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Effect of binary stars on galactic chemical evolution

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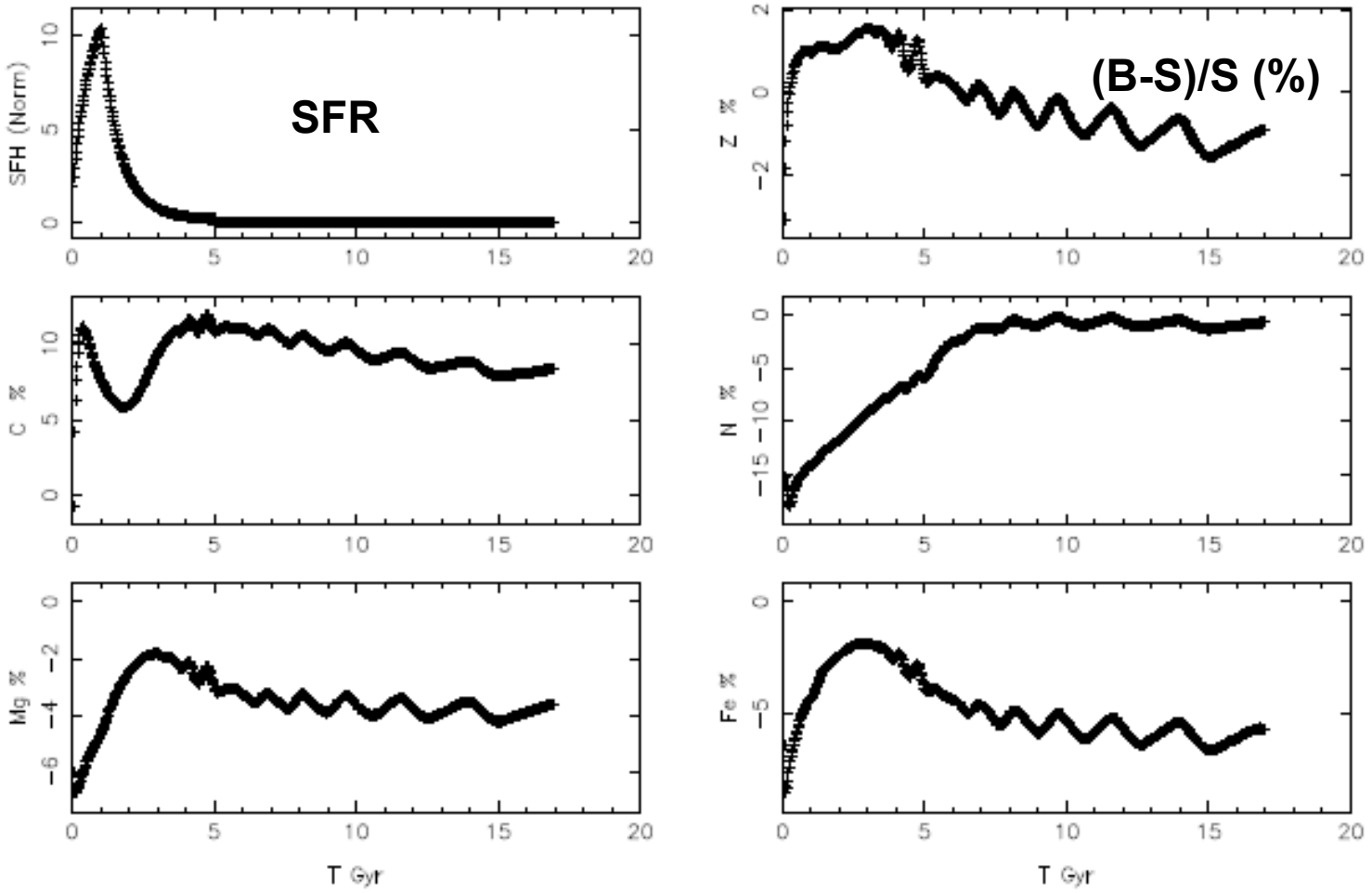
Feedback from:

- SNII (massive stars >8M⊙) } Single stars (s)
- IMS
- SNIa (binaries of various types: Accreting CO WDs; Merging CO WDs; Edge-Lit Detonations) } SNIa
- Other binaries (RLOF; Common envelope; Novae; RSCVn) } Binaries (b)

Chemical yields modelled by **Robert Izzard** *(Utrecht)* (**s, SNIa, b**).
Chemistry to **spectral line strengths** via SSP models (*UCLan).*
SSPs used: Thomas et al 2004 (age, Z, α/Fe).

With vs. **Without** "Other Binaries"

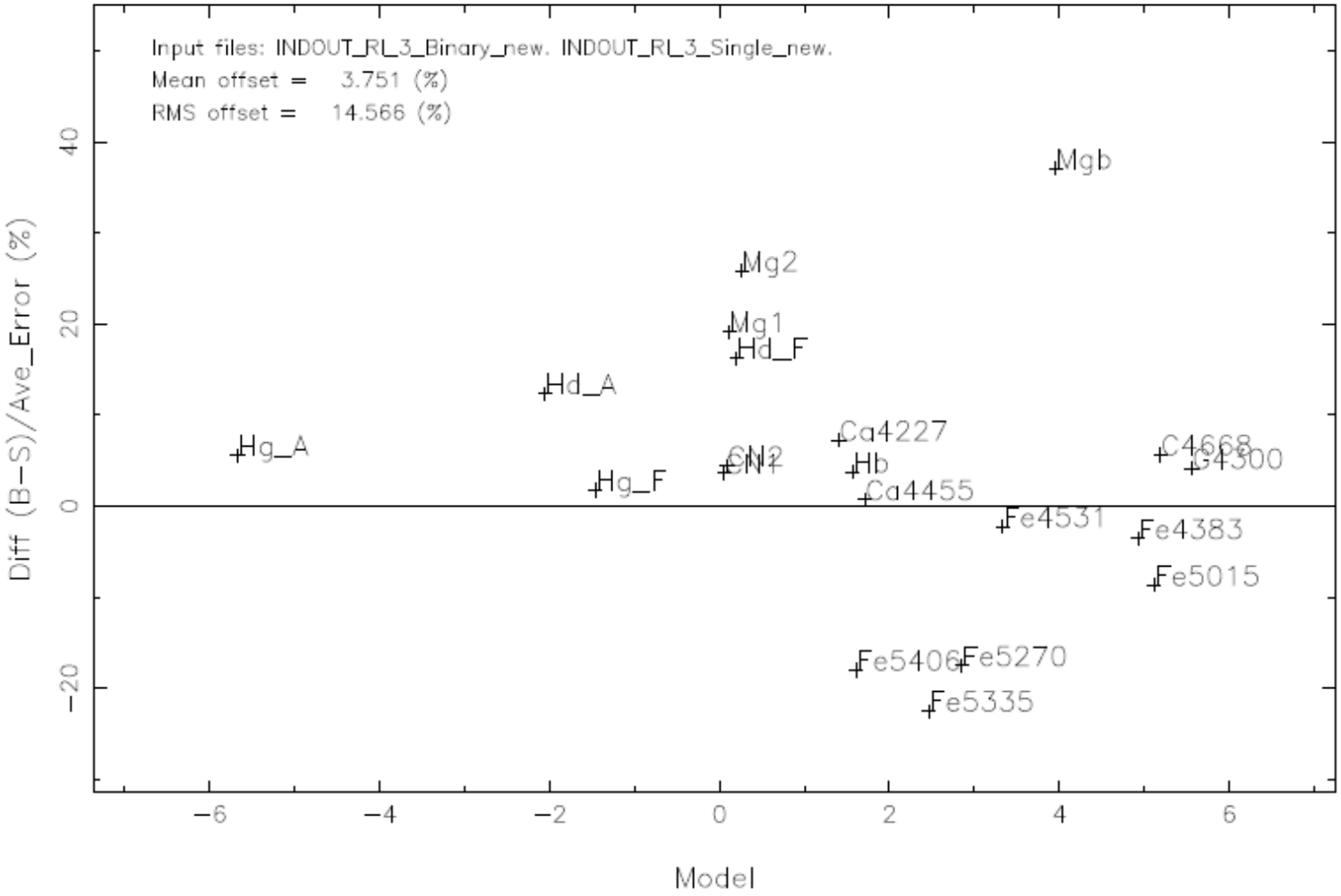
i.e. B=s+b+SNIa versus S=s+s+SNIa



Changes in Indices

(Typical errors from WHT observations - Proctor & Sansom 2002)

(Binary-Single) index differences (% of typical error)



Discussions

- Inclusion of other binaries makes **small**, but systematic differences to yields (few %) and line strengths (<errors).

- **By including binary yields:-**
  - Overall metallicity is lowered (by ~1% of average errors)
  - Fe and Mg are lowered (by ~5% of average errors)
  - C is raised (by ~8% of average errors)
  - Line strength systematic changes reflect the above small changes in chemistry from which stars are made.

- Different SNIa models may make **much larger** differences (ongoing work).