

User's Information:
About Baseline Interpolation

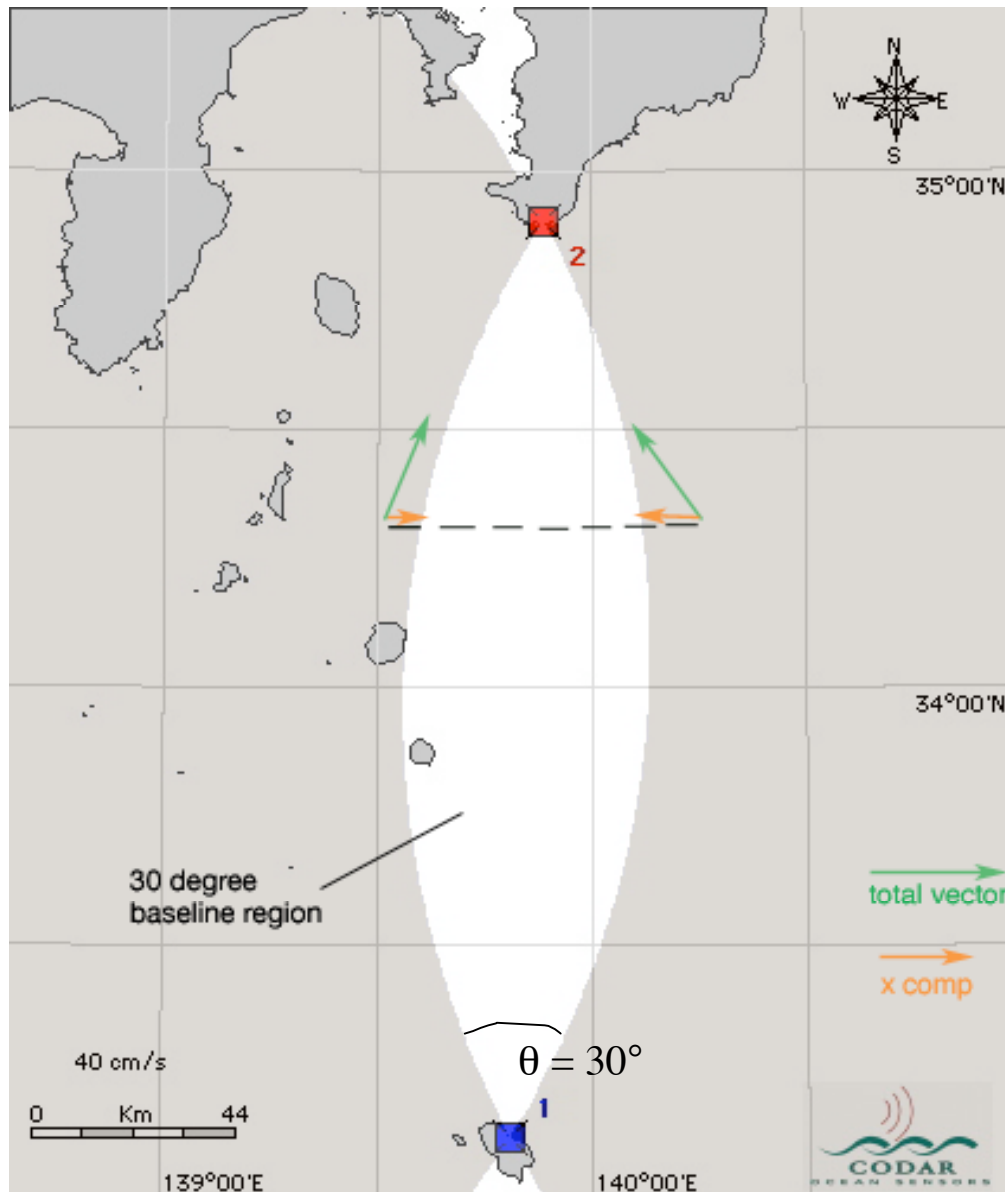
THIS DOCUMENT DESCRIBES HOW SEASONDE COMBINING SOFTWARE CREATES
INTERPOLATED TOTAL VECTORS ACROSS THE BASELINE REGION



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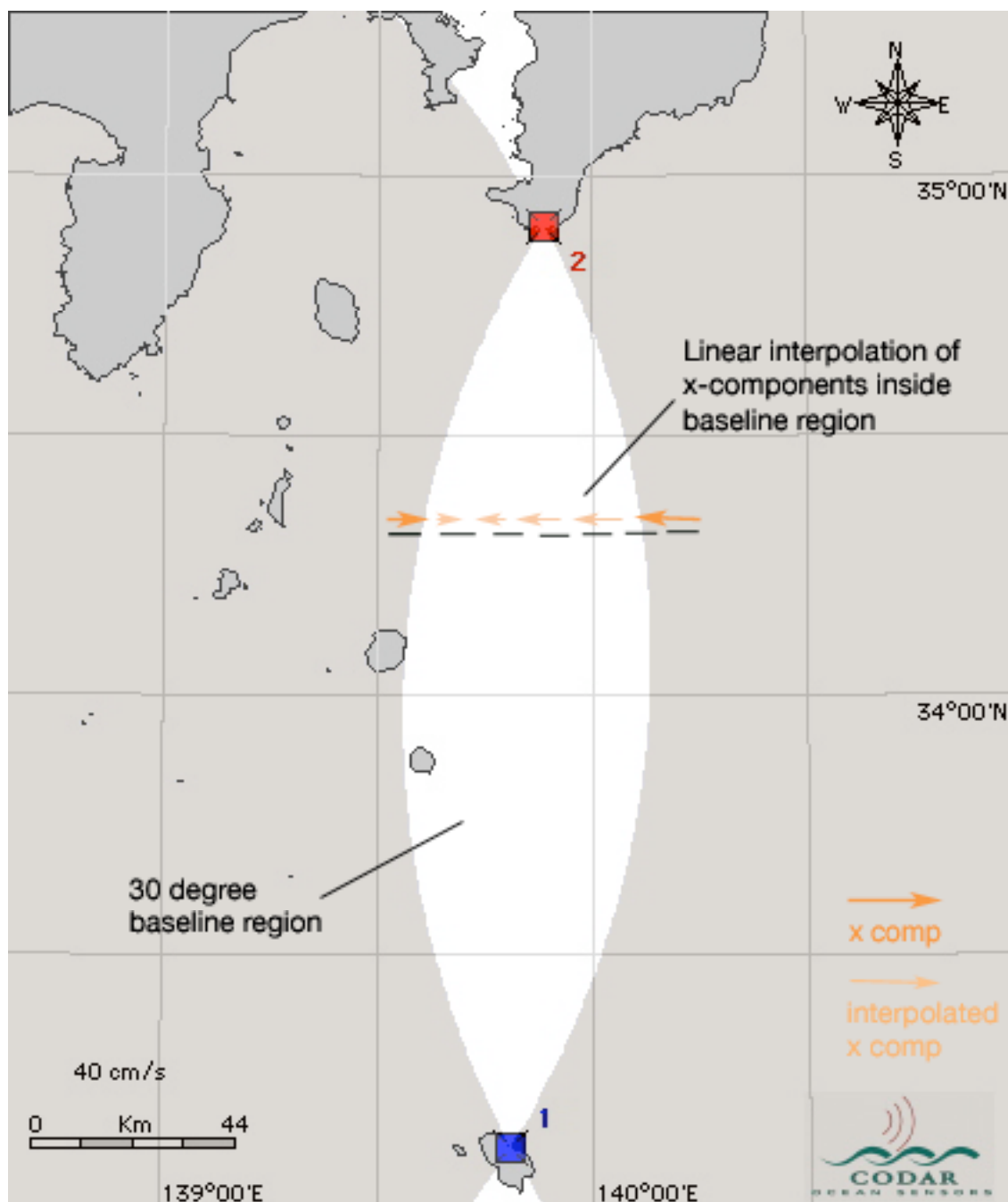
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The figure below shows a 30° baseline region. This means that if the radial components from the two sites make an angle of less than 30° (approaching parallel), the x-components of the created total velocity vectors within this area are termed unstable by rule of GDOSA (Geometric Dilution of Statistical Accuracy, see Barrick, 2002, COS documentation). Therefore, this region needs to be filled with “interpolated” total vectors. The error amplification for total vectors associated with this particular angle example is a factor of two times the radial uncertainties. The process of creating these “interpolated” vectors is described in this document.



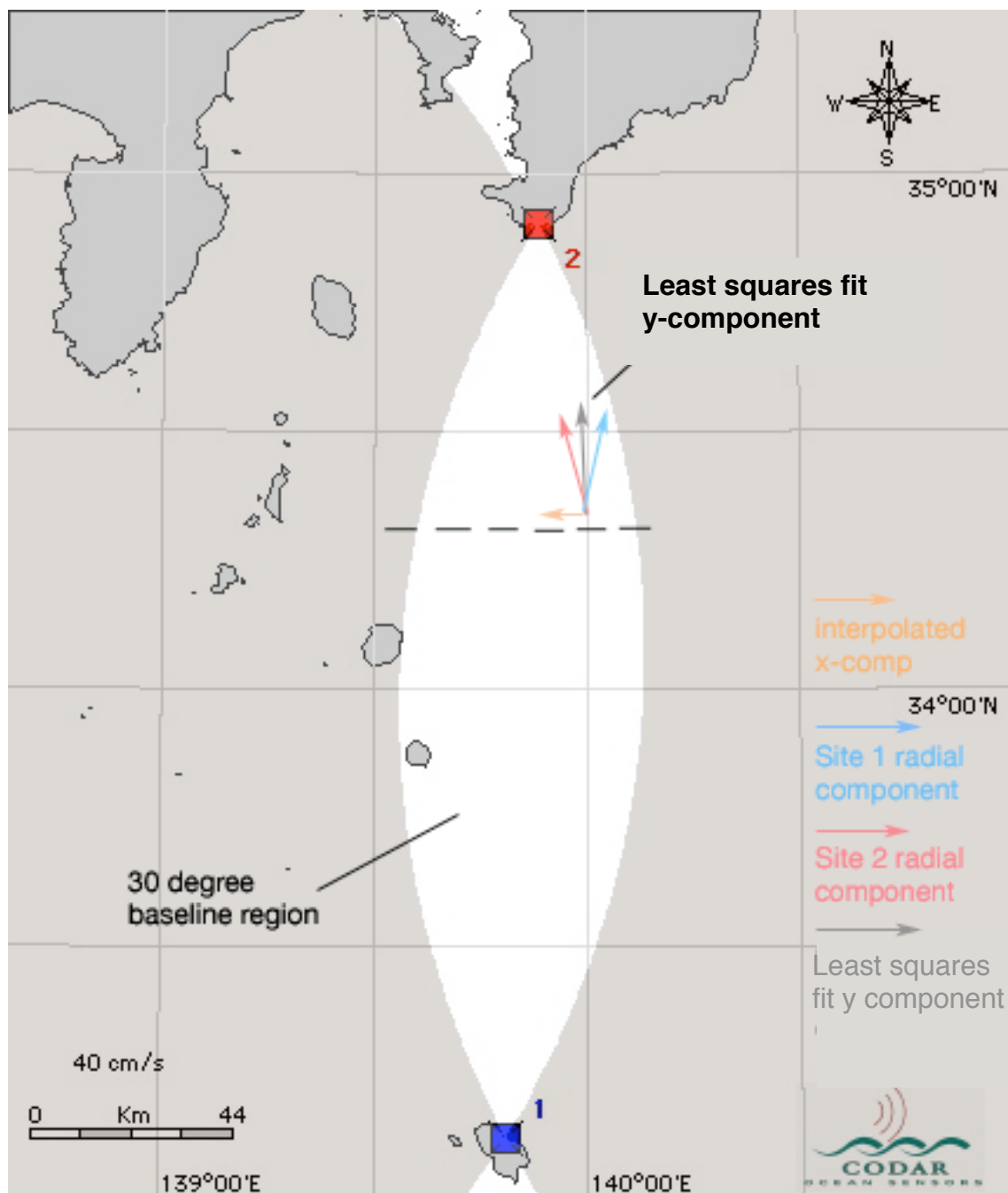
Step 1.

At each grid point within the baseline region, the two closest total vectors outside the baseline region are found. The x-components of these two total vectors are extracted and used as “endpoints” (shown in dark orange) along a line containing the grid points. Note that in this example there is a negative x-component on the right side of the baseline region, and a smaller, positive component on the left side of the region.



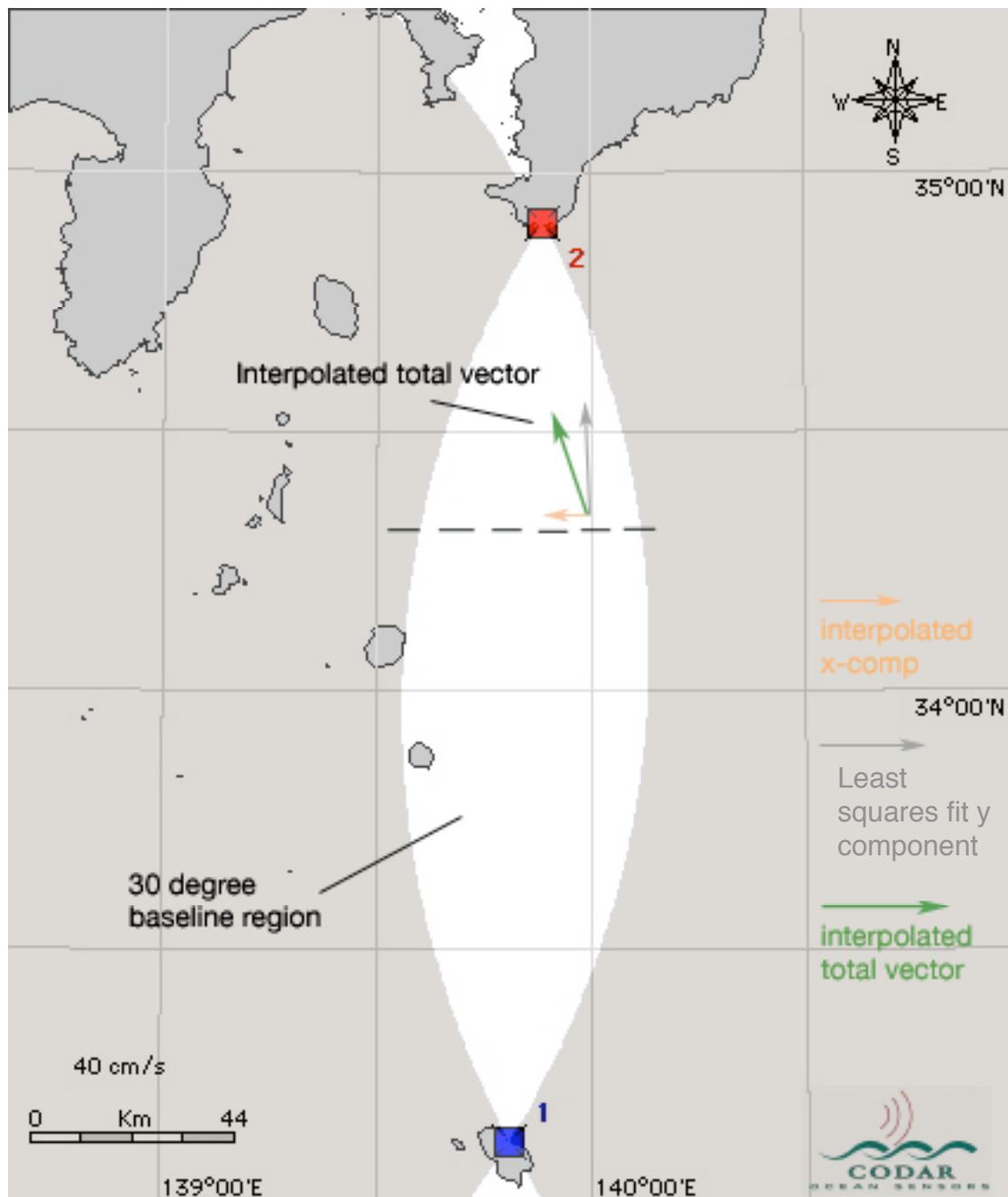
Step 2.

The x-components of two total vectors just outside of the baseline region are then linearly interpolated across the baseline region, forming the interpolated x-components at grid points along the line (shown in light orange).



Step 3.

The component parallel to the baseline (y-component) that contributes to the “total vector” is derived from a least squares fit of the radial velocities from the two contributing sites (the Site 1 radial vector is shown in blue, and the Site 2 radial vector is shown in red). This new least squares fit y-component is shown above in grey.



Step 4.

The least squares fit y-component (shown in grey) and the linearly interpolated x-component (shown in light orange) are combined to form the “Interpolated” total vector, shown above in green.

This method is done for each grid point within the baseline region to create the interpolated total vectors observed when interpolation is selected along the baseline.