

IAF SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS
(A7)Interactive Presentations - IAF SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND
SOLAR-SYSTEM SCIENCE MISSIONS (IP)

Author: Mr. Quentin Changeat
University College London (UCL), United Kingdom

COMPLEX CHEMICAL PROFILES IN THE JWST AND ARIEL ERA.

Abstract

We explore the theoretical possibility of retrieving chemical profiles in exoplanet atmospheres by using the example of a 2-layer chemical model. The 2-layer model allows to independently characterise molecular abundances at the surface and at the top of an exoplanetary atmosphere. By simulating various cases, we demonstrate that this evolution from the more traditional constant chemistry profile leads to spectral features that can be successfully distinguished in retrievals. Comparisons with the constant model show that assumptions made on chemical profiles may significantly impact retrieved parameters, such as the planet temperature. In the context of next generation telescopes (JWST and ARIEL), more accurate description of chemical profiles with additional levels of flexibility may become crucial to explain observations and gain new insights into atmospheric physics.