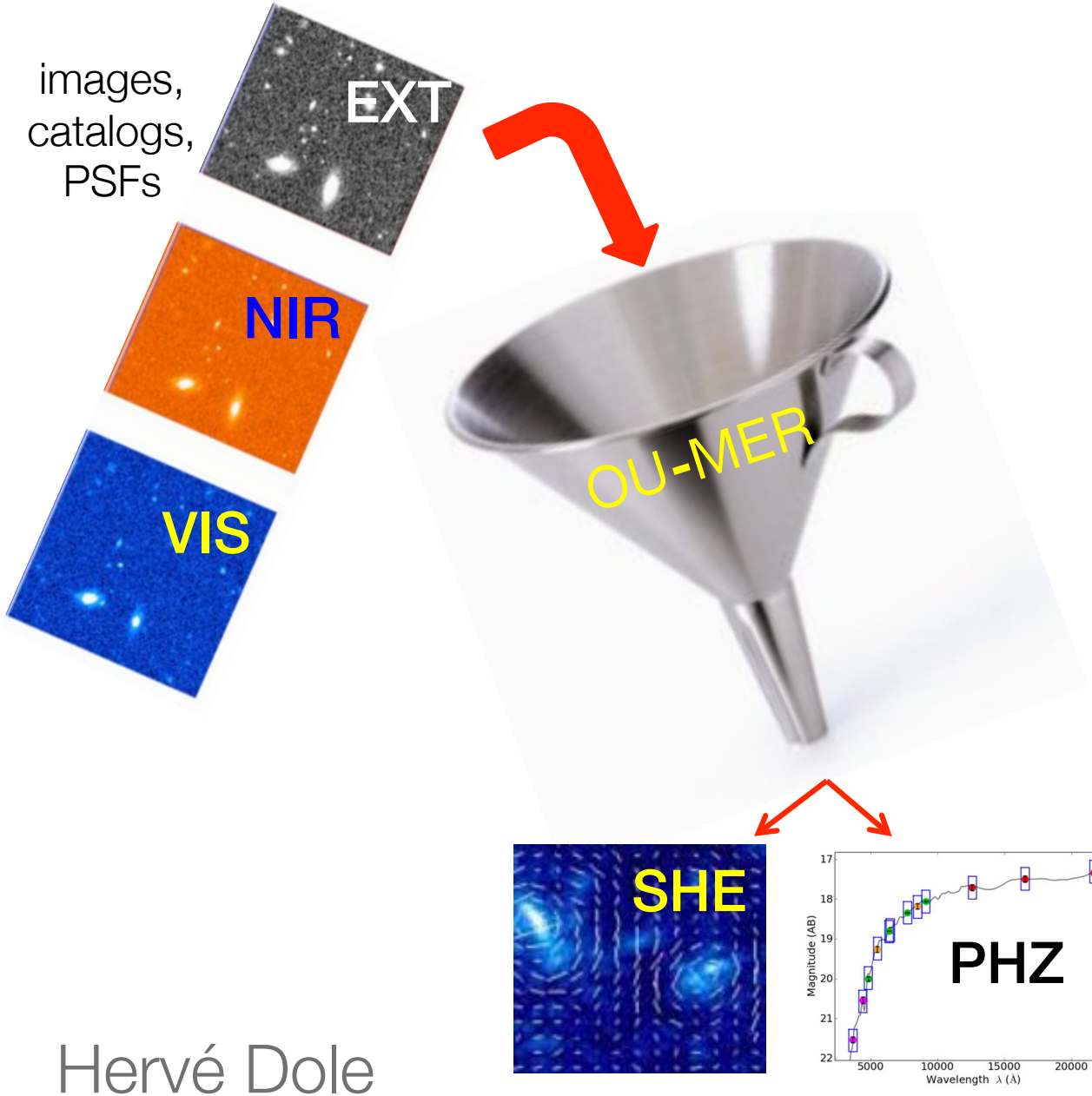
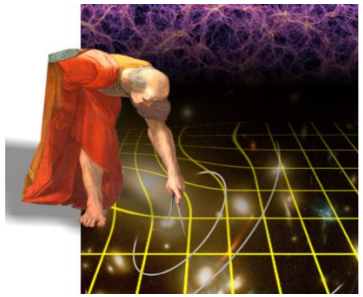


OU-MER

Organization 1.
Tasks, WPs, interfaces 2.
updates 3.
prospects 4.

Hervé Dole

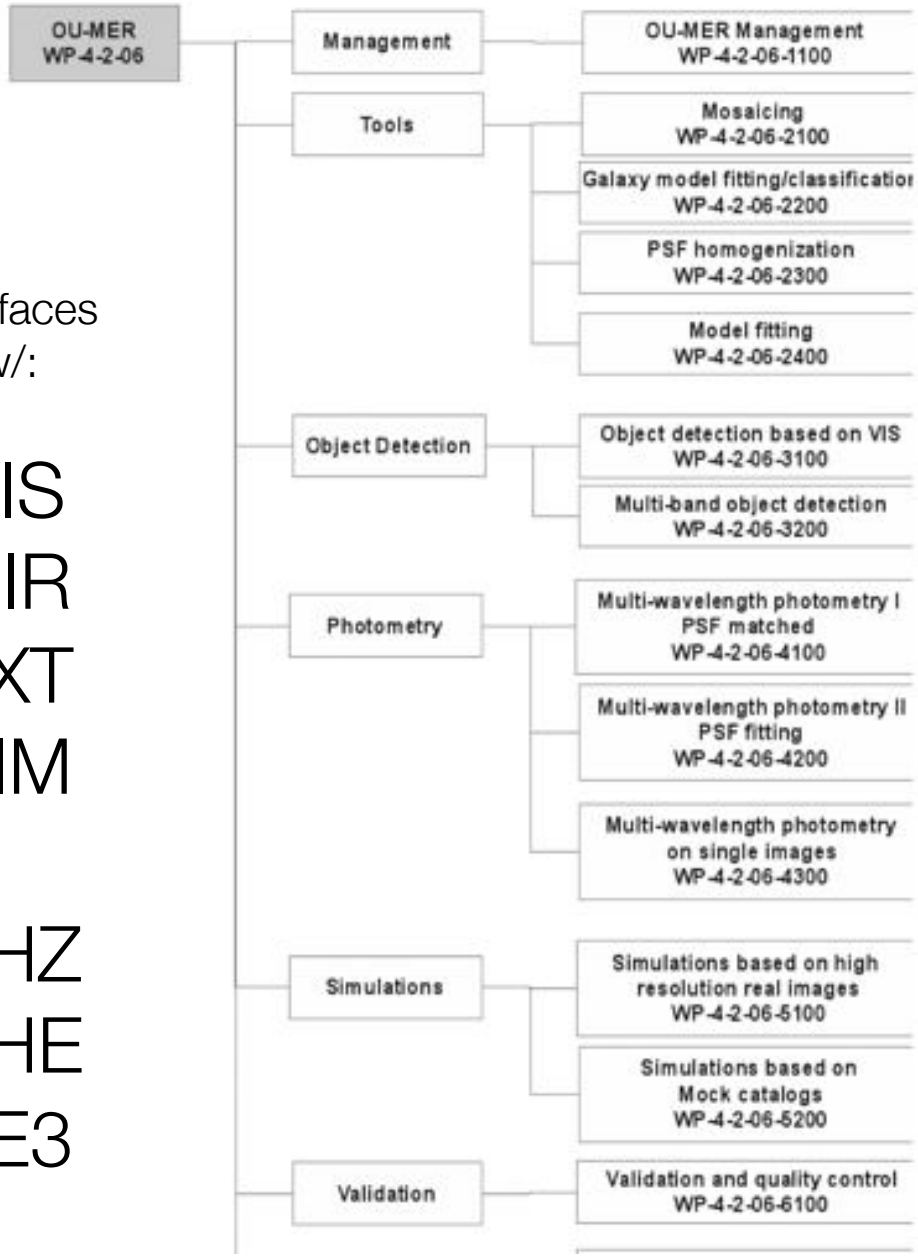
Institut d'Astrophysique Spatiale, Orsay, France
Université Paris Sud & CNRS
Institut Universitaire de France
http://www.ias.u-psud.fr/dole/



1. Organization

- lead: A. Fontana (Roma)
- co-leads: H. Dole (Orsay) – M. Kümmel (München)
- en France: IAS, IRAP, APC
  - IAS
    - Aghanim, Beelen, Boucaud, Dole, Douspis, Guillard, Vibert
  - IRAP
    - Cabanac
  - APC
    - Ganga, Bartlett

2. Tasks, Work Packages, interfaces



interfaces w/:

VIS
NIR
EXT
SIM

PHZ
SHE
LE3

PSF Homogenization

object detection based on VIS

multiband object detection

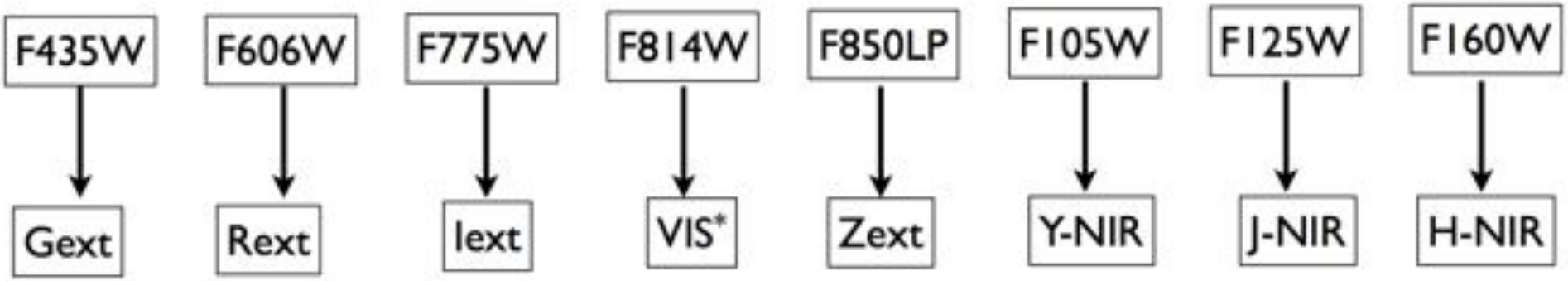
validation and quality control

3. Updates

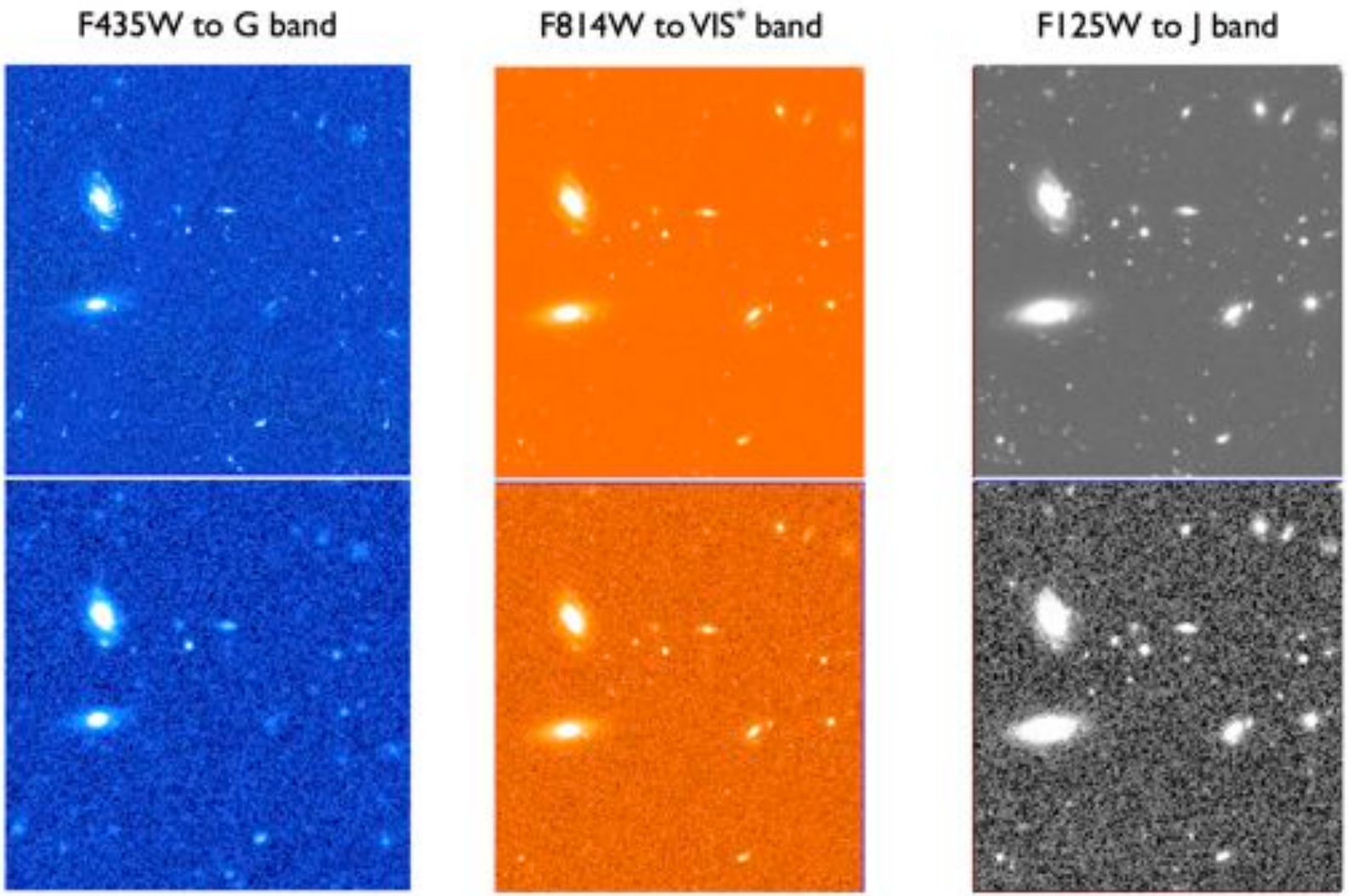
- Data challenge #1
  - ongoing work
- PSF homogenization (IAS)
  - ongoing work
- Methods to reconstruct PSF (IAS)
  - ongoing
- Validation
  - action plan being written (IRAP)

3.1 Data challenge #1

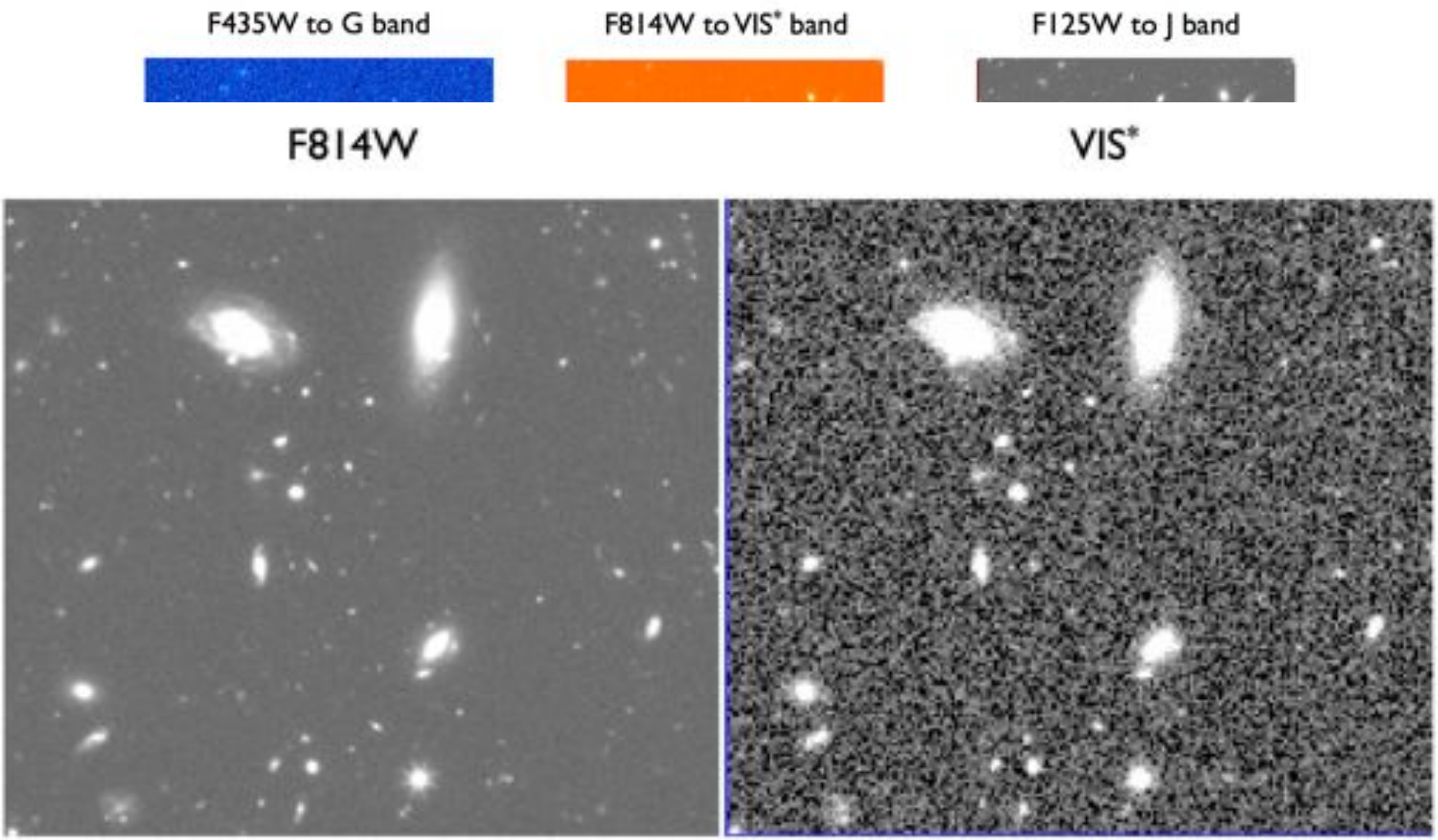
- btw OU-MER and OU-PHZ to start with
- 10 realizations of EXT, VIS and NIR images (Roma)
- based on HST CANDELS data
- source extraction, photometry (IT, DE, FR)



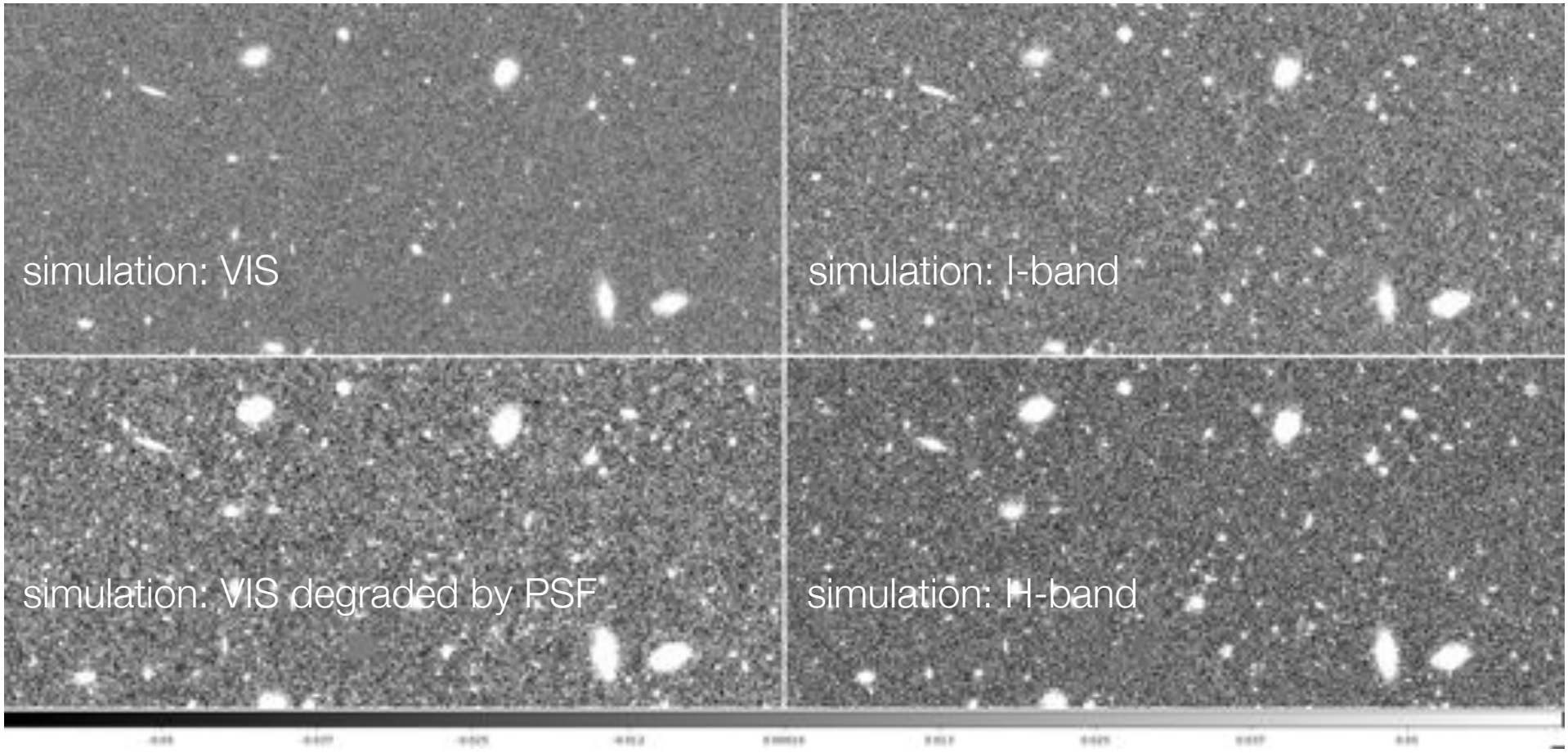
3.1 Data challenge #1



3.1 Data challenge #1



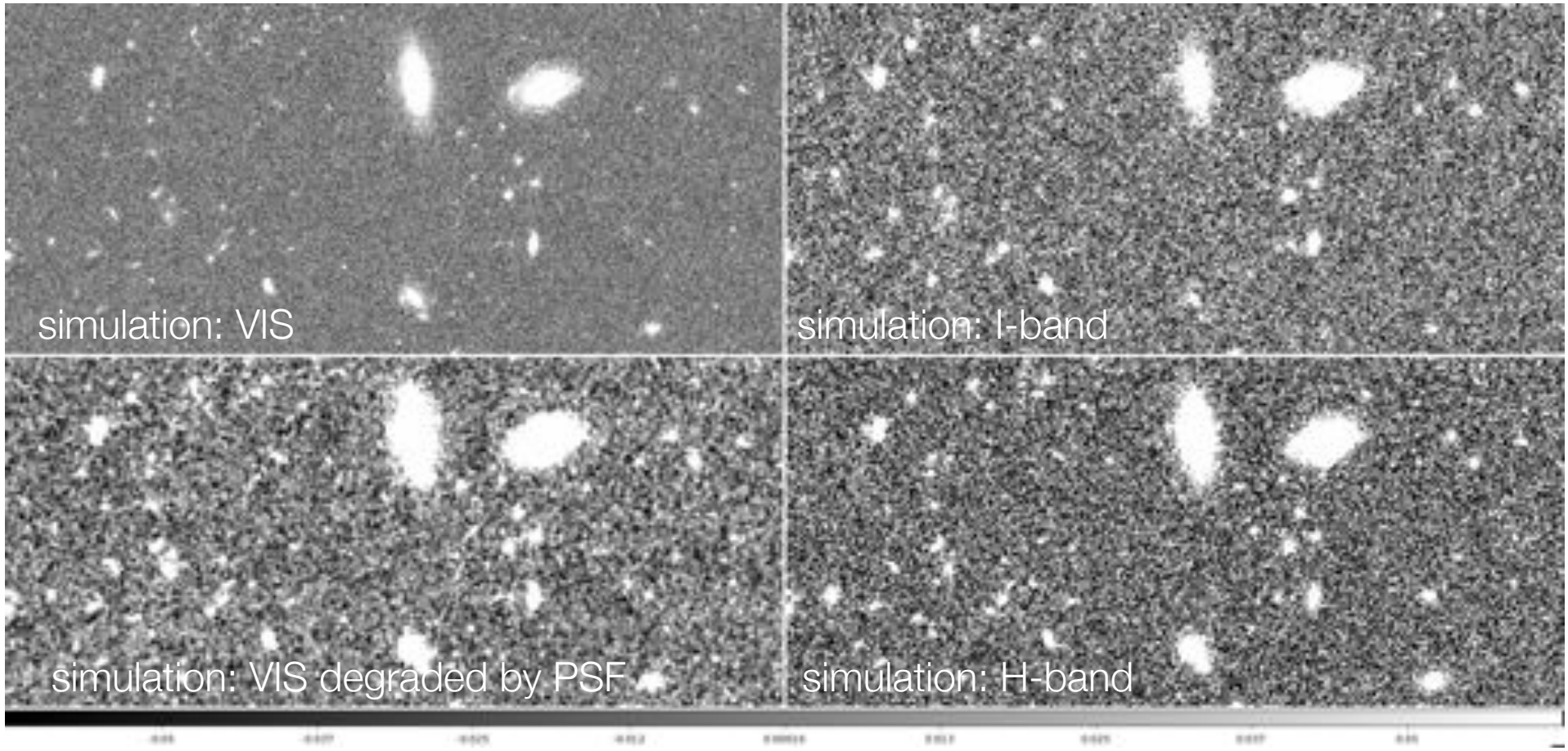
3.2 PSF homogenization – a start



work by Alexandre Boucaud, IAS

3.2 PSF homogenization – a start

a zoom



work by Alexandre Boucaud, IAS

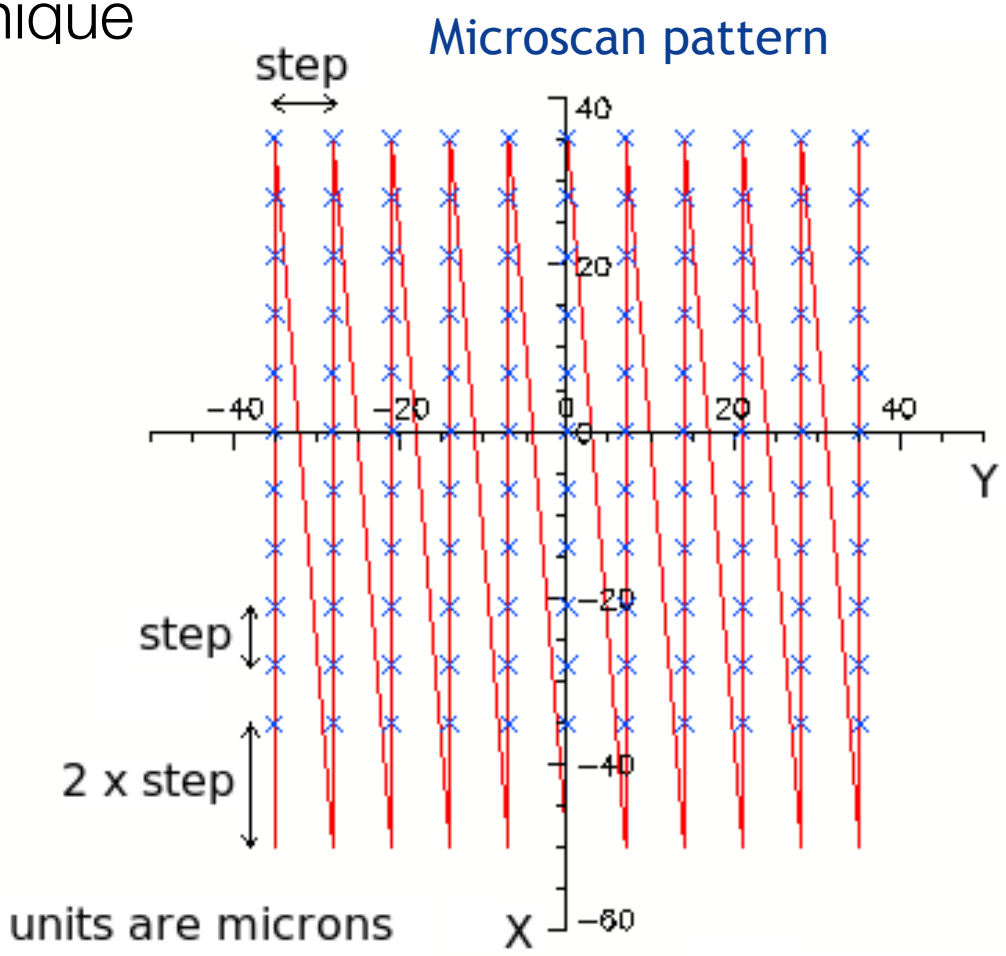
3.3 PSF reconsctruction at high resolution

Microscanning / dithering technique

- Aims: reconstruction of an over-resolved PSF from multiple low-resolution images.

- Method: we combine a microscanning strategy with a deconvolution algorithm.

- Microscanning: example: we scan a point source over a 11x11 grid mapping a 1 pixel area, i.e. individual displacements of 1.2 µm on the detector plane.

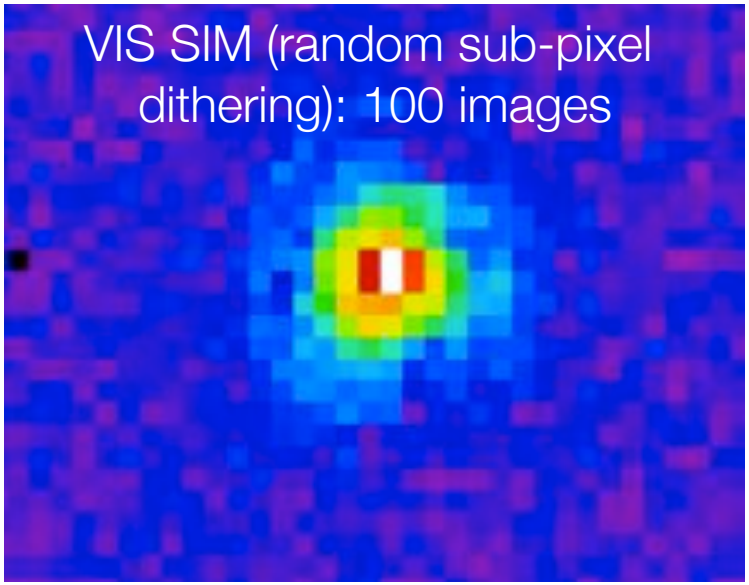


Method originally developed for JWST/MIRI (P. Guillard et al. 2010, SPIE 7731-18)

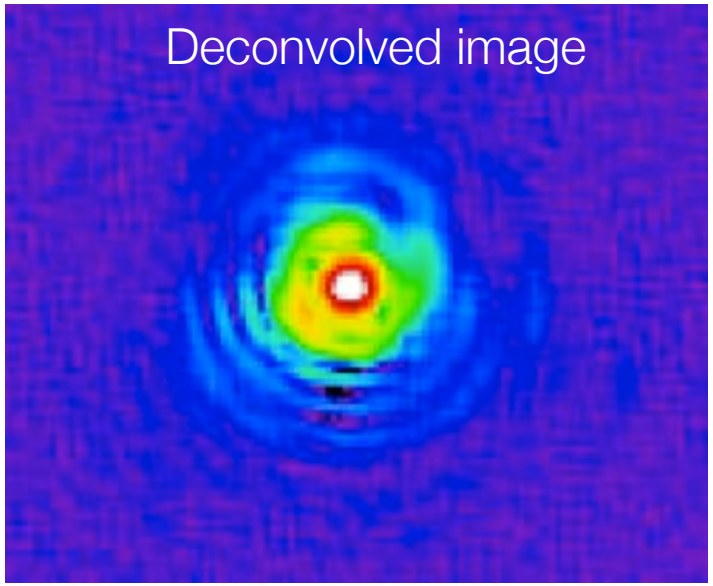
work by Pierre Guillard, IAS

3.3 PSF reconsctruction: first results

-From simulated VIS images (P. Hudelot, S. Ronayette)
-From optical test dada at CEA (CCD Working Group): in progress



LOW RESOLUTION (RAW)



HIGH-RESOLUTION RECONSTRUCTION

work by Pierre Guillard, IAS

→ We checked that the reconstruction method does not introduce any additional ellipticity

Work in Progress / Perspectives:

- Check PSF characteristics
- Explore reconstruction with 2x2 dithering
- Develop a method to reconstruct from multiple stars in the field.
- Use these high-res PSF to build PSF homogenization kernels?
- Articulate work with CCD working group and OU-VIS?

4. Prospects

- Consolidate the organization within OU-MER
  - also within OU-MER FR
- and the links in general
  - e.g. tighter links btw OUs and w/ SGS & SDC
- Refine + strengthen the interfaces w/ OUs for OU-MER:
  - as input: OU-VIS, OU-NIR, OU-EXT, OU-SIM
  - as ouput: OU-SHE, OU-PHZ, OU-LE3
  - and w/ SDC; and for PSF/VIS
- Close the loop on the Data Challenge #1
  - Garage Days, Feb 4-5, 2014
- Finalize prototyping for SRR
  - esp. PSF homogenization, by ~mid-2014
- Anticipate
  - data flows, validation, interfaces