



## **PREMIER: a proposed satellite mission to observe processes controlling atmospheric composition in the height range most important to climate**

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The PREMIER (PRocess Exploration through Measurements of Infrared and millimetre-wave Emitted Radiation) mission is one of 6 candidates for ESA's 7th Earth Explorer Core Mission (due for launch ~ 2016), for which Phase 0 Assessment Studies have recently been undertaken. The mission proposes to make detailed measurements in the mid/upper troposphere and lower stratosphere in order to quantify processes controlling atmospheric global composition in this height range of particular importance to climate. PREMIER would consist of an infrared limb-imaging spectrometer which would observe 3D fields of trace gases, alongside a millimetre-wave limb sounder which would enable observations in the presence of most cirrus clouds, and also provide complementary trace gases. In addition, co-located data from EPS-MetOp would be combined with that from PREMIER, to extend the scientific impact of PREMIER down into the lower troposphere, to explore links to surface emissions and pollution.

In this presentation, the PREMIER mission concept will be introduced and initial simulations of its capabilities will be described.