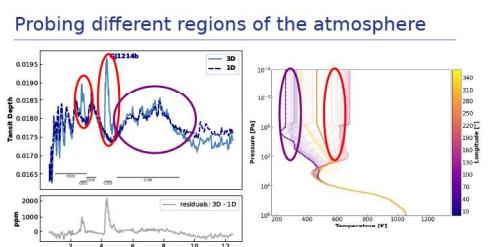
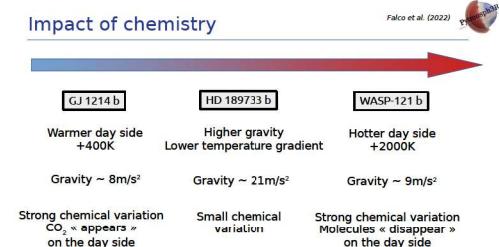
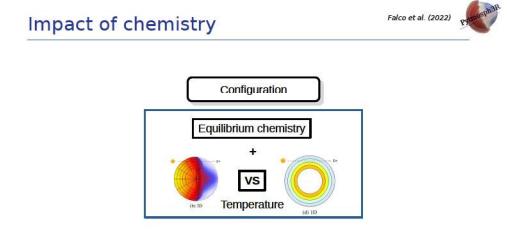
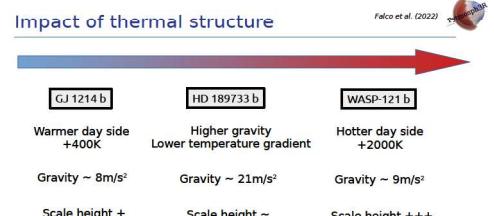
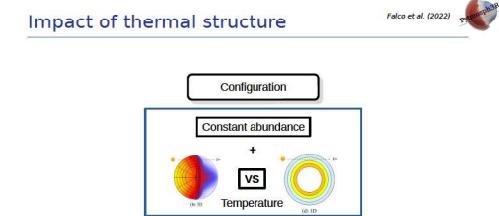
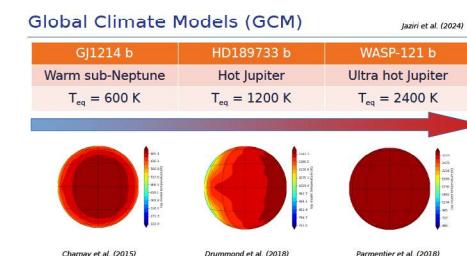
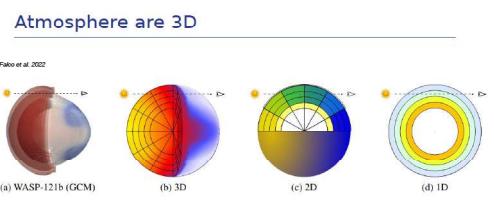
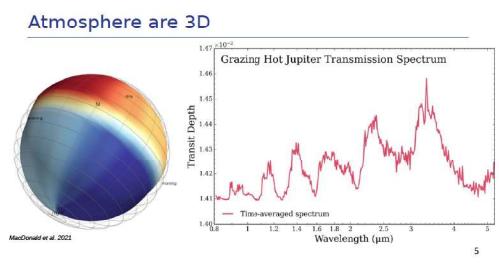
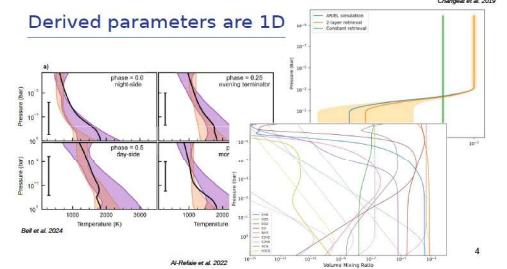
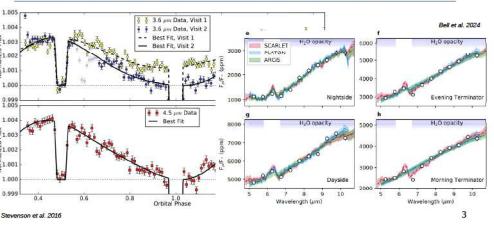
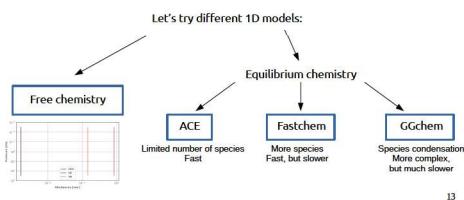


### Phase curve spectroscopy (WASP-43 b)

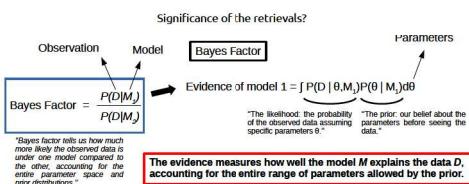


What happen if we try to retrieved with 1D models?



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What happen if we try to retrieved with 1D models?



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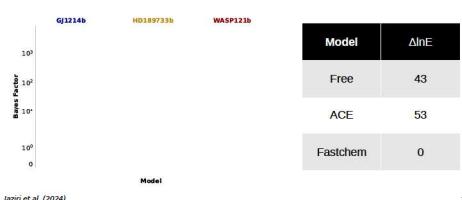
What happen if we try to retrieved with 1D models?

| Significance of the retrievals? |   |                               |                                   |
|---------------------------------|---|-------------------------------|-----------------------------------|
| Bernardo & Seeger (2013)        | $\ln(B_{\text{Bayes Factor}}) = \ln(P(D M_1)) - \ln(P(D M_2)) = \Delta \ln E$ |                               |                                   |
| $p$ -value                      | $B_{\text{Bayes Factor}}$   | $\ln B_{\text{Bayes Factor}}$ | Interpretation                    |
| 0.05                            | 2.5   | 0.9                           | 2.0 $\sigma$ "weak" detection     |
| 0.04                            | 2.9   | 1.0                           | 2.1 $\sigma$ "moderate" detection |
| 0.03                            | 3.4   | 1.1                           | 2.2 $\sigma$ "moderate" detection |
| 0.0006                          | 12  | 2.5                           | 2.7 $\sigma$ "moderate" detection |
| 0.0001                          | 53  | 3.3                           | 3.0 $\sigma$ "moderate" detection |
| 0.00005                         | 150   | 3.5                           | 3.6 $\sigma$ "strong" detection   |
| $< 10^{-7}$                     | $> 3000$  | $> 5.02$                      | $> 5.02$ "strong" detection       |

TABLE 2  
TRANSLATION TABLE BETWEEN FREQUENTIST SIGNIFICANCE VALUES ( $p$ -VALUES) AND BAYESIAN SIGNIFICANCE ( $\ln B_{\text{Bayes Factor}}$ ) FOR A COMPLEX MODEL. ADAPTED FROM BERTA (2008). A BAYES FACTOR OF 150 CAN BE CONSIDERED AS "STRONG" DETECTION, CORRESPONDING TO A 3.6 $\sigma$  DETECTION IN THE FREQUENTIST'S FRAMEWORK.

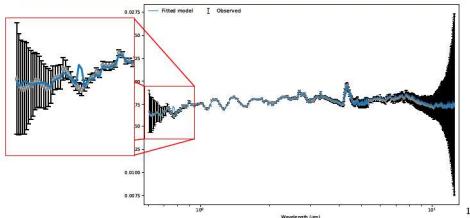
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### Retrievals comparison



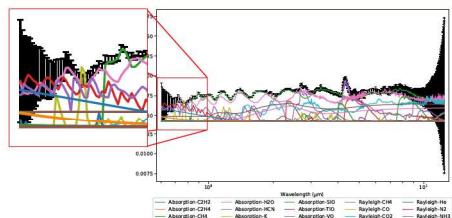
16

### Retrievals comparison



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### Retrievals comparison



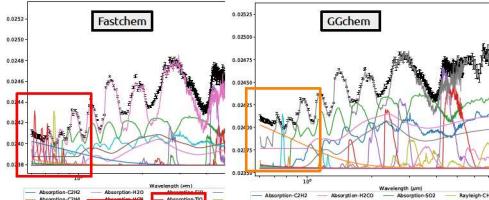
18

### Retrievals comparison

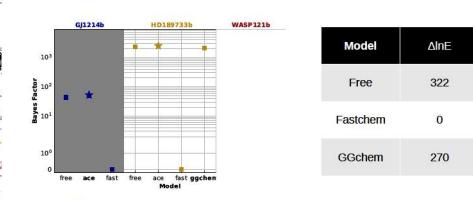


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### Retrievals comparison



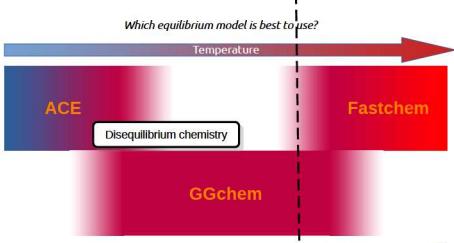
### Retrievals comparison



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Which equilibrium model is best to use?

Temperature



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