Galaxy evolution with the spatial distribution of Globular Clusters: how the VO has helped, and could help even more.

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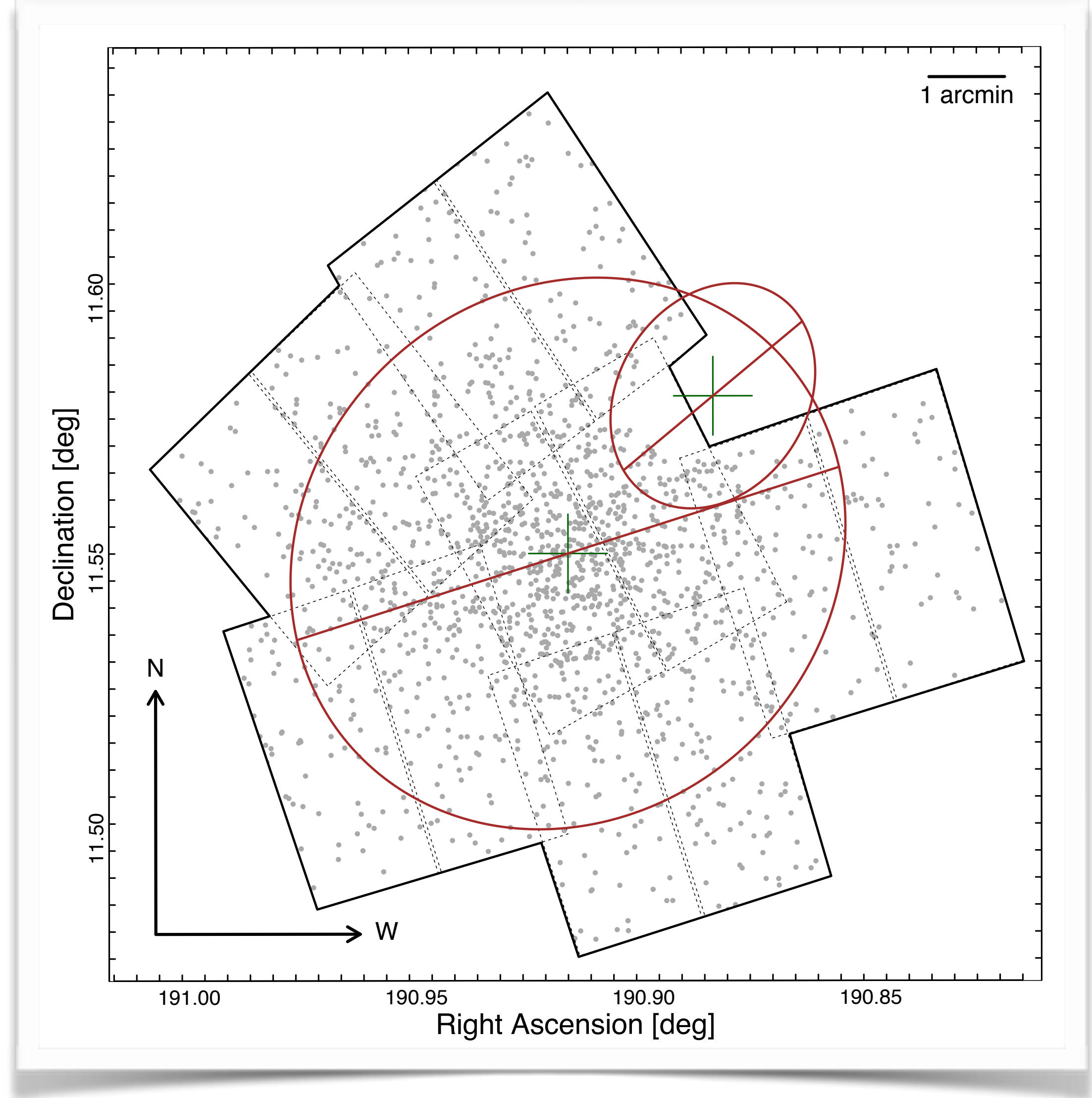
Structures in the spatial distribution of GCs

The observed 2D spatial distribution of globular clusters around their host galaxies, at a more careful look, is far from being smooth and regular, contrary to what was previously thought.

- Quantitative characterization of the structures in the GCs distribution (position, size, shape, significance)
- GC structures can be used to reconstruct the assembly history of the host galaxy



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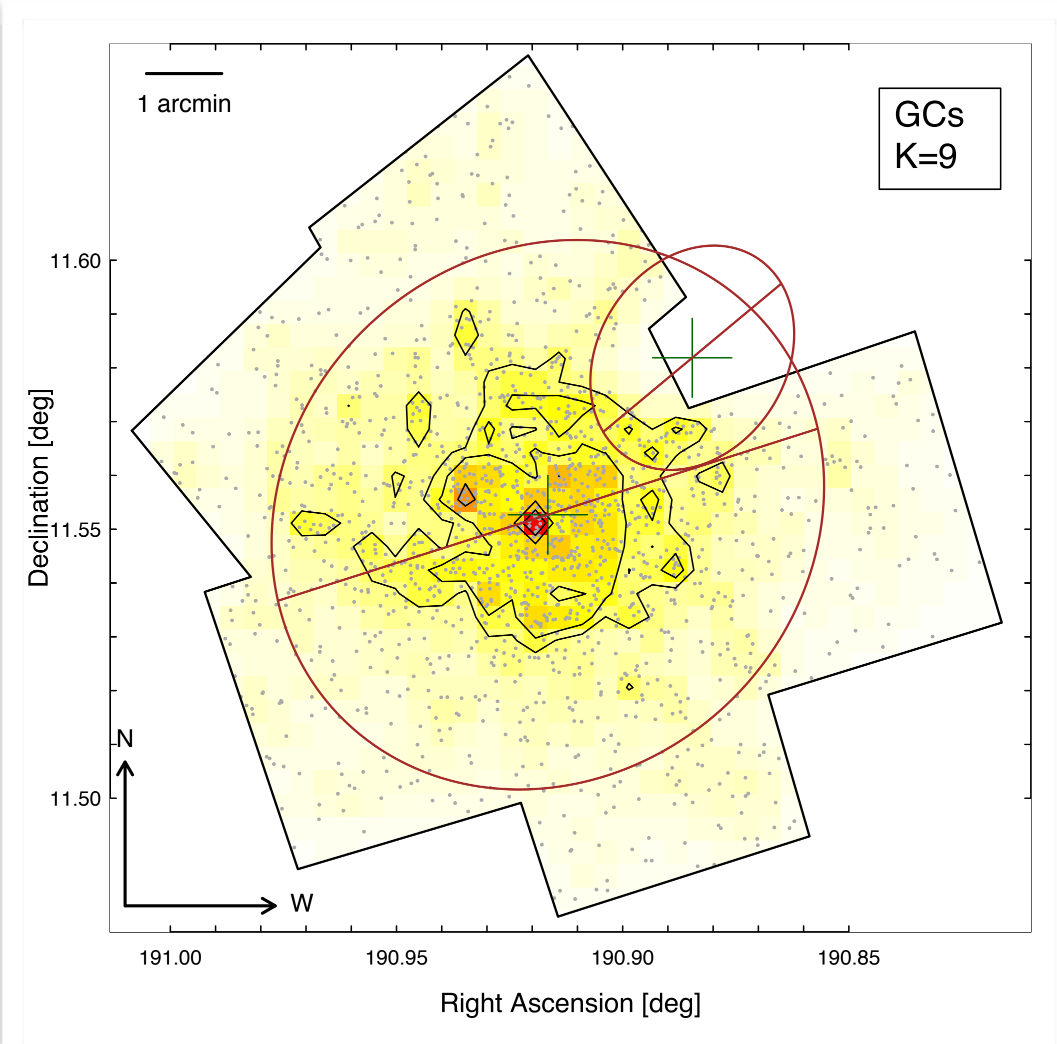

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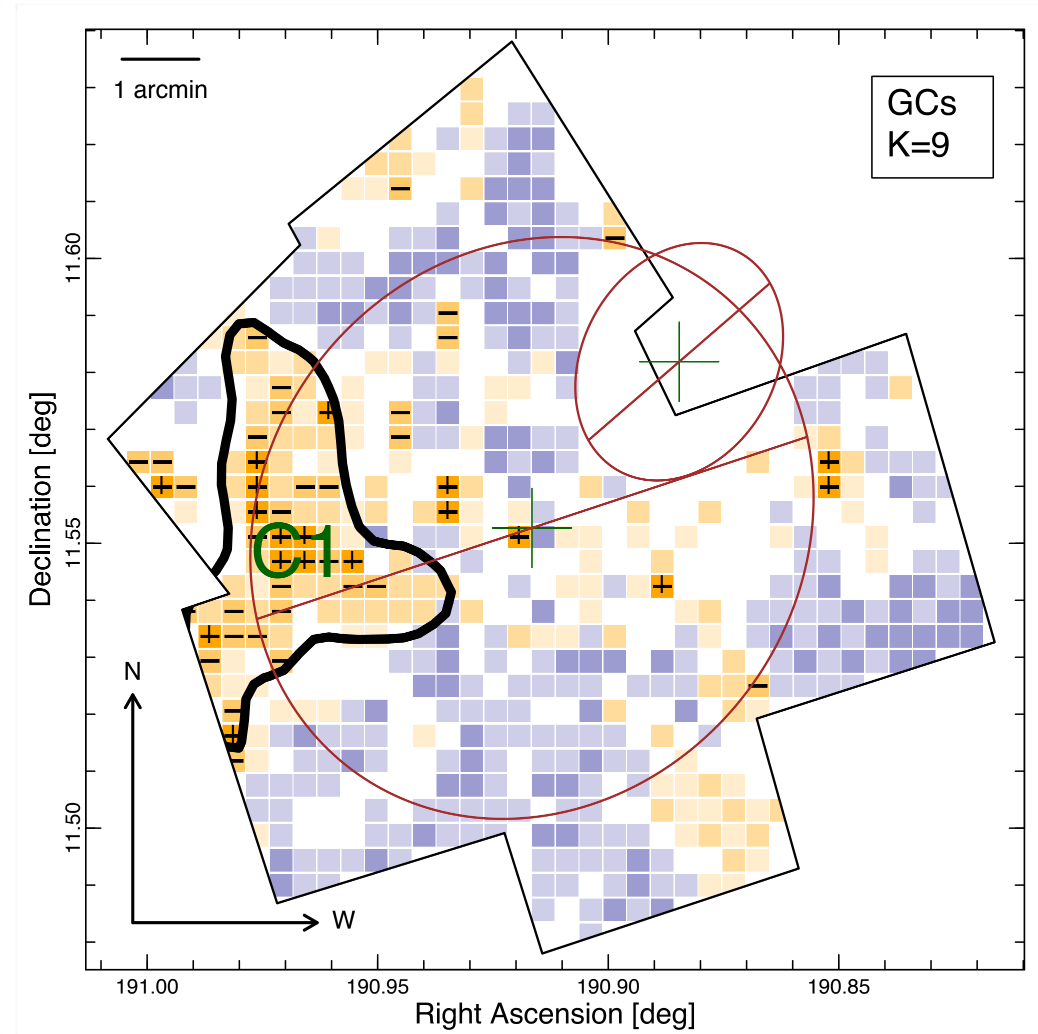

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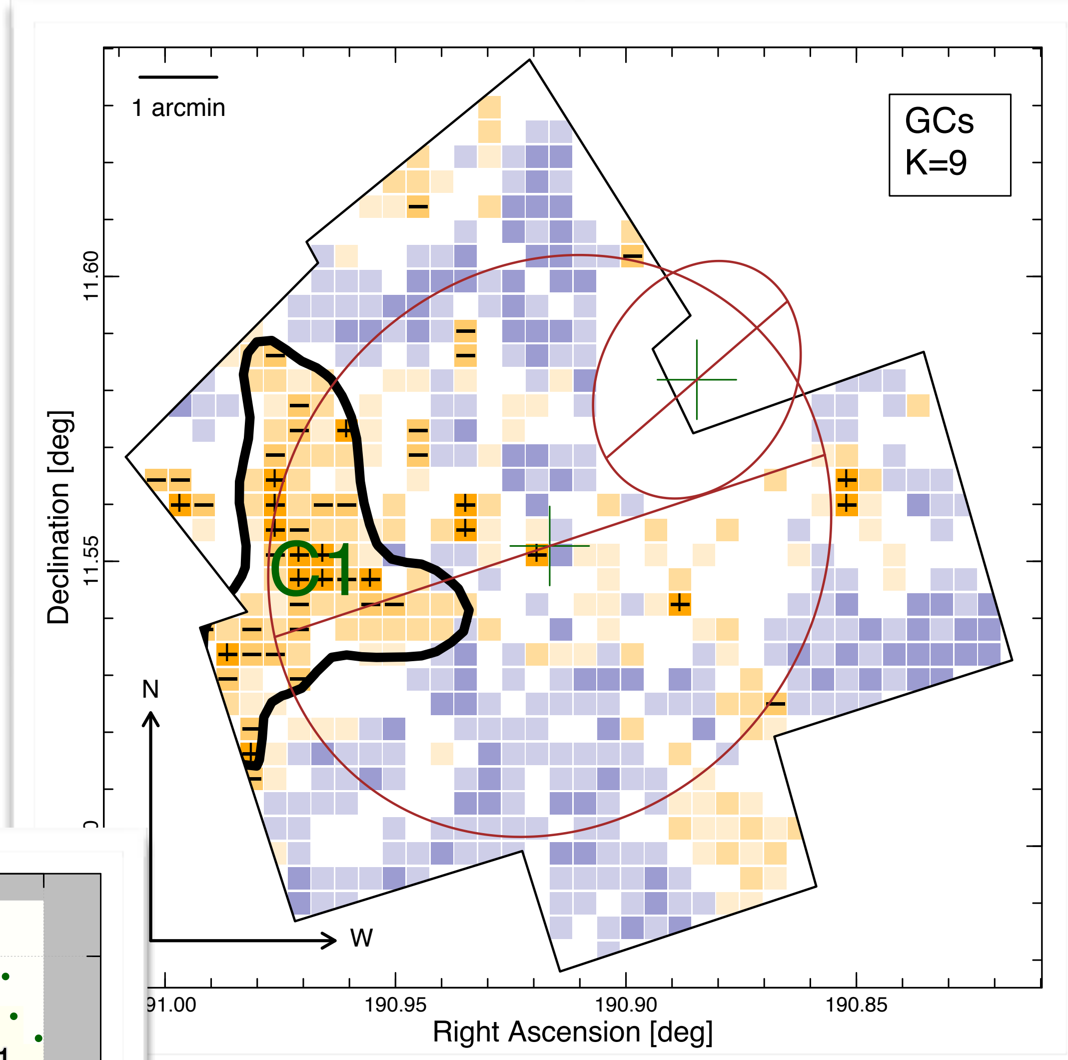

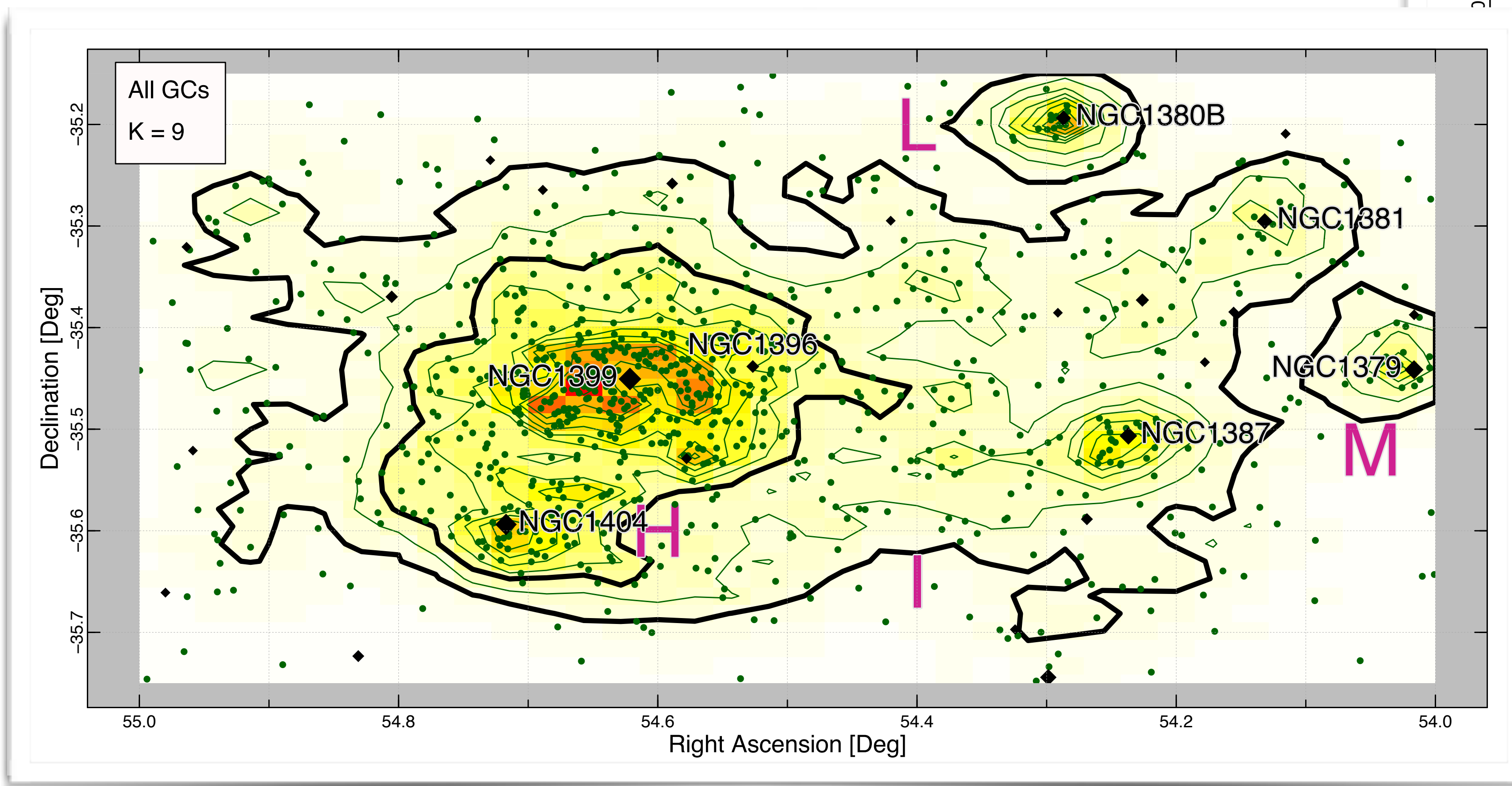

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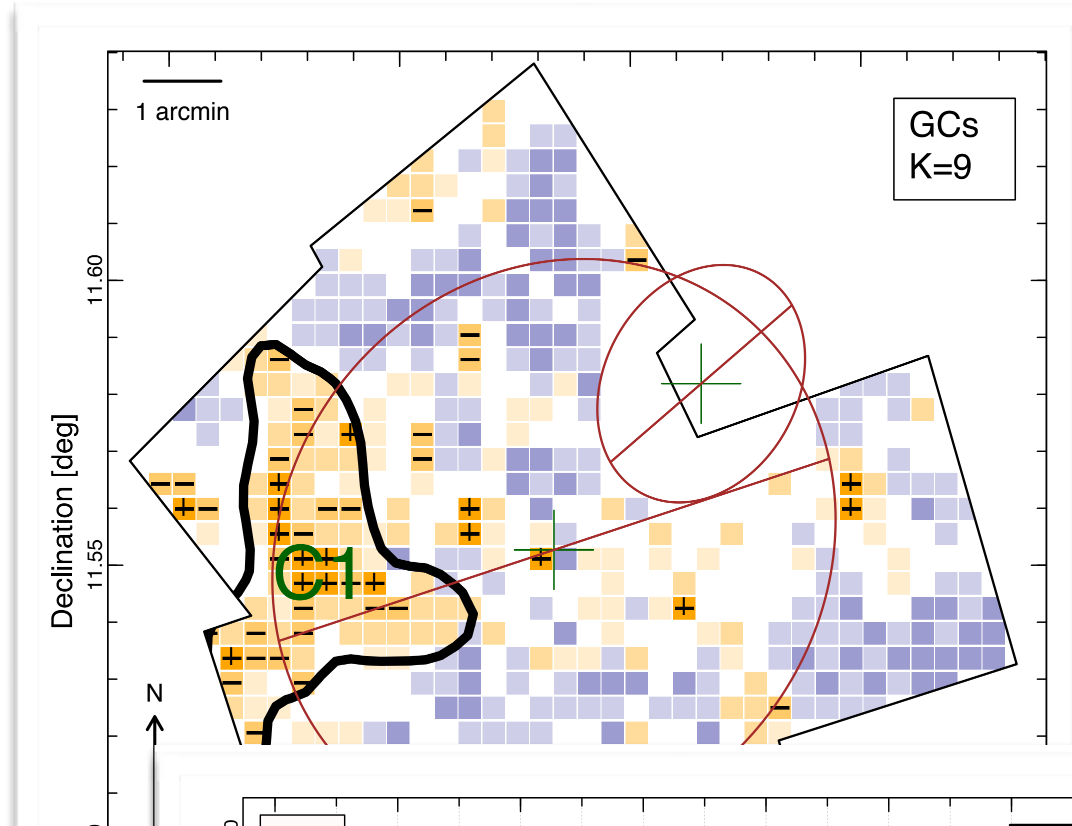
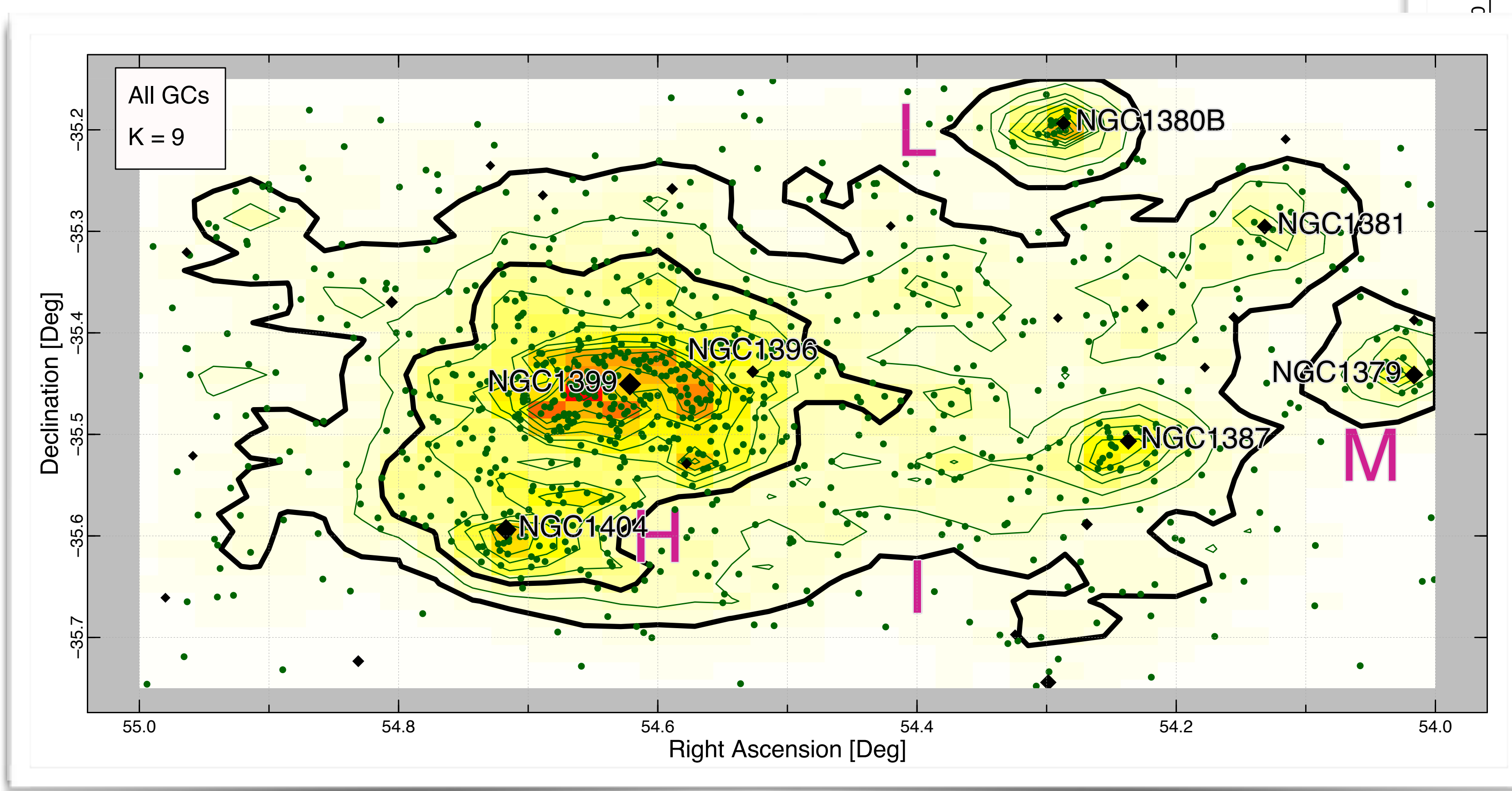
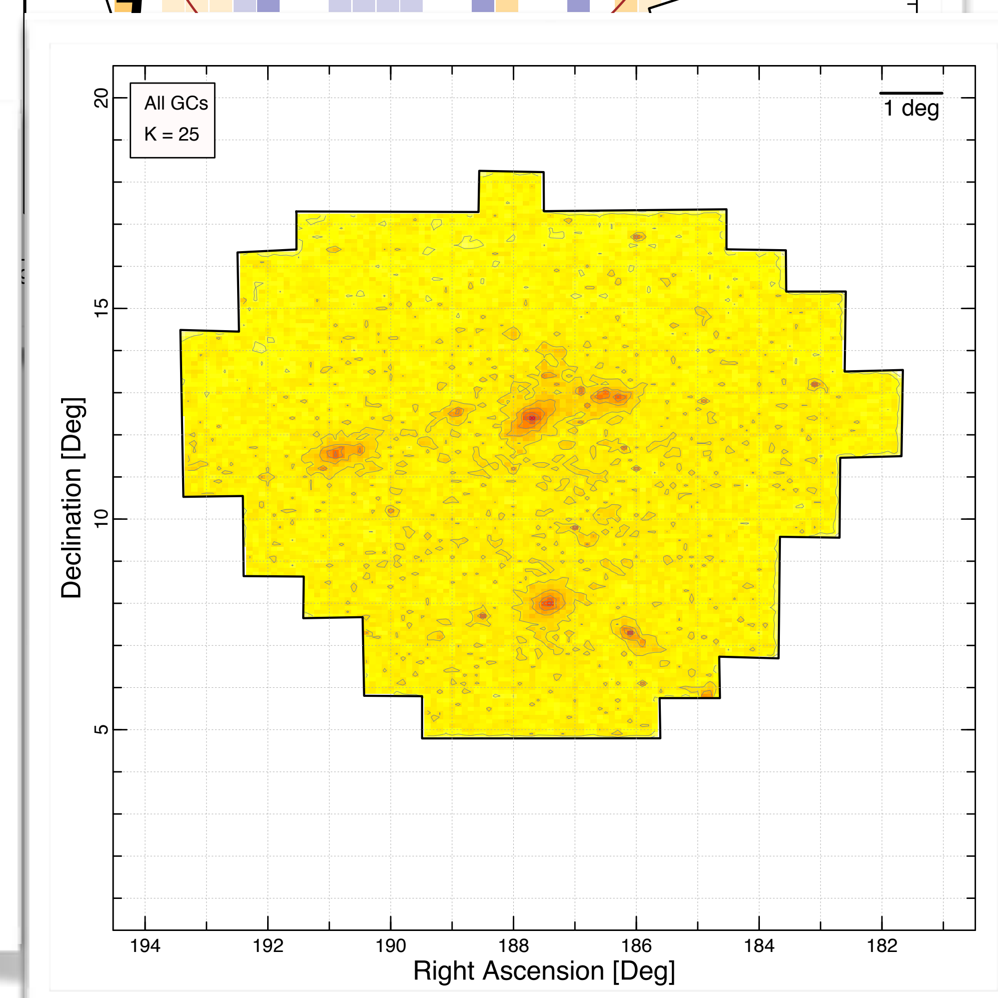
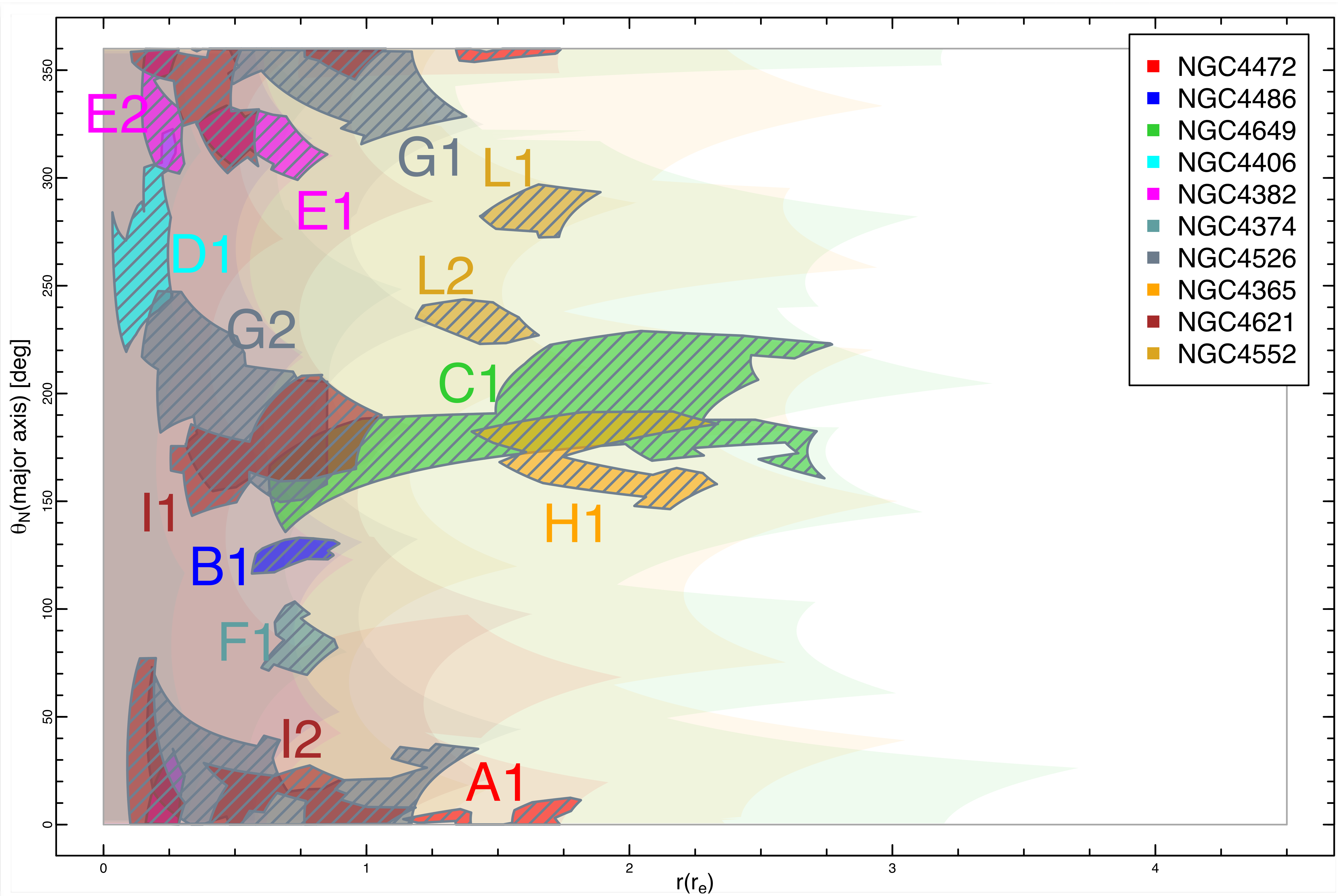


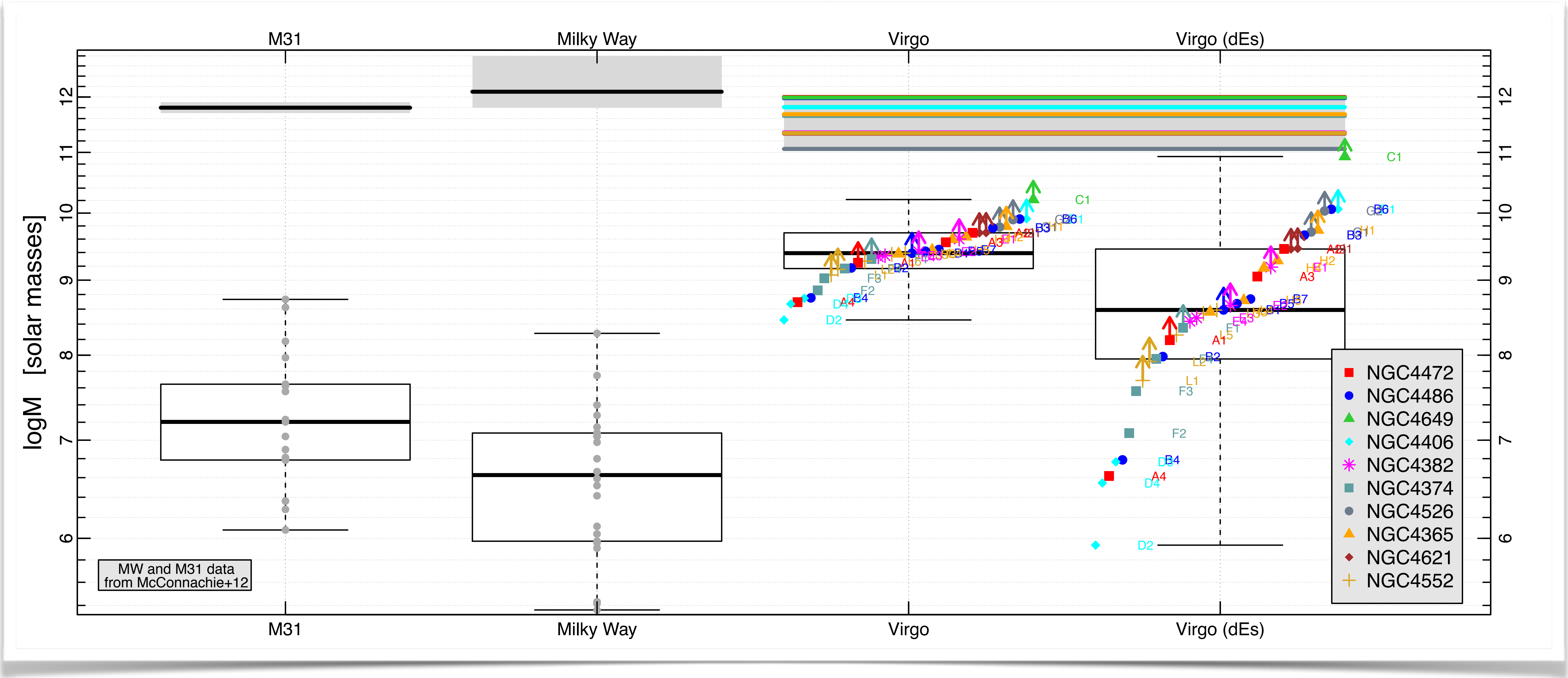




GCs spatial structures from many galaxies



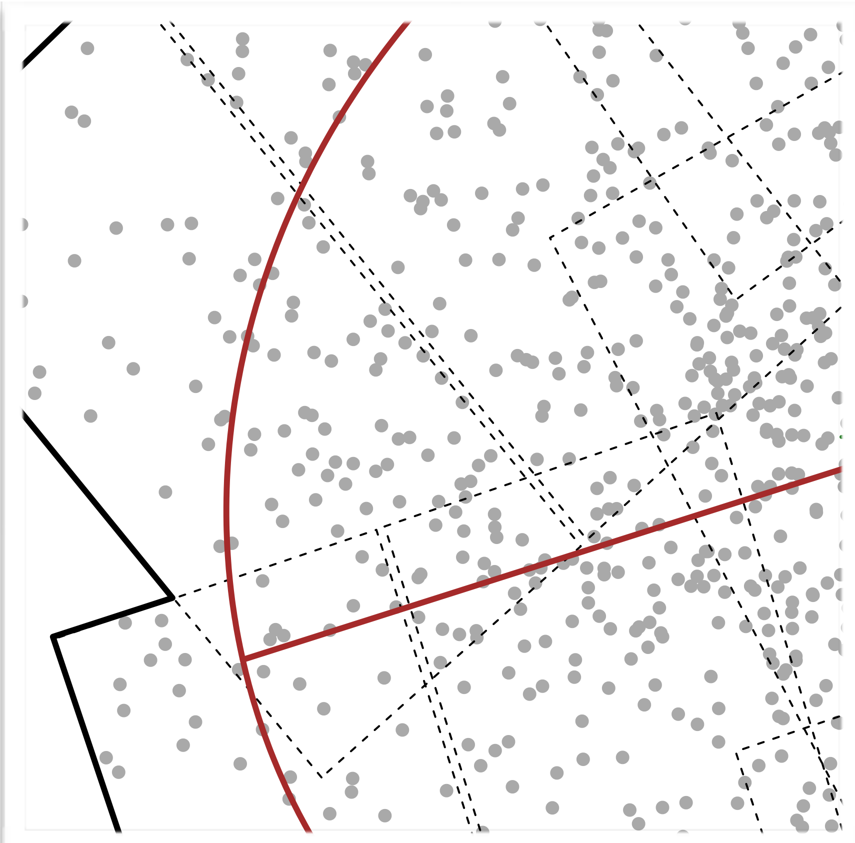
Physical inferences

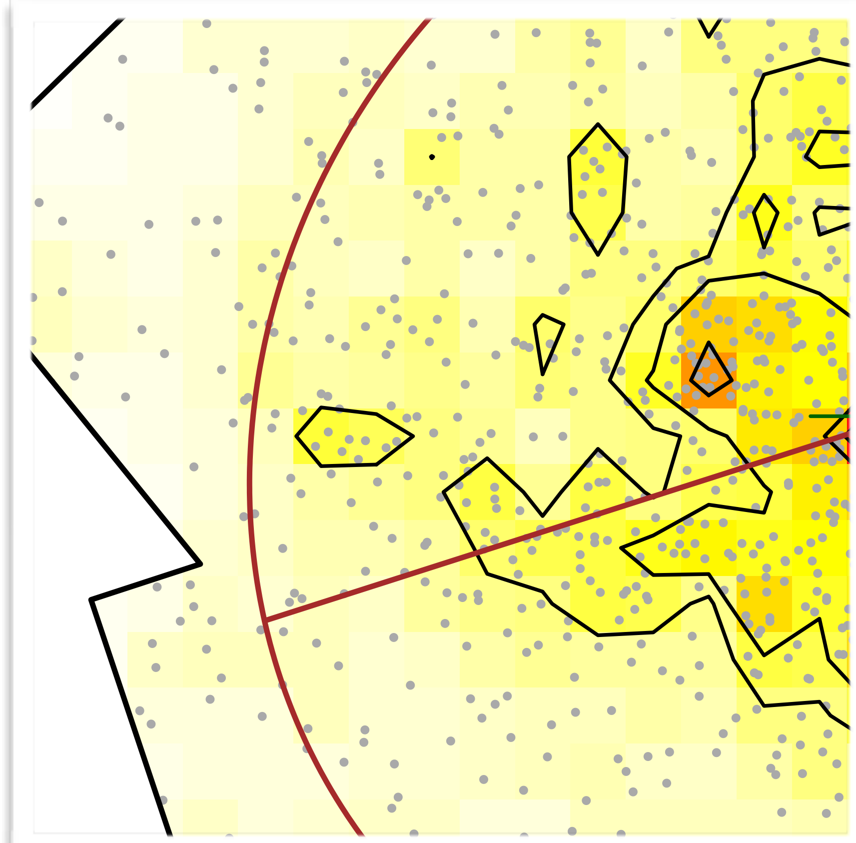


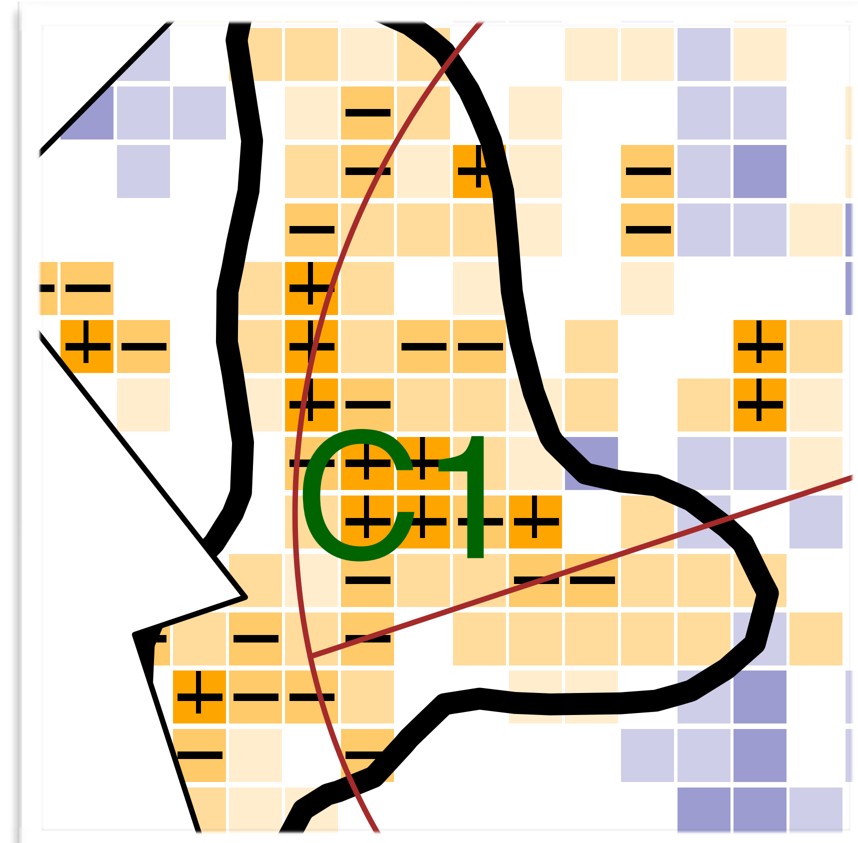
How the VO helped

- Registry
- TAP service
- MOCs
- The whole ecosystem of interoperable, VO-enabled tools for the interactive exploration of data

There's more to it than GCs…







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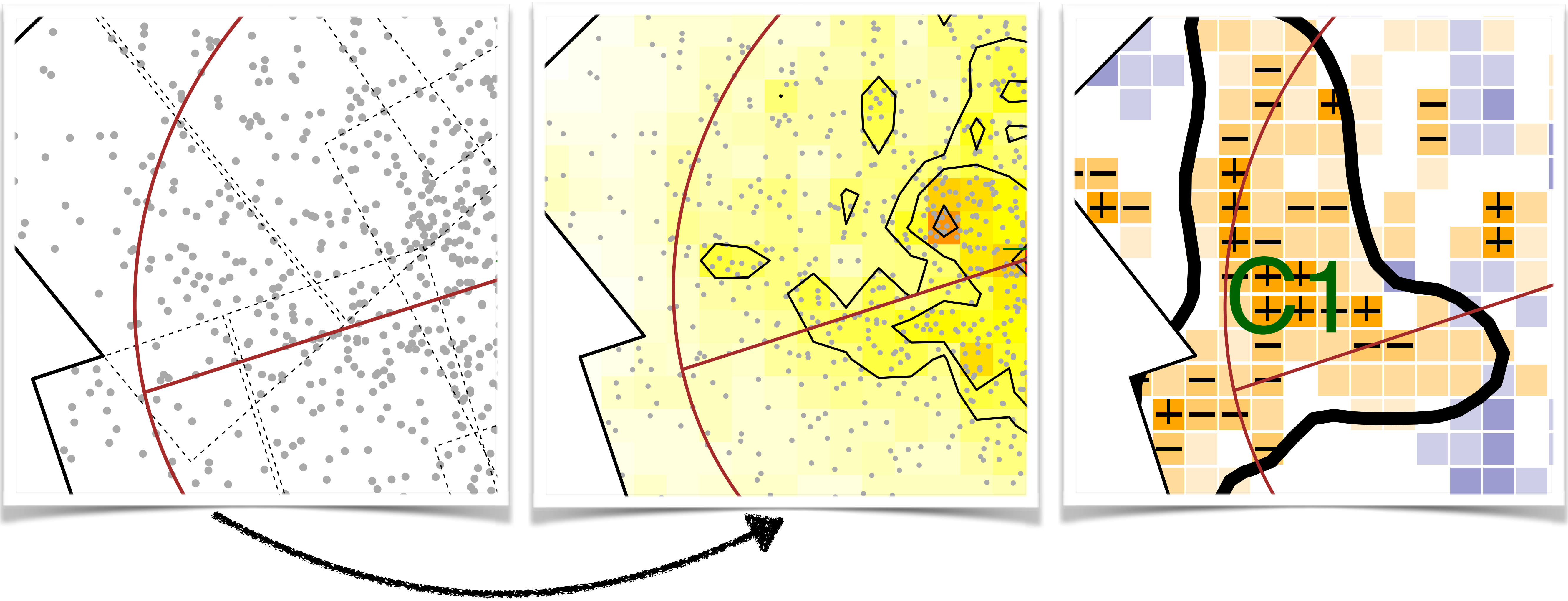

From a **distribution of points** to a **density map**:

- A statistical method
- Normalization strategy
- Density values for contours

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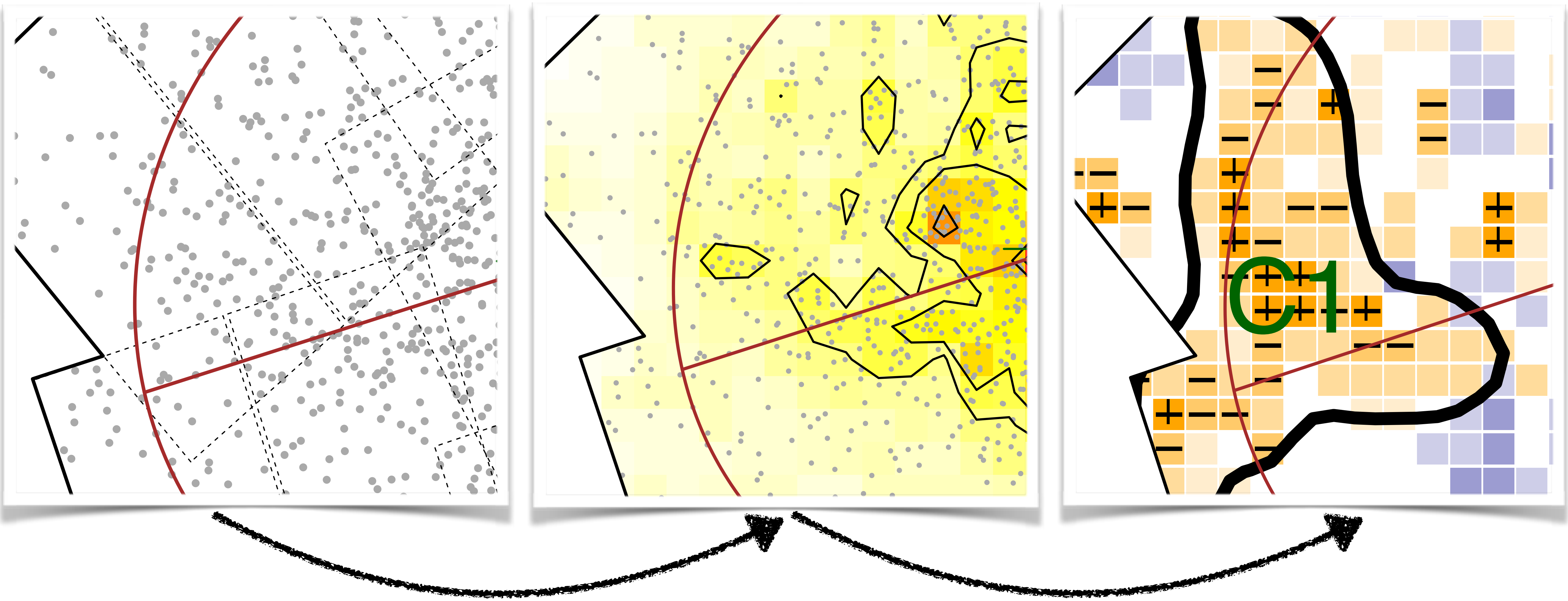

From a **distribution of points** to a **density map**:

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From a **density map** to a **residual map**

- A reference model
- Set of simulations
  - spatial grid
  - simulation technique
  - # of simulations
- Definition of significance
- Criteria for the identification of structures

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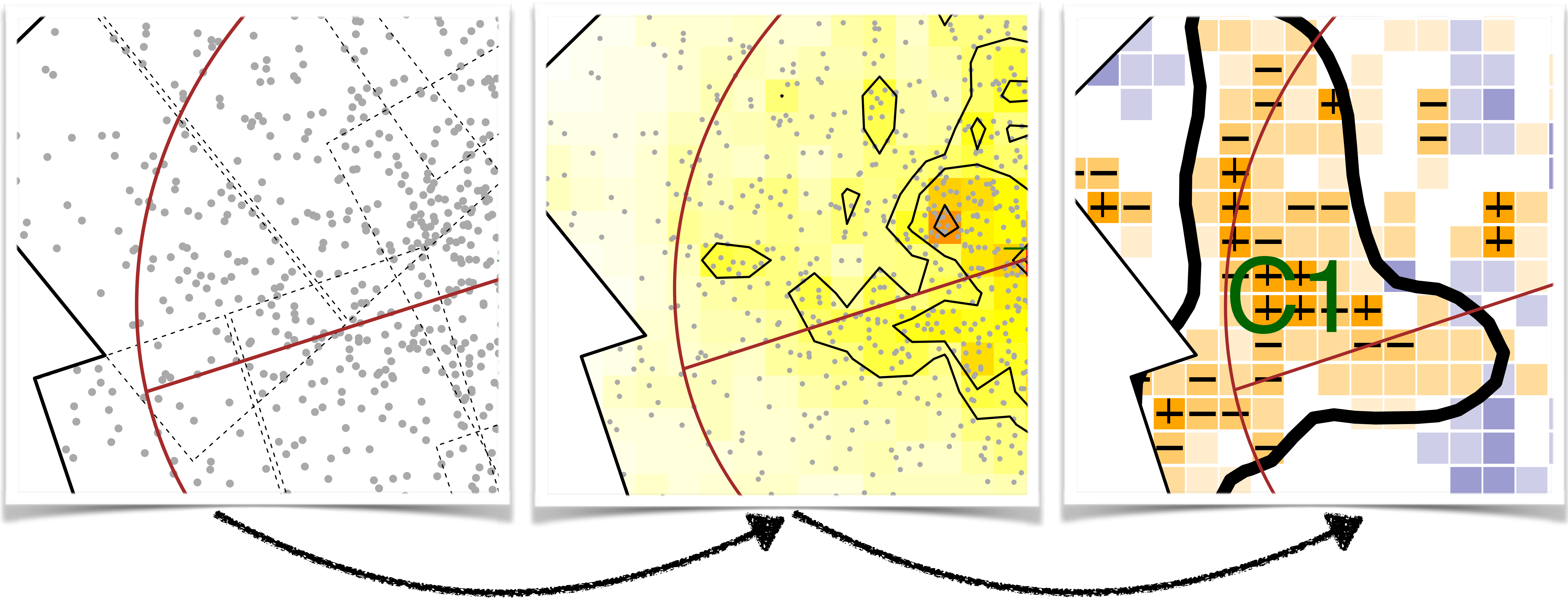

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How the VO could help

The real value of my work is in the "**statistically-produced data products**" (like the density map and residual maps). This type of data (produced by astronomers and/or data centers alike) will become more and more important for our discipline.

- Do these data fit naturally in any data model?
- Should a minimal set of metadata for these data be formalized?
- Can these data be discovered and searched?
- Can the VO help me to get these data re-used or cited?