CLOUD FORMATION AND CLOUD PROPERTIES IN EXOPLANET ATMOSPHERES

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Context: In most exoplanets a major fraction of the energy balance is governed by clouds. Cloud physics and chemistry are extremely complex.

At CELS our exoplanets atmospheres models are obtained using:

• MARCS (1): radiative and convective transfer in LTE
• GGChem (3): equilibrium gas chemistry
• Static Weather (2,4): cloud physics and chemistry

Project goals:

• More solid description of the cloud physics
• Difference between clouds formed from mineral seeds (e.g. TiO₂, SiO) and microbiological seeds (e.g. extremophile bacteria)
• Observability of spectral features emerging in the two cases: can we use those as biosignatures?

References: