

20250625 Check Median pm Std

The main idea here is to see if the quality control (QC) creates an upper limit in resolved SFMS plot.

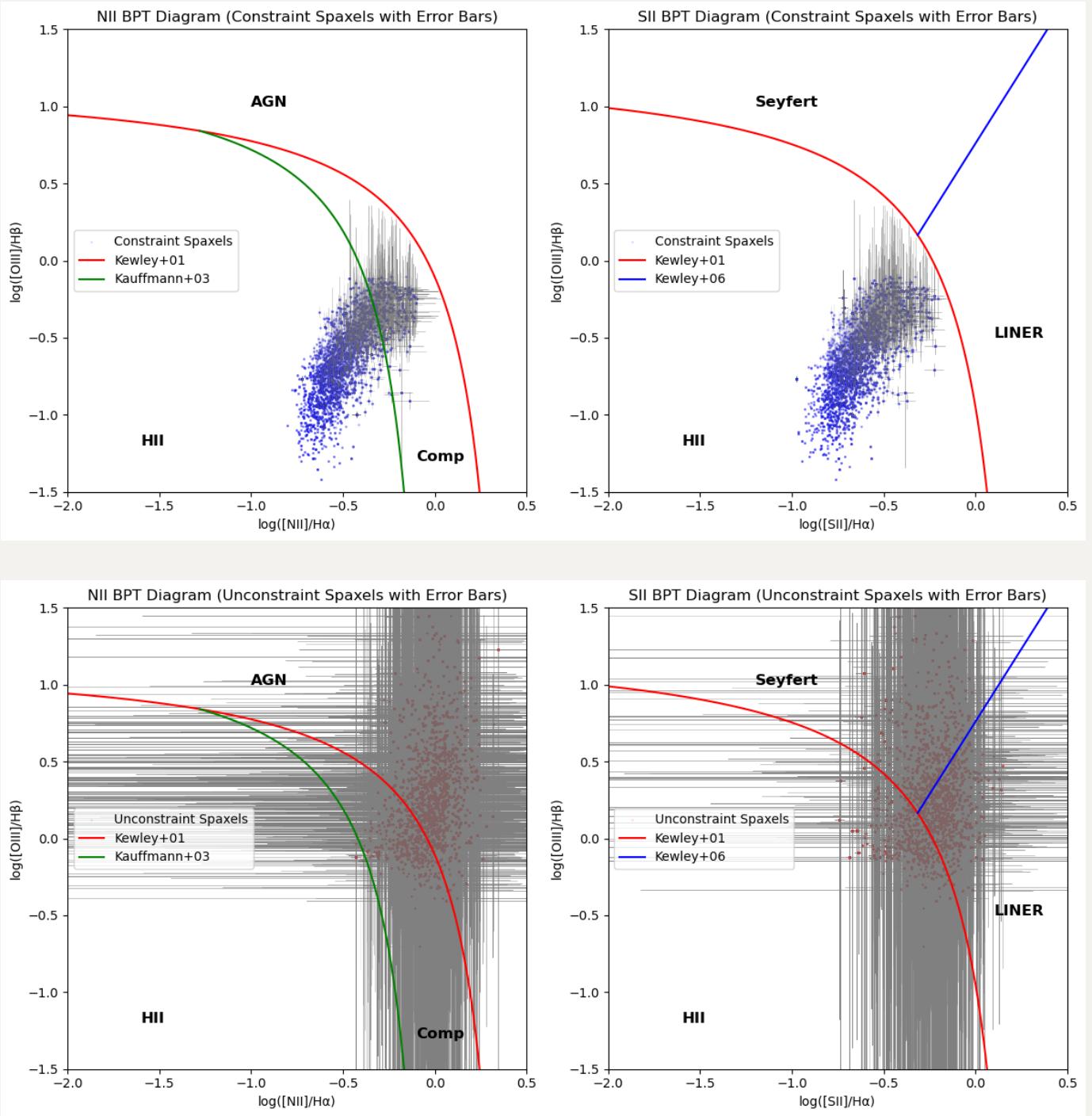
1. Two different approaches of QC

1. Uniform QC at all lines ("Cut" and "Control")

In this way, I require all emission lines need to have S/N higher than a particular value. If a spaxel has all lines' S/N higher than that value. I call it "Control" (or "Cut"), otherwise will be "Uncontrol" (or "Uncut"). In this experiment, I set $S/N \geq 3$ for "Cut", while $S/N \geq 7.2$ for "Control".

2. Adaptive QC at all lines ("Constraint")

Instead of setting a uniform value at all lines, I adopt another QC based on the error bar on both [N II] and [S II] BPT diagrams. That is, for each point on both BPT diagram, as long as its errorbars are all within a same region, I call it "Constraint". That means I have 68% confident to say that those "Constraint" spaxels can be located in a region on both BPT diagrams. Below is the example of this QC (blue dots are constraint, while red dots are not constraint):



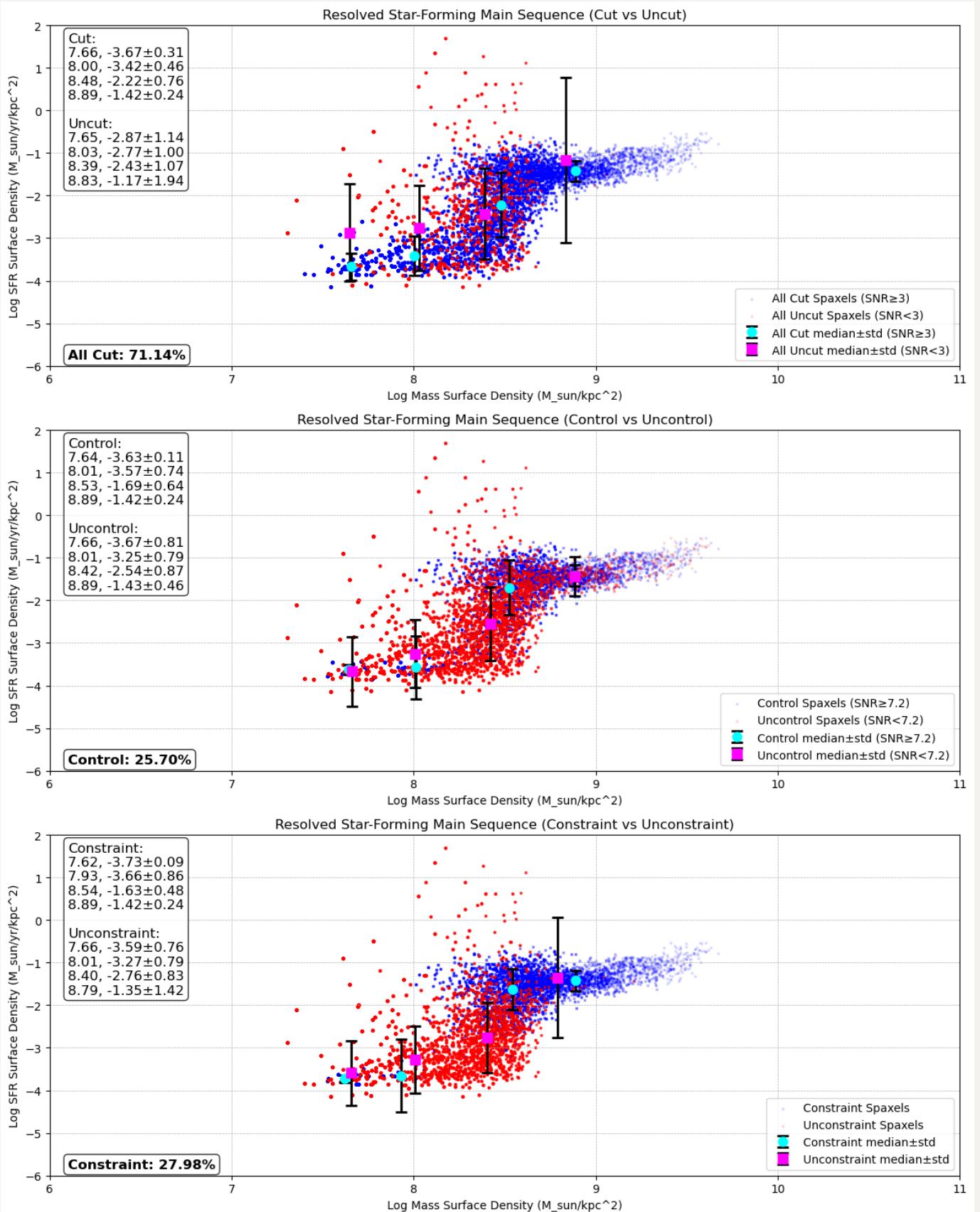
2. Upper limit due to QC or not?

Now we have three different cases of QC:

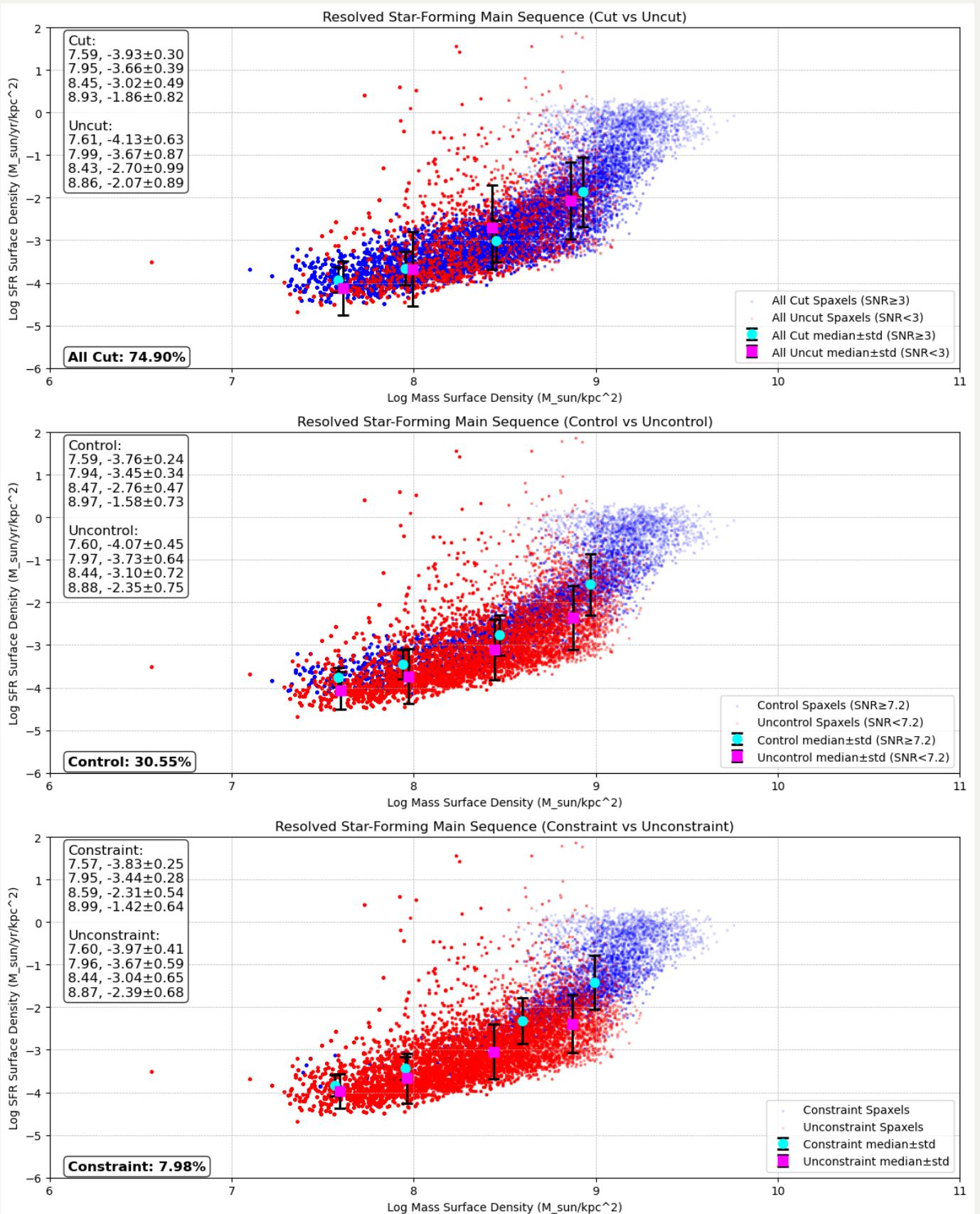
1. "Cut" or "Uncut": $\text{S/N} \geq 3$ or " $\text{S/N} \leq 3$ "
2. "Control" or "Uncontrol": $\text{S/N} \geq 7.2$ or " $\text{S/N} \leq 7.2$ "
3. "Constraint" or "Unconstraint": all error bars within same region or not

Then I can show the resolved SFMS plots of these three cases (upper, middle and lower panels) for all 14 galaxies. In each panel, I show the median values of each mass bin and the scatter (standard deviation) as the error bars.

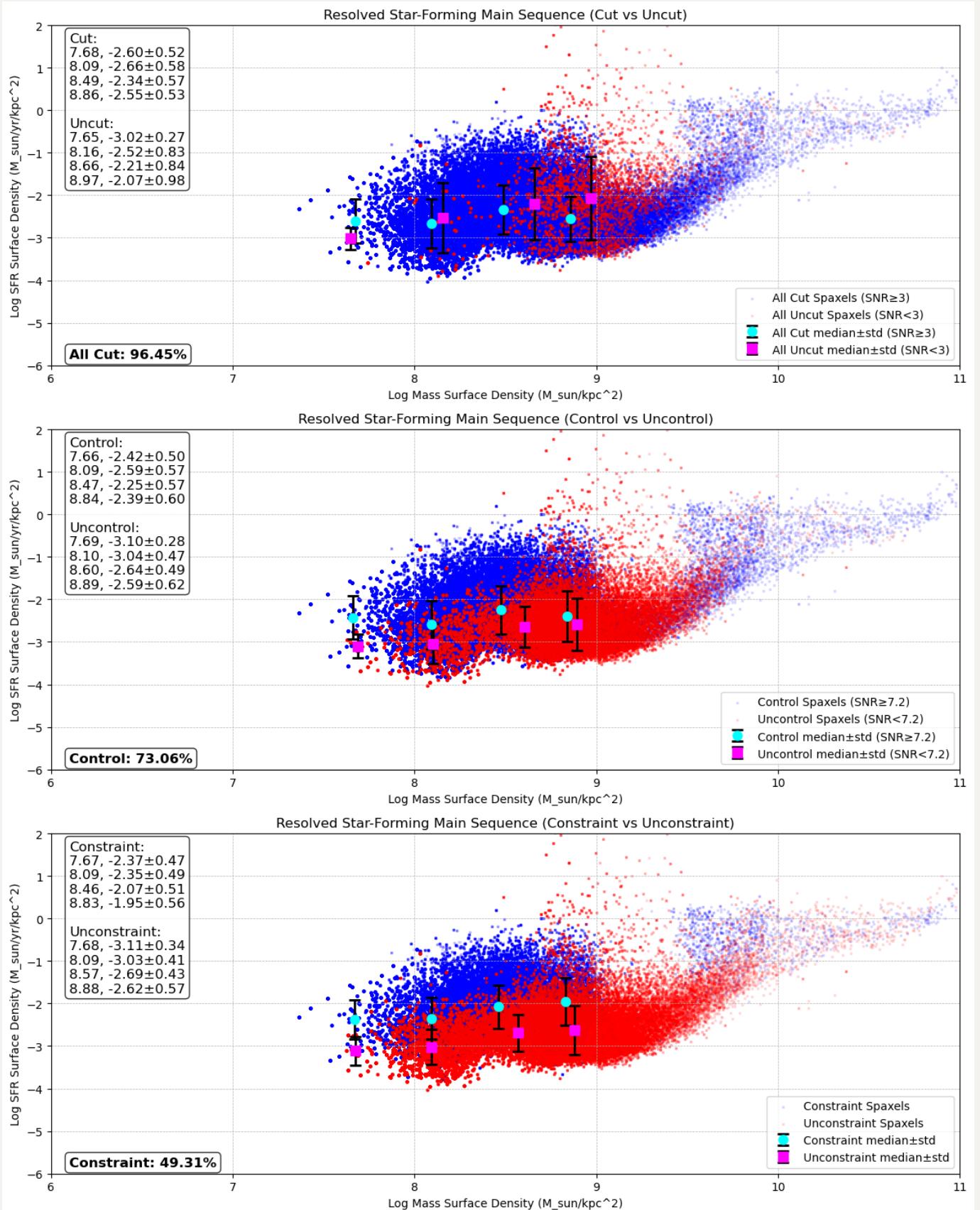
2.1 IC3392



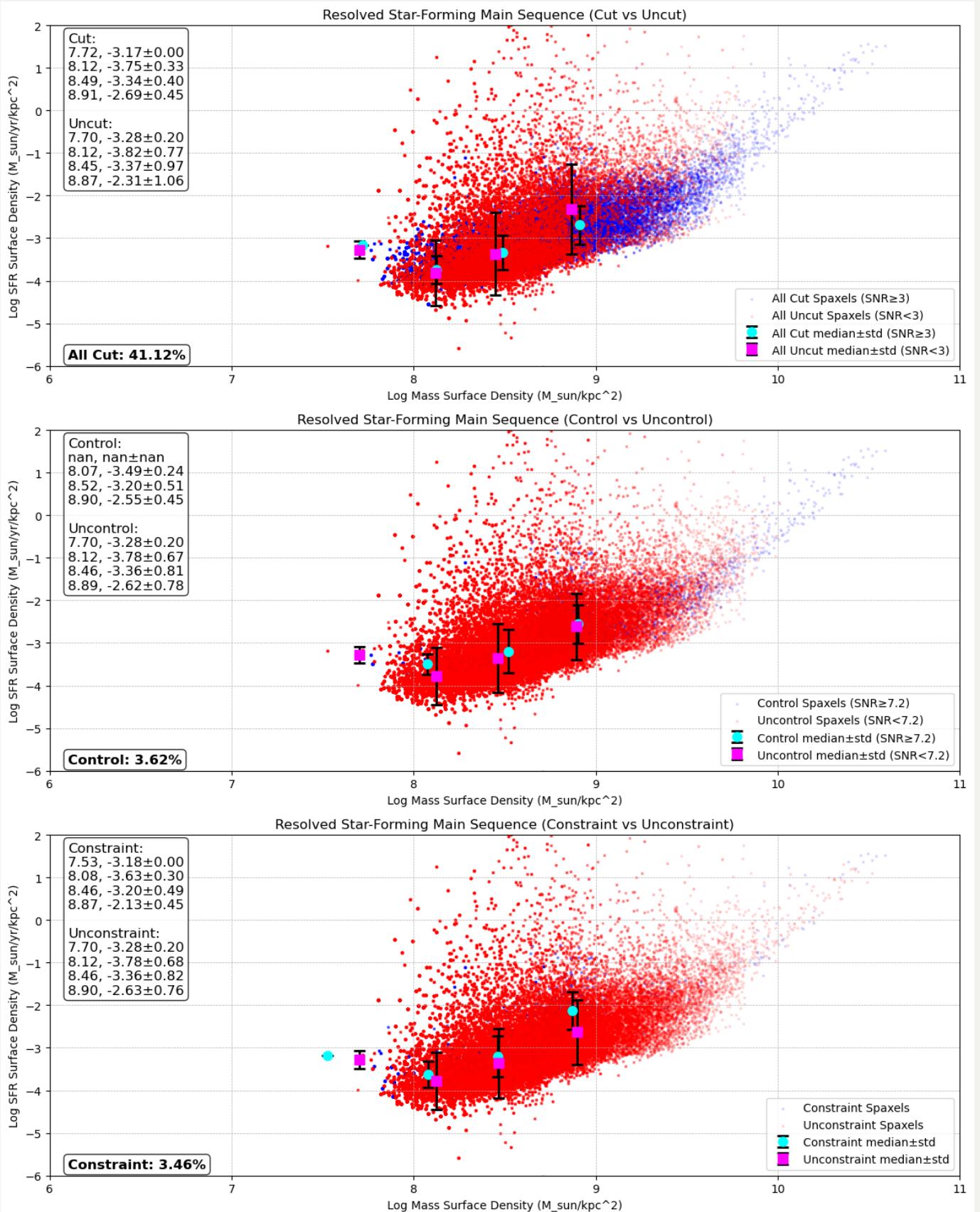
2.2 NGC4064



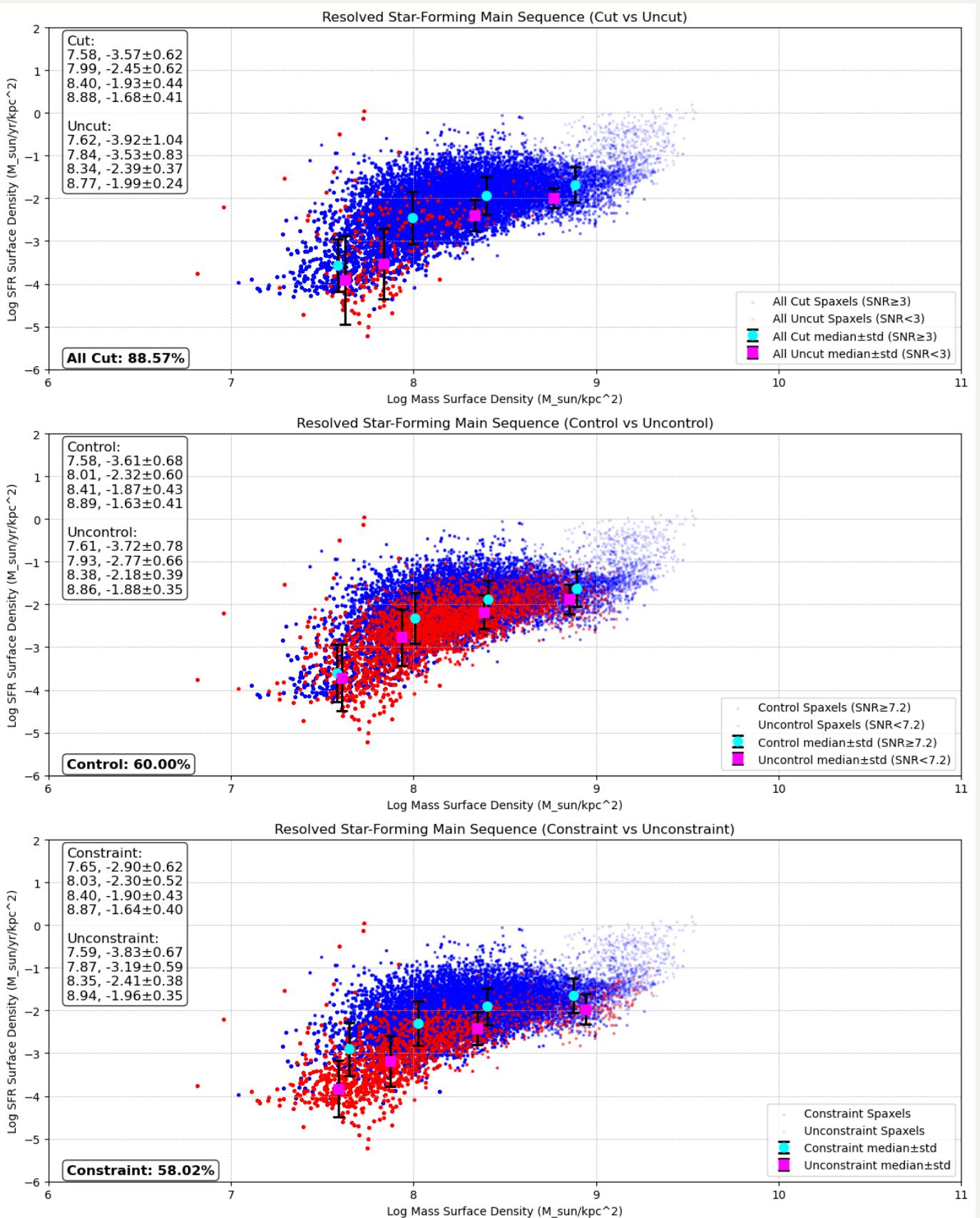
2.3 NGC4192



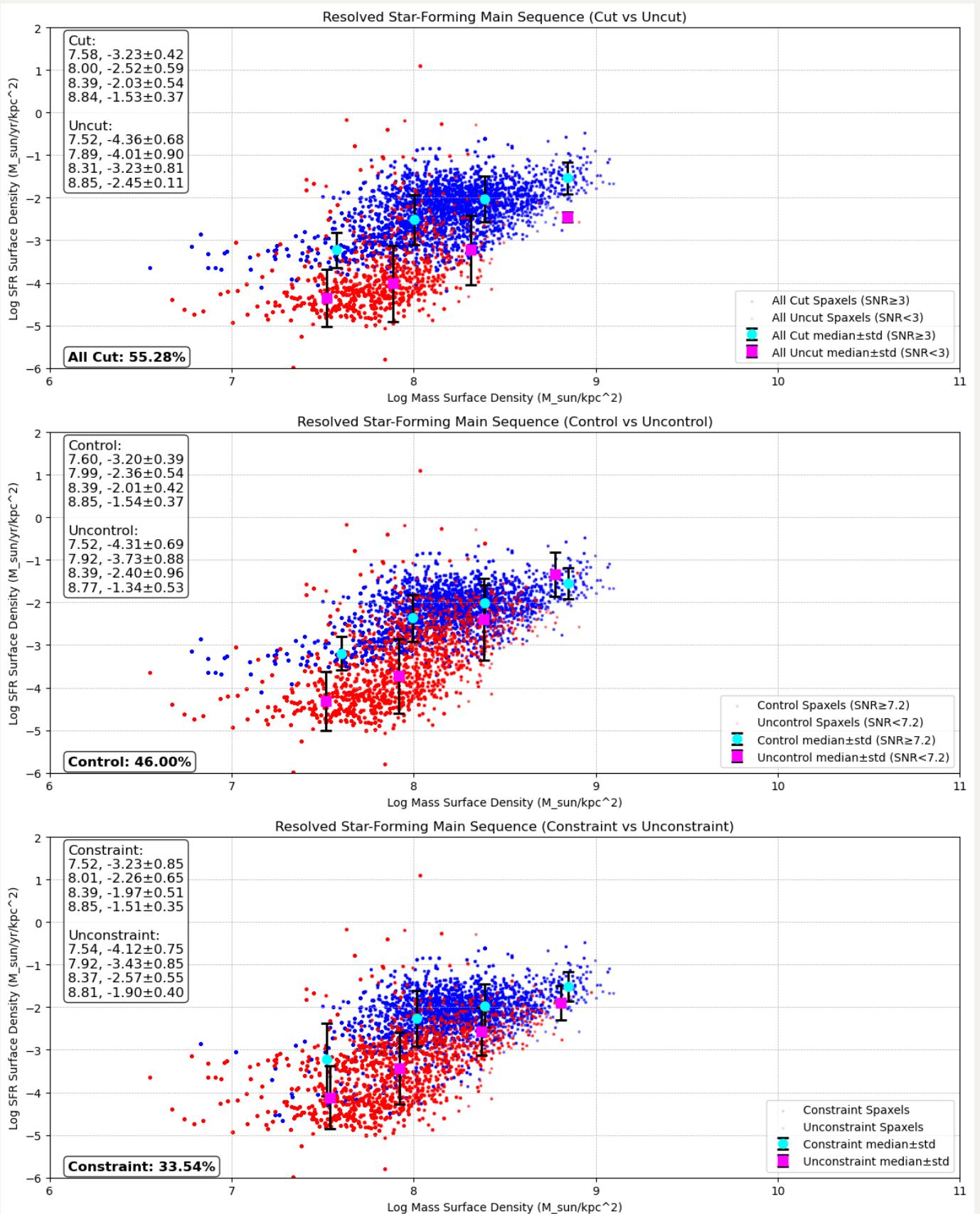
2.4 NGC4293



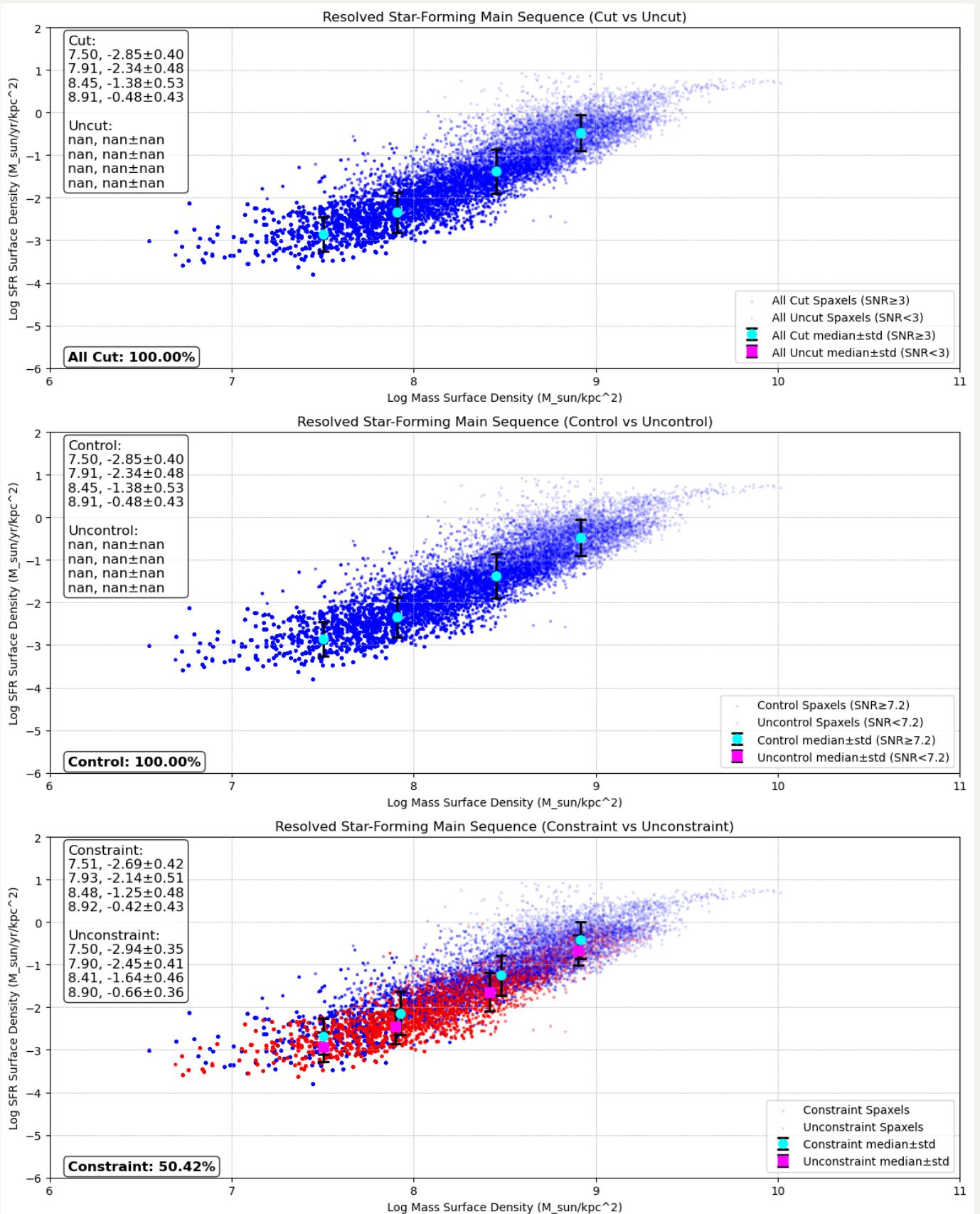
2.5 NGC4298



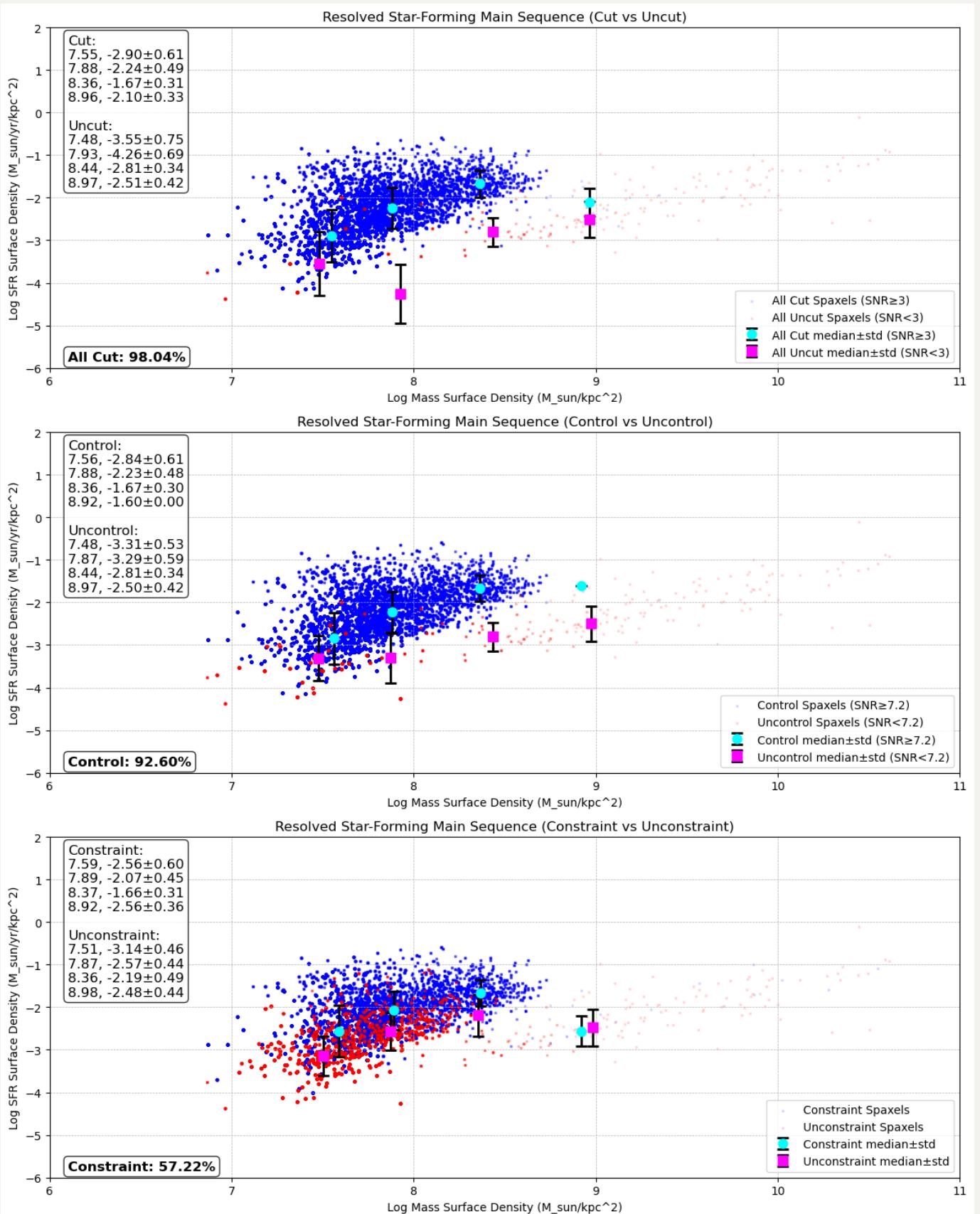
2.6 NGC4330



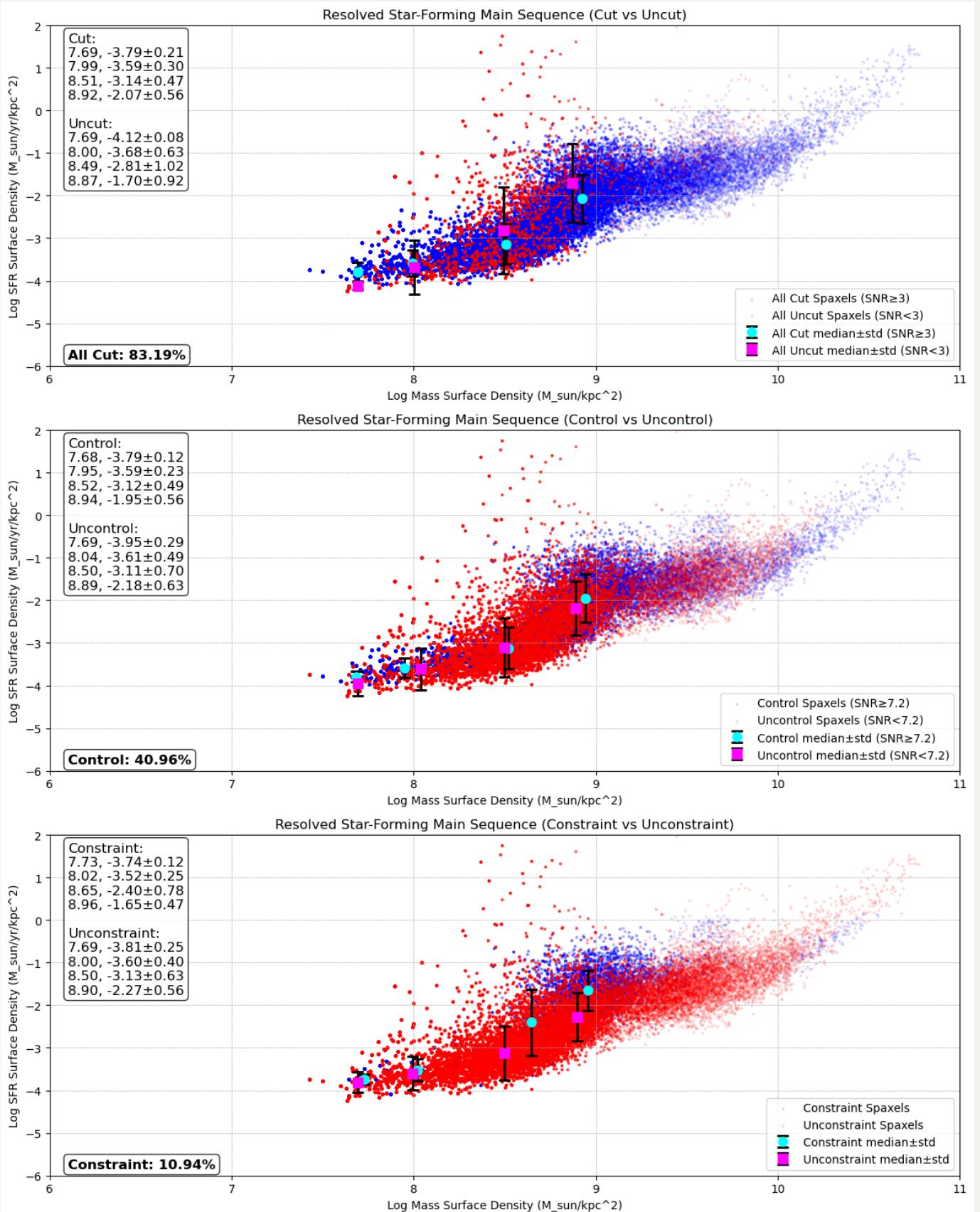
2.7 NGC4383



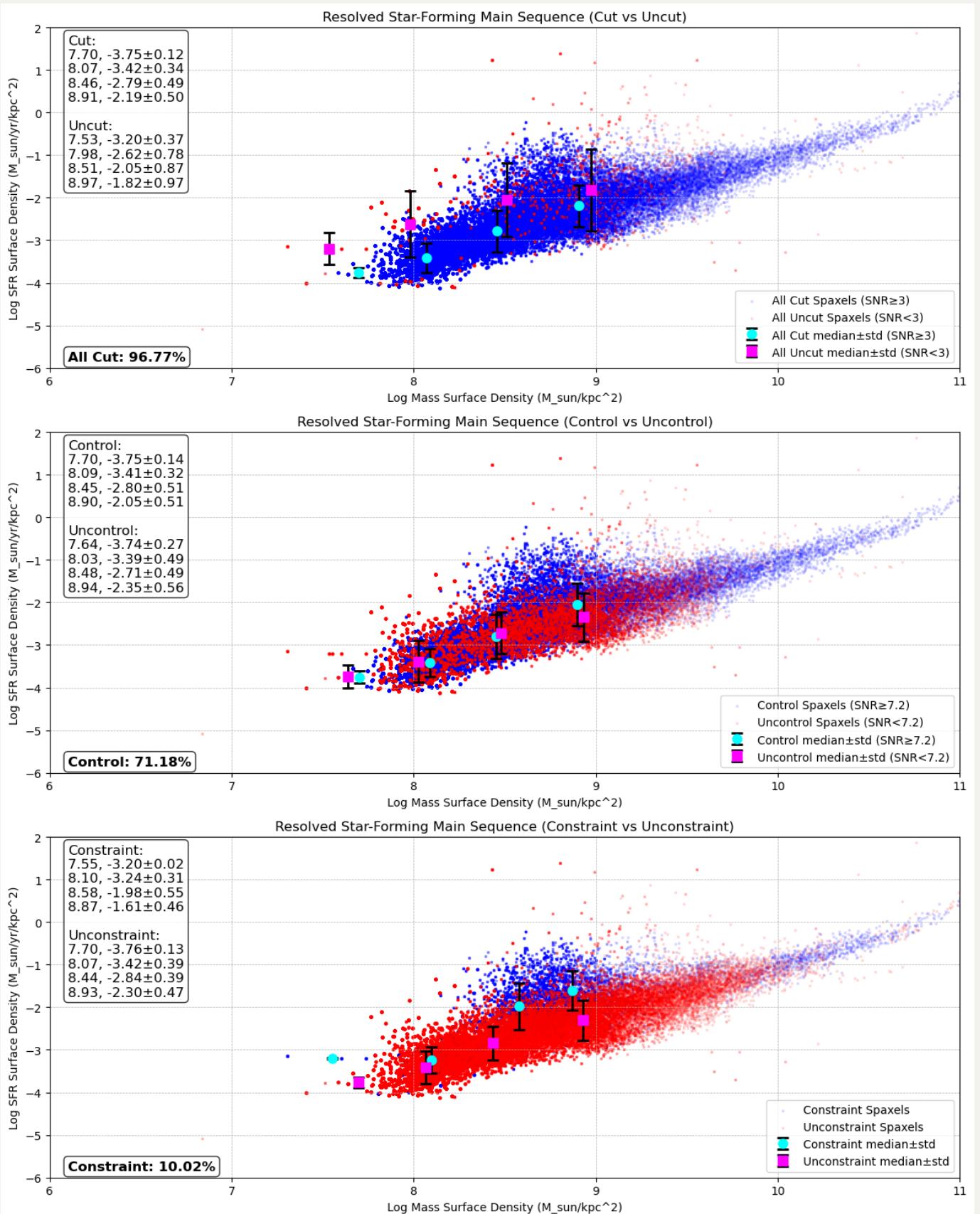
2.8 NGC4396



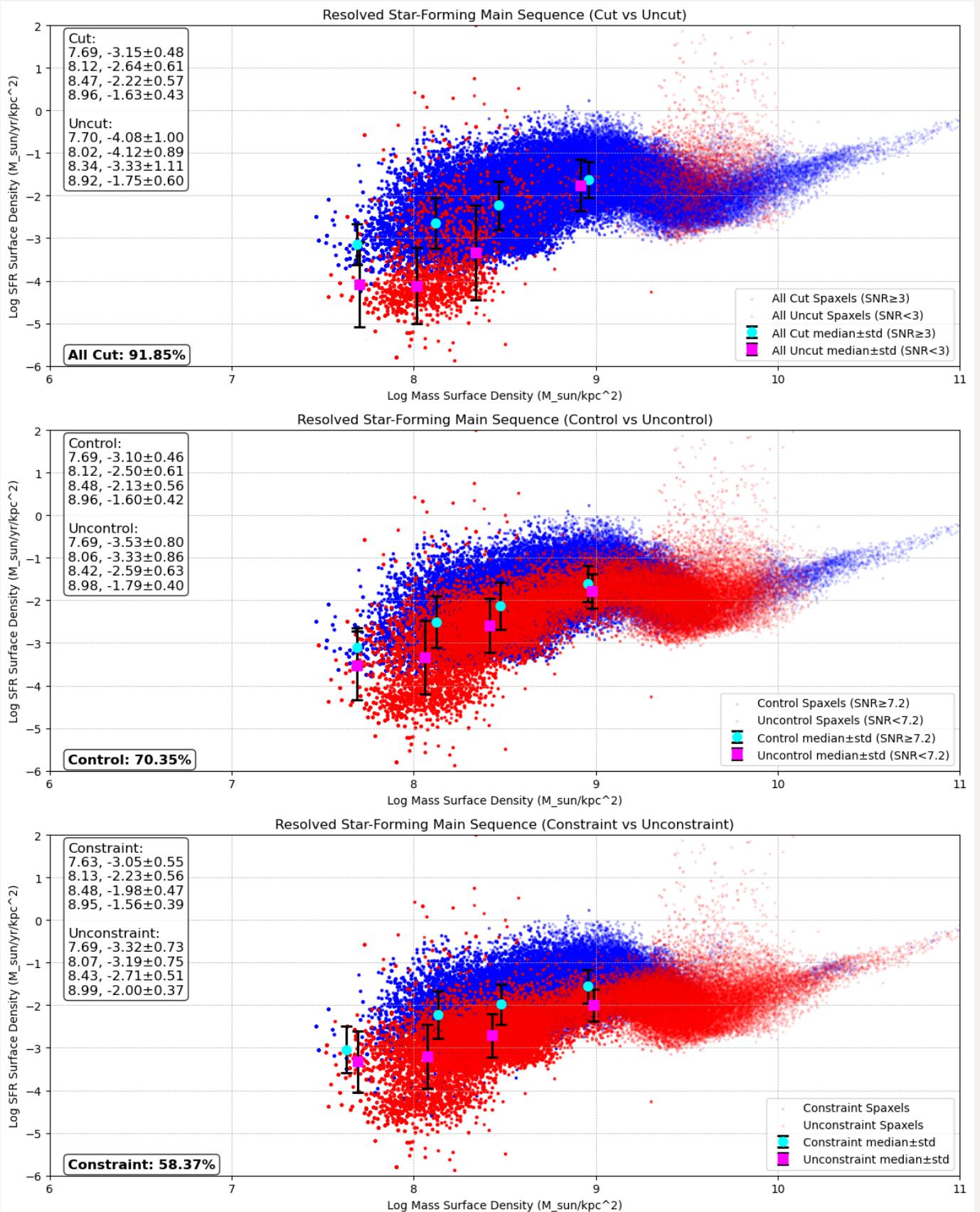
2.9 NGC4419



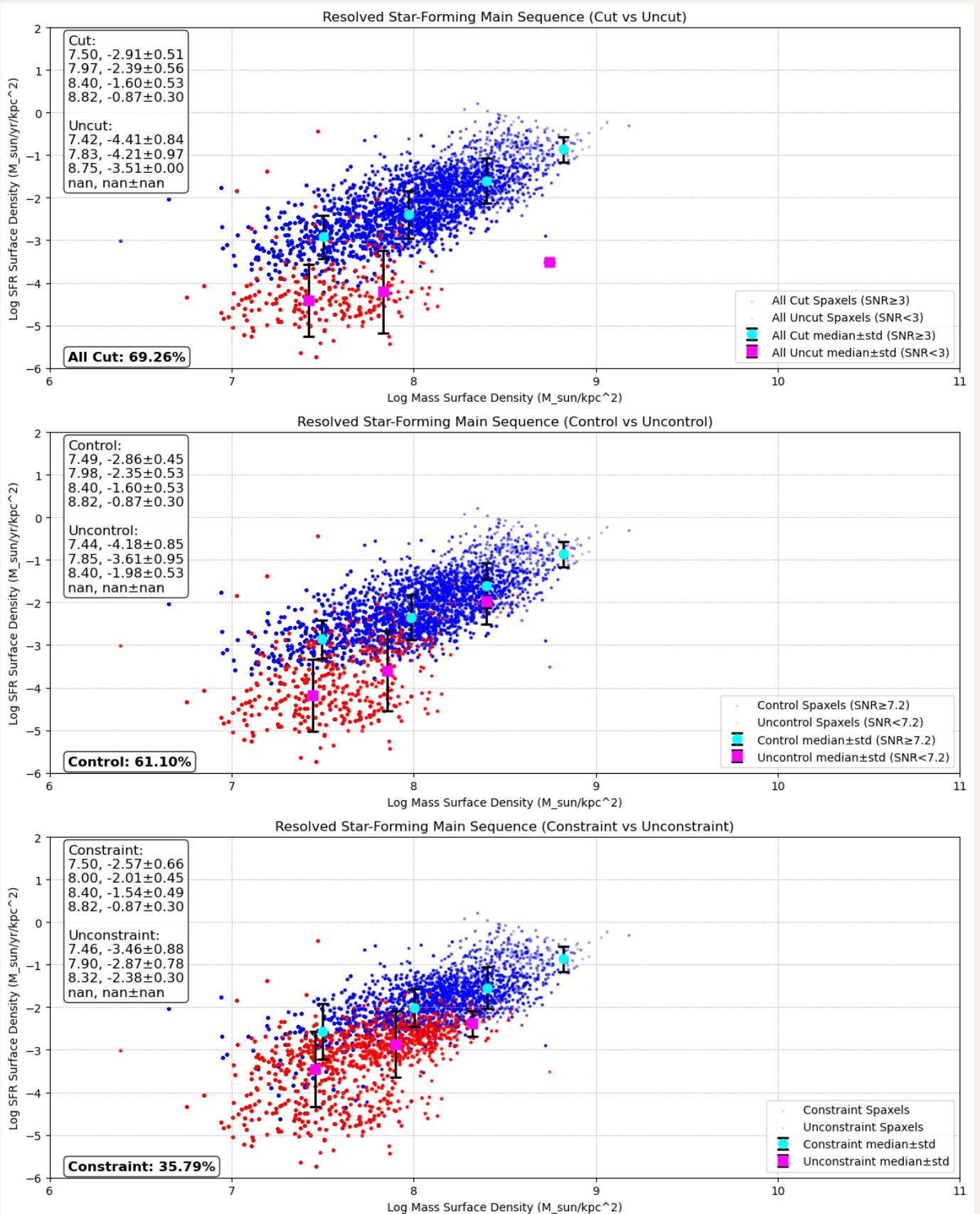
2.10 NGC4457



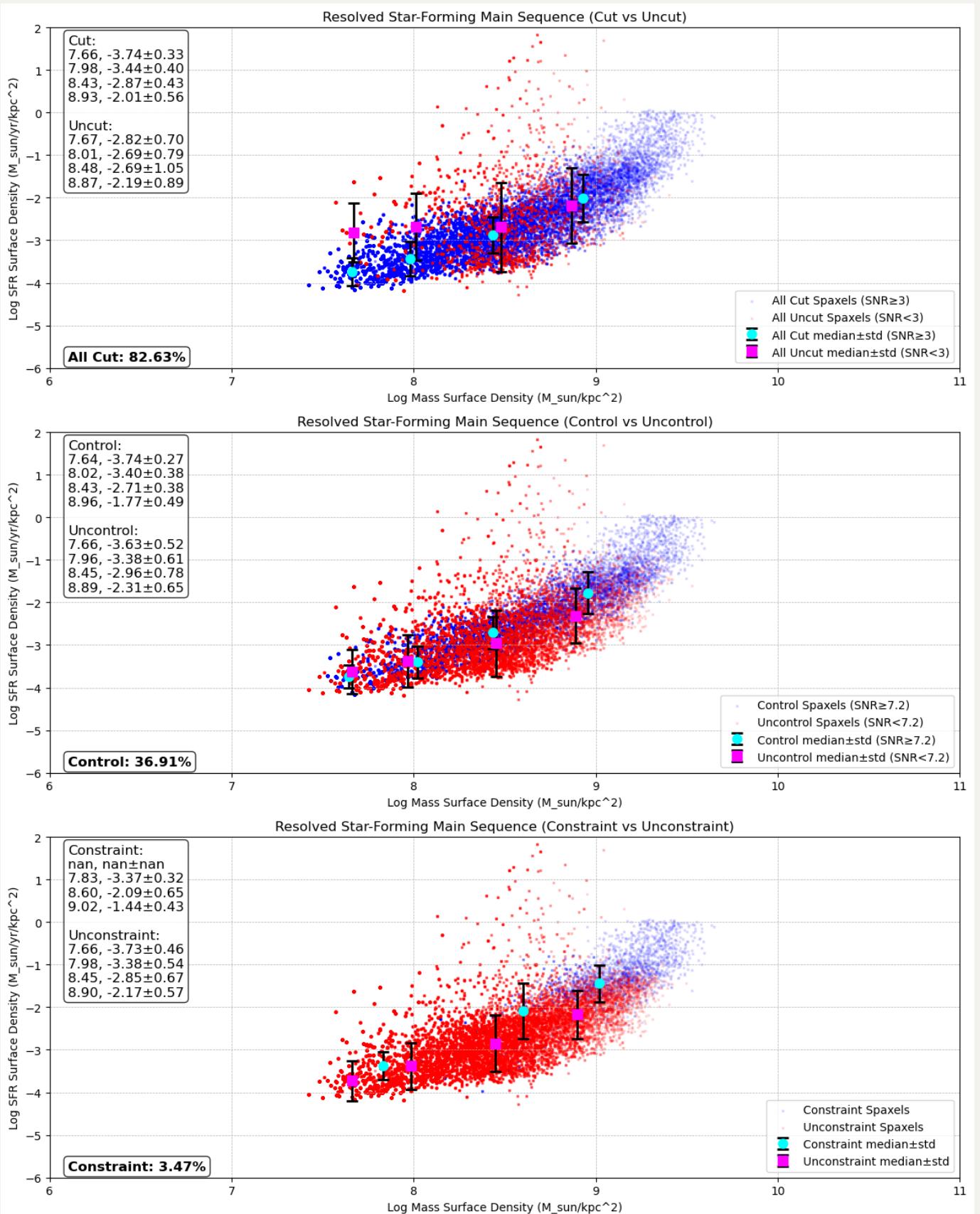
2.11 NGC4501



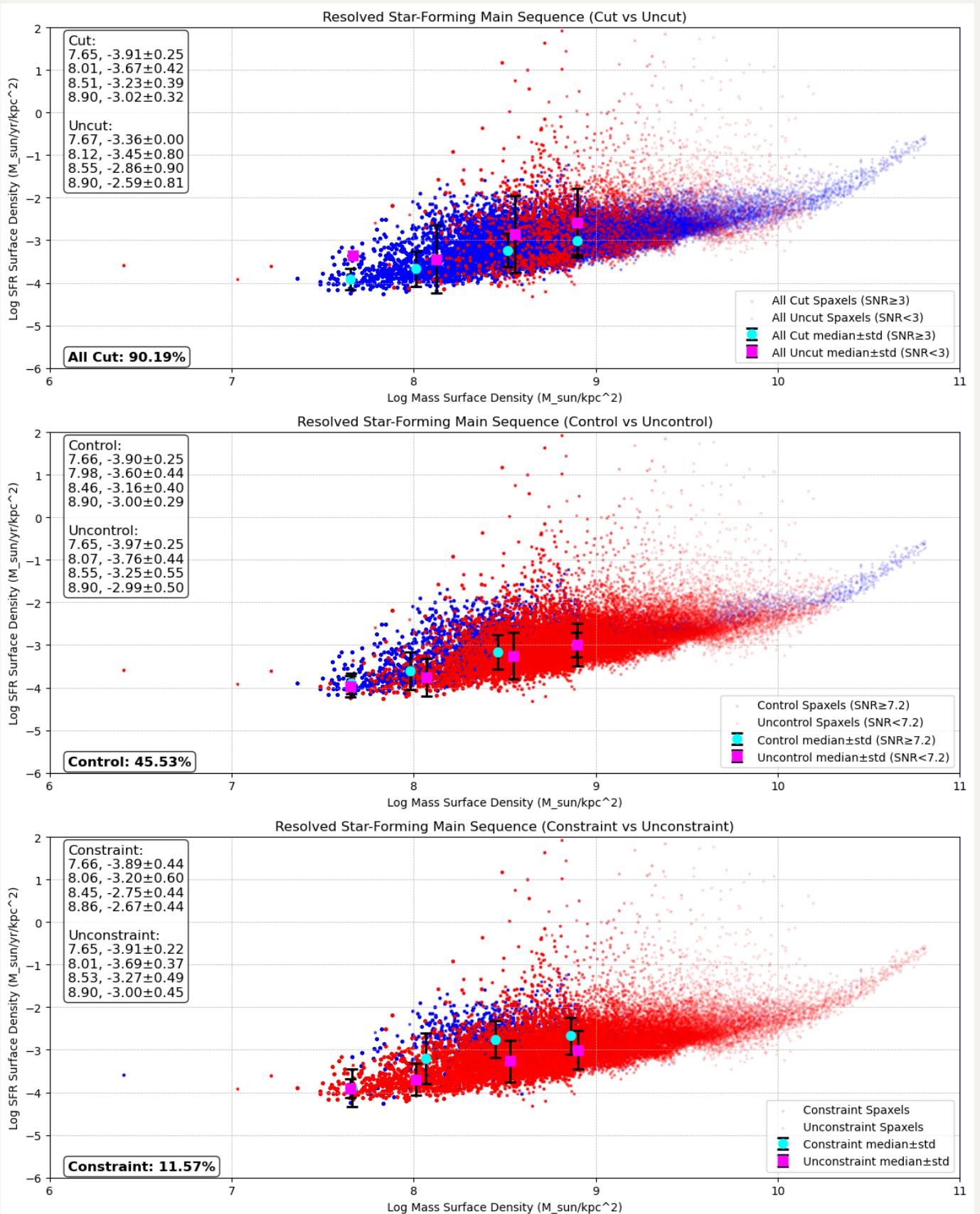
2.12 NGC4522



2.13 NGC4694



2.14 NGC4698



3. Maybe 3 of them?

Most all them look fine for me, but only 3 of them may be showed as upper limit after QC:
NGC4330, NGC4396 and NGC4522.