

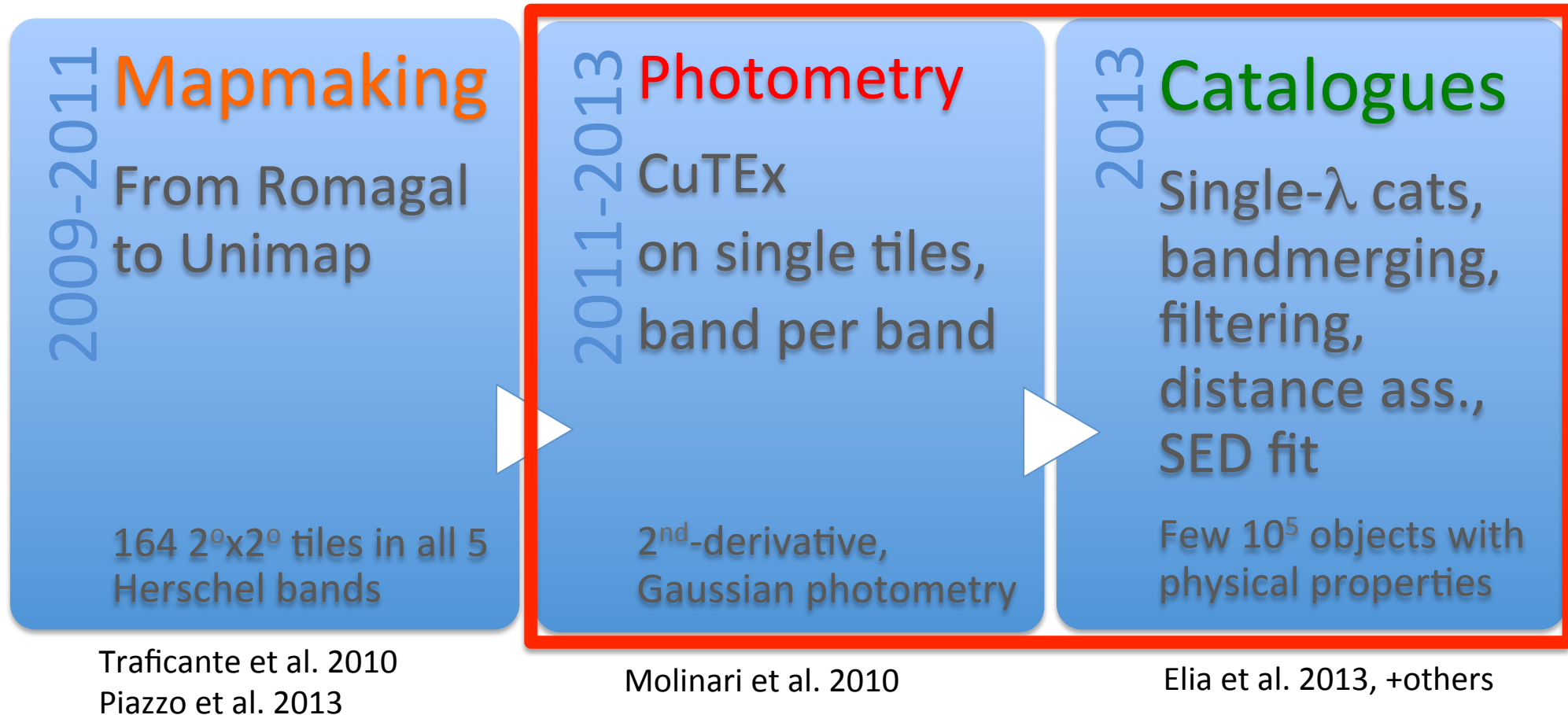
Star formation in the Galaxy with Herschel

Michele Pestalozzi, INAF – IAPS, Rome
on behalf of the Hi-GAL team

P.I. is Sergio Molinari

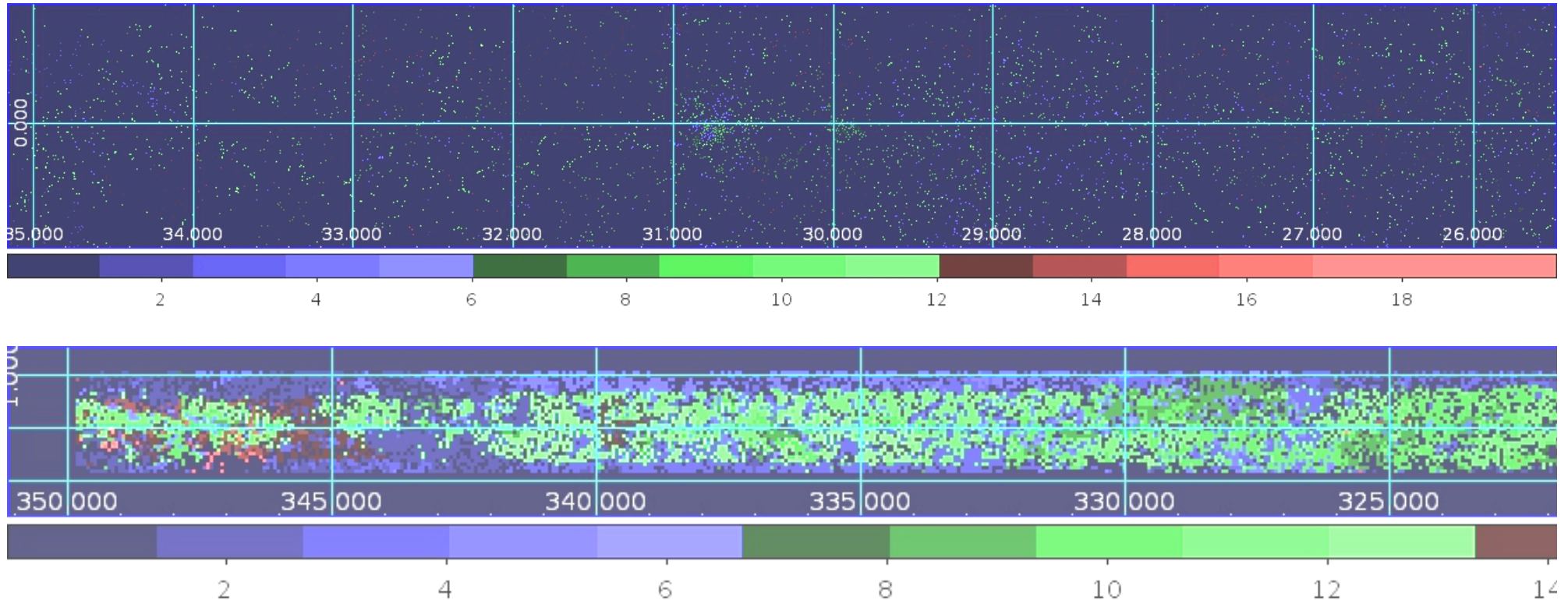


One-slide-data-processing...



pre- and **proto**stellar labelling: based on 70 μ m data

Physical significance ↔ DISTANCES

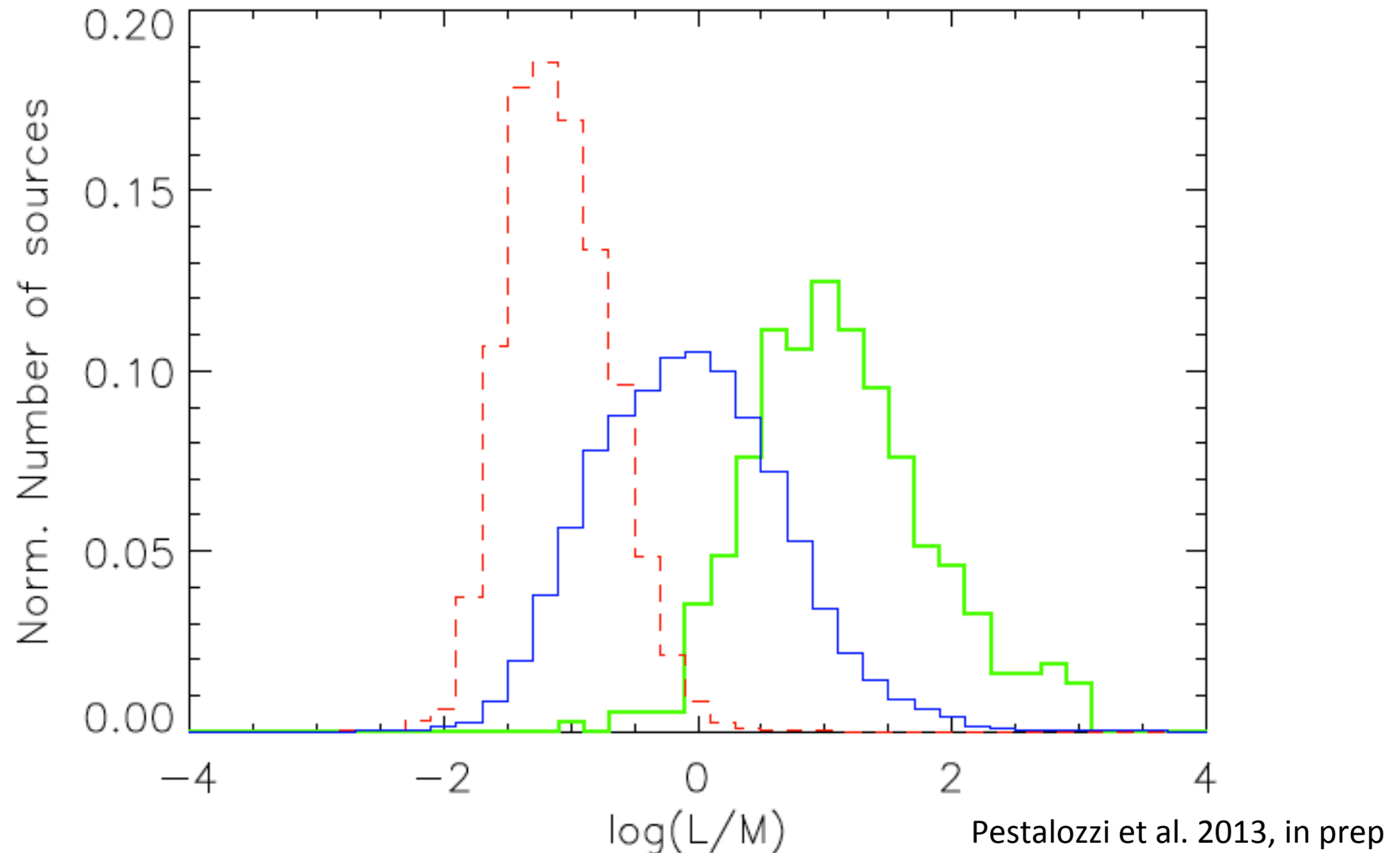


Based on **CO cubes** (NANTEN + GRS), **extinction** and **association** with sources with known distances Russeil et al. 2011

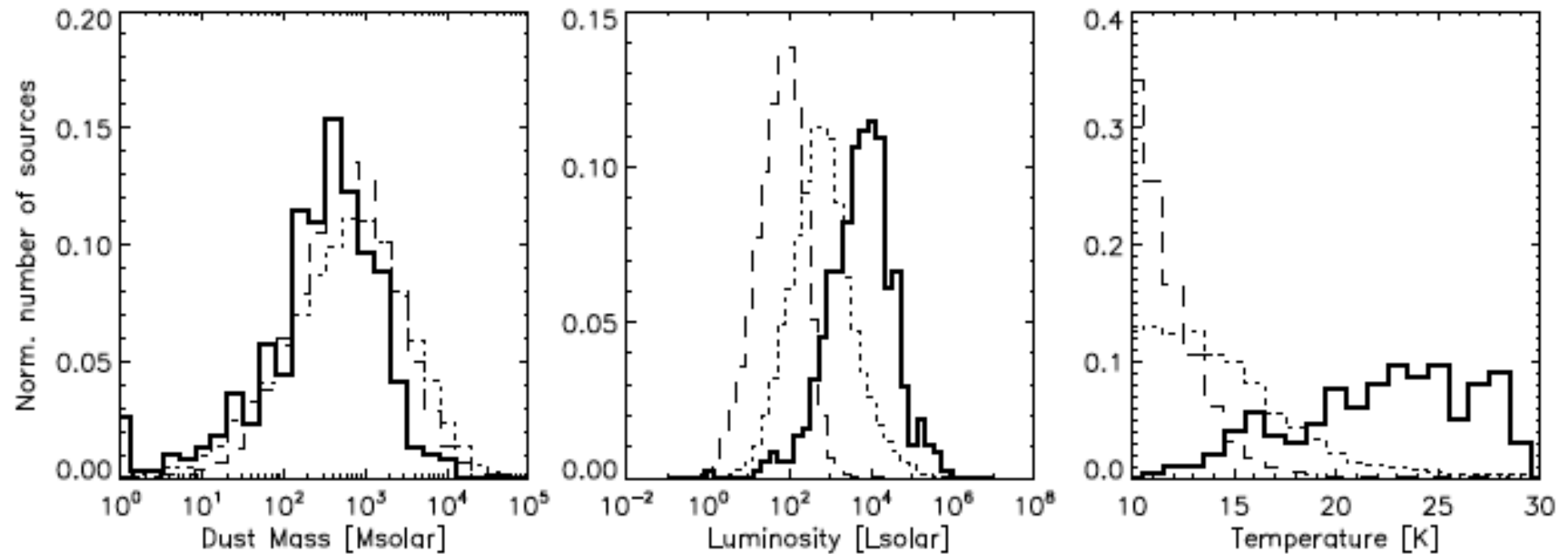
What are these objects?

- Hi-GAL detects **clumps**, not cores
 - Sizes of the order of 0.1 pc
- Clumps contain “many” objects...
 - Classification is difficult
- SFR and SFE: number counting Hi-GAL sources has to pass through models
- But there are a lot of them...!

Distance **in**dependent quantities

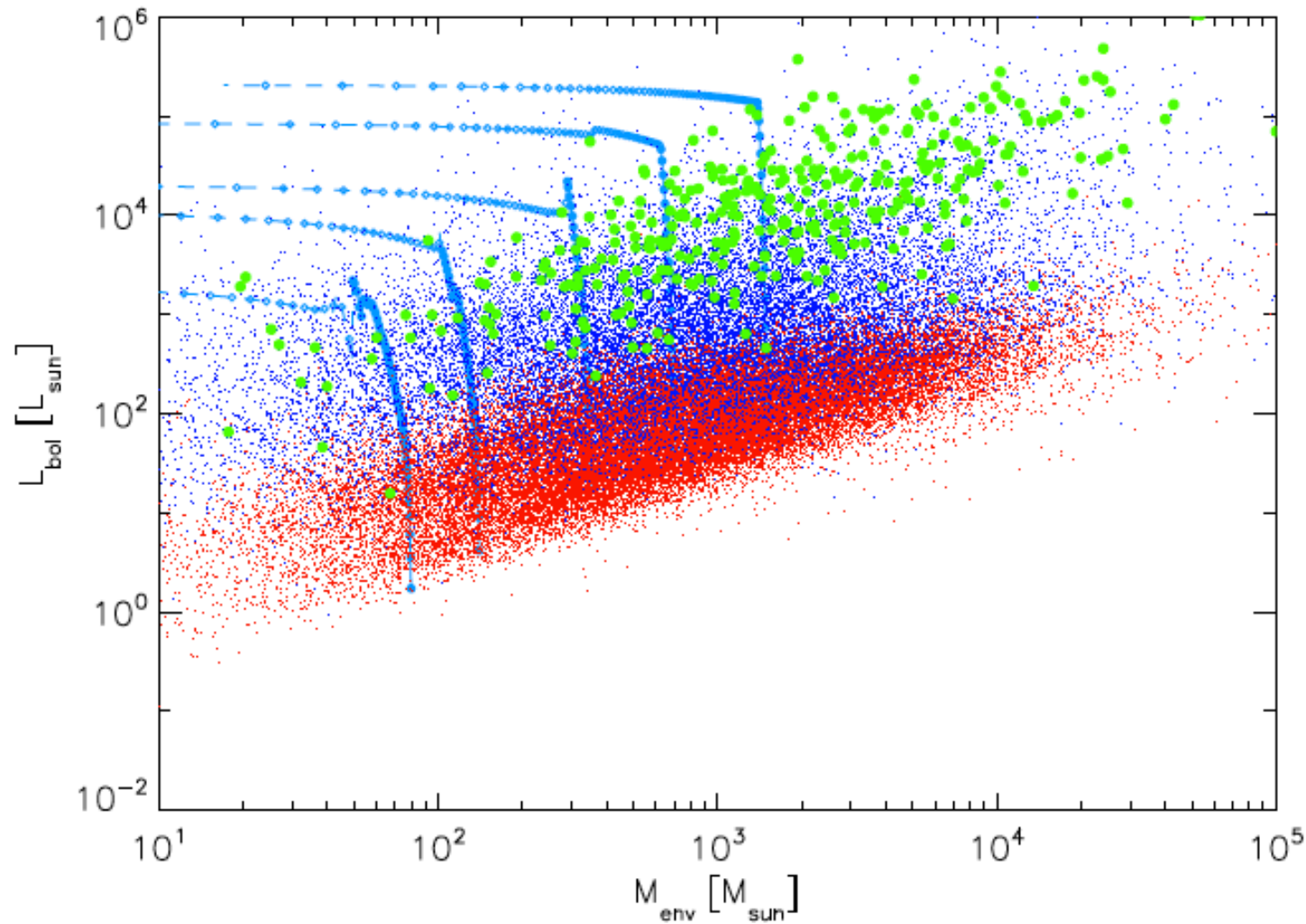


Physical significance



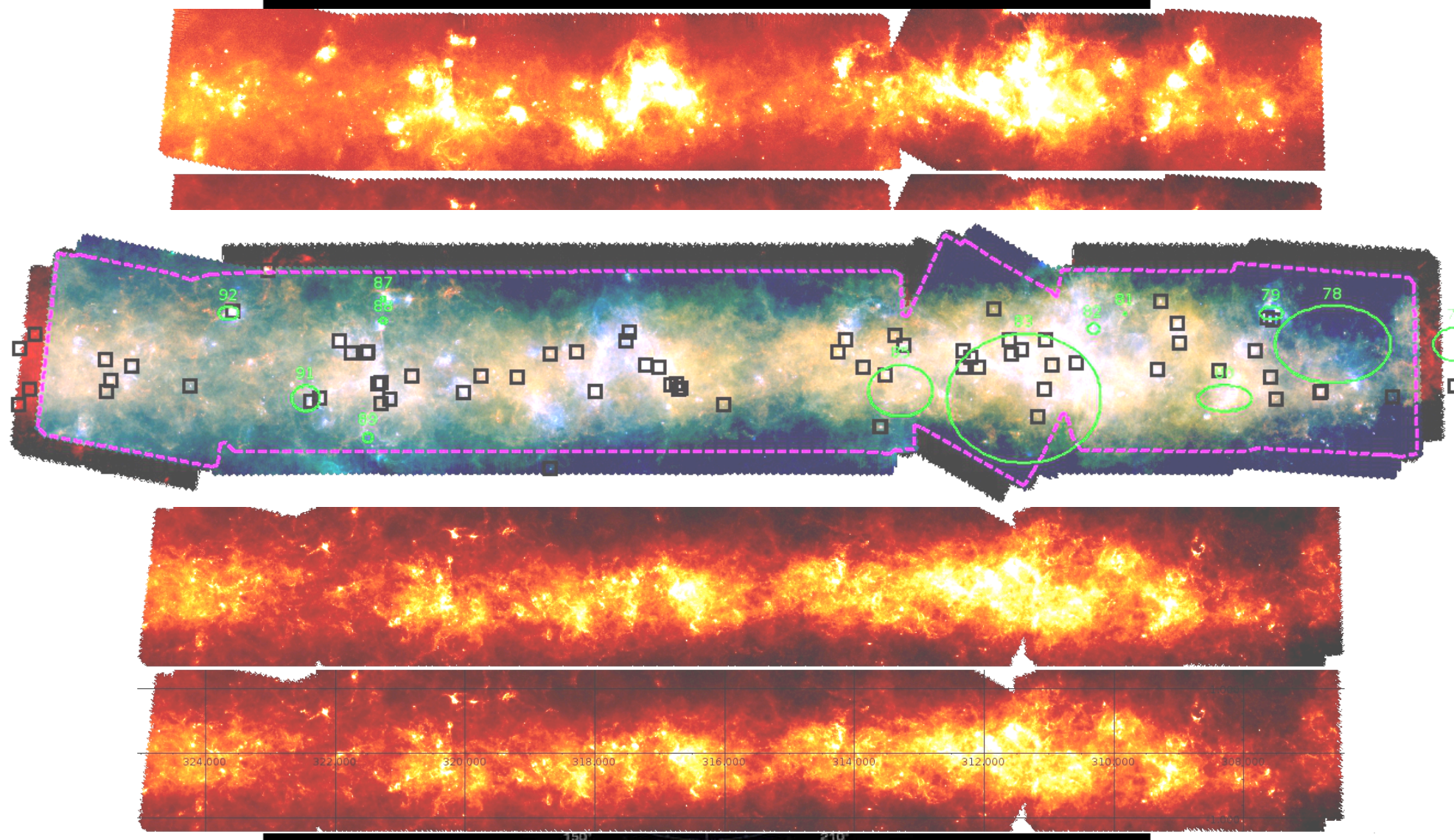
Pestalozzi et al. 2013, in prep

Evolution – comparison with models



Pestalozzi et al. 2013, in prep
Molinari et al. 2008

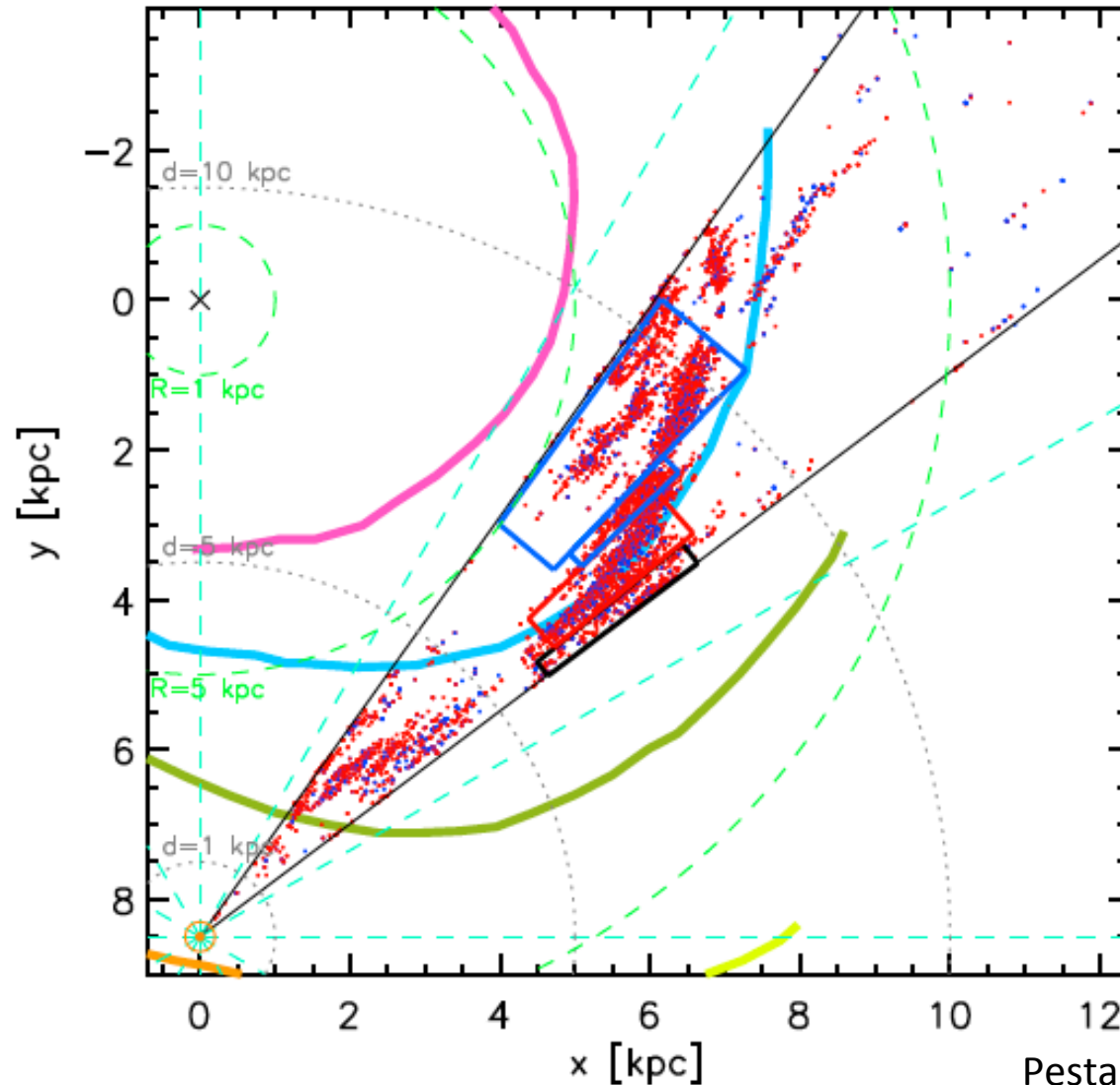
The Scutum-Crux arm



The Universe Explored by Herschel, ESTEC, October 2013

et al. 2014, in prep

What happens in the wake?



PRE/(PRE+PROTO)

0.6925

0.6749

0.7452

Pestalozzi et al. 2014, in prep

The scenario...

- Material is assembled in the wake of a spiral wave
 - Physical conditions of the gas in the wakes?
 - Turbulence, colliding flows, filamentary structures,...
- The spiral wave approaches MC and “triggers” SF

See e.g. Moore et al. 2012, Eden et al. 2013, Dobbs 2013, ...

Spiral pattern – stars & gas



Conclusions

- Hi-GAL delivers solid statistical grounds to study SF globally in the Galaxy
- Hi-GAL allows precise recognition of evolutionary stages
- **If** SF is related to the spiral arm structure, then its study can give hints on the initial conditions for SF

Thank you!

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Kazy Rygl, Gemma Bousquet, Danae Polychroni,
Alessio Traficante, Marcella Veneziani
Joe Mottram, Delphine Russeil