

## PhD: Simulation of Mars Ground Ice

The project aims to significantly advance our understanding of very shallow ground ice on Mars, which has been found to be much more widespread than once thought. This is the most accessible ice to future human exploration, and is important as a potential astrobiology target.

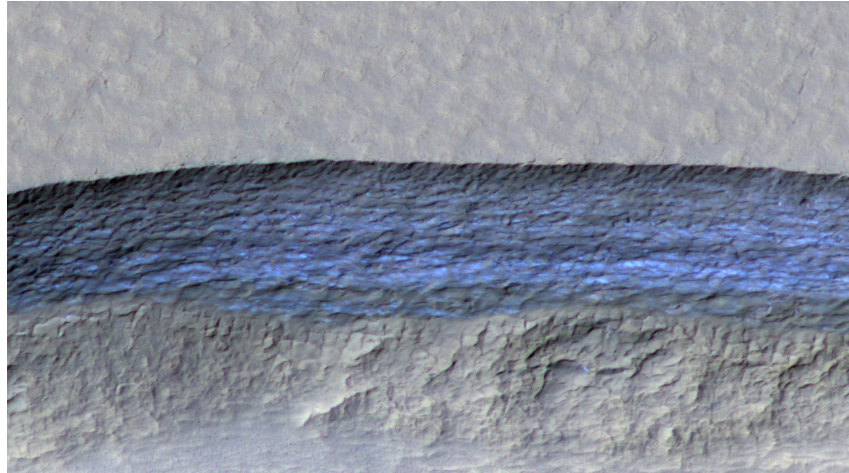


Image at 30 cm pixel size of an ice outcrop in the mid-latitude of Mars

We propose a program based on the simulation of the formation and evolution of ice and ground ice to understand its origin in the Mars history. Previous work could not predict the presence of ice near surface at mid and low latitude. The proposed task consists of creating an unprecedented simulation tool, including the main processes governing surface ice microphysics. Several pieces are already present in the literature, but the novelty and extremely promising nature of the present approach is to encompass them all since they all contribute to the evolution of ices with potentially similar time/length scales. This model will be designed to be coupled with Global Climate Model (GCM). The second aspect of the project will be focused on quantitative geomorphology. By proposing new proxies, we propose to reassess the mapping of ice on Mars. The final step of the project will be a comparison between simulations and geomorphological mapping to decipher the ice mobility on the Red Planet.

We seek a highly motivated candidate with an MSc degree in at least one of those fields: planetary science / climate science / physics / geosciences / remote sensing / astronomy / numerical simulations with excellent programming skills. The PhD will be evolving in an international and multidisciplinary environment.

The start date of the thesis is expected in October 2025 but can be flexible. The salary is 2300€ /month including regular services in France (social security, unemployment insurance,...). An extra housing assistance fee may complement this salary depending on the candidate situation.

Candidates should provide a CV, transcript of records and a cover letter.

Contact:

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