SPA-OC Workshop

SPA with the TNG: Atmospheric parameters and abundances of giant stars from 13 OCs

Marina Dal Ponte, Valentina D'Orazi, Angela Braggalia,
Sara Lucatello, Nagaraj Vernekar, Antonella Vallenari

The sample

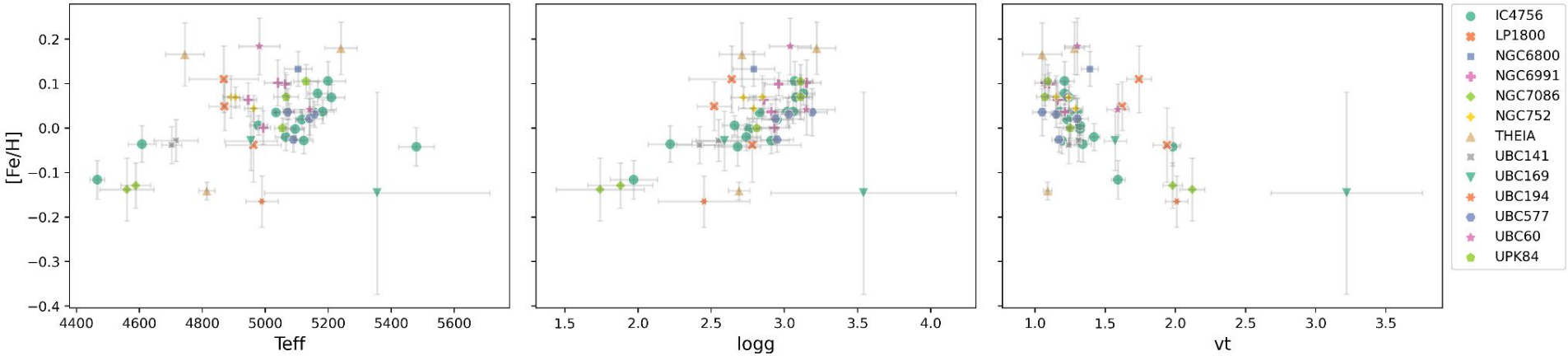
- **45** giant stars from **13** OCs:
  - IC 4756 - 14
  - LP 1800 - 3
  - NGC 752 - 3
  - NGC 6800 - 1
  - NGC 6991 - 5
  - NGC 7086 - 2
  - THEIA 1214 - 3
  - UBC 60 - 2
  - UBC 141 - 2
  - UBC 169 - 2
  - UBC 194 - 1
  - UBC 577 - 4
  - UPK 84 - 3

The steps

- Correct by RV and to perform the continuum normalization
- Atmospheric parameters
- Abundances

Stellar parameters

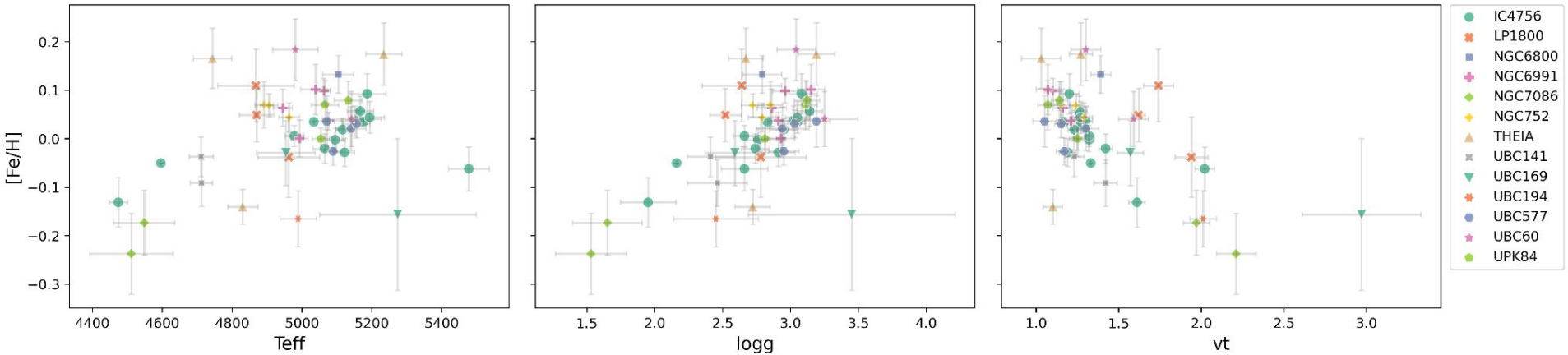
1) ARES + Q2: 1 reference star
   - EW > 200 mÅ and error > 10 mÅ
   - Q2 differential analyses



Stellar parameters

2) ARES + Q2: 3 reference stars

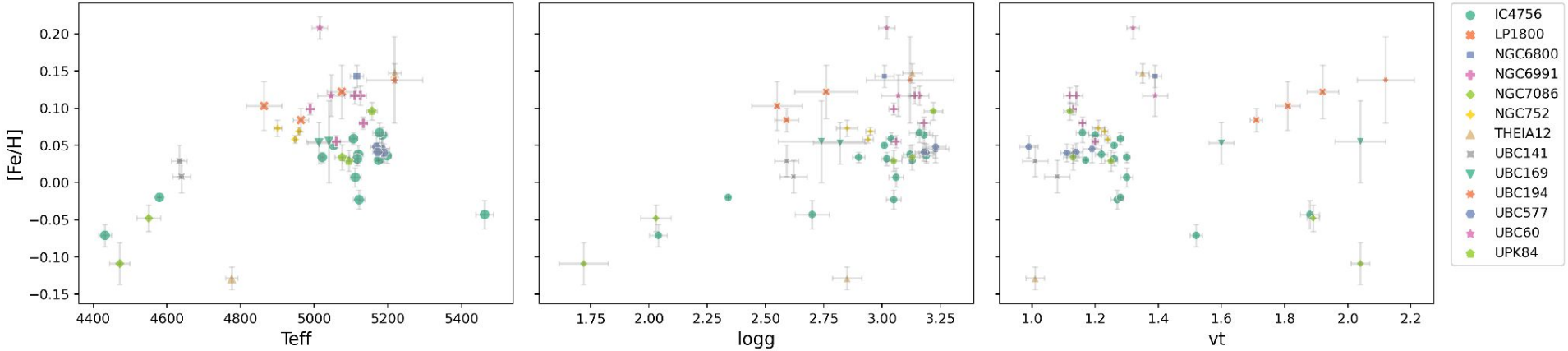
- EW > 200 mÅ and error > 10 mÅ
- Q2 differential analyses
- **Δ**Teff < 150 K and **Δ**logg < 0.25



Stellar parameters

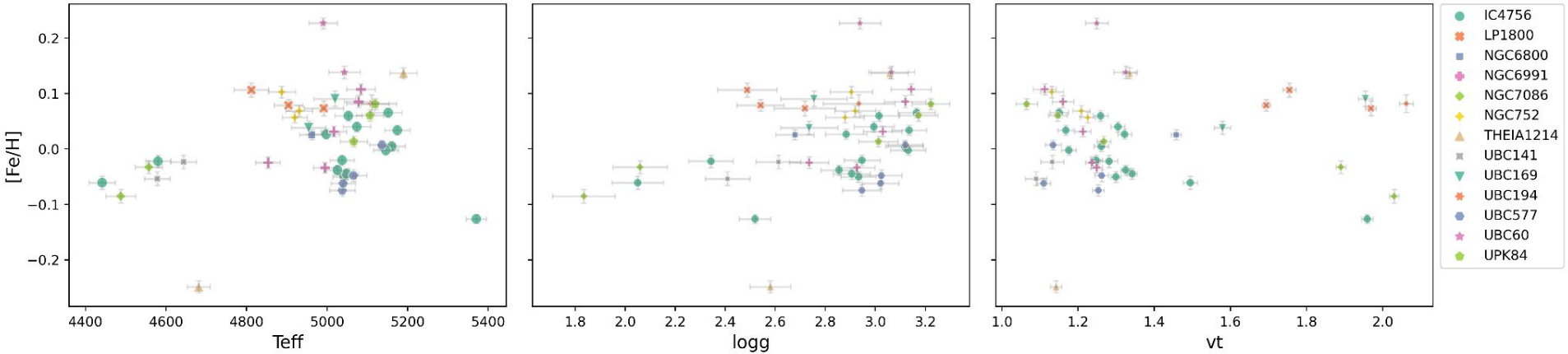
3) SMHR + Q2: 3 reference stars

- SMHR to create masks and EW differently using stellardiff
- Q2 differential analyses
- **Δ**Teff < 150 K and **Δ**logg < 0.25



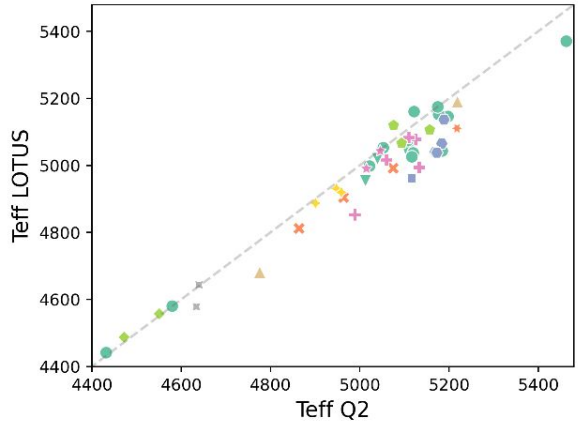
Stellar parameters

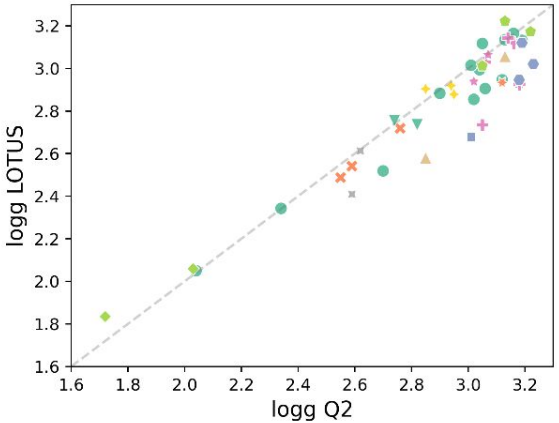
4) SMHR + LOTUS
   - SMHR to create masks and EW differently using stellardiff
   - LOTUS NLTE effects

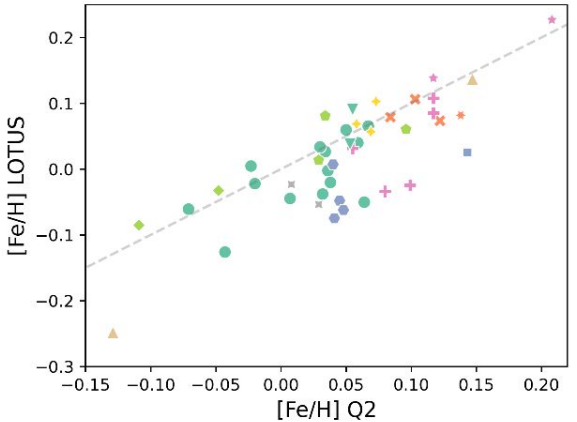


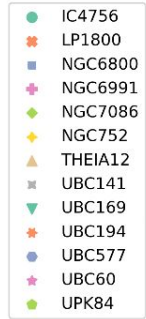
Parameters comparison

- Q2 vs LOTUS









Parameters comparison

LOTUS vs literature: IC 4756

Object	Teff	Logg	[Fe/H]	Vmic	Teff Bagdonas+2018	Logg Bagdonas+2018	[Fe/H] Bagdonas+2018	Vmic Bagdonas+2018
star 12	5037	2.9	-0.02	1.25	5115	2.7	-0.02	1.25
star 13	5175	3.1	0.03	1.17	5165	2.7	-0.01	1.25
star 14	5152	3.2	0.07	1.15	5165	2.9	0.0	1.35
star 15	4998	2.9	0.03	1.32	5135	2.8	-0.01	1.4
star 2	4441	2.0	-0.06	1.49	4500	1.9	-0.12	1.6
star 4	4580	2.3	-0.02	1.28	4650	2.1	-0.1	1.45
star 5	5053	3.0	0.06	1.26	5040	2.6	-0.03	1.45
star 7	5026	2.9	-0.04	1.32	5135	2.6	-0.03	1.45

Abundances

In progress ...

- Spectral synthesis with TSFitPy: Mg, Ca, Si, Ti, Na, Al, Ba, Y