

## Can HERA see the SAA?

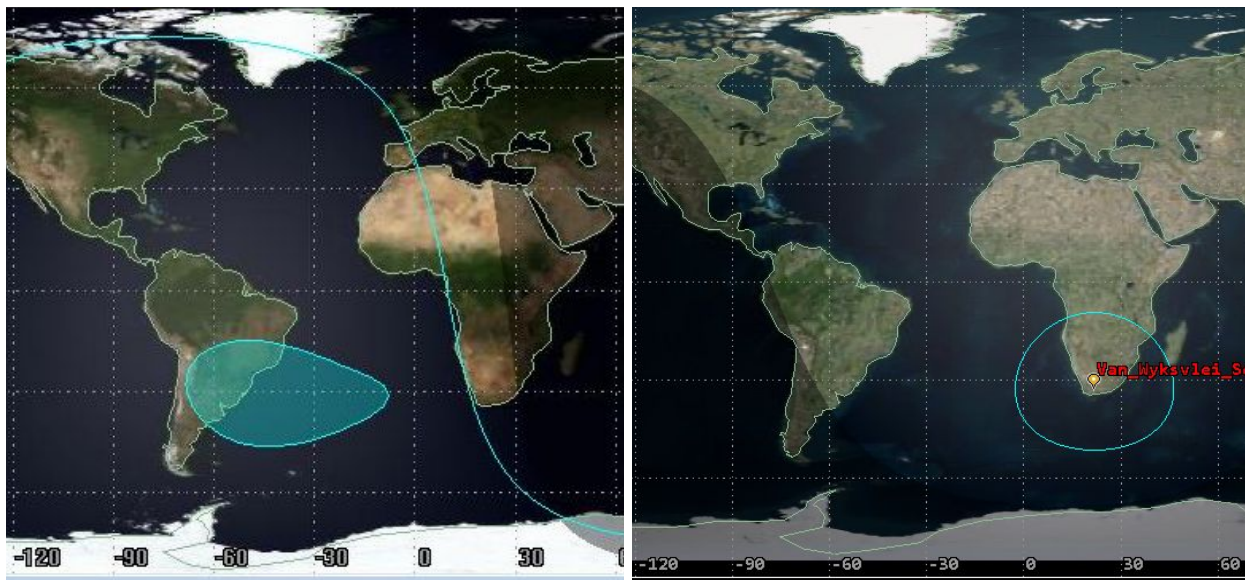
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Curiosity drove us to wonder if the HERA telescope array can see the South Atlantic Anomaly (SAA). I used STK, a software designed for simulating space systems and their geometric relationships.

To the left is a screenshot taken from the following STK tutorial. It shows the SAA above South America and jutting towards Africa, reaching about  $-10^{\circ}$  longitude

[https://help.agi.com/stk/11.0.1/Content/training/SEET\\_SAA.htm](https://help.agi.com/stk/11.0.1/Content/training/SEET_SAA.htm)

To the right is my interpretation of HERA's viewing angle. I placed it at the nearby city of Van Wyksvlei, which is slightly northeast of HERA's actual location. I set the half cone viewing angle to  $89^{\circ}$ , for a total viewing angle of  $178^{\circ}$ . I'm also looking at the slice 500km above sea level, which is the approximate altitude of the SAA. The furthest it reaches west is about  $-3^{\circ}$ , so not quite to where the SAA is.



My conclusion is that while the two areas on the images don't appear to overlap, they are awfully close, and the circles are probably not accurate. The HERA one isn't placed exactly in the right spot and the circle will change in size drastically with any altitude change. Additionally, the SAA isn't exactly a constant boundary, it fluctuates. I'd say it's certainly possible that HERA can see the very edge of the SAA on it's horizon.