630

NEW WORLDS, NEW VANTAGE POINTS: HOW DOES THE ANTARCTIC PLATEAU FIT ON THE ROADMAP FOR THE SEARCH OF EXTRASOLAR EARTHLIKE PLANETS

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After the discovery of the first planets orbiting solar-type stars in 1995, one of the greatest challenges awaiting modern astronomy is the census of habitable planets around stars in the solar vicinity, and the subsequent spectroscopic characterization of their atmosphere with the possible identification of biological markers. The technical difficulties to overcome (due mostly to the 10^9 contrast ration between the planet and the host star) are immense and it was believed until recently that this type of observations could only be carried out from space.

However astronomical site testing carried out at the Concordia station has shown that the site has almost space-like qualities for observations requiring a very high dynamic range (most notably in the infrared). This opens the possibility to achieve from the Antarctic plateau at least part of the objectives originally assigned to space missions, and at a small fraction of the cost. These objectives, by order of difficulty, include the characterization of stellar environments in their habitable zone, deriving statistics about the frequency of telluric planet in the habitable zone, and identifying those planets. The space missions could then focus on the characterization of biosignatures in a known set of planetary companions.