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Role of the solar and stellar input for planetary emissions calculations : from solar system planets to exoplanets

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For planets at large distance from Earth the main source of information regarding the upper atmosphere is the non LTE UV-visible- near IR emissions. For jovian like planets, we can mention the H2 Lyman and Werner band in the 80-170 nm spectral region. The energetic input producing these emissions are both UV flux and particle precipitations impacting directly those upper atmospheres. The discovery of a large number of planets in other stellar system allows a much more wider comparative planetology approach to characterize these emissions. For all these cases, accurate estimations of the solar or stellar fluxes are of strong importance since the systems involved in these processes are not linear. Some small error in the estimations of these fluxes can produce important error in the estimation of the upper atmosphere emissions.

For these reasons and regarding the solar system, long term FUV-EUV observations of the solar fluxes are critically important. For the exoplanet cases, a large FUV-EUV survey of close stars with planetary system is also of very strong importance. This will allow to drive a wide comparative planetology approach of the upper atmosphere emissions.