

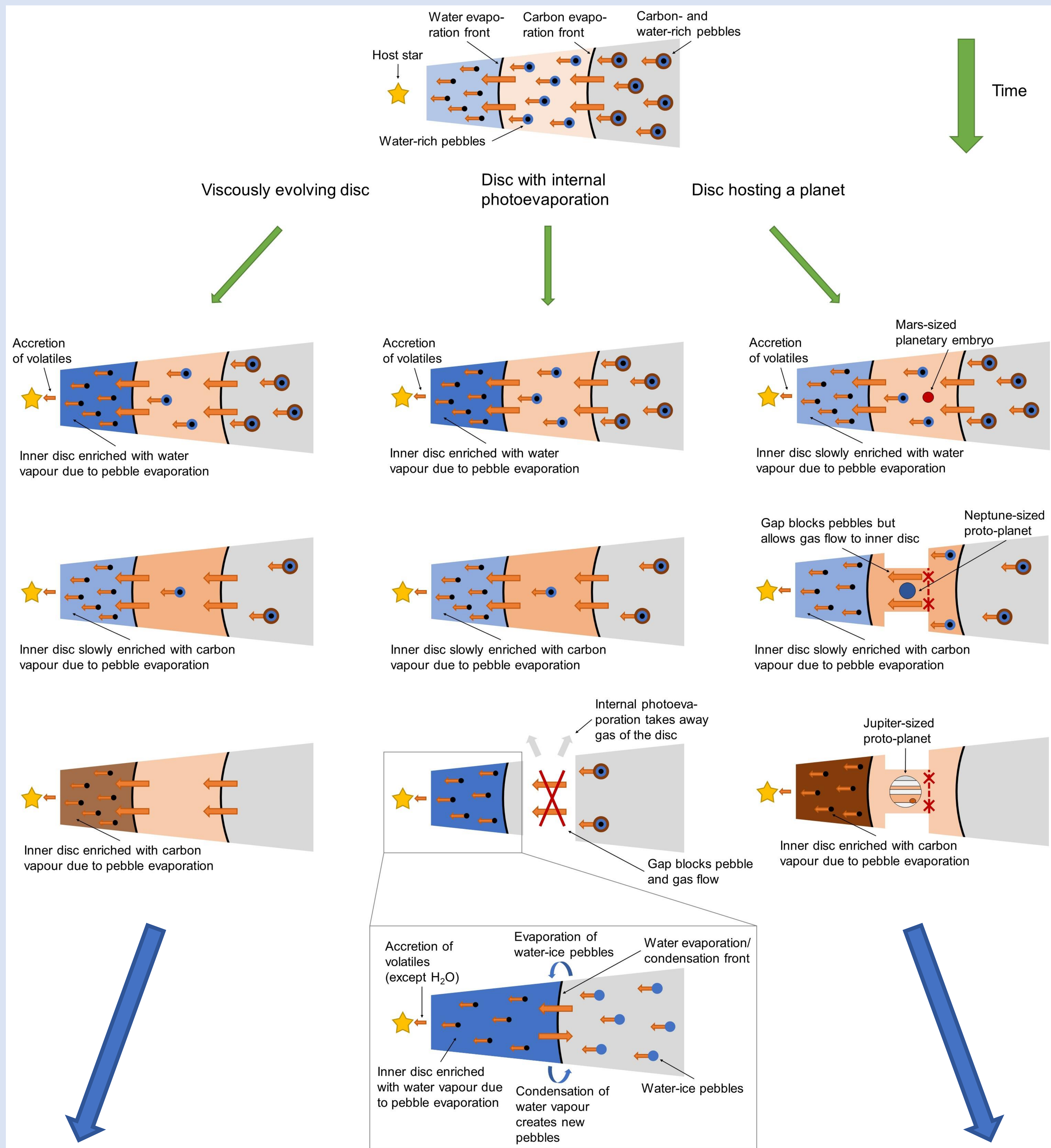
## Time evolution of the disc's chemical composition

### Goal

- Understand impact of internal photoevaporation<sup>c</sup> (PE) on protoplanetary discs
- Chemical evolution of inner disc affected by PE

### Model

- Code “chemcomp”<sup>a,b</sup>
- 1D semi-analytical model of protoplanetary discs
- Physics: viscous evolution & heating, pebble growth & drift, pebble evaporation & condensation, simple chemistry

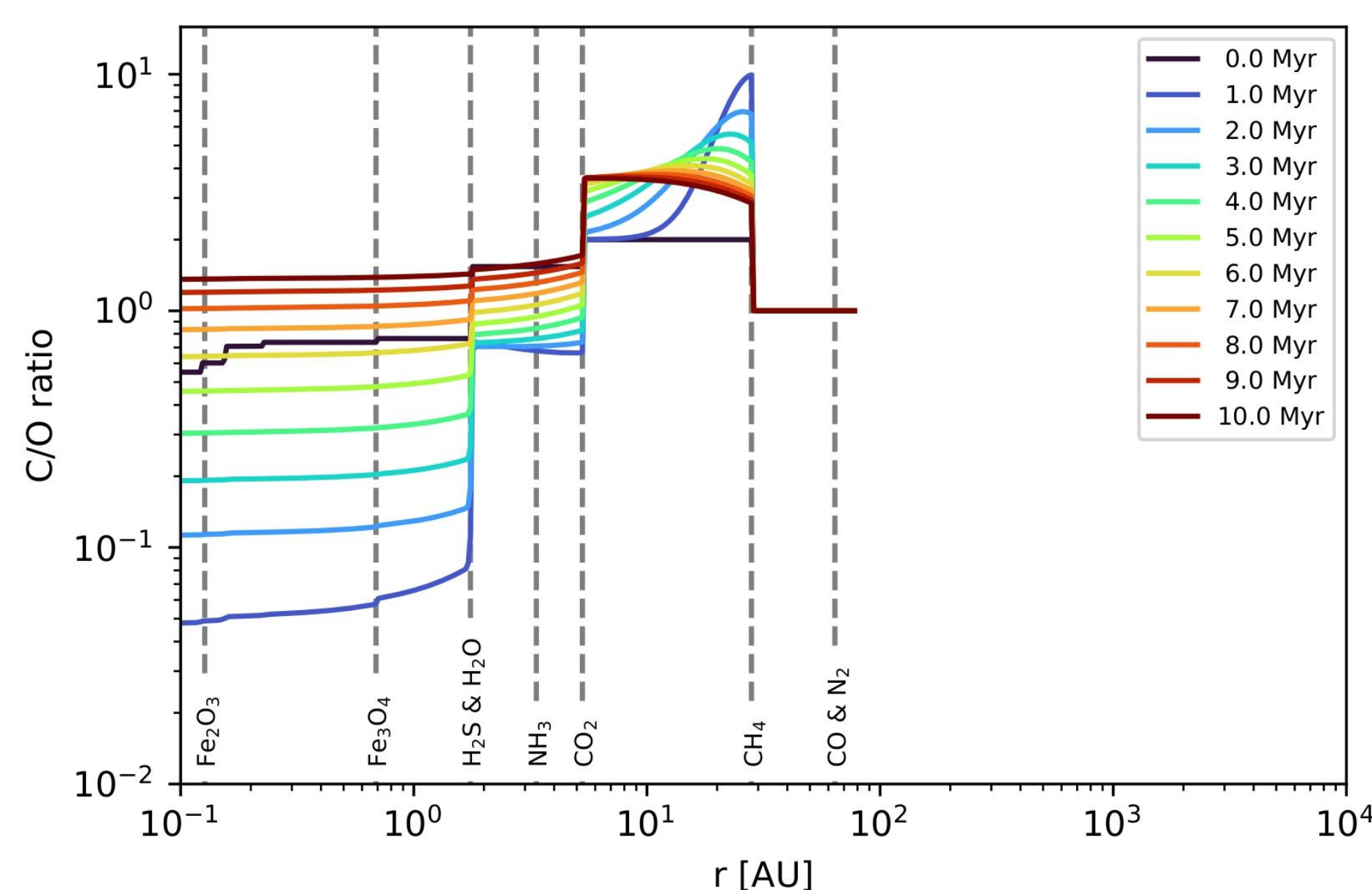


### Results<sup>d</sup>

- PE changes inner disc composition and therefore composition of forming planets!
- Elevated water content + low C/O ratio in inner discs
- Cause of gap structures in protoplanetary discs can be inferred!

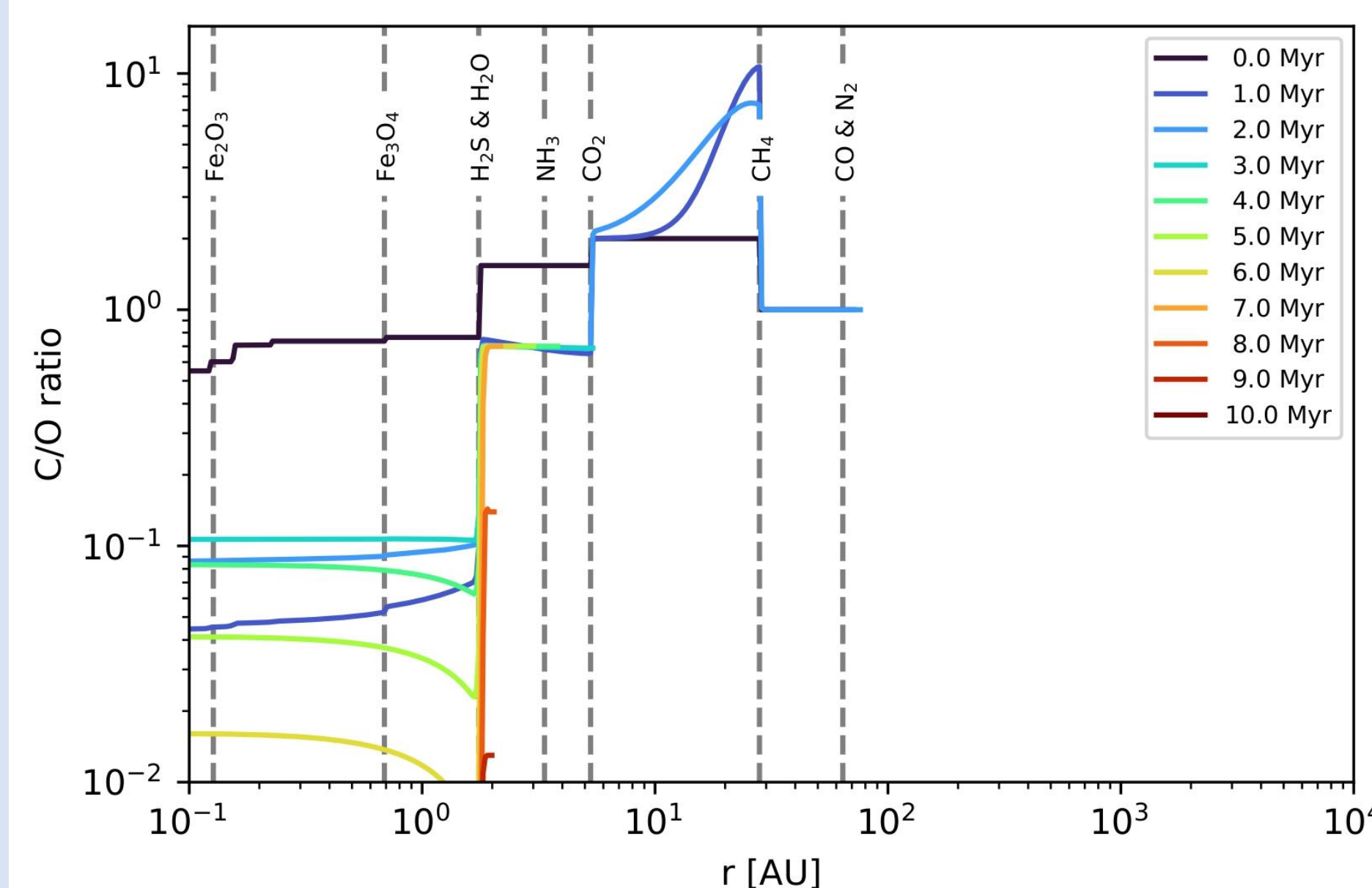
### Viscously evolving disc

$M_* = 1 M_\odot$ ,  $\alpha = 10^{-4}$ ,  $M_{\text{disc}} = 0.1 M_\odot$ ,  $R_{\text{disc}} = 75 \text{ AU}$



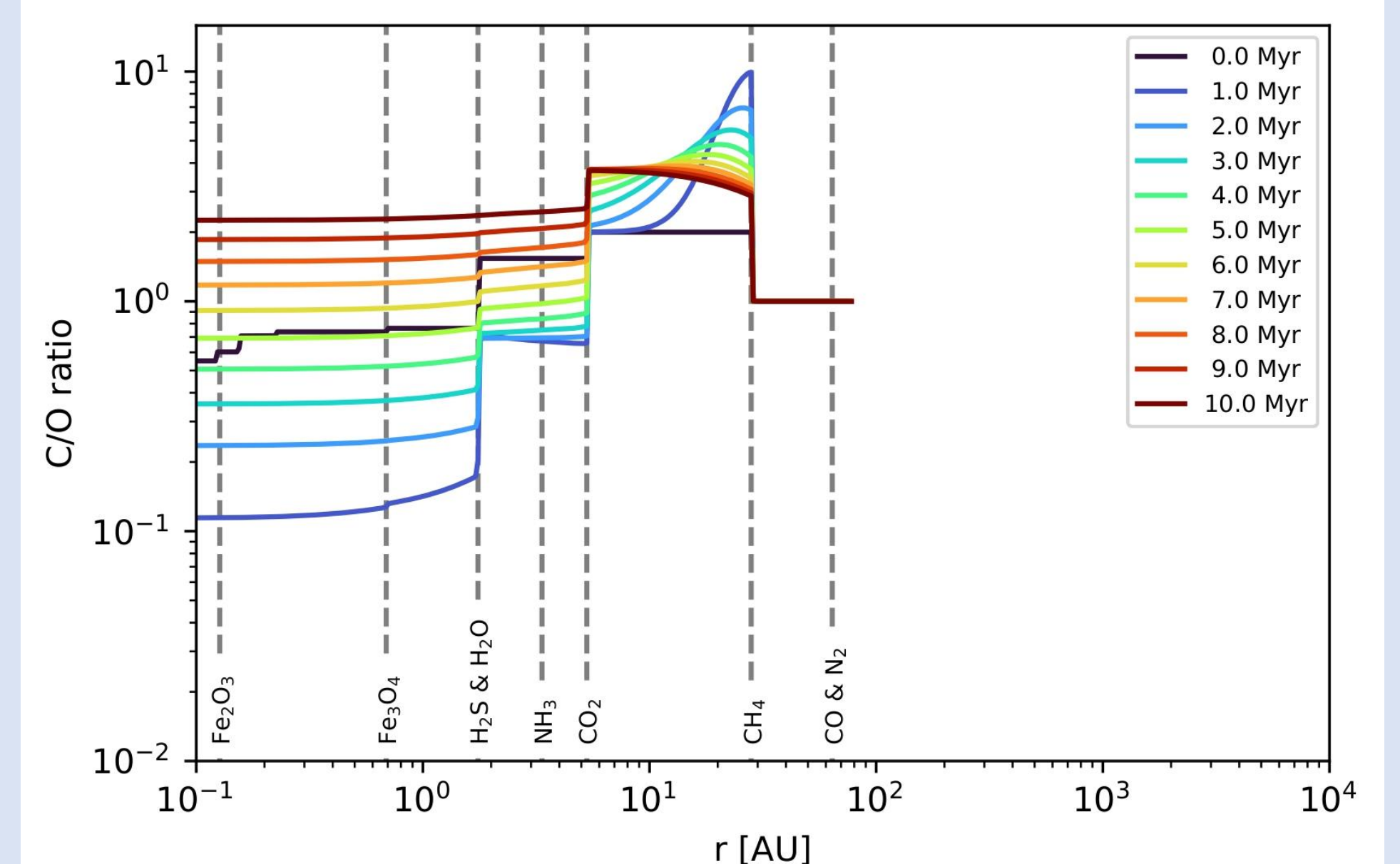
### Disc with internal photoevaporation

$M_* = 1 M_\odot$ ,  $\alpha = 10^{-4}$ ,  $M_{\text{disc}} = 0.1 M_\odot$ ,  $R_{\text{disc}} = 75 \text{ AU}$



### Disc hosting a planet

$M_* = 1 M_\odot$ ,  $\alpha = 10^{-4}$ ,  $M_{\text{disc}} = 0.1 M_\odot$ ,  $R_{\text{disc}} = 75 \text{ AU}$



### References

- Schneider, A., Bitsch, B., 2021a, *Astronomy & Astrophysics*, Volume 654, A71
- Schneider, A., Bitsch, B., 2021b, *Astronomy & Astrophysics*, Volume 654, A72
- Picogna, G., Ercolano, B., Espaillat, C. C., 2021, *MNRAS*, Volume 504, Issue 3
- Lienert, J.L., Bitsch, B., Henning, Th., 2024, *Astronomy & Astrophysics*

### Contact

**Julia Lienert**  
 Email: [lienert@mpia.de](mailto:lienert@mpia.de)  
 Institute: Max-Planck-Institut für Astronomie  
 Königstuhl 17  
 69117 Heidelberg  
 Deutschland  
 See also: <https://arxiv.org/pdf/2402.09342>

