Título/Title:
Studying the dynamics of the Venus atmosphere by using chemical tracers

Orientador/Supervisor:
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Descrição/Description:
The dynamical regime of the Venus atmosphere is mainly decomposed into three regions. The first one, located below 65 km altitude is governed by the retrograde superrotation zonal (RSZ) circulation. The second region, above 120 km is dominated by the Subsolar to Antisolar (SS-AS) flow, due to strong temperature gradient between the day side and the night side of Venus upper atmosphere. The region inbetween (70-120 km) is called the "transition region": a very variable region not fully understood by theoretical studies. Above the cloud tops (~ 70 km) no direct measurements of winds are possible and the dynamics in this part of the atmosphere is instead studied using the so called "dynamical tracers". They are minor atmospheric constituents which have a significant variability and are therefore used to track large scale circulation in the atmosphere.

The student will be involved in the work of the team, focused to understand this complex dynamical region of the atmosphere of Venus (80-130 km). In particular, he/she will learn how to use 3D simulations by a General Circulation Model (GCM) for the Venus atmosphere to represent 1. chemical tracer density vertical profiles 2. their density distribution on the planet (Latitude-Local Time maps). Those results will be used to perform a detailed data-model comparison with the available results from the satellite Venus Express.

Requisitos/Requirements:
The project is based on the use of python scripts. Therefore, the candidate should be able and willing to program in python.