

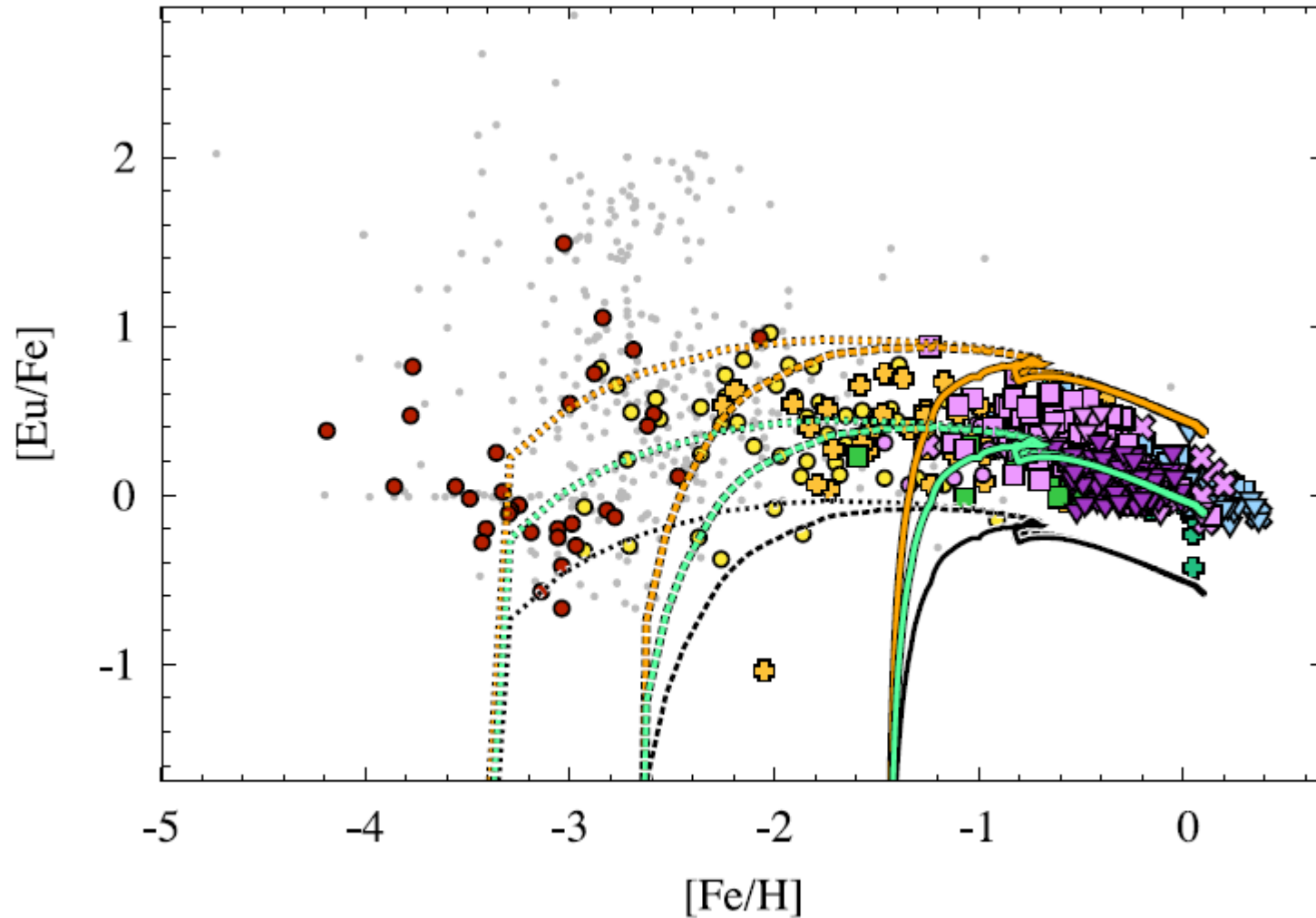
Inhomogeneous chemical Evolution of the Milky Way



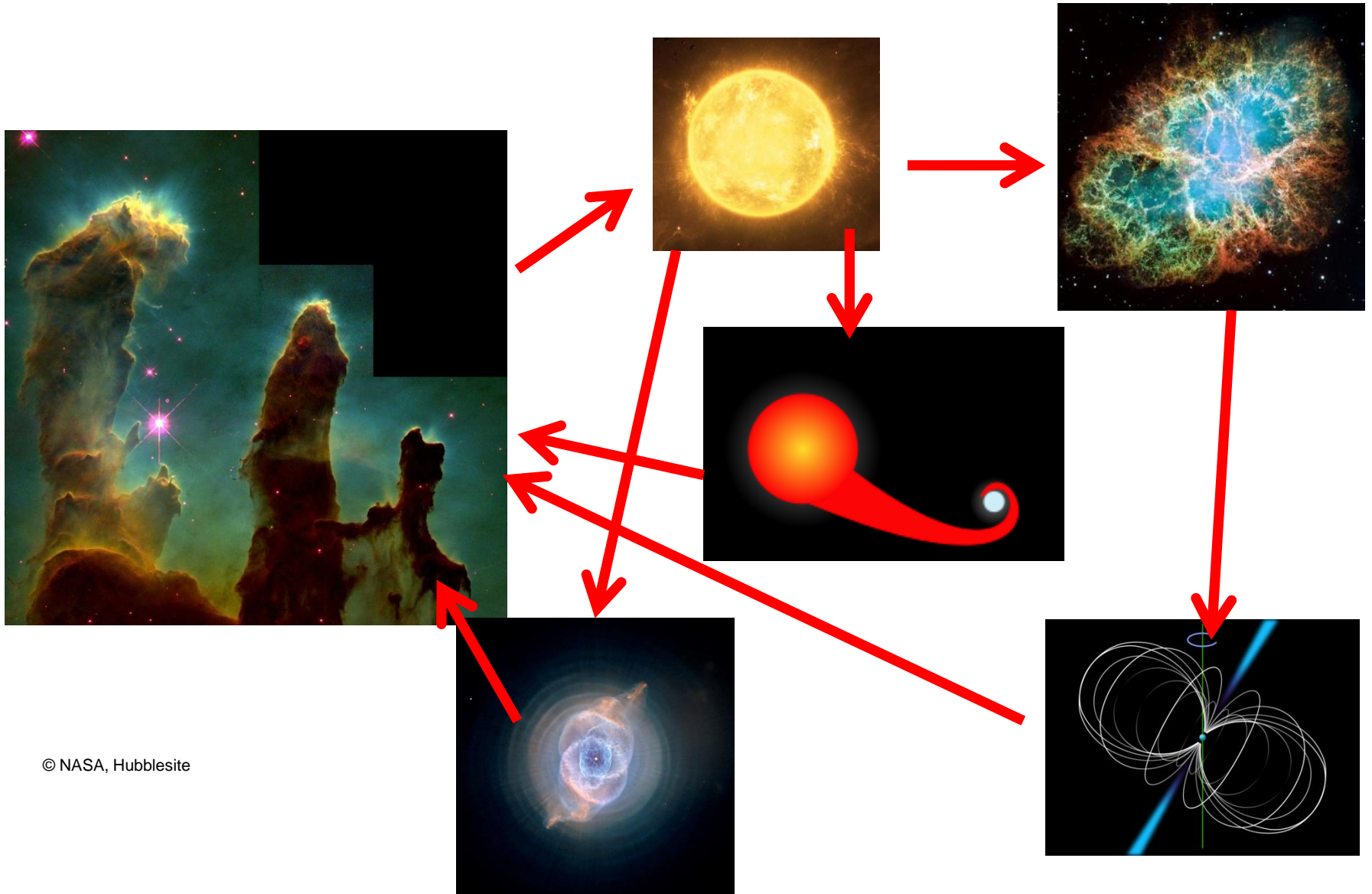
10. 09. 2014

Benjamin Wehmeyer

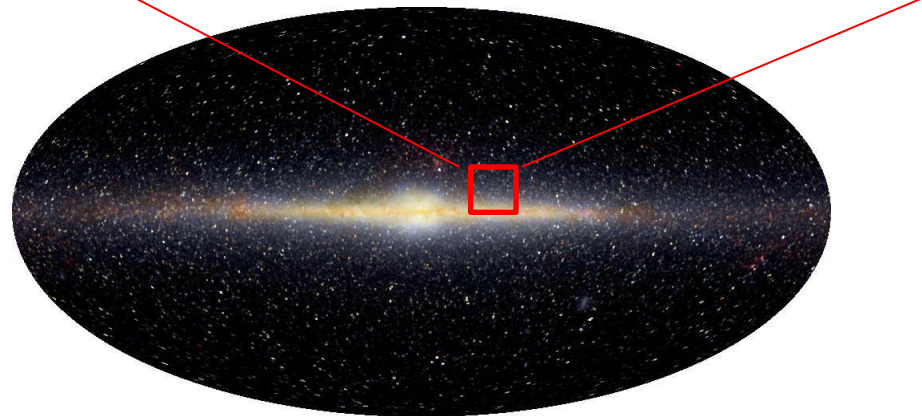
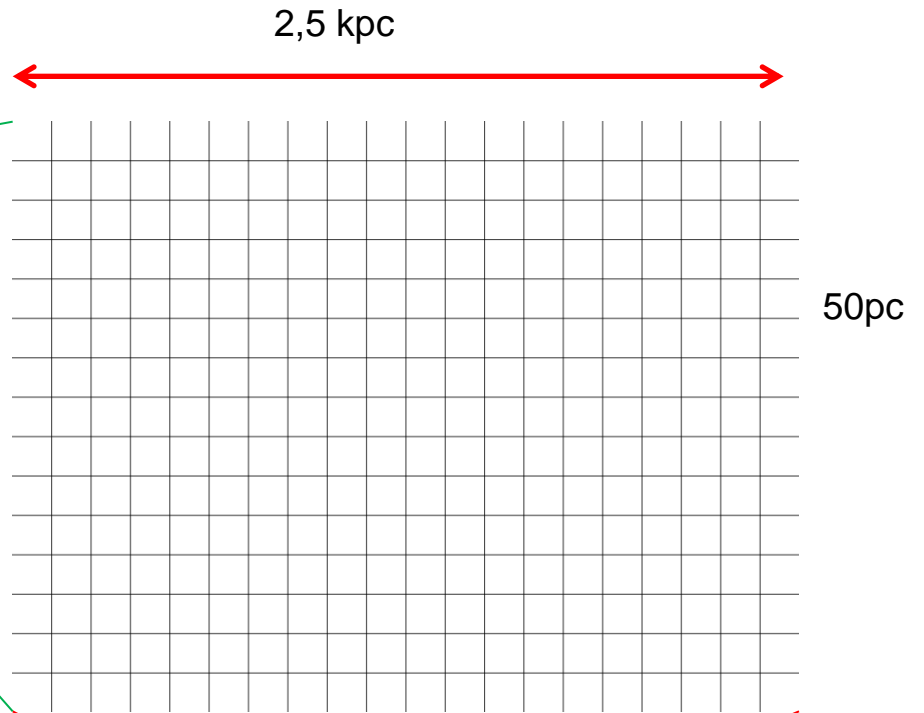
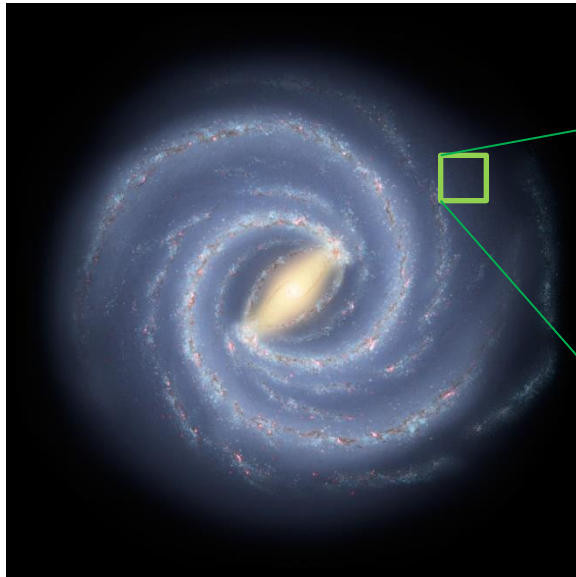
Why ,*inhomogeneous*'?



The cosmic life cycle



The model



Total time: 13.5E9 yrs
Timestep: 1E6 yrs

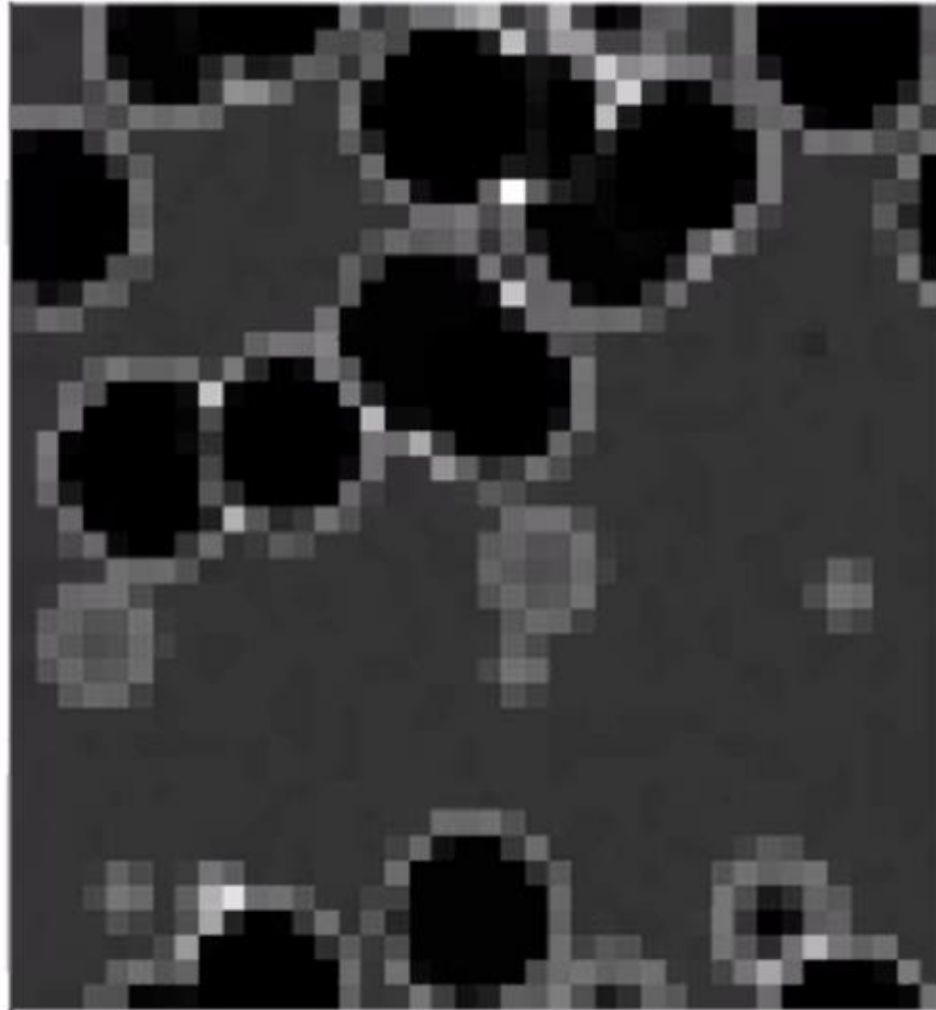
Main loop

- Choose SF cells randomly
- Read local density
- SF (coupled to density) with IMF
- Add local metal enrichment to stars
- Have stars reached end of life time?
- Simulate explosion (extrapolate matter to nearby cells)

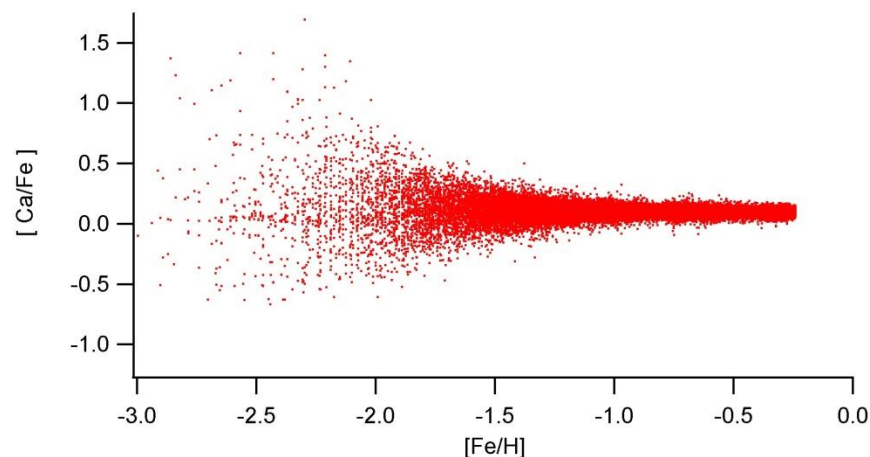
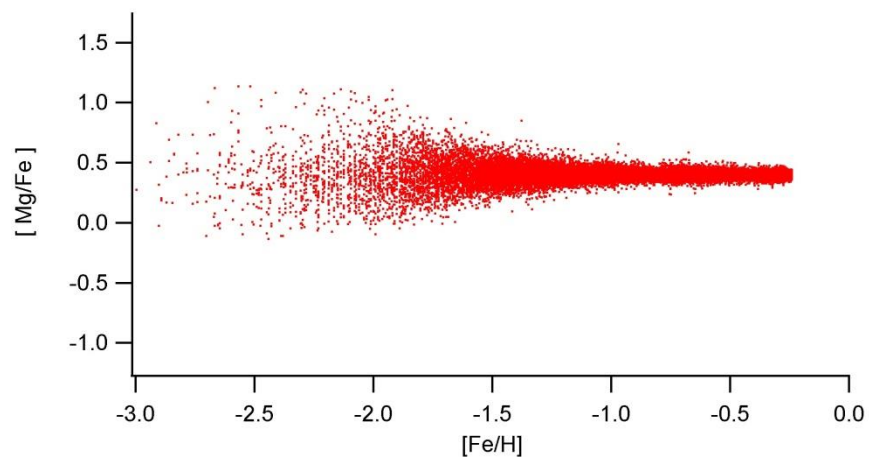
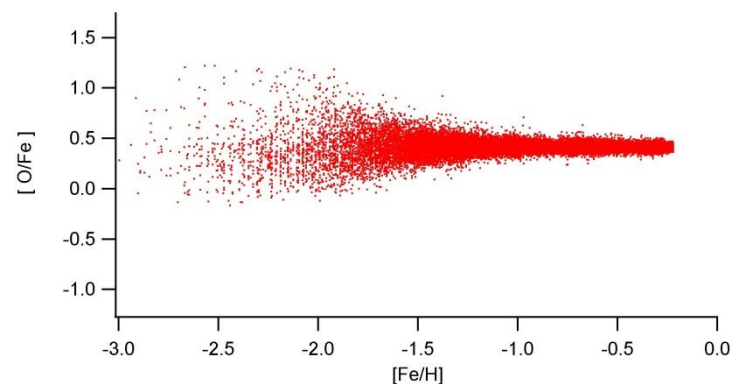
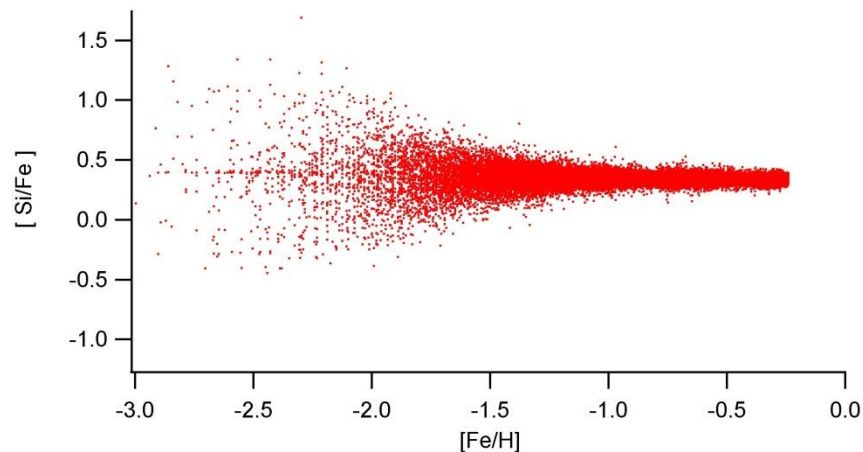
Stars

- $M < 8-10 M_{\text{Sol}}$: Not producing r-process elements, but lock up ISM for the duration of their life time
- $M > 8-10 M_{\text{Sol}}$: Star is doing ccSN
- NSM: Possibility P_{NSM} for a double star (HMS) system to also do NSM-Event
- Ia: Possibility P_{SNIa} for a double star system (IMS) to do SNIa event

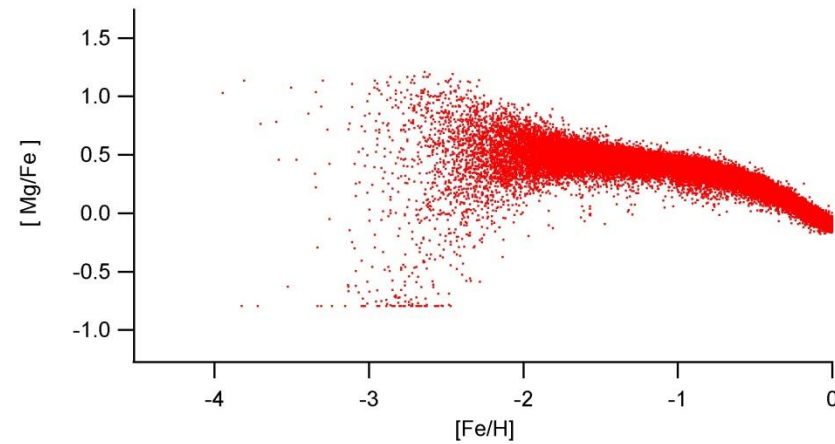
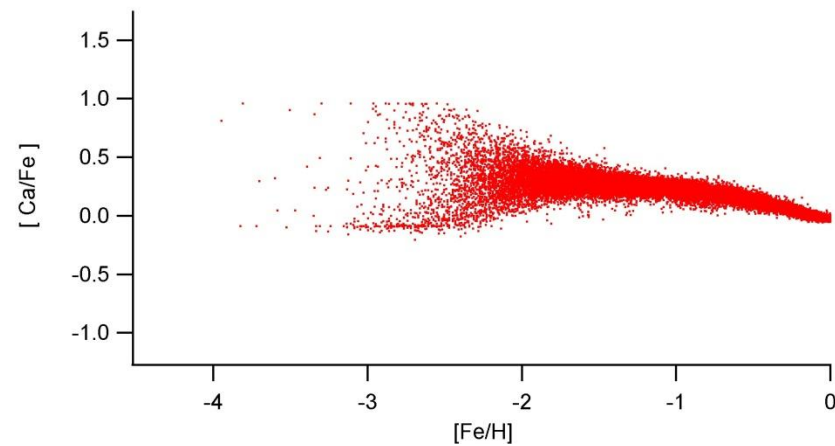
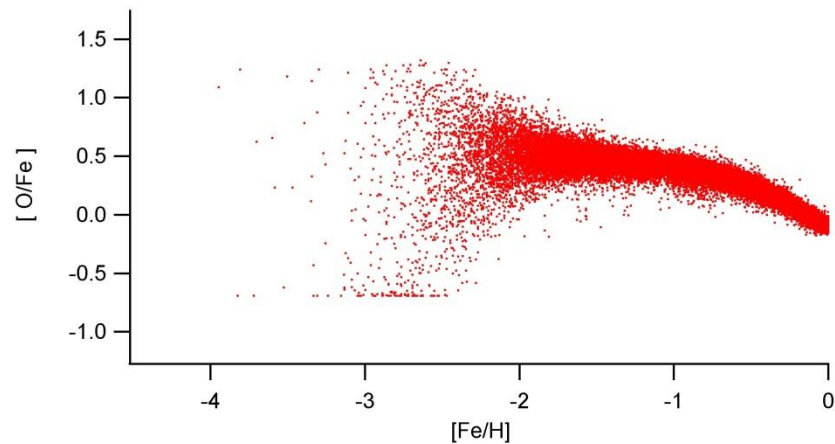
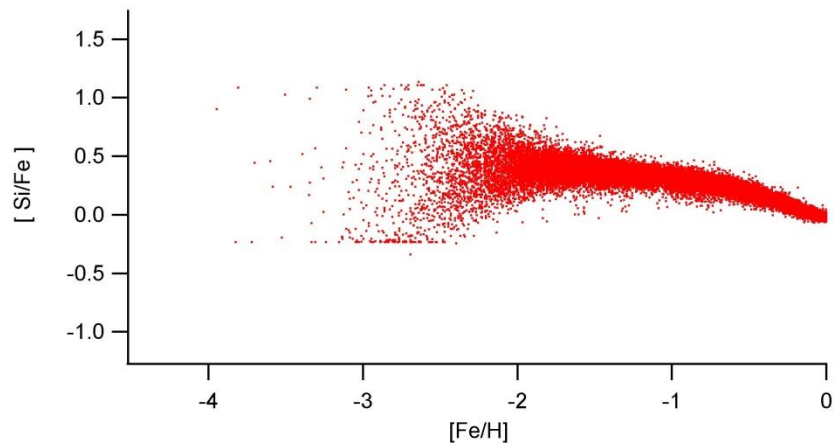
ρ -Evolution



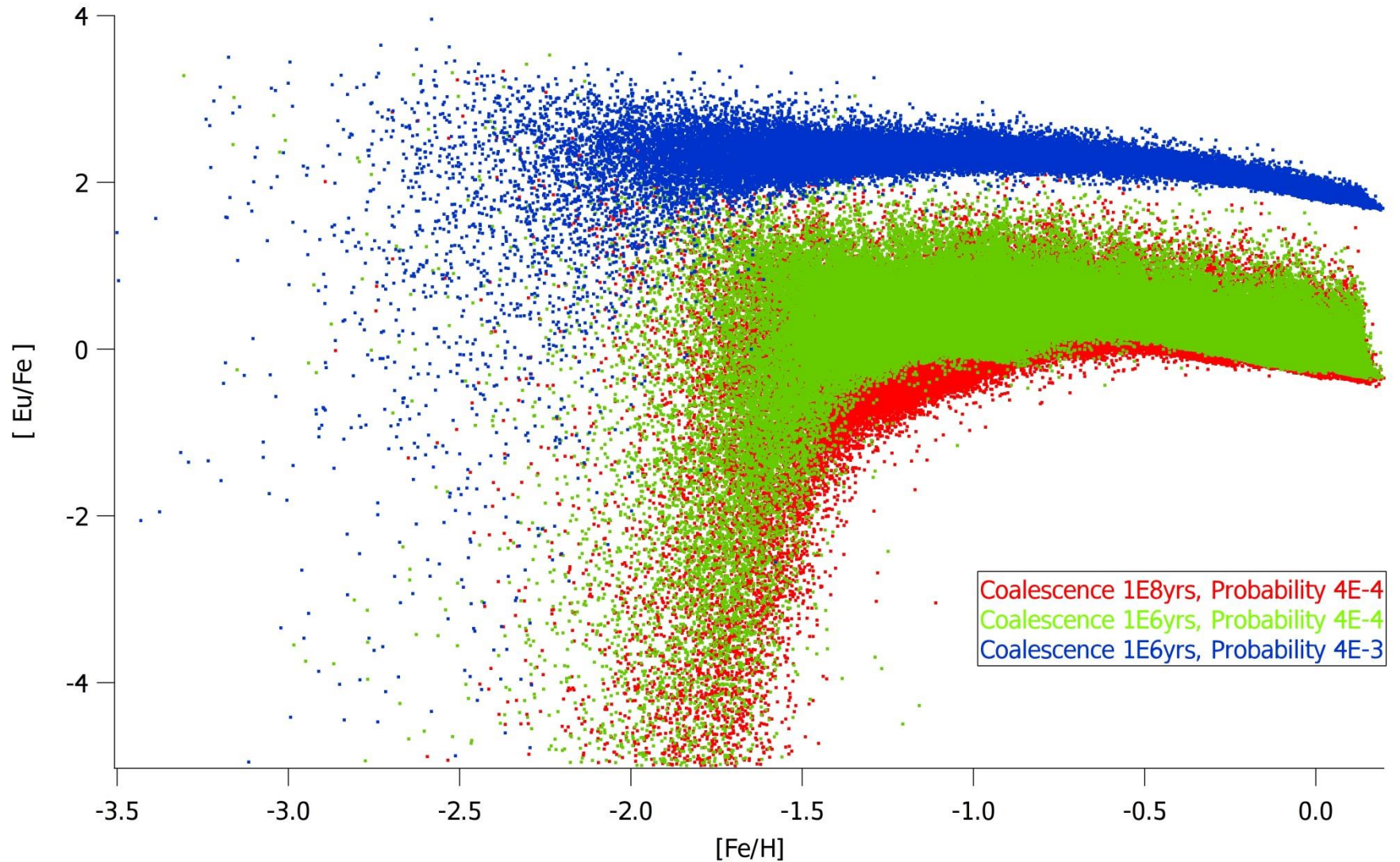
Test with α -elements group



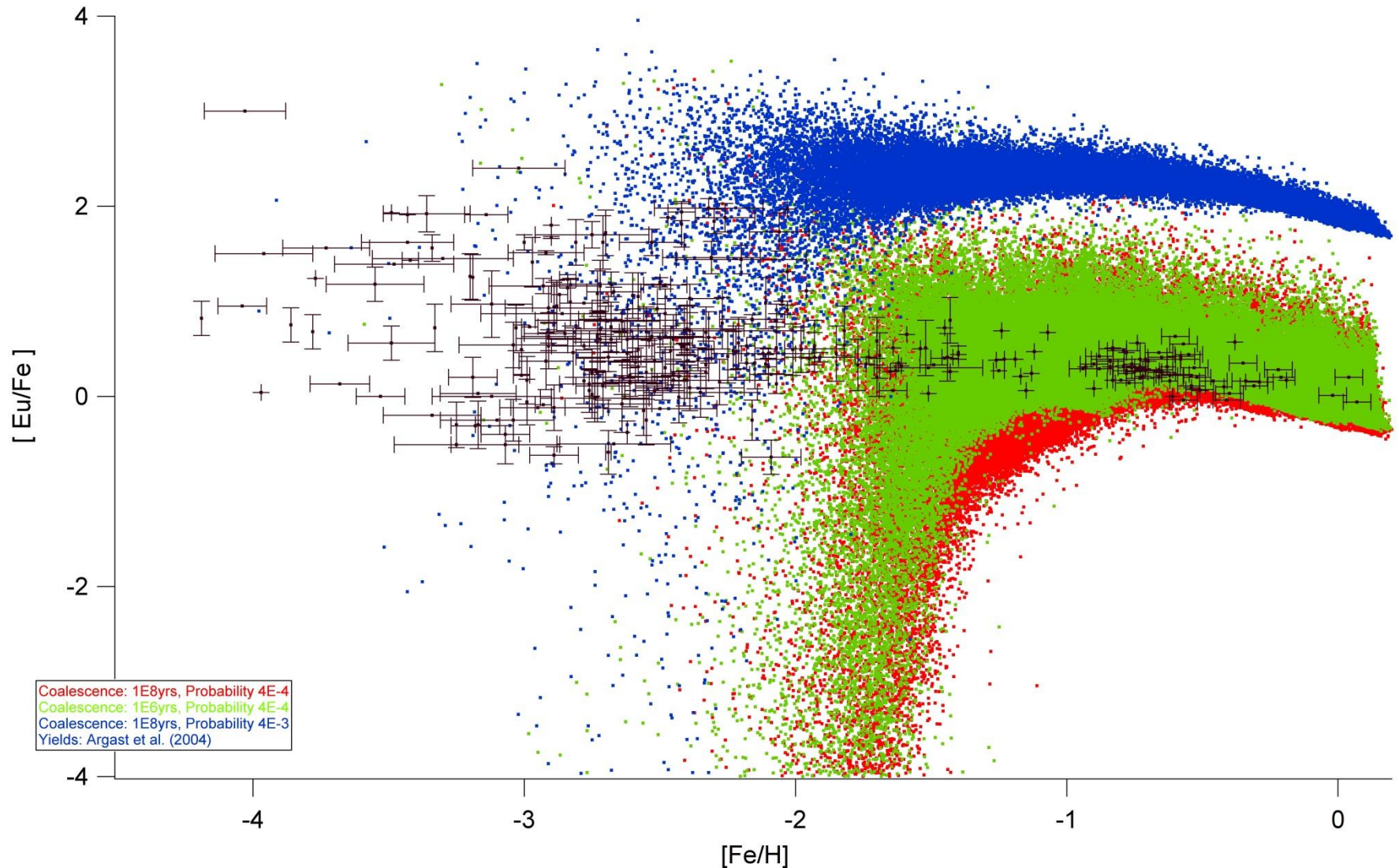
SN Ia on!



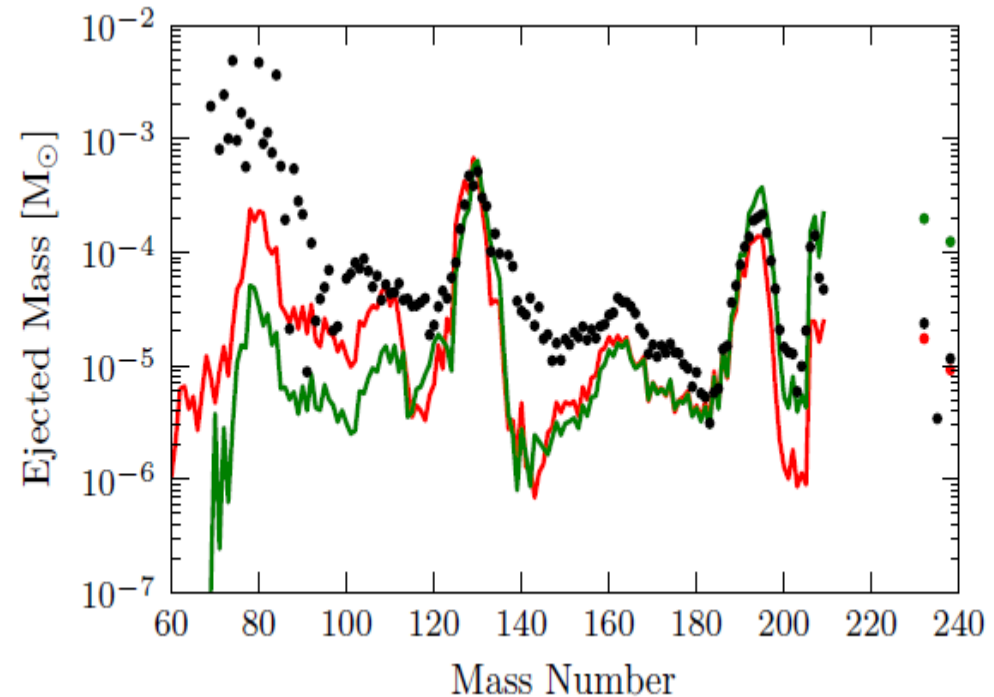
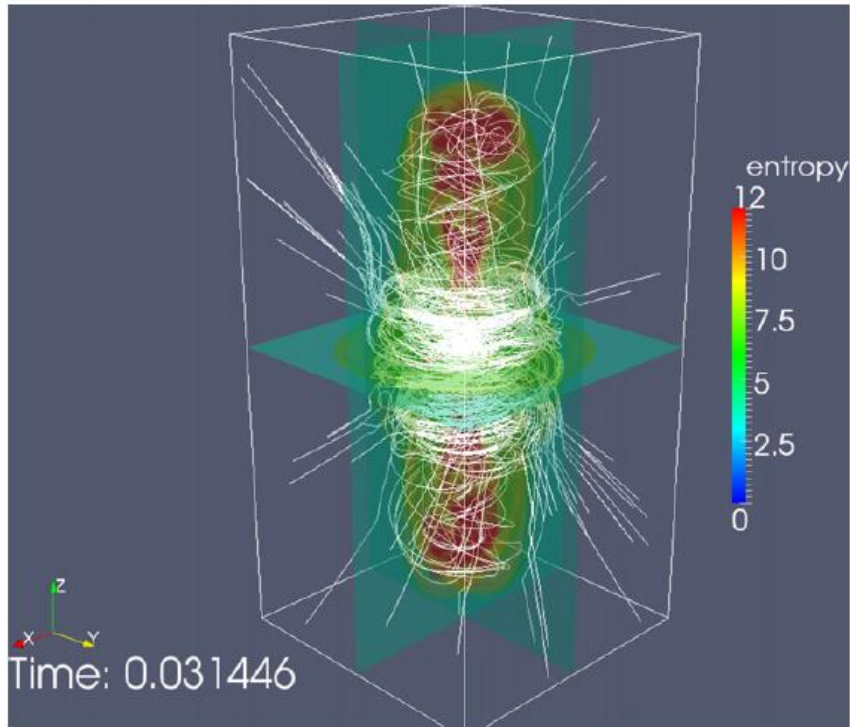
Experiment with NSM



Compare with obs.

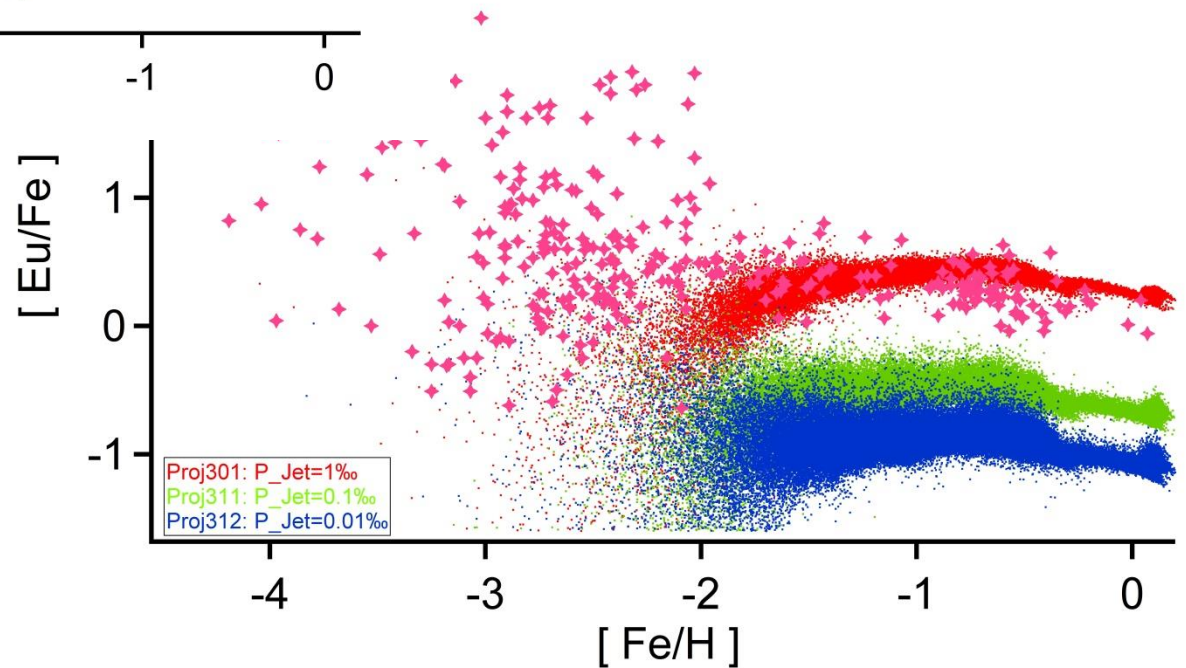
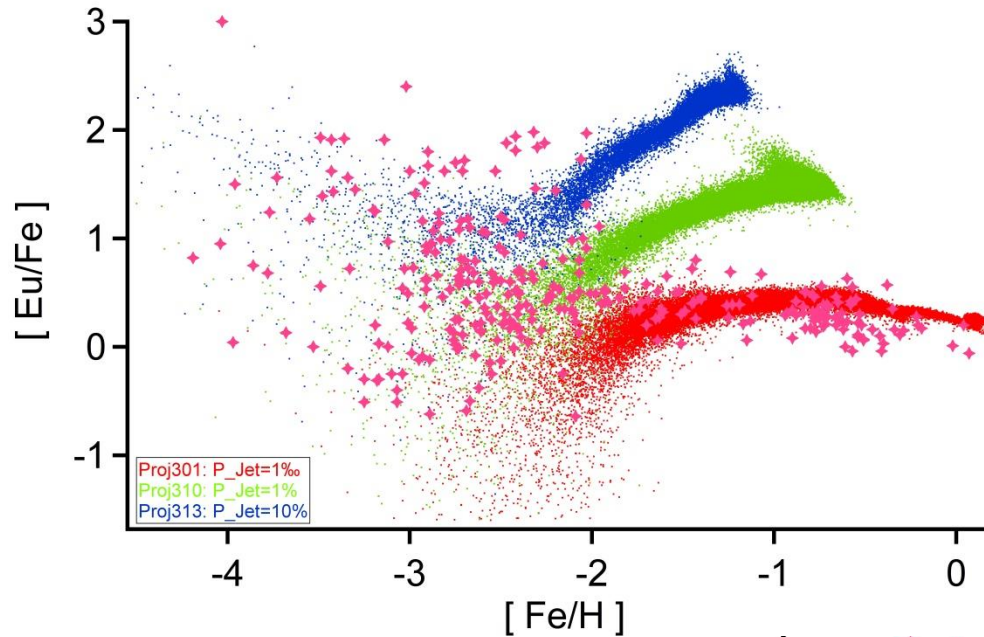


Recalling MHD-ccSN

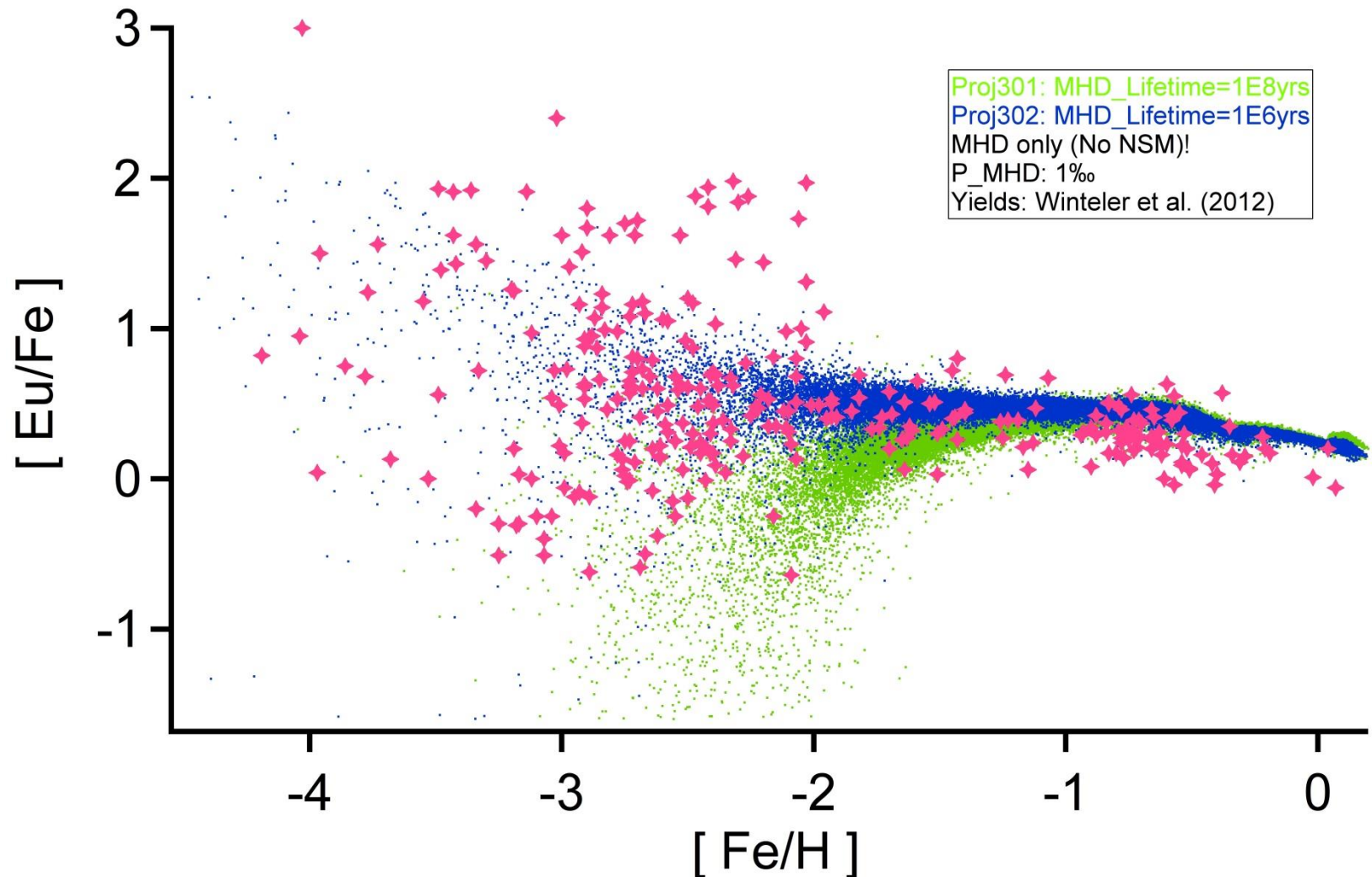


C. Winteler, R. Käppeli, A. Perego, A. Arcones, N. Vasset, N. Nishimura, M. Liebendörfer¹, and F.-K. Thielemann (2012)

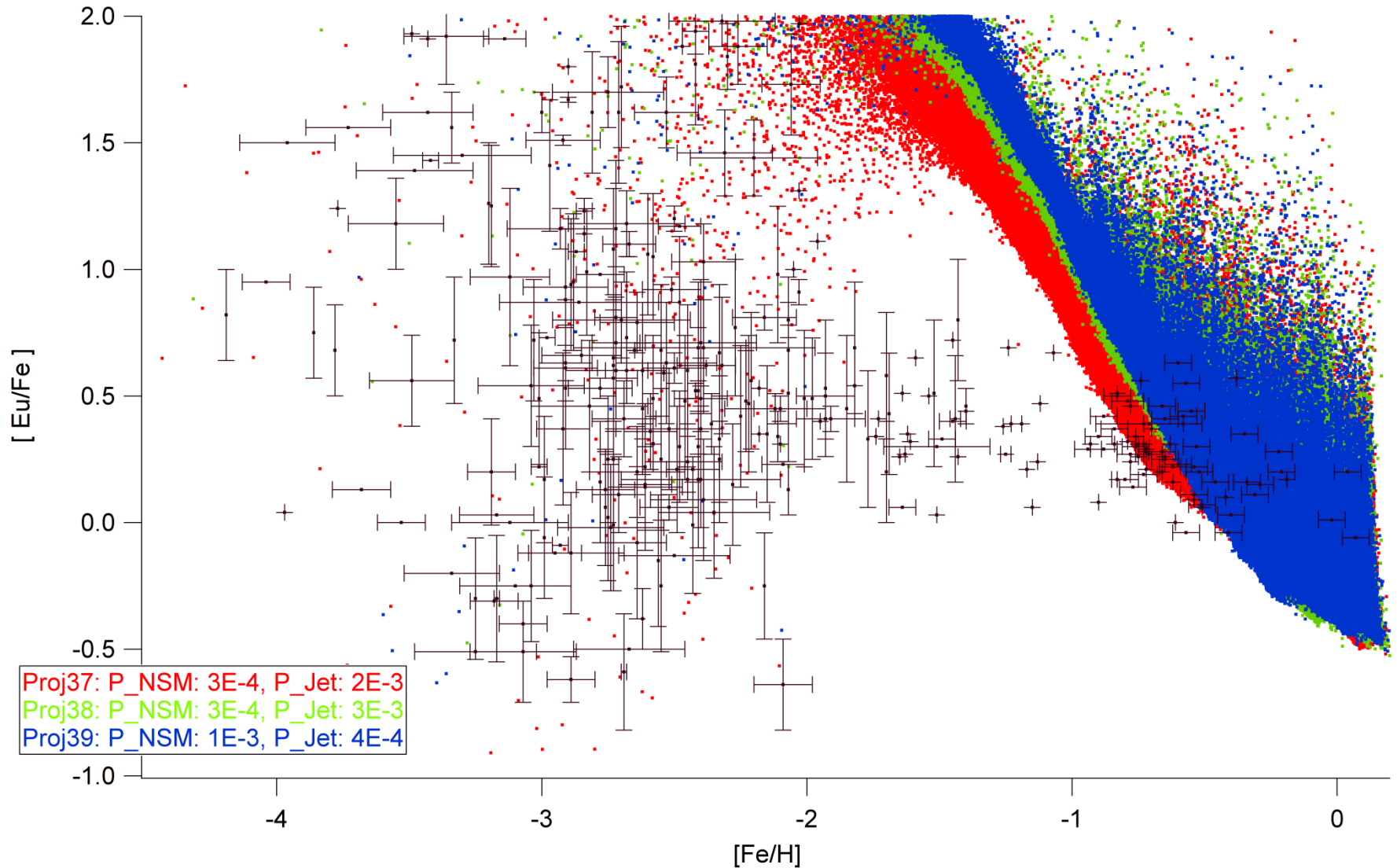
Experiment with MHD-ccSN



Not enough Eu @ low-met!



Now: Combine NSM&MHD-ccSN



Finally!

