HerMES: Stacking PACS maps
Inversion vs. high-pass filtering

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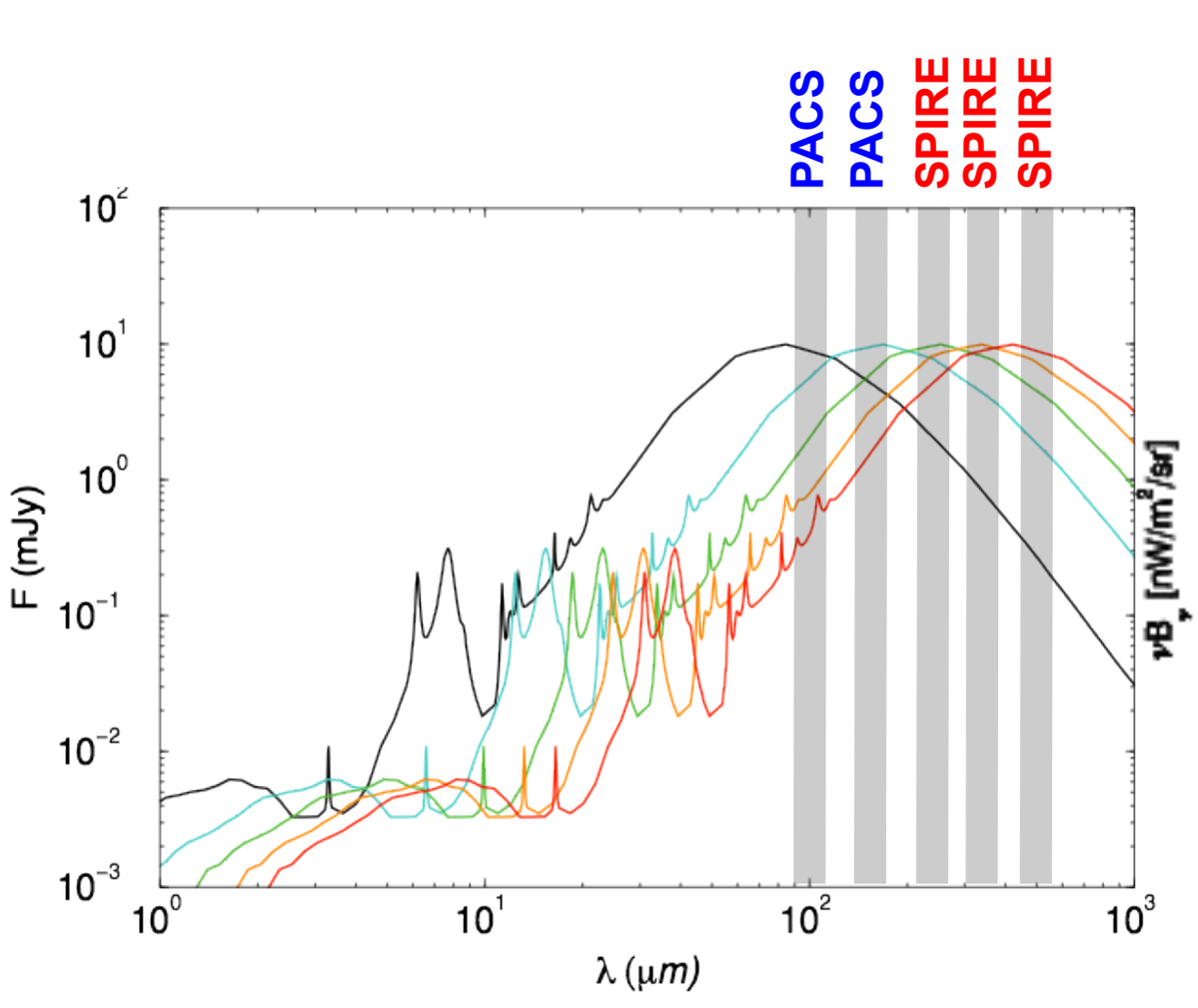
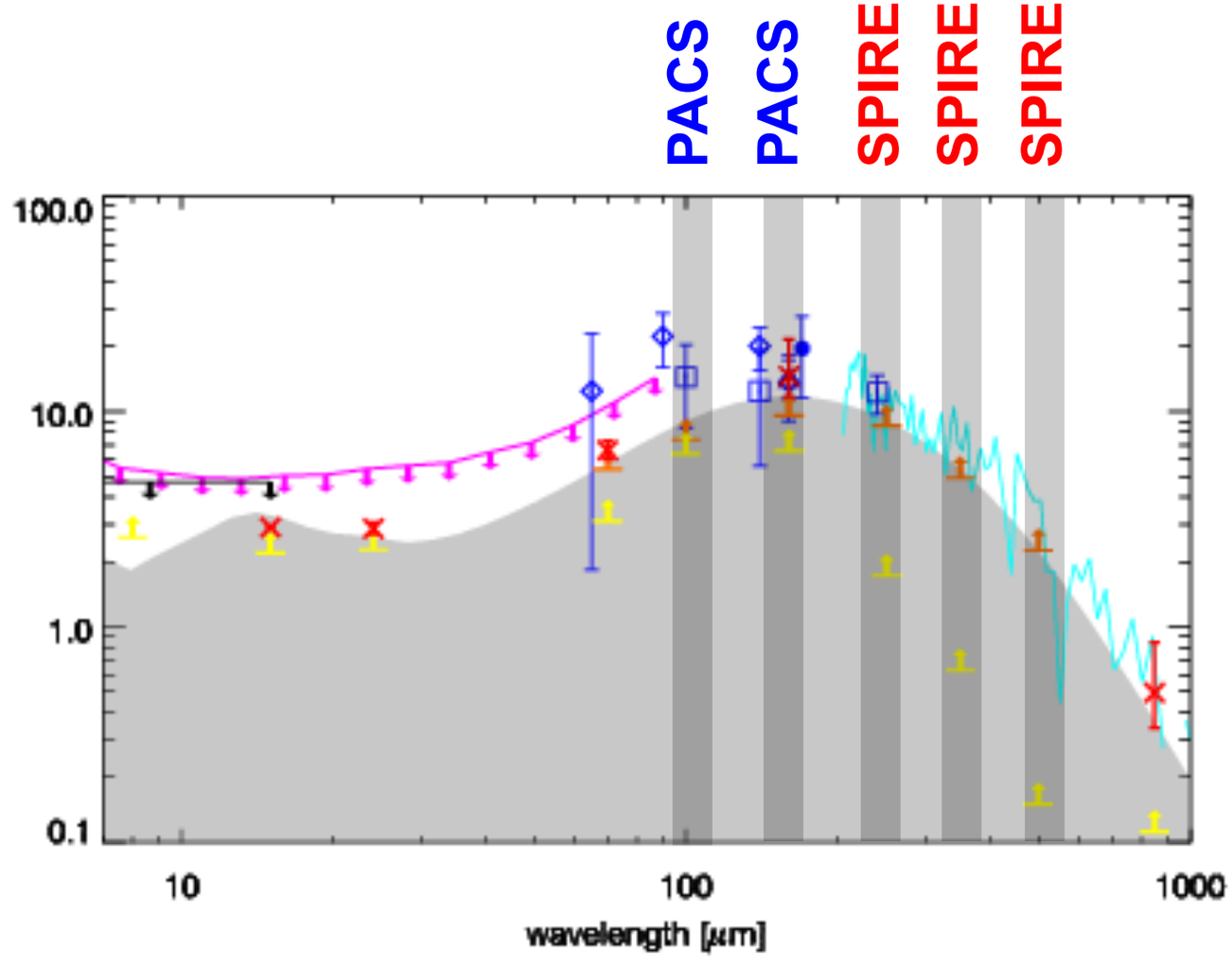
HerMES: Herschel Multi-tiered Extragalactic Survey

- J. Bock (Caltech) & S. Oliver (Sussex)
- SPIRE GT survey

HerMES Science Goals:

The evolution of galaxies and the Cosmic IR Backround





A Wedding Cake Strategy

Going from deep to shallow

Clusters

Level1 0.11 □°

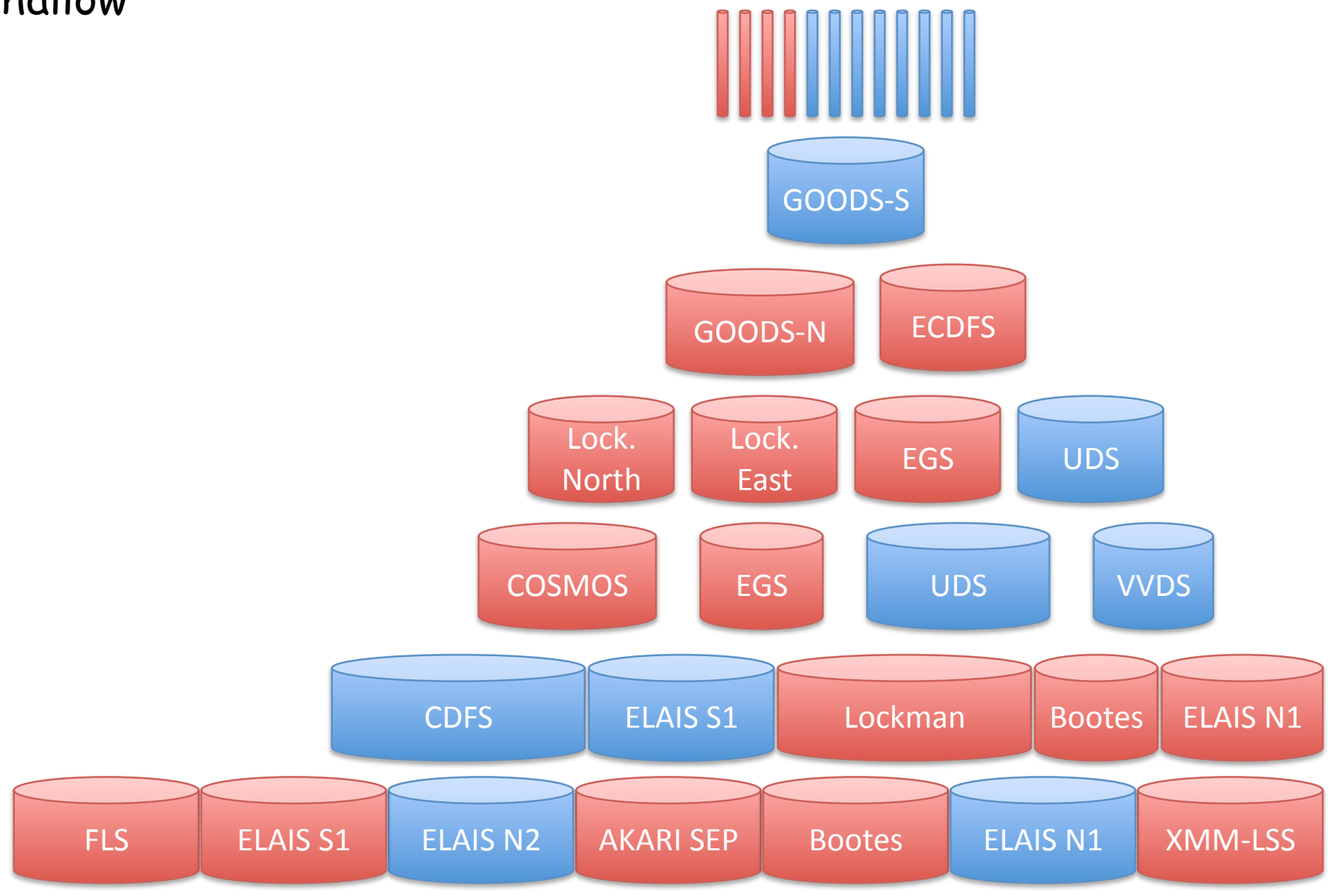
Level2 0.36 □°

Level3 1.25 □°

Level4 ~4 □°

Level5 ~30 □°

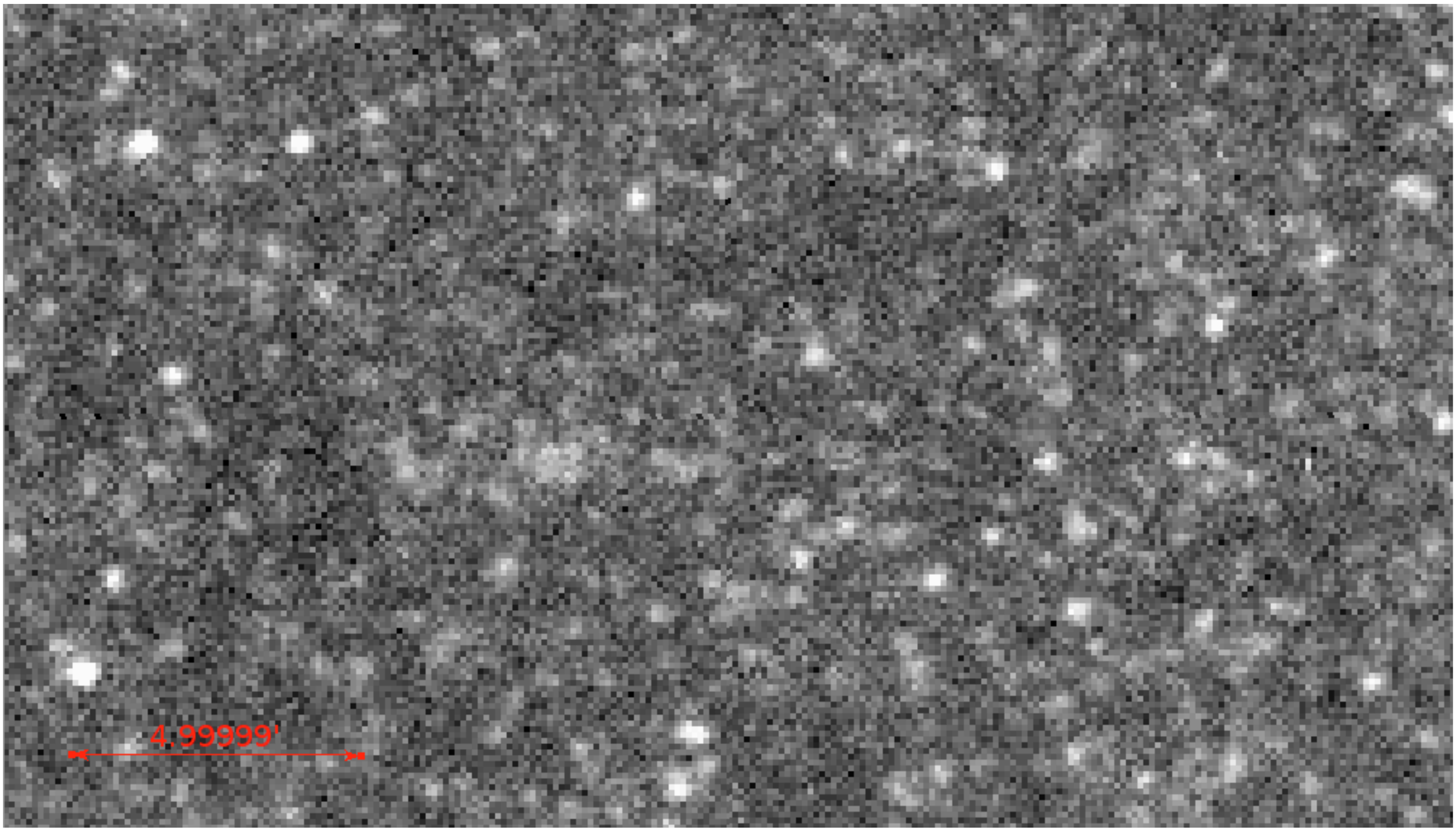
Level6 ~40 □°



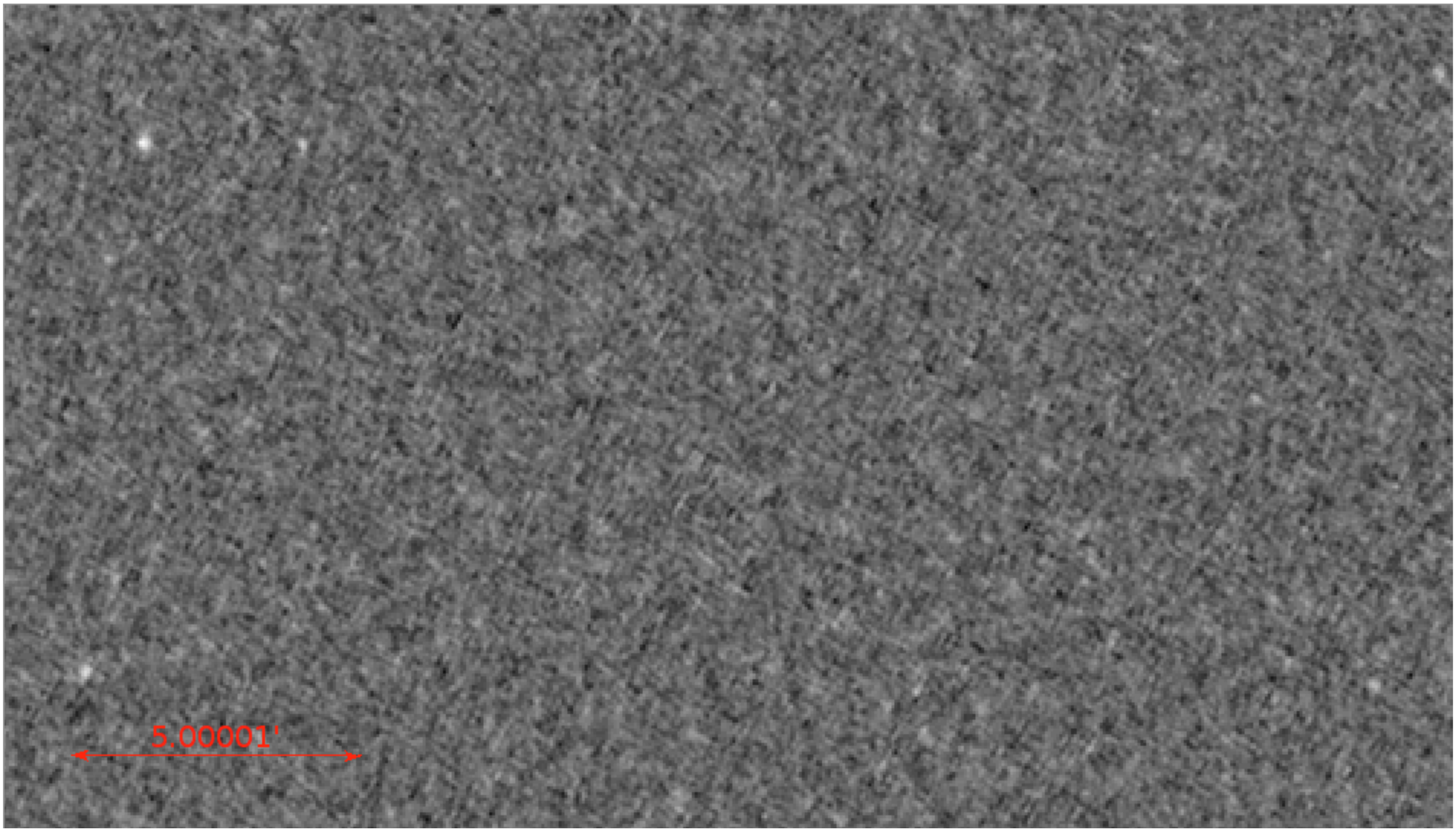
PACS data on HerMES fields

- HerMES relies on PEP for the PACS data on most of the deep fields.
- All level 5-6 fields have been observed in parallel mode
- Sensitivities (5 σ) at 160 / 250 μm:
  - Level 5: 50-60 mJy / 13-16 mJy
  - Level 6: ~90 mJy / 26 mJy

SPIRE 250 μm view of the sky at Level 5



PACS 160 μm view of the sky at Level 5



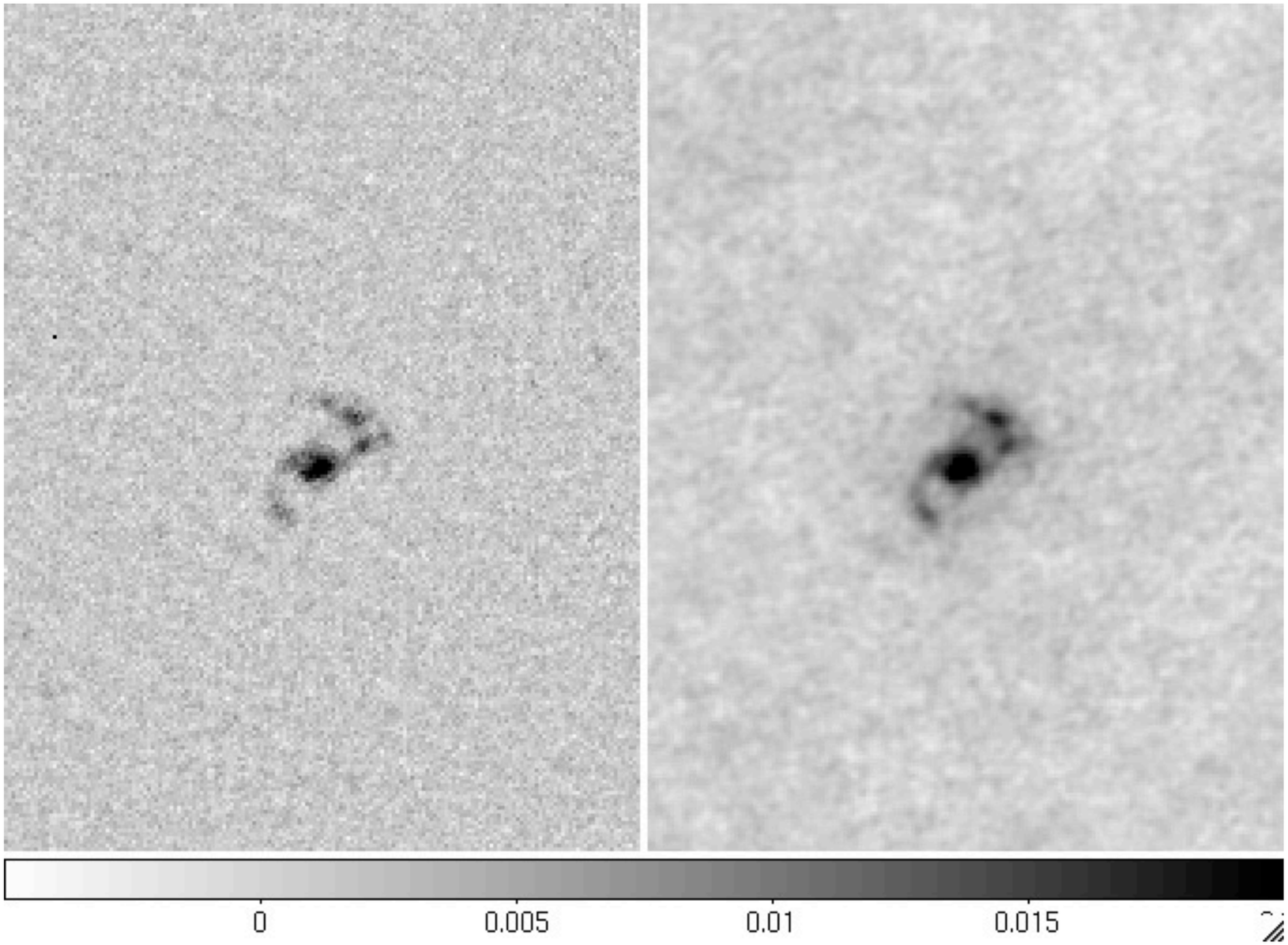
Sources in HerMES PACS maps

- A lot of the sources of interest to HerMES users are not detected
- A significant fraction of the detected sources are extended
- In both cases, the classical High Pass Filtering with masking is not appropriate
- We are using the inversion method of Tamasis

Extended sources in PACS Maps

HPF

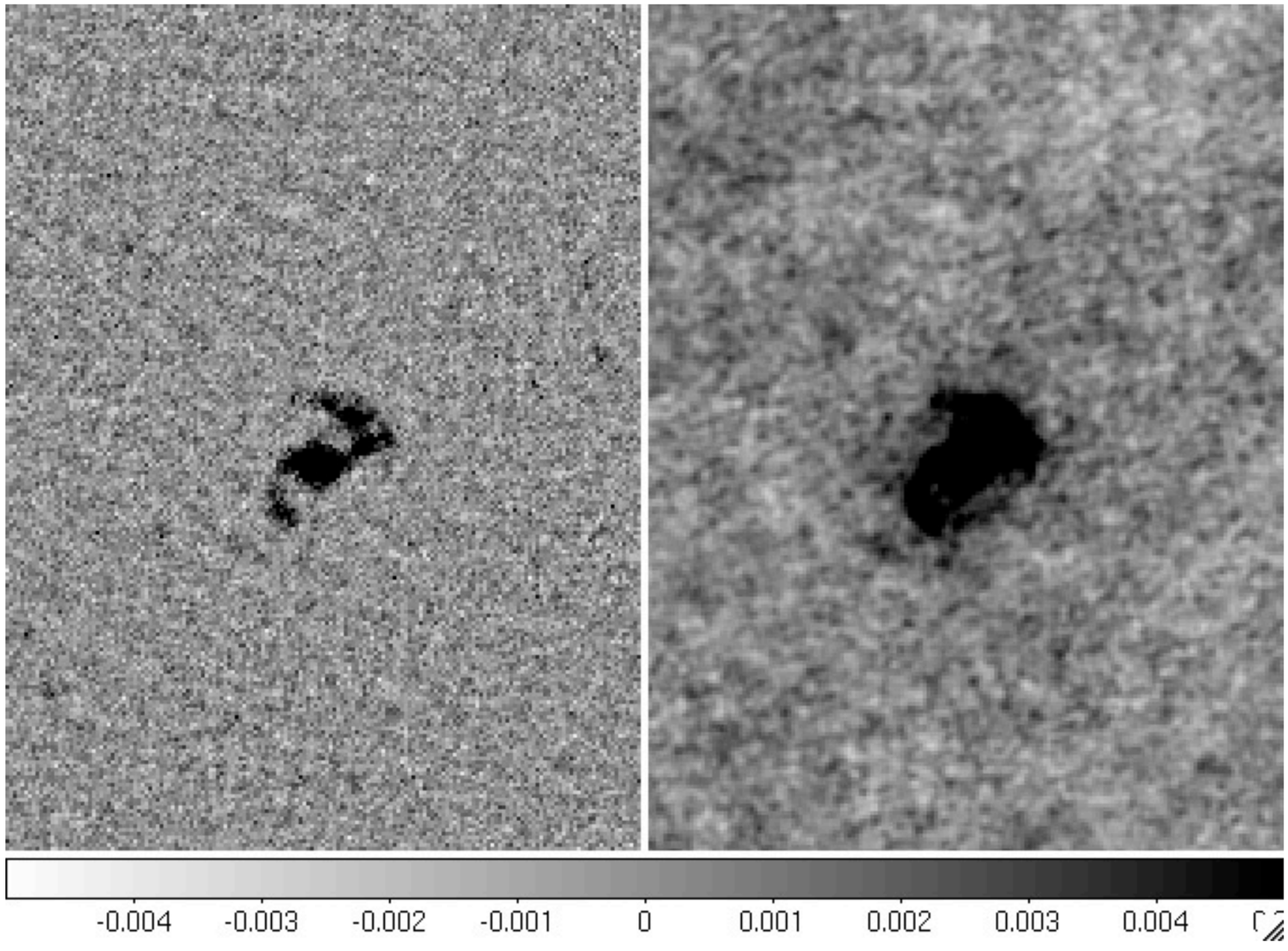
Tamasis



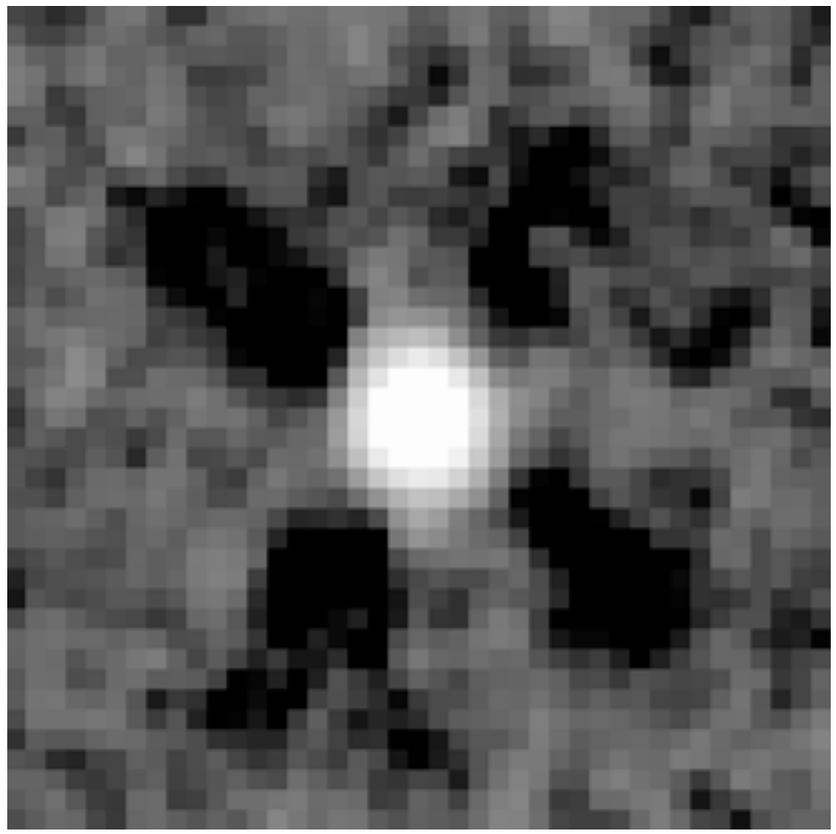
Extended sources in PACS Maps

HPF

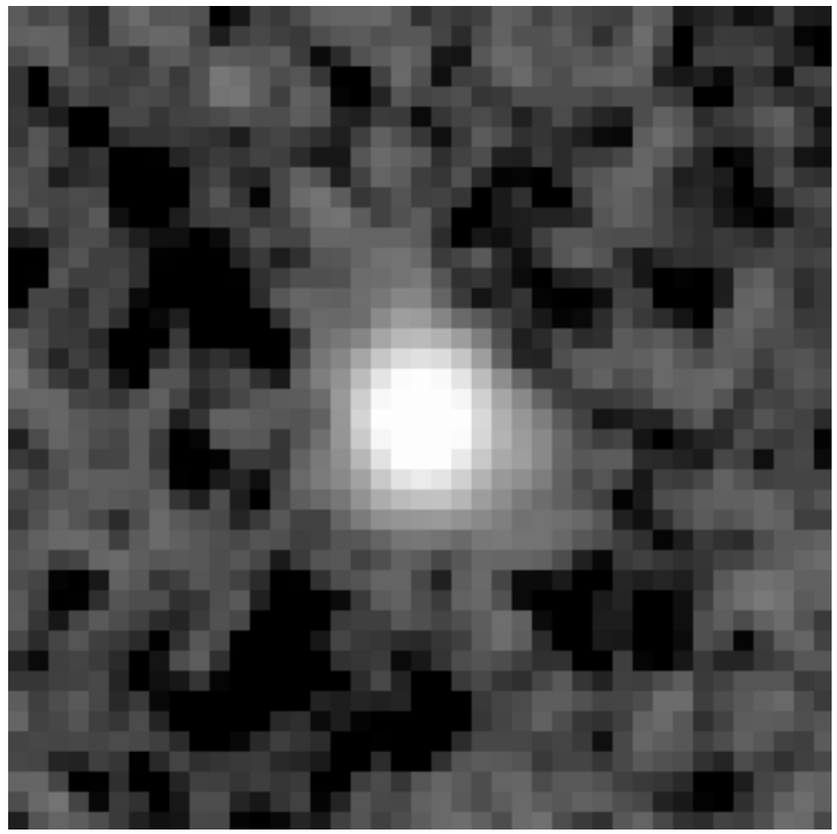
Tamasis



Stacking in PACS map



Far from PACS sources



Close to PACS sources

- The filtering applied to the data in HPF maps is inhomogenous

Stacking in PACS Maps

- An inversion map offers similar filtering throughout the whole map.
- Preserve photometry for extended sources
- We are using Tamasis for our processing
- Allow us to distribute one map to our users