New Insights into Triton and Pluto's climates

Despite being located far from the Sun, the dwarf planet Pluto and Neptune's moon Triton exhibit surprisingly complex and dynamic surfaces and atmospheres, shaped by a variety of processes unique to their respective environments. Investigating their peculiar climate is a challenge to test our fundamental understanding of atmospheric and surface physics, usually based on what is known on the Earth. Not only it deepens our understanding of these distant worlds, but it also provides valuable insights and perspective into the mechanisms that govern planetary climates in our Solar System and beyond.

At the conference, we will present the first climate modeling results of Triton including near-surface winds, atmosphere dynamics and transport of dark materials by Triton's plumes and the general circulation, obtained with a state-of-the-art global climate model. These simulations are used to interpret observations of Triton by Voyager 2 in 1989 and by Earth-based observations from the last decades. They are also compared to simulations of Pluto to better understand what drives the atmosphere dynamics on these objects. Finally, we will also take the opportunity to present the first observations of Pluto by JWST, acquired by our team in October 2022, and how they help us constraining Pluto's climate.