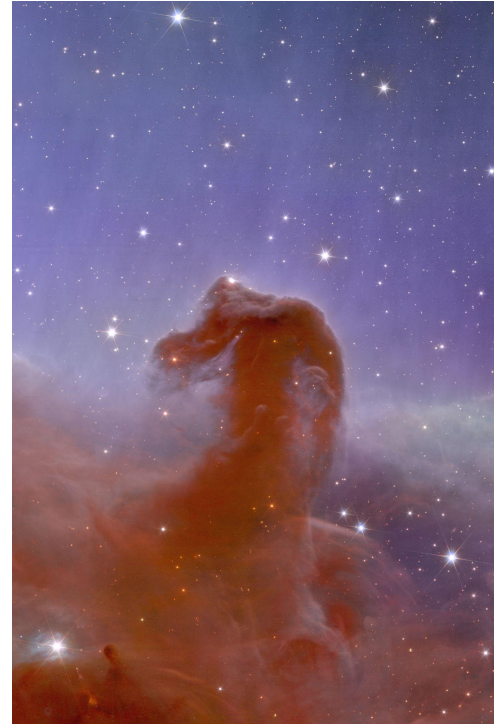


Euclid Early Release Observations

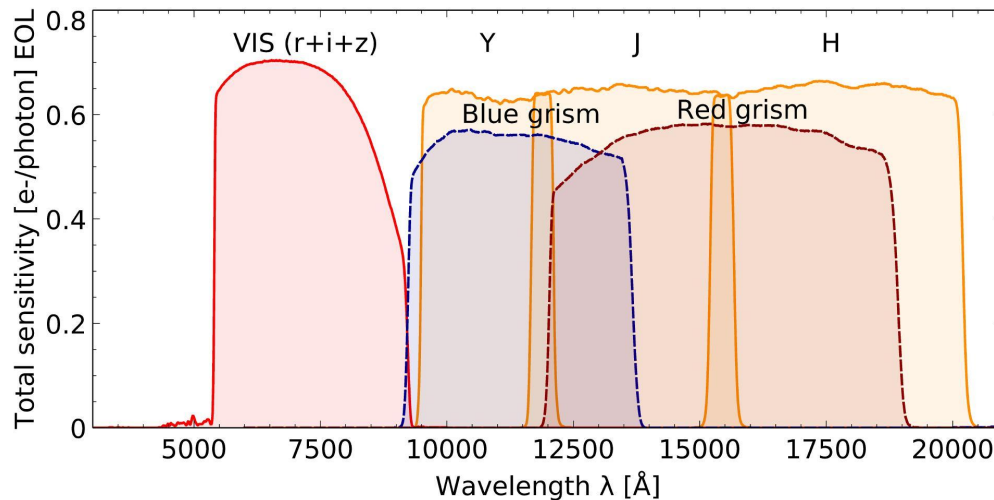
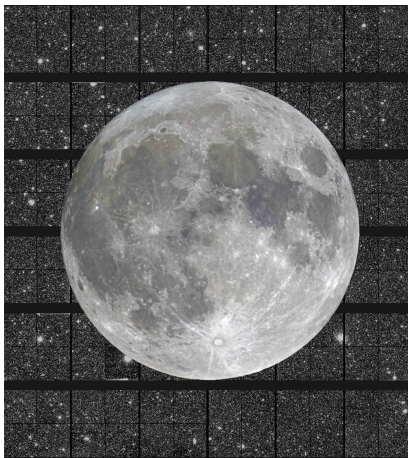
Jean-Charles Cuillandre (CEA Paris-Saclay)

Pretty images paving the way to Euclid's first science results



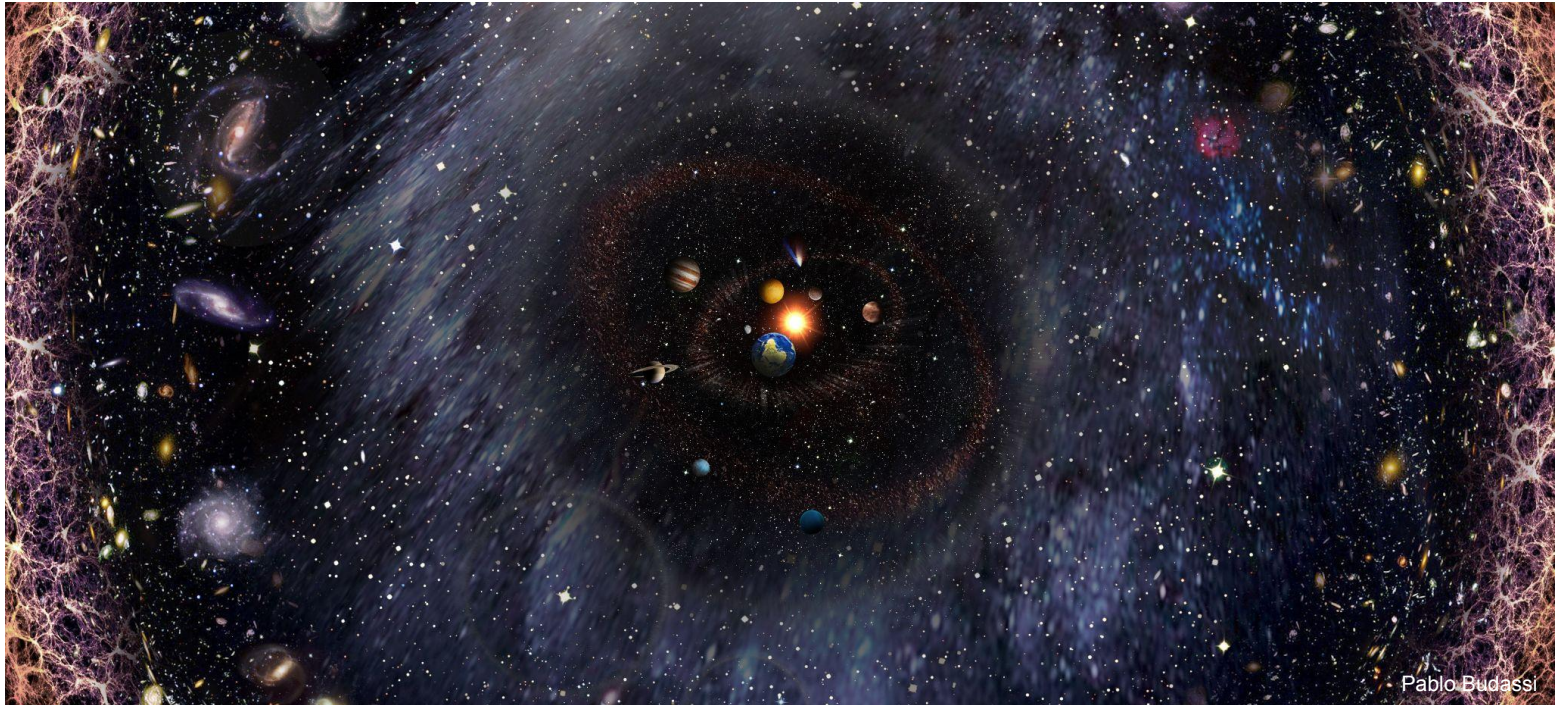
Euclid Space Telescope

- Primary mirror: 1.2 meter
- Field of view: 0.5 square degree (matched optical/near-infrared)
- FWHM optical: 0.14" (610 Mpx CCD mosaic with 0.1"/px, one single broad band)
- FWHM near-infrared: 0.45" (64 Mpx FPA mosaic with 0.3"/px, three bands)
- Low-resolution grism near-infrared spectroscopy (R~400)
- Located at L2 for its 6 year-long DE mission to cover 14 000 square degrees



The wow factor of large astronomical objects

ESA's goal with the ERO (24hr total) : explore the aesthetics of the cosmos through diverse science validation programs on sources filling the Euclid field of view



Pablo Budassi

The first ERO images (fall 2023)



Impact of the aesthetics of the cosmos

The ERO media splash showed how compelling visuals help convey complex concepts, such as hinting at Euclid's mission on dark matter and dark energy

OVERVIEW | ESA MEMBER STATES



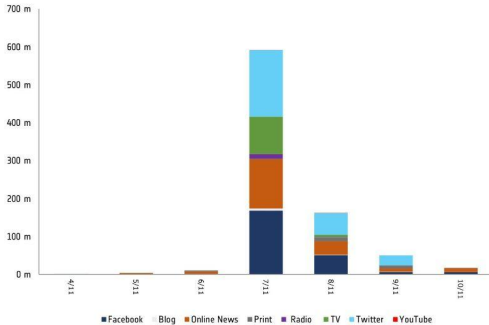
In terms of traditional media within ESA member states, the gross reach amounted to an impressive 342.5 million for the Euclid first images. Traditional media visibility in ESA member states was particularly strong in the UK (thanks in large part to extensive BBC coverage across various channels), France, Spain and Germany which accounted for most of the coverage.

Social media represented 60% of all visibility in ESA member states – driven by strong visibility on Facebook and Twitter. Though not a surprise given the highly visual and shareable assets that were being released. Interesting, and positive, to see ESA accounts not featured too prominently in terms of the reach achieved.

Online news was the most visible traditional media format, representing 23% of all visibility in ESA member states. Followed by TV & Radio with 14%. The peak in coverage coming exactly at 14:15, when the under-embargo ended, indicates the success that sending information and assets to media beforehand had in relation to the impact that was generated.

Visibility Trend

Visibility by date and by channel (Gross Reach)

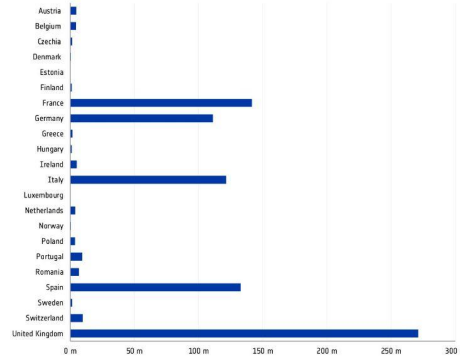


Euclid first images

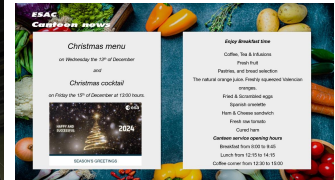
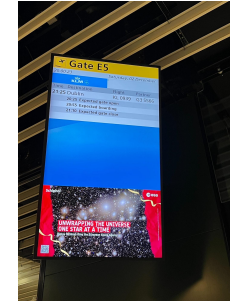
	Traditional media		Social media	
	Gross Reach	Volume	Gross Reach	Volume
Visibility in ESA Member States	342.5 M	3.1 K	506 M	1.7 K
Overall visibility	574.2 M	5.7 K	2.07 Bn	4.2 K

Markets

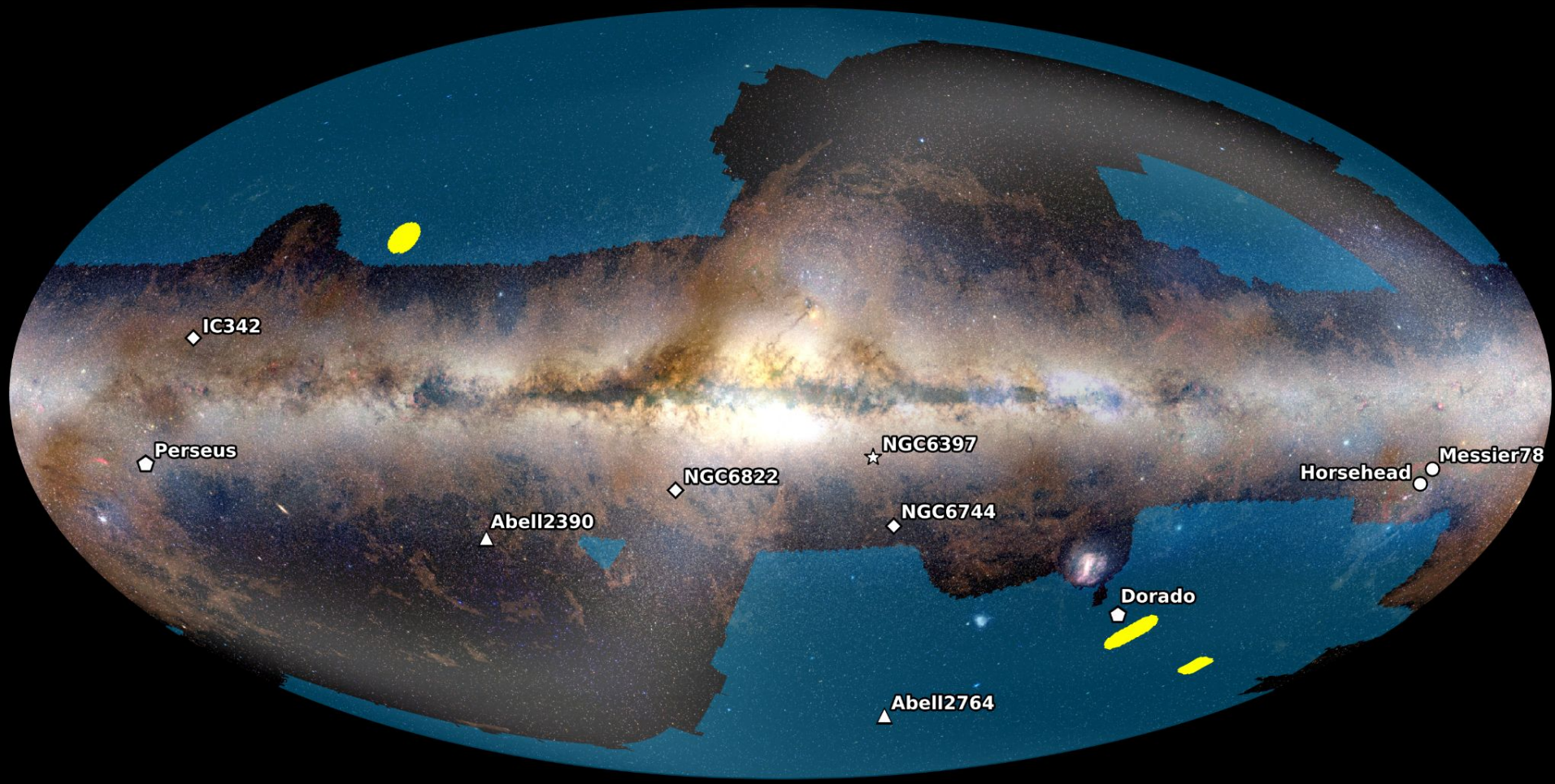
Visibility by country* (Gross Reach)



*Instagram cannot segment by country

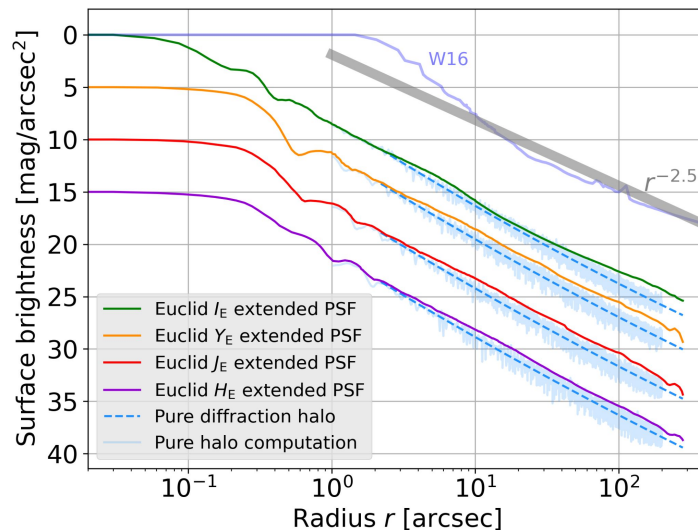
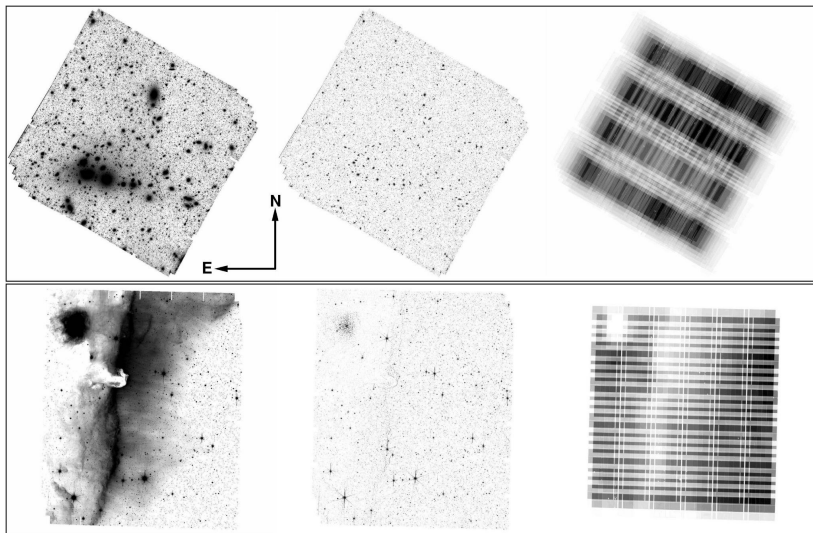


Euclid Wide Survey (blue) + Deep Survey (yellow) + 10 ERO

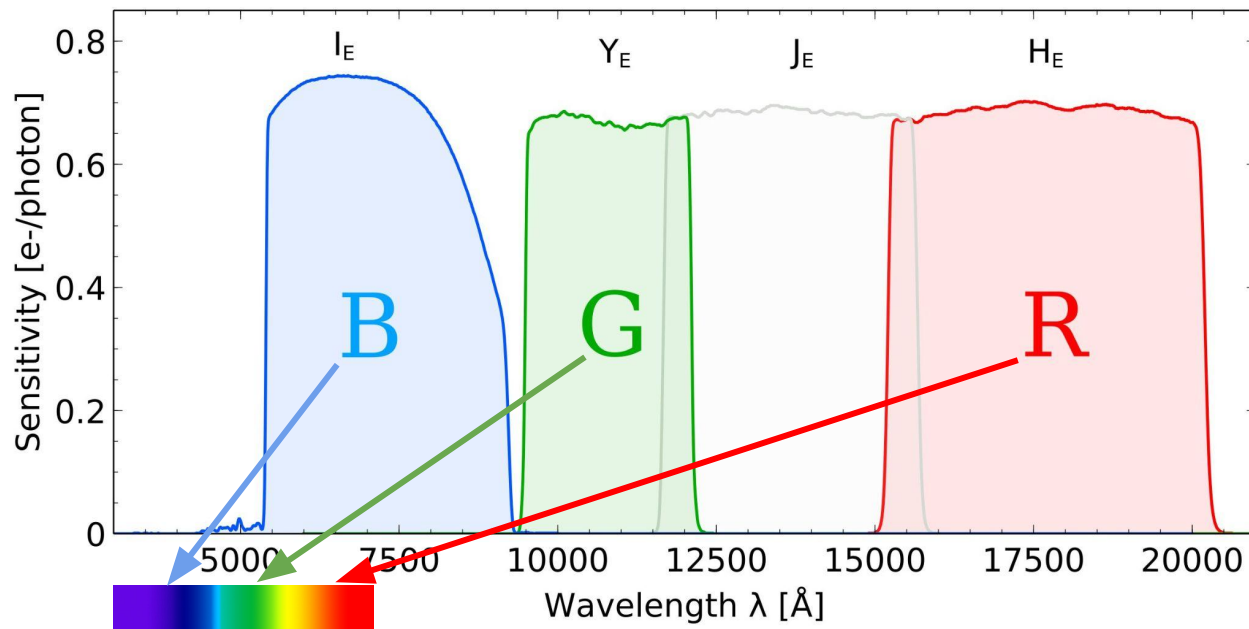


Euclid: Early Release Observations – Programme overview and pipeline for compact- and diffuse-emission photometry ★

J.-C. Cuillandre¹, E. Bertin¹, M. Bolzonella², H. Bouy^{3,4}, S. Gwyn⁵, S. Isani⁶, M. Kluge⁷, O. Lai⁸, A. Lançon⁹, D. A. Lang¹⁰, R. Laureijs¹¹, T. Saifollahi^{9,12}, M. Schirmer¹³, C. Stone¹⁴, Abdurro'uf¹⁵, N. Aghanim¹⁶, B. Altieri¹⁷, F. Annibali², H. Atek¹⁸, P. Awad¹², M. Baes¹⁹, E. Bañados¹³, D. Barrado²⁰, S. Belladitta^{13,2}, V. Belokurov²¹, A. Boselli^{22,23}, F. Bournaud¹, I. Rovin²⁴, R. A. A. Bowler²⁵



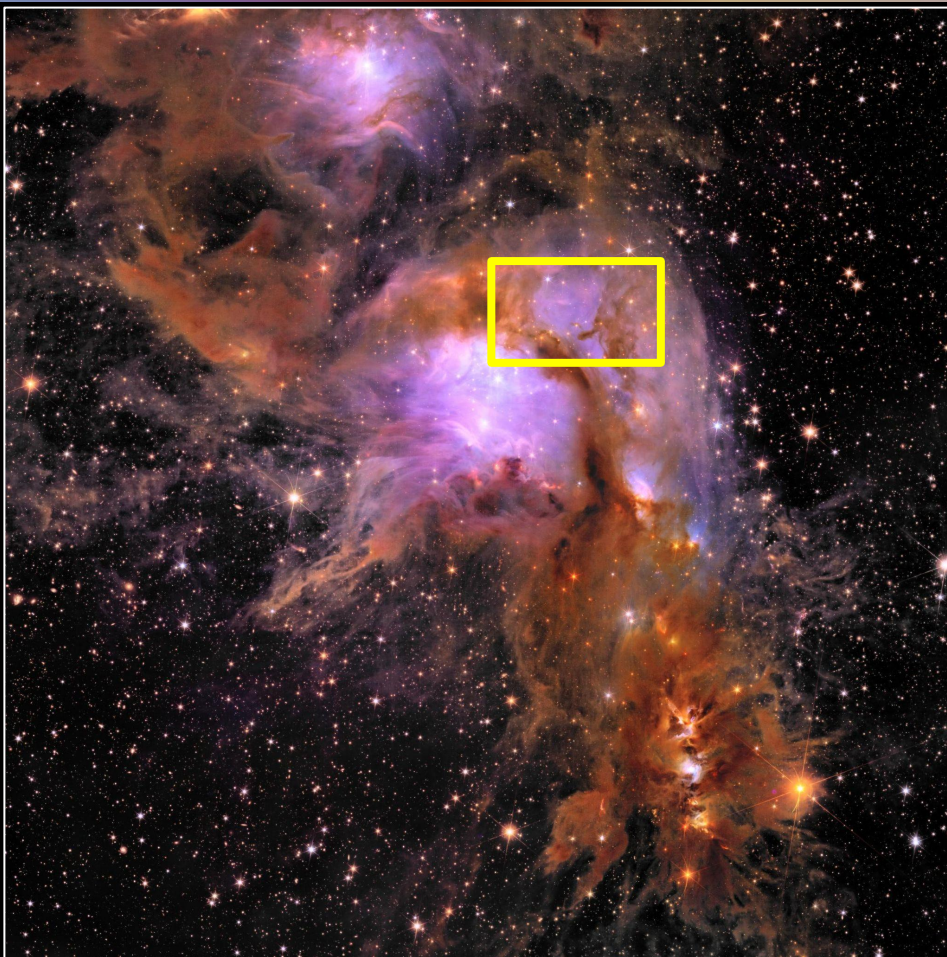
The Euclid color palette



Star formation region Messier 78



Cutout TV 4K UHD = 1.4% of Euclid's field of view



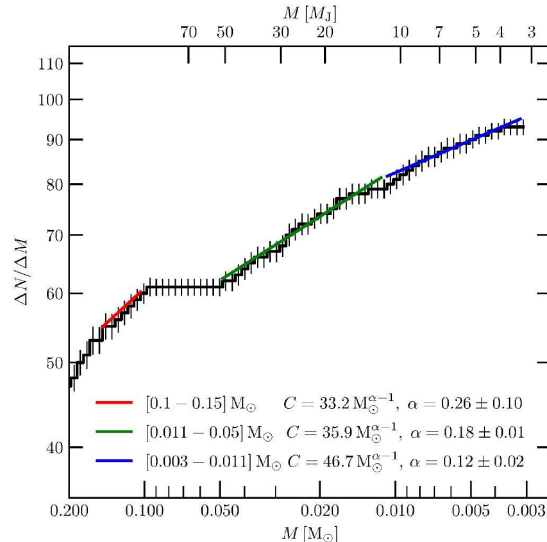


Star formation region Horsehead



***Euclid*: Early Release Observations – A glance at free-floating new-born planets in the σ Orionis cluster★**

E. L. Martín ★^{1,2}, M. Žerjal ^{1,2}, H. Bouy^{3,4}, D. Martín-Gonzalez ⁵, S. Muñoz Torres ^{1,2}, D. Barrado ⁶,
J. Olivares ⁷, A. Pérez-Garrido ⁸, P. Mas-Buitrago ⁶, P. Cruz ⁶, E. Solano⁶, M. R. Zapatero Osorio ⁶,
N. Lodieu ^{1,2}, V. J. S. Béjar^{1,2}, J.-Y. Zhang ^{1,2}, C. del Burgo ^{1,2}, N. Huélamo⁶, R. Laureijs⁹, A. Mora ¹⁰,
T. Saifollahi ^{11,12}, J.-C. Cuillandre ¹³, M. Schirmer ¹⁴, R. Tata¹⁵, S. Points ¹⁶, N. Phan-Bao ^{17,18}.



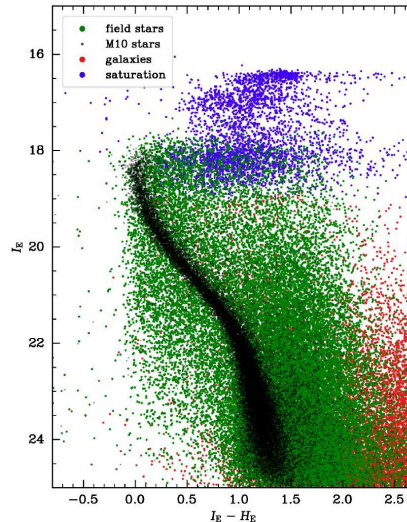
Globular cluster NGC 6397





Euclid: Early Release Observations – Unveiling the morphology of two Milky Way globular clusters out to their periphery★

D. Massari¹, E. Dalessandro¹, D. Erkal², E. Balbinot^{3,4}, J. Bovy⁵, I. McDonald⁶, A. M. N. Ferguson⁷, S. S. Larsen⁸, A. Lançon⁹, F. Annibali¹, B. Goldman^{10,9}, P. B. Kuzma^{7,11}, K. Voggel¹², T. Saifollahi^{4,9}, J.-C. Cuillandre¹³, M. Schirmer¹⁴, M. Kluge¹⁵, B. Altieri¹⁶, A. Amara², S. Andreon¹⁷, N. Auricchio¹, M. Baldi^{18,1,19}, A. Balestra²⁰, S. Bardelli¹, A. Basset²¹, R. Bender^{15,22}, D. Bonino²³, F. Branchini^{24,25,17}



Irregular galaxy NGC 6822





Spiral galaxy IC 342





Spiral galaxy NGC 6744

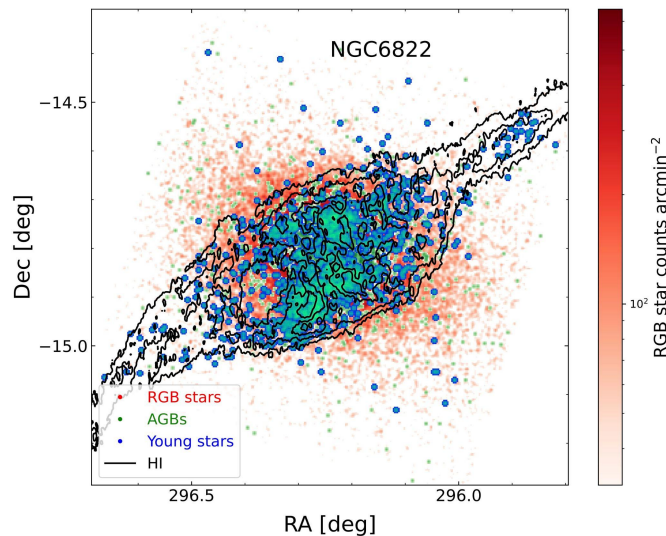




ERO science : galaxy showcase

***Euclid*: Early Release Observations – Deep anatomy of nearby galaxies★**

L. K. Hunt^{★ ★ 1}, F. Annibali², J.-C. Cuillandre³, A. M. N. Ferguson⁴, P. Jablonka⁵, S. S. Larsen⁶, F. R. Marleau⁷, E. Schinnerer⁸, M. Schirmer⁸, C. Stone⁹, C. Tortora¹⁰, T. Saifollahi^{11,12}, A. Lançon¹¹, M. Bolzonella², S. Gwyn¹³, M. Kluge¹⁴, R. Laureijs¹⁵, D. Carollo¹⁶, M. L. M. Collins¹⁷, P. Dimauro^{18,19}, P.-A. Duc²⁰, D. Erkal¹⁷, J. M. Howell⁴, C. Nally⁴, E. Saremi²¹, R. Scaramella^{18,22}, V. Belokurov²³, C. I. Conzelmann²⁴, I. H. Knapen^{25,26}



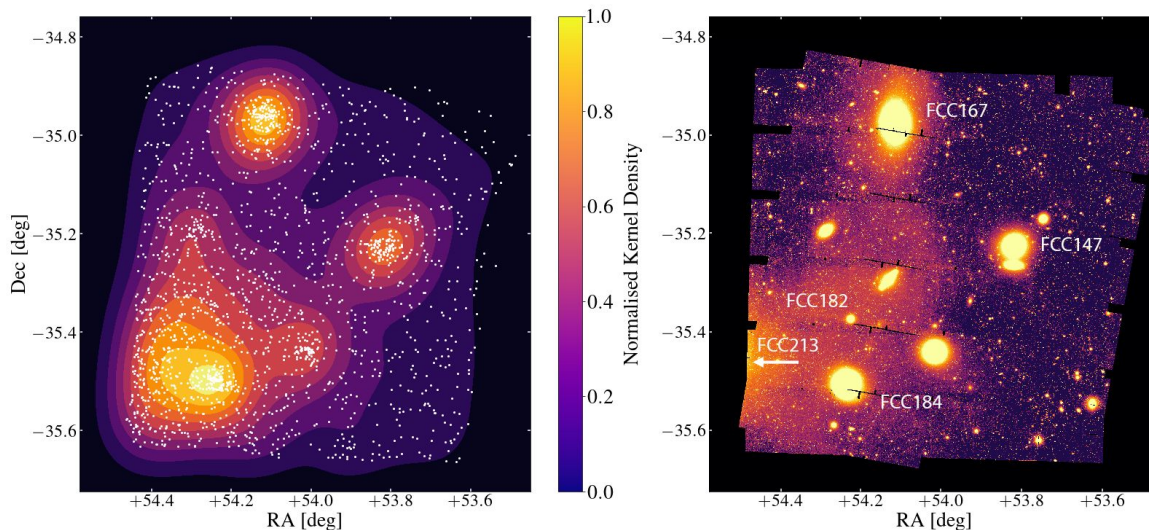
Galaxy group Dorado





***Euclid*: Early Release Observations – Globular clusters in the Fornax galaxy cluster, from dwarf galaxies to the intracluster field★**

T. Saifollahi^{1,2}, K. Voggel³, A. Lançon¹, Michele Cantiello⁴, M. A. Raj², J.-C. Cuillandre⁵, S. S. Larsen⁶, F. R. Marleau⁷, A. Venhola⁸, M. Schirmer⁹, D. Carollo¹⁰, P.-A. Duc³, A. M. N. Ferguson¹¹, L. K. Hunt¹², M. Kümmel¹³, R. Laureijs¹⁴, O. Marchal¹, A. A. Nucita^{15,16,17}, R. F. Peletier², M. Poulain⁸, M. Reikuba¹⁸, R. Sánchez-Janssen¹⁹, M. Urbano¹, Abdurro'uf²⁰, R. Altieri²¹, M. Baes²², M. Bolzonella²³



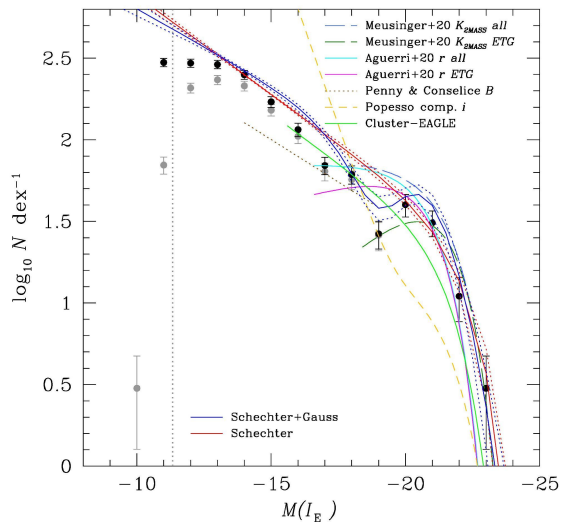
Galaxy cluster Perseus





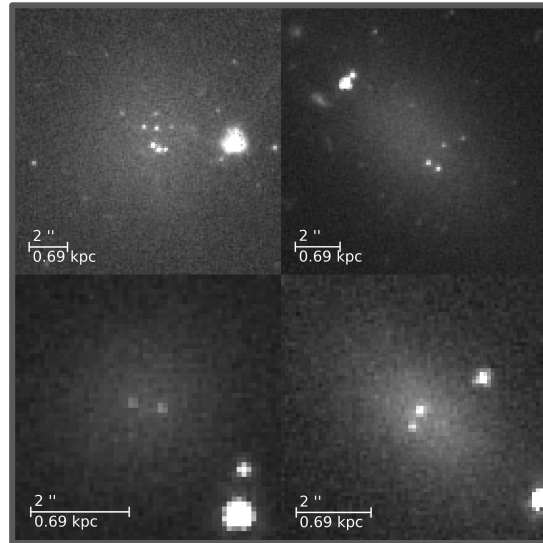
***Euclid*: Early Release Observations – Overview of the Perseus cluster and analysis of its luminosity and stellar mass functions★**

J.-C. Cuillandre¹, M. Bolzonella², A. Boselli^{3,4}, F. R. Marleau⁵, M. Mondelin¹, J. G. Sorce^{6,7,8}, C. Stone⁹, F. Buitrago^{10,11}, Michele Cantiello¹², K. George¹³, N. A. Hatch¹⁴, L. Quilley¹⁵, F. Mannucci¹⁶, T. Saifollahi^{17,18}, R. Sánchez-Janssen¹⁹, F. Tarsitano²⁰, C. Tortora²¹, X. Xu¹⁸, H. Bouy^{22,23}, S. Gwyn²⁴, M. Kluge²⁵, A. Lancon¹⁷, R. Laureijs²⁶, M. Schirmer²⁷, Abdurro'uf²⁸, P. Awad¹⁸, M. Raes²⁹, F. Bournaud¹



***Euclid*: Early Release Observations – Dwarf galaxies in the Perseus galaxy cluster ★**

F. R. Marleau¹, J.-C. Cuillandre², M. Cantiello³, D. Carollo⁴, P.-A. Duc⁵, R. Habas³, L. K. Hunt⁶, P. Jablonka⁷, M. Mirabile^{3,8}, M. Mondelin², M. Poulain⁹, T. Saifollahi^{10,11}, R. Sánchez-Janssen¹², E. Sola¹³, M. Urbano¹⁰, R. Zöller^{14,15}, M. Bolzonella¹⁶, A. Lançon¹⁰, R. Laureijs¹⁷, O. Marchal¹⁰, M. Schirmer¹⁸, C. Stone¹⁹, A. Boselli^{20,21}, A. Ferré-Mateu^{22,23}, N. A. Hatch²⁴, M. Kluge¹⁵



***Euclid*: Early Release Observations – The intracluster light and intracluster globular clusters of the Perseus cluster★**

M. Kluge¹, N. A. Hatch², M. Montes^{3,4}, J. B. Golden-Marx², A. H. Gonzalez⁵, J.-C. Cuillandre⁶, M. Bolzonella⁷, A. Lançon⁸, R. Laureijs⁹, T. Saifollahi^{8,10}, M. Schirmer¹¹, C. Stone¹², A. Boselli^{13,14}, M. Cantiello¹⁵, J. G. Sorce^{16,17,18}, F. R. Marleau¹⁹, P.-A. Duc²⁰, E. Sola²¹, M. Urbano⁸, S. L. Ahad^{22,23}, V. M. Robit²⁴, S. D. Bamford², C. Bellhouse², E. Ruizgroves^{25,26}, B. Dimarco^{27,28}, E. Durret²⁹, A. Elia³⁰



Galaxy cluster Abell 2764 and a bright star





Galaxy cluster Abell 2390

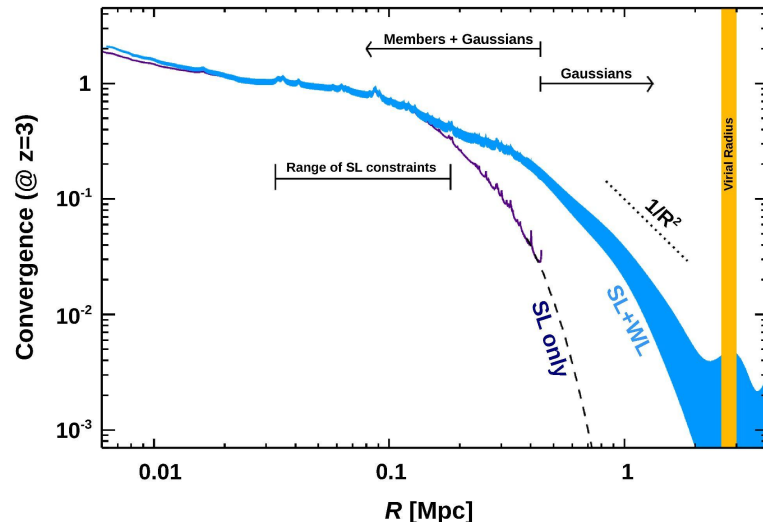




ERO science : Abell galaxy clusters

***Euclid*: Early Release Observations – A preview of the *Euclid* era through a galaxy cluster magnifying lens★**

H. Atek^{★1}, R. Gavazzi^{2,1}, J. R. Weaver³, J. M. Diego⁴, T. Schrabback⁵, N. A. Hatch⁶, N. Aghanim⁷, H. Dole⁷, W. G. Hartley⁸, S. Taamoli⁹, G. Congedo¹⁰, Y. Jimenez-Teja^{11,12}, J.-C. Cuillandre¹³, E. Bañados¹⁴, S. Belladitta^{14,15}, R. A. A. Bowler¹⁶, M. Franco¹⁷, M. Jauzac^{18,19,20,21}, G. Mahler^{22,18,19}, J. Richard²³, P.-F. Rocci⁷, S. Serjeant²⁴, S. Toft^{25,26}, D. Abriola²⁷, P. Bergamini^{27,15}, A. Riviero^{28,29}, P. Dimarco^{30,12}, M. Ezziati², I. R. Golden-Mercy⁶



ERO science : Abell galaxy clusters

***Euclid*: Early Release Observations – NISP-only sources and the search for luminous $z = 6–8$ galaxies★**

J. R. Weaver^{★1}, S. Taamoli², C. J. R. McPartland^{3,4}, L. Zalesky⁵, N. Allen⁶, S. Toft^{6,4}, D. B. Sanders⁵, H. Atek⁷,
R. A. A. Bowler⁸, D. Stern⁹, C. J. Conselice⁸, B. Mobasher², I. Szapudi⁵, P. R. M. Eisenhardt⁹, G. Murphree⁵,
I. Valdes⁵, K. Ito¹⁰, S. Belladitta^{11,12}, P. A. Oesch^{13,4,6}, S. Serjeant¹⁴, D. J. Mortlock^{15,16}, N. A. Hatch¹⁷, M. Kluge¹⁸,
B. Milvang-Jensen^{6,4,3}, G. Rodighiero^{19,20}, F. Bañados¹¹, I. M. Diego²¹, R. Gavazzi^{22,7}, G. Congedo²³

