

Visualizing the Tangoroa

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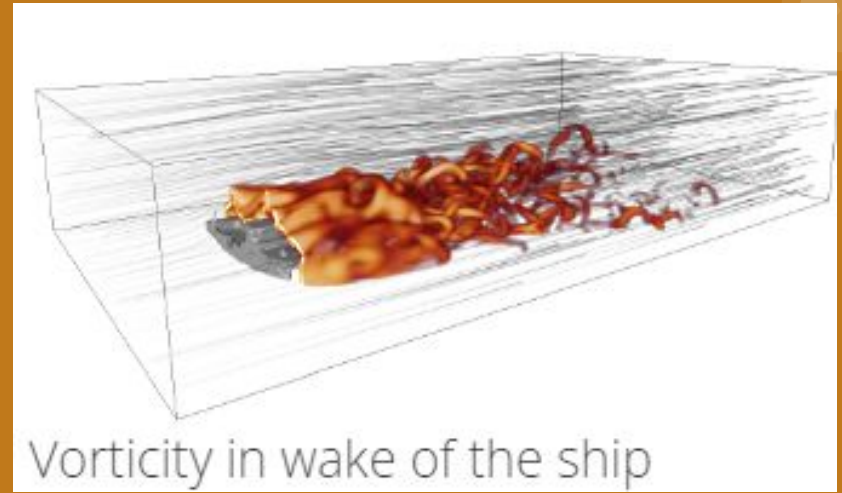
What is the Tangoroa, and Why Care?

- ❖ Tangoroa Research Vessel
 - Research Vessel from New Zealand
 - Employs dynamic positioning to stabilize itself
- ❖ Our goals
 - Visualize air currents around the vessel
 - Gain an understanding of how the vessel's shape affects the flow to inform the dynamic positioning system



The Dataset: What is in There?

- ❖ There were three main groups of VTK files, 200 timesteps each
 - Each group (U, V, and W) were a point in a vector shown as a scalar
 - After combining the data we were able to see the resulting vector field



Visualization from the dataset source

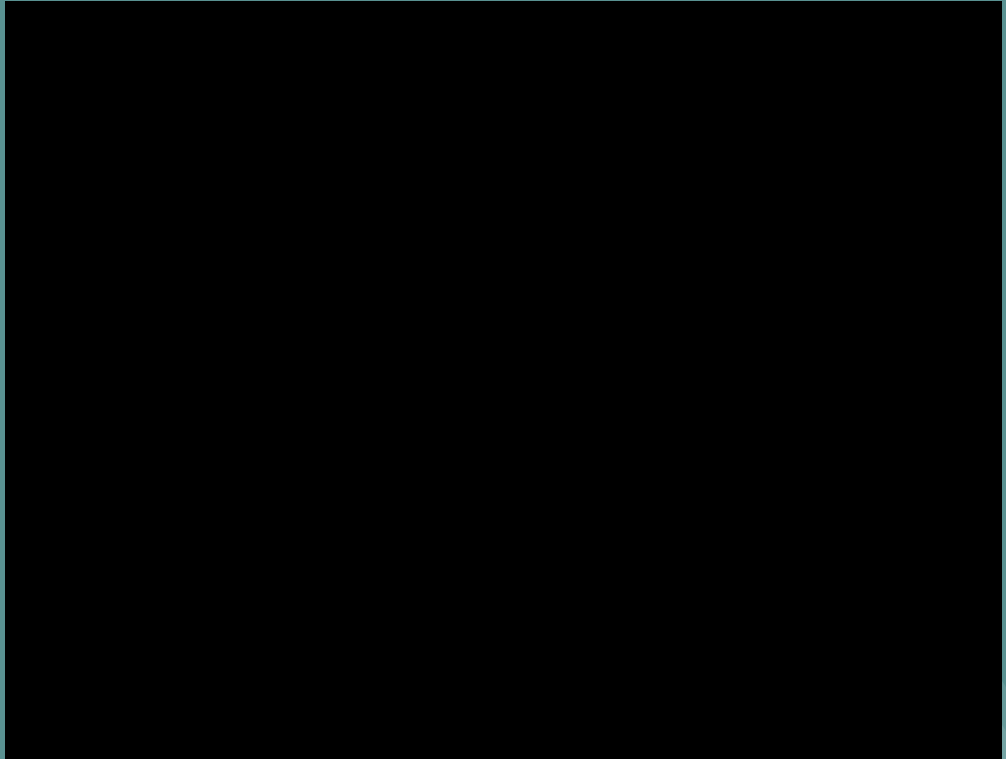
Tools Used

Paraview!

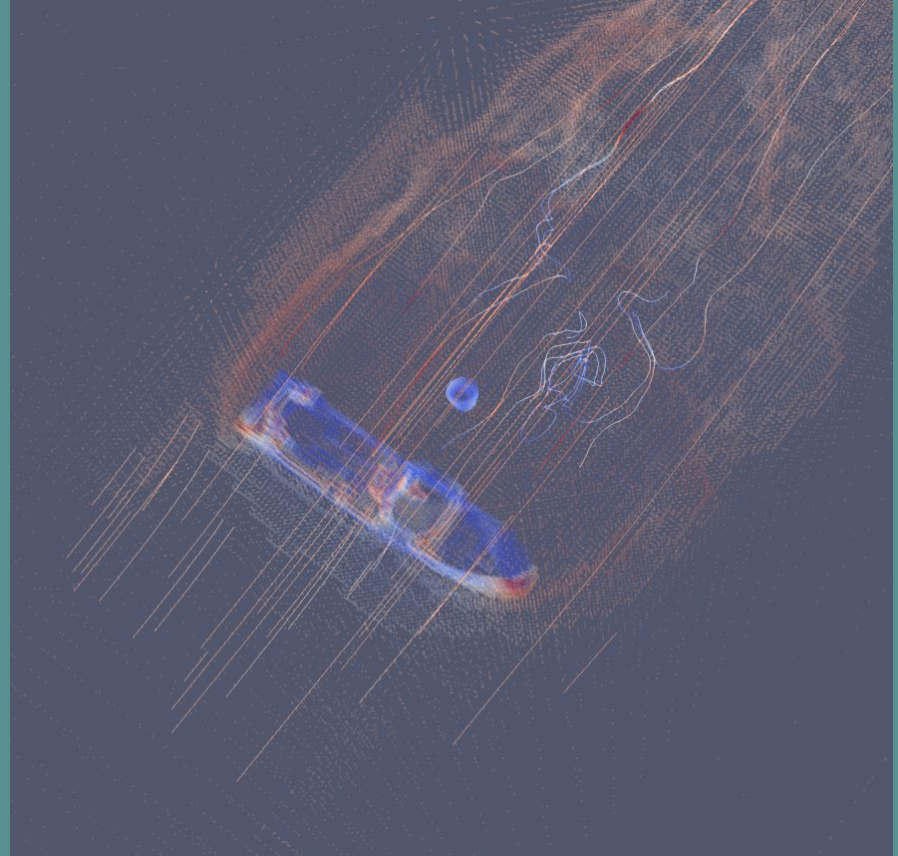
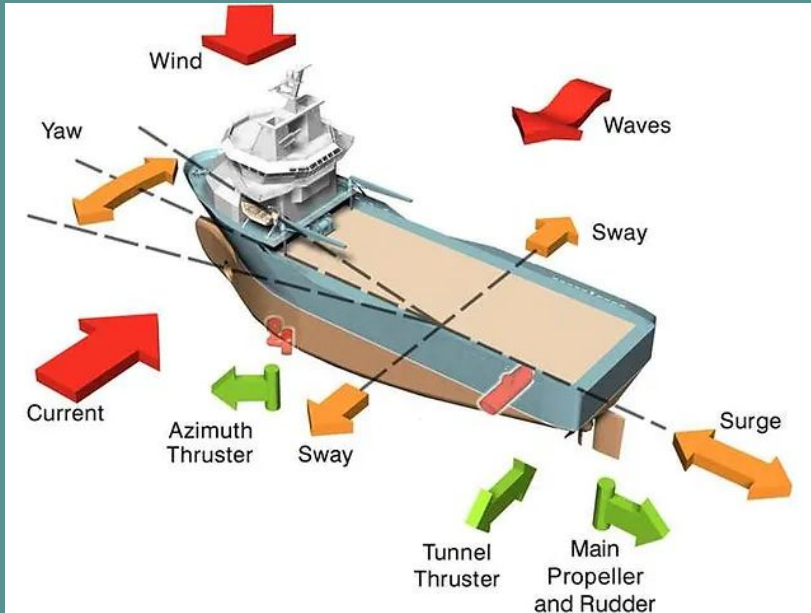
A decorative pattern of vertical bars of varying heights and shades of teal, located at the bottom of the slide.

Solutions

Visualize flow with
streamlines and
vorticity



Solutions



Solutions

Visualize topology of the flow to understand how the flow changes shape behind the ship over time



Solutions

Show persistence of the flow?????



Challenges

- ❖ Renaming the files so Paraview could group timesteps appropriately
- ❖ Getting acquainted with the data
 - We originally thought the flow was underwater!
- ❖ Dealing with such a large dataset, and how slowly visualizations rendered

Expected vs. Actual Outcome

- ❖ Original plan: determine which parts of the body of the vessel are inefficient for movement
- ❖ Actual analysis: visualizing where the turbulence is greatest to support the dynamic positioning system



Questions?

