Postdoctoral position on Pluto and Triton atmospheric modeling

The *Laboratoire d'études spatiales et d'instrumentation en astrophysique* (LESIA, Paris observatory, located in Meudon, France), invites applications for a **2-year postdoctoral position on Pluto and Triton atmospheric modeling**. The position is funded by the ANR (Agence Nationale pour la Recherche) grant **SHERPAS** "Studying HazE Radiative Processes and Atmosphere-Surface interactions on Pluto and Triton".

Pluto and Triton represent invaluable natural laboratories that give us a perspective on the great diversity of planetary surfaces and atmospheres. Their peculiar climate, geology, and surface-atmosphere interactions are a challenge to test our fundamental understanding of atmospheric and surface physics, usually based on what is known on the Earth.

The SHERPAS project addresses fundamental questions regarding the surface and atmosphere of Pluto and Triton, and includes an investigation of the processes (1) forming the icy dunes observed on Pluto's surface, (2) driving the formation of atmospheric waves observed on Pluto by New Horizons and (3) controlling the radiative balance of Pluto's and Triton's atmospheres. The latter is the main topic of the postdoctoral position. The candidate will work on answering key science questions, including: What explains the cold upper atmosphere of Pluto and the near-surface cold layer observed by New Horizons? What explains the latitudinal variations in atmospheric temperature observed on Pluto by ALMA? What is the radiative impact of the organic haze versus the hydrocarbon ice clouds on Pluto? What are the properties of the aerosol and how do they evolve over the annual timescale? How can we explain the differences between Pluto's and Triton's thermal profiles?

To do that, the candidate will contribute to the development of the Pluto/Triton version of the new-generation Generic Planetary Circulation Model (PCM). The main goal is to implement a comprehensive scheme of organic haze and hydrocarbon ice clouds microphysics for Pluto (which will also apply to Triton). The PCM is a 3D versatile model developed at LMD (Paris), and therefore the candidate will work in strong collaboration with the LMD and possibly other laboratories (LAB in Bordeaux, LPG in Nantes). With this new scheme, the candidate will be able to explore how the organic/icy haze impacts Pluto's and Triton's climates and how it evolves over seasonal timescales. The candidate will also investigate the mechanisms at the origin of the cold layer observed above Pluto's surface. This approach should permit a breakthrough toward an understanding of Pluto's and Triton's radiative balances and climates. Comparisons with observations (including recent ones by the JWST, or with ALMA) will be done to validate and interpret model results. Several scientific papers can be envisioned during the 2-year period. Note that access to computing hours on a national facility has already been secured.

The applicant will join the "Planetology" team at LESIA, composed of 8 permanent researchers and 15 assistant professors and ~20 engineers, postdocs and PhDs working on all solar system/exoplanetary atmospheres and surfaces, both on modeling and observational aspects.

Applicants should have a PhD in planetary science, atmospheric physics or astrophysics. Among the desirable assets for the position are: experience conducting research on planetary atmospheres ; atmospheric modeling (e.g., aerosol microphysics) ; good programming skills (e.g., Fortran, python); experience with collaborative tools (Git / svn); good English level. **The postdoctoral position is awarded for 24 months starting ideally in Fall (or Winter) 2024, with some flexibility.** Applications received until 30 April, 2024 will receive full consideration. Applicants should send a CV (including publication list), a cover letter stating their research accomplishments, interests in the project and date of availability, and 1 to 3 contact information for references to tanguy.bertrand@obspm.fr.