Planning the ATA Nearby Star SETI Campaign

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Step 1: Identify Targets

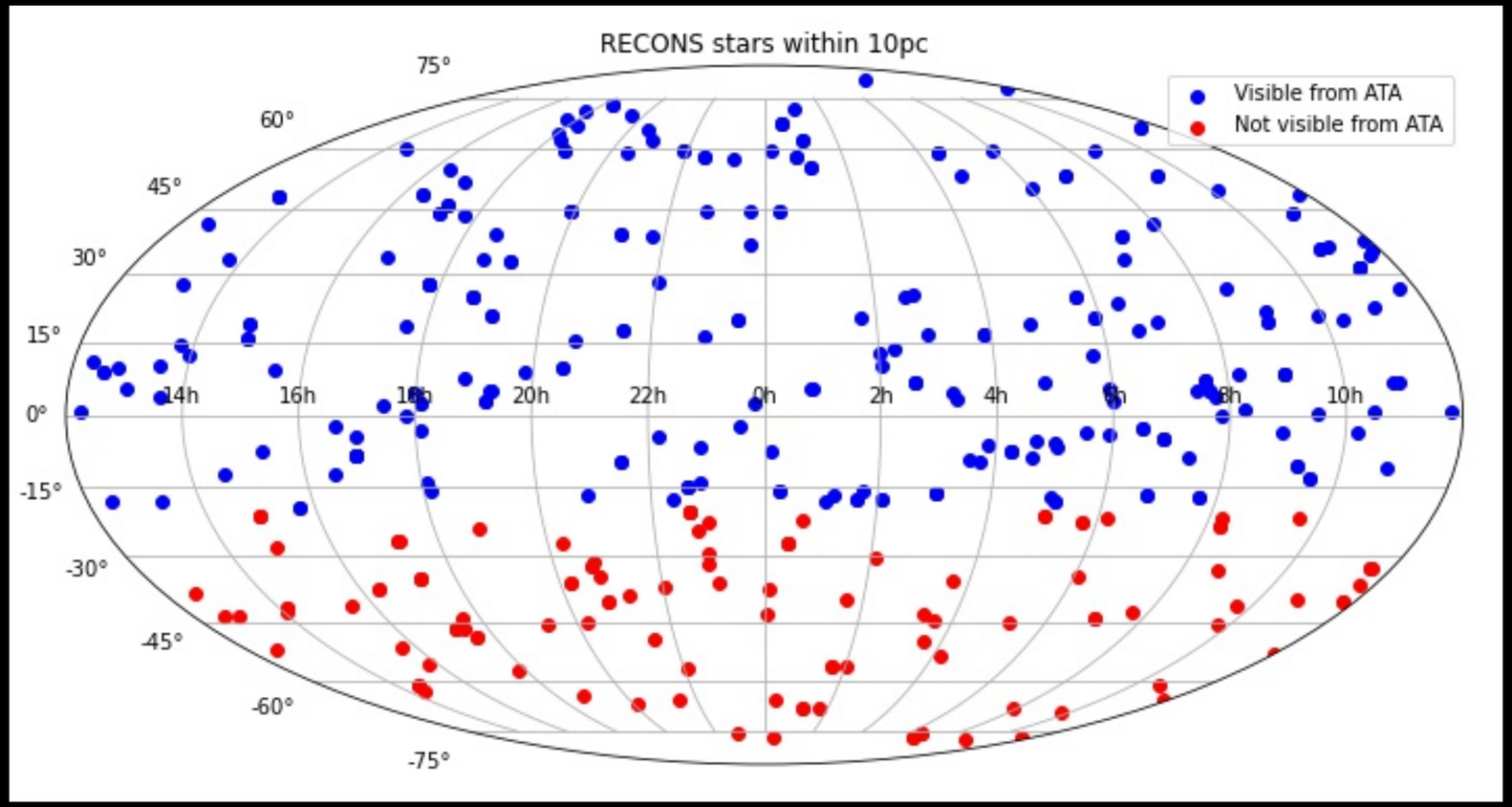
Step 1a: Find and download target databases

- Identified 2 useful target databases
  - RECONS 10pc complete sample
  - GAIA 100pc sample
- RECONS (once planets and brown dwarfs are removed): 383 targets
- GAIA at 10pc: 309 targets
- -> RECONS is more complete than GAIA at the smallest distances

Step 1: Identify Targets

Step 1b: Input ATA declination limits, get target numbers

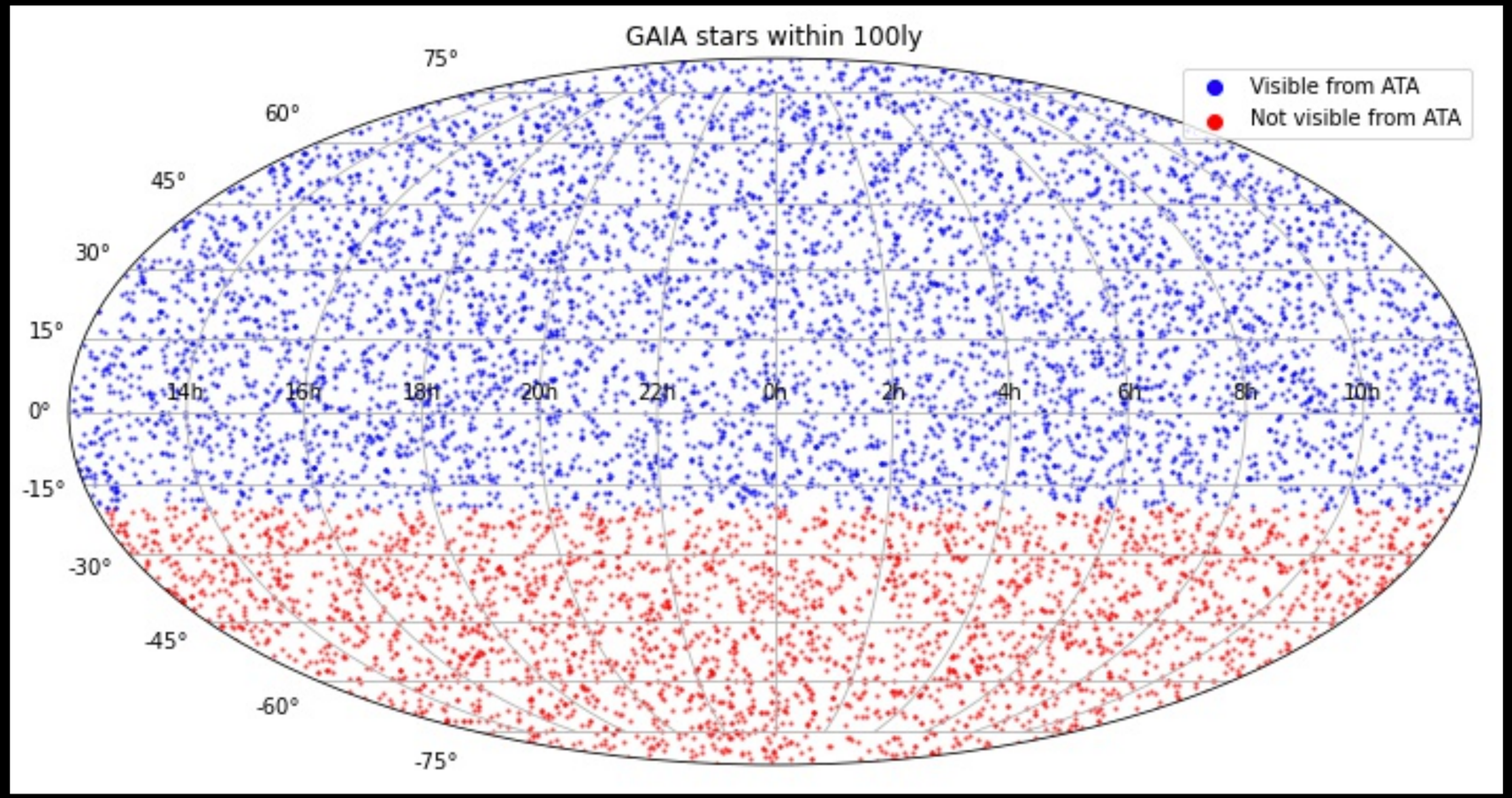
- When a declination cut of -20 is applied to RECONS, get 265 targets w/in 10pc



Step 1: Identify Targets

Step 1b: Input ATA declination limits, get target numbers

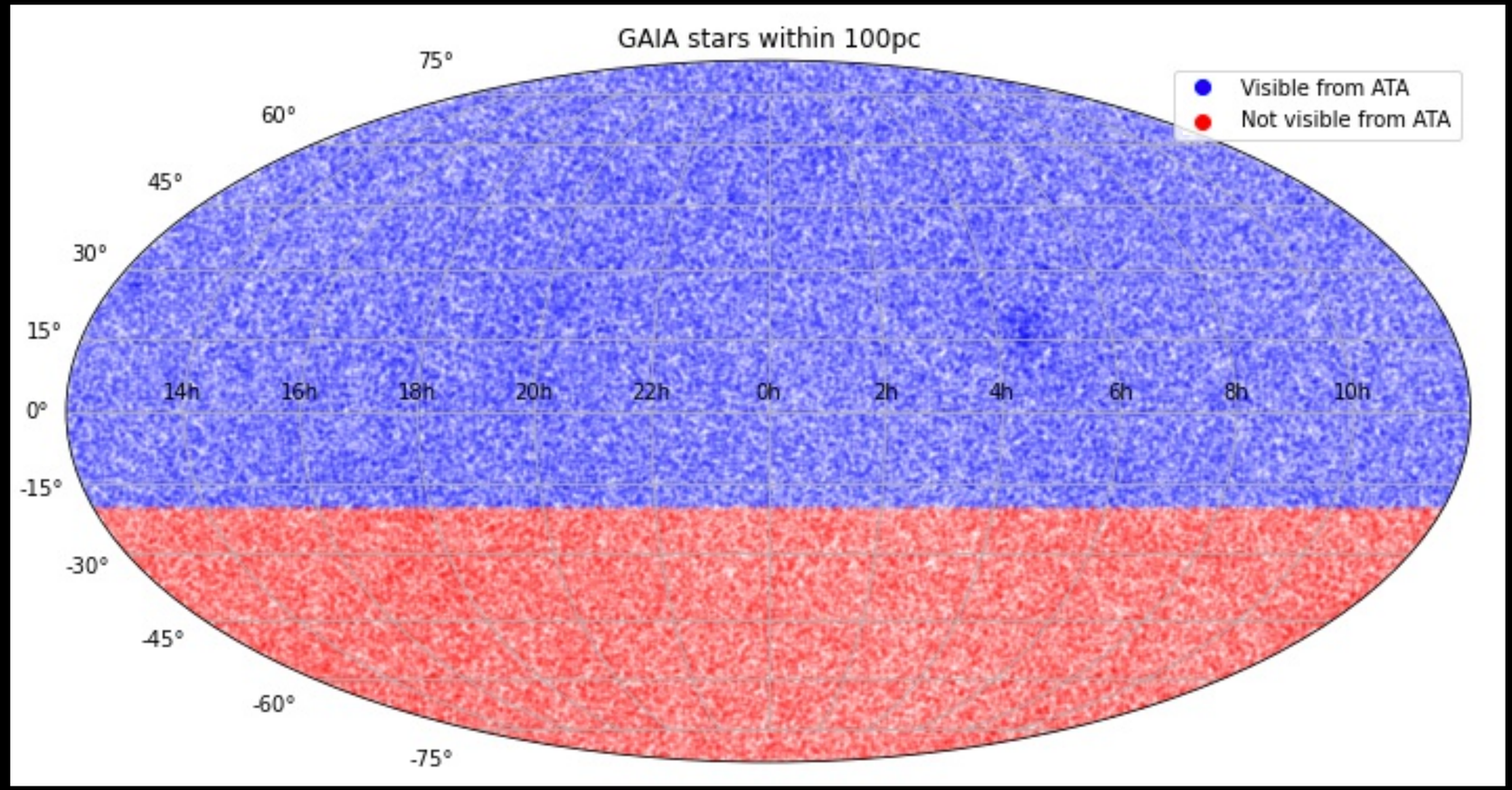
- When a declination cut of -20 is applied to GAIA, get 3089 targets w/in 100ly



Step 1: Identify Targets

Step 1b: Input ATA declination limits, get target numbers

- When a declination cut of -20 is applied to GAIA, get 220443 targets w/in 100pc



Step 2: Check observing time constraints

Step 2a: Choose fiducial observation parameters

- Assumptions:
  - 16 hours of observing per day
  - 200 second observations / tuning / target
  - 1.3 GHz simultaneously (2 LOs) -> ~6 tunings to cover 2-10 GHz
  - 10% overhead for slew / starting observations
  - Return to each target 5 times

Step 2: Check observing time constraints

Step 2b: Apply fiducial observation parameters to sample options

	# of Targets	Observing Time (no repeats, 10% overhead)	Days to complete (16 hrs/day)	Days to complete w/ 5 repetitions
10pc	265	97 hrs	**6**	30
100ly	6219	2280 hrs	**143**	715
100pc	220443	80829 hrs	**5052**	25260

- My suggestion: let's do the RECONS 10pc sample first, to have a complete science result early, then expand to the 10pc - 100ly range with the GAIA targets
  - Consideration: slew times will be a bit longer for the RECONS survey if we don't include GAIA right off the bat
  - Other options:
    - Choose some intermediate distance <100ly, do the full target-list out to that distance right off the bat
    - Fiddle with parameters to make the larger distances work better