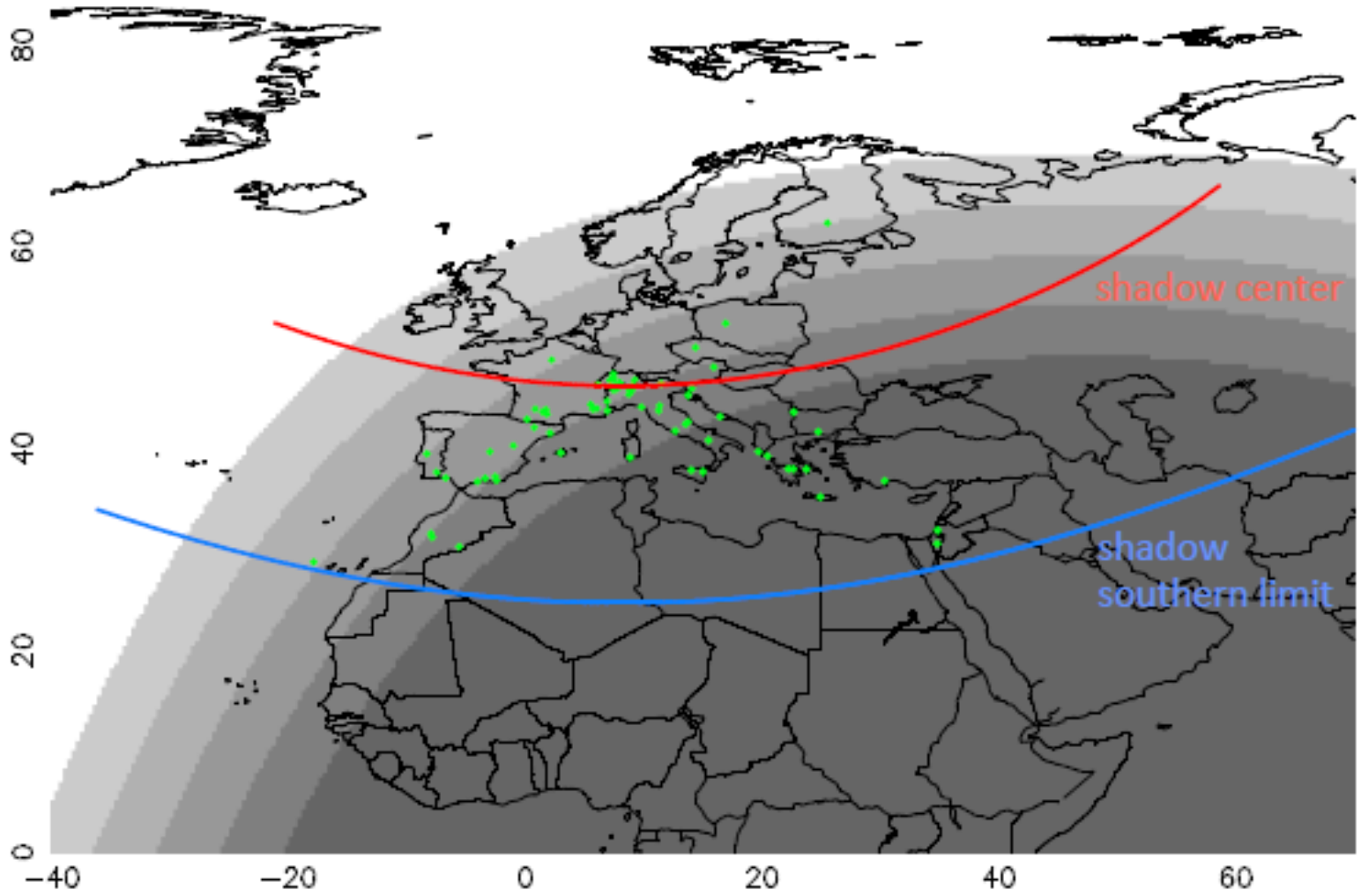
credits: ESA/Gaia/DPAC/CU6/Yassine Damerdji (Observatoire d'Alger/ Institut d'Astrophysique et de Géophysique de Liège) & Pasquale Panuzzo (CNRS/Observatoire de Paris)

Asteroid detection

Credits: ESA/Gaia/DPAC/ CU4, L. Galluccio, F. Mignard, P. Tanga (Observatoire de la Côte d'Azur)

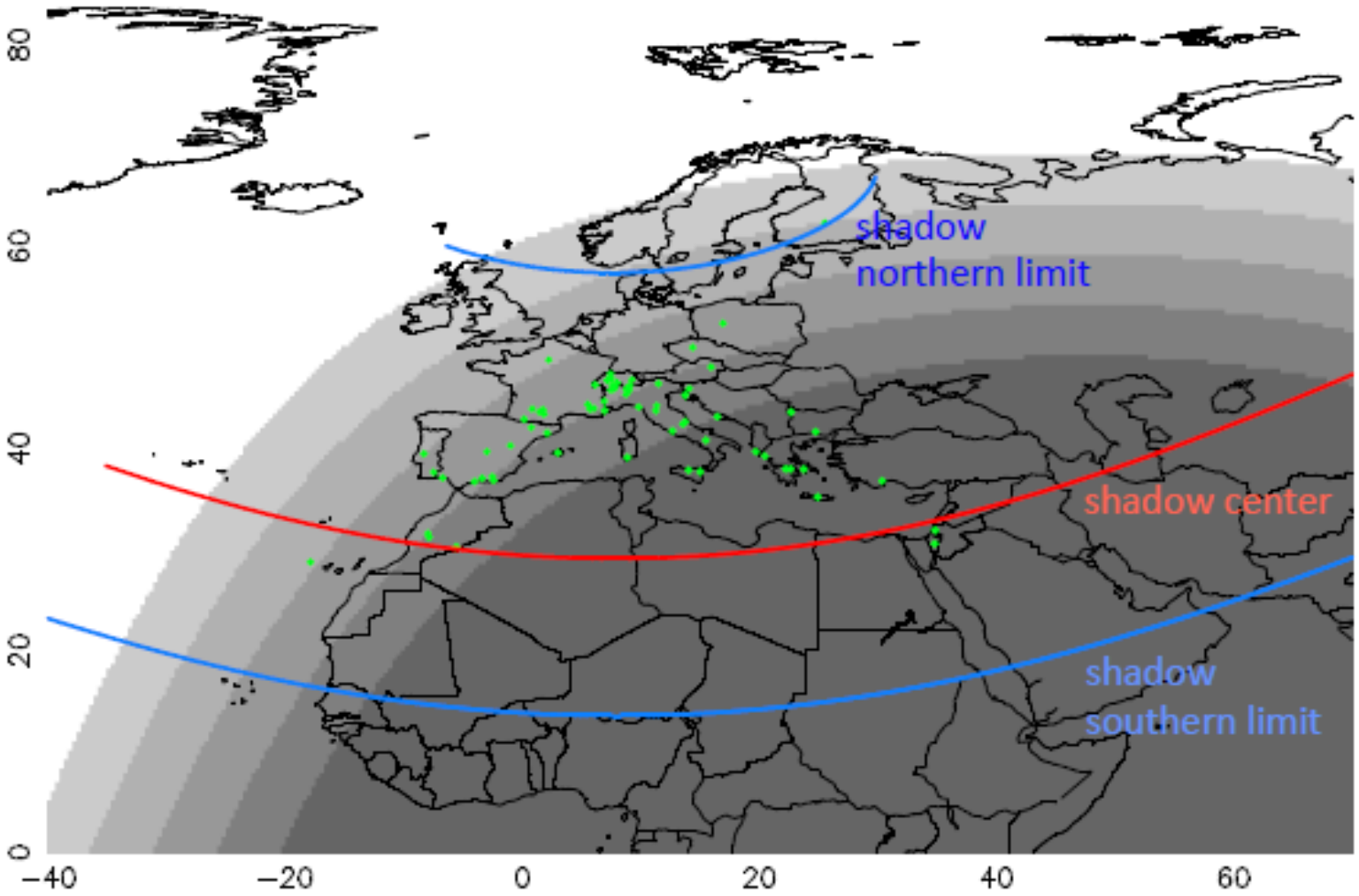


The July 19, 2016 Pluto occultation
our prediction as of early July



green dots: sites involved in the campaign (not all got data!)

The July 19, 2016 Pluto occultation, prediction using
the GAIA star position (and estimation of its pm), plus the New Horizons-updated ephemeris



green dots: sites involved in the campaign (not all got data!)