

FAST2field (“FAST10k”) – optimization of the stereo observation

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Motivation

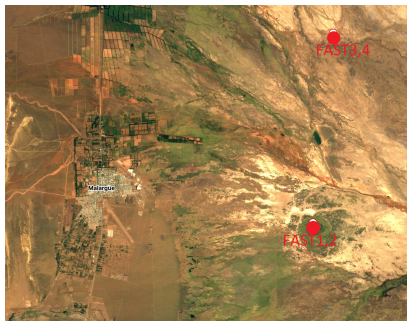
- FAST stations: FAST1,2 and FAST3,4

- FAST1,2:

- Fixed position:
 $35^{\circ}29'48.7''\text{S}$, $69^{\circ}26'55.9''\text{W}$
- FAST1 currently operated (axis is 8 deg in azimuth)
- The axis between FAST1 and FAST2 is fixed (-7 deg)

- FAST3,4:

- Position will be fixed closed to SD at:
 $35^{\circ}23'51.4''\text{S}$, $69^{\circ}26'11.3''\text{W}$
- The axis is not fixed $\Rightarrow$ Set the axis between FAST3 and FAST4 to achieve the largest possible stereo overlap.
- No simulations performed in this analysis.



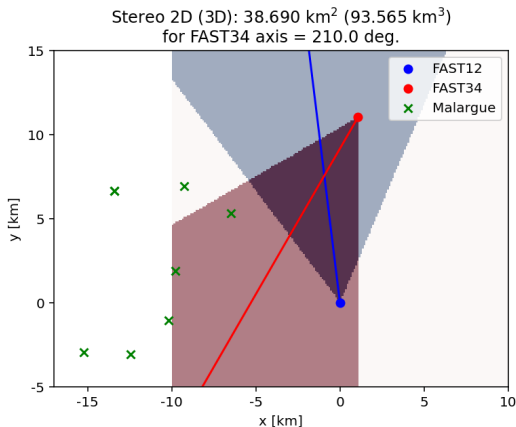
Malargüe position

The highlighted Malargüe position used for the following stereo analysis:



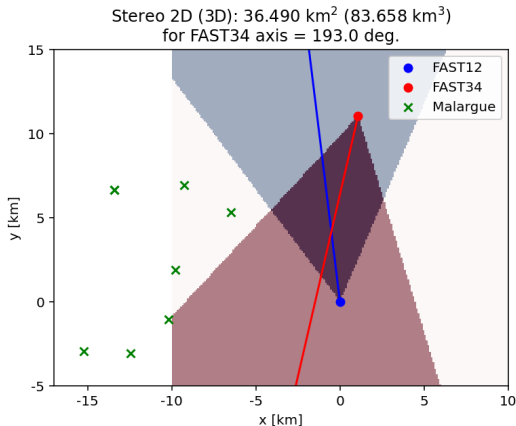
The largest stereo

- Resolution of the analysis:
100 m in x, y, z axis
- axis = 210 deg in azimuth
- The “best” scenario
(in terms of stereo)
- FoV directly at Malargüe may cause high night-sky background
⇒ **not appropriate option.**



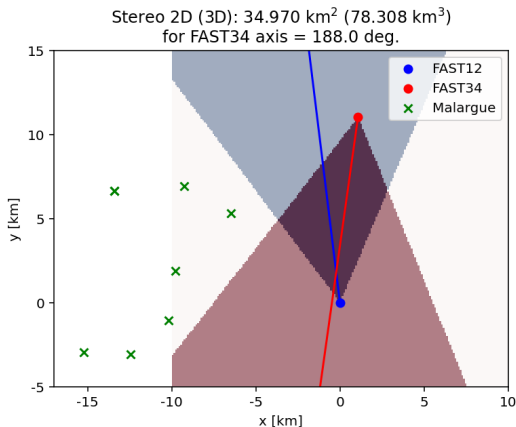
The closest to Malargüe

- axis = 193 deg in azimuth
- The closest to Malargüe as much as possible
- Compared to the “best” scenario:
 - 2D: 94.3%
 - 3D: 89.4%



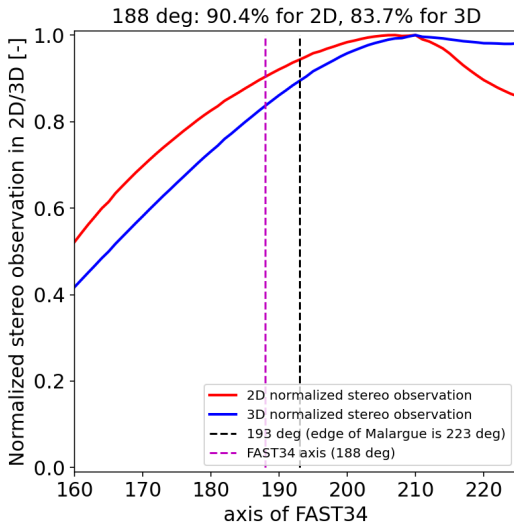
The most appropriate option

- axis = 188 deg in azimuth
- The closest to Malargüe minus 5 deg to avoid undesirable light.
- Compared to the “best” scenario:
 - 2D: 90.4%
 - 3D: 83.7%



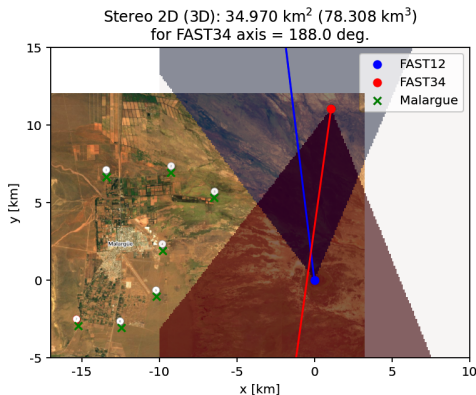
All tested options: $\text{axis} \in [160 \text{ deg}, 225 \text{ deg}]$

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Conclusion

- “Set the axis between FAST3 and FAST4 to achieve the largest possible stereo overlap” **is not appropriate** due to Malargüe position.
- The condition is changed to:
Set the axis between FAST3 and FAST4 to avoid Malargüe and achieve the largest possible stereo.
- axis = 188 deg in azimuth is the most appropriate option
 - $\approx 10\%$ less in 2D
 - $\approx 16\%$ less in 3D



Thank you for your attention. Feel free to ask any questions.

