

Visualization and Analysis of Eddies in a Global Ocean Simulation

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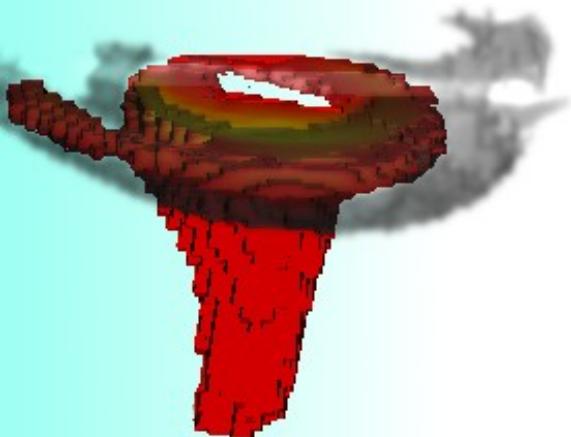
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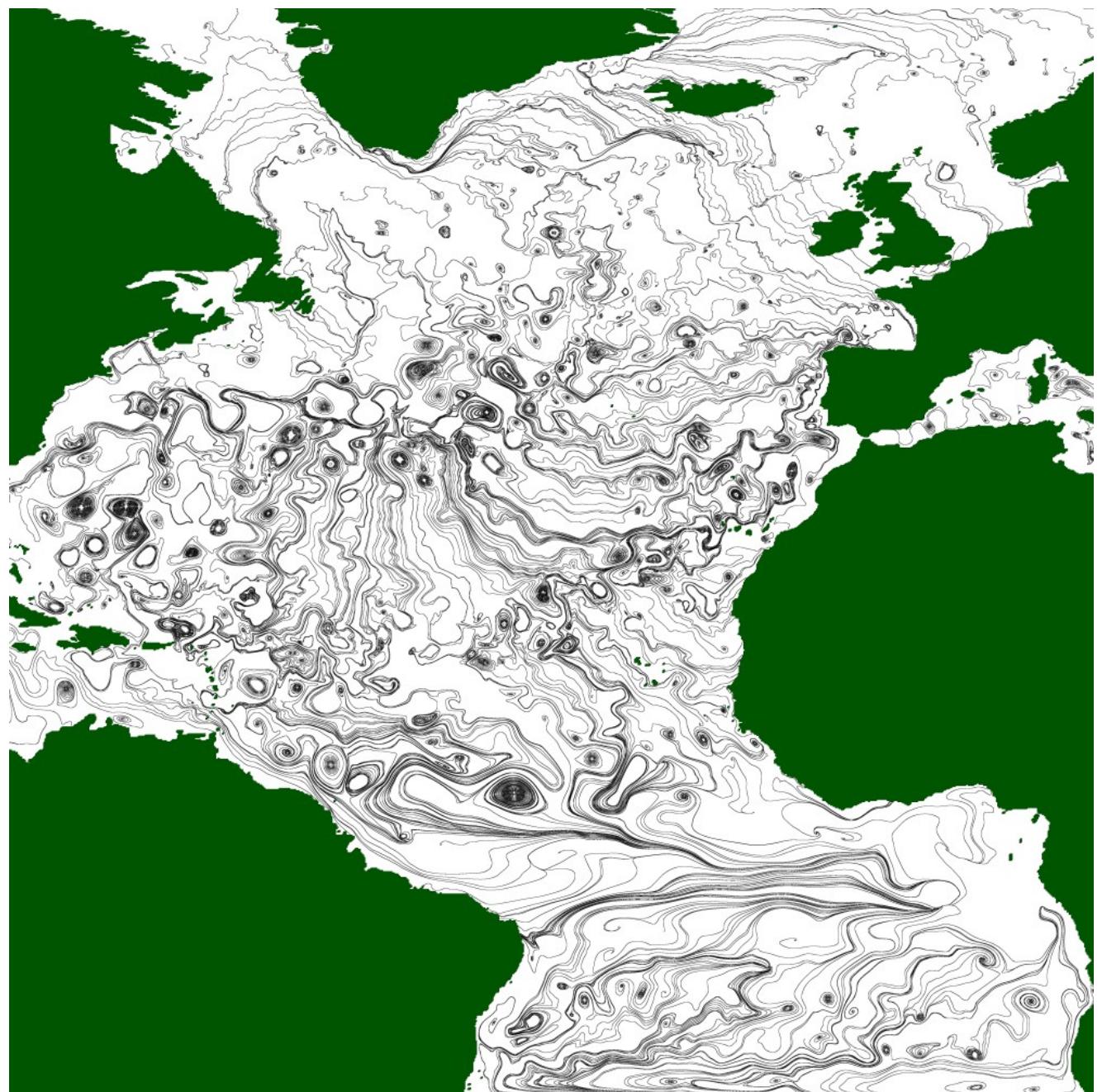
James Ahrens

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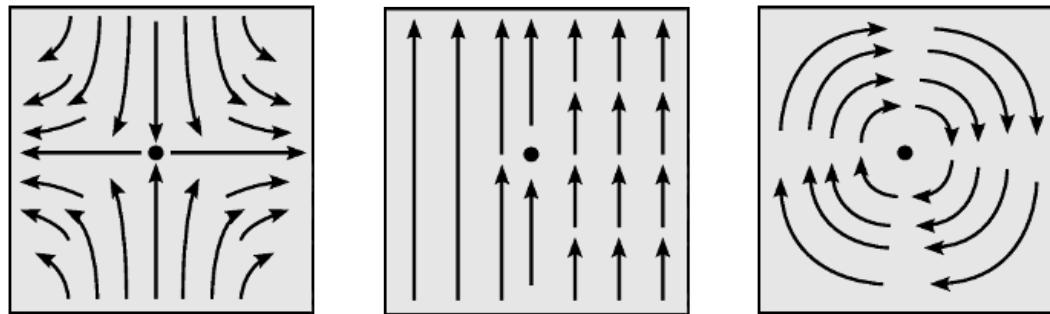
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The North Atlantic



The Okubo-Weiss Parameter



$$OW = s_n^2 + s_s^2 - \omega^2$$

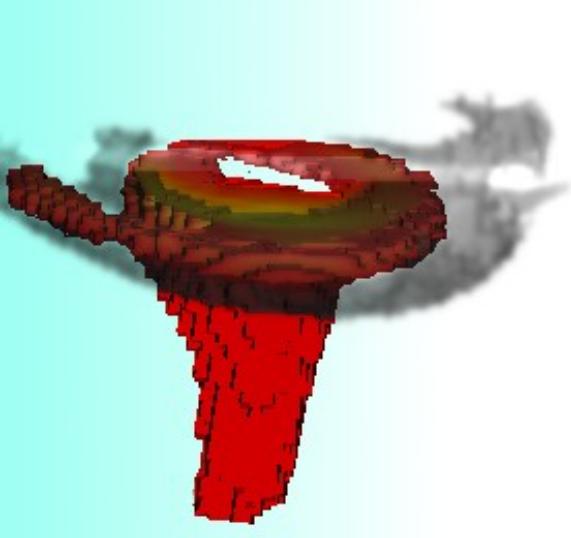
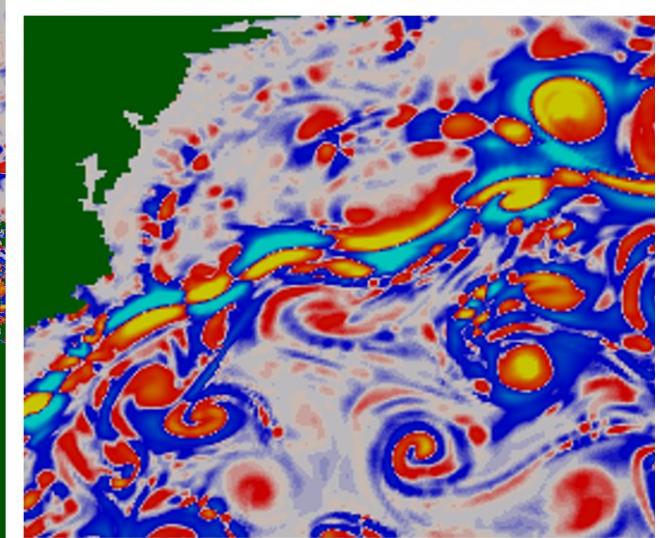
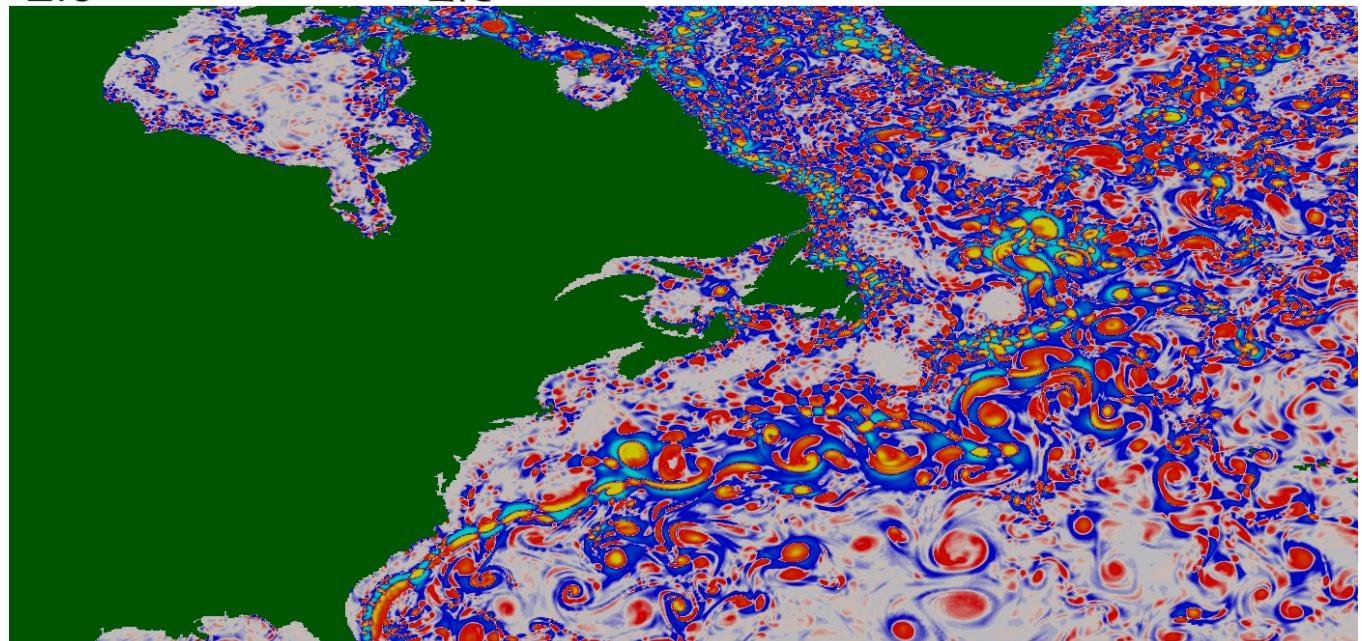
$$\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y}$$

$$\frac{\partial v}{\partial x} + \frac{\partial u}{\partial y}$$

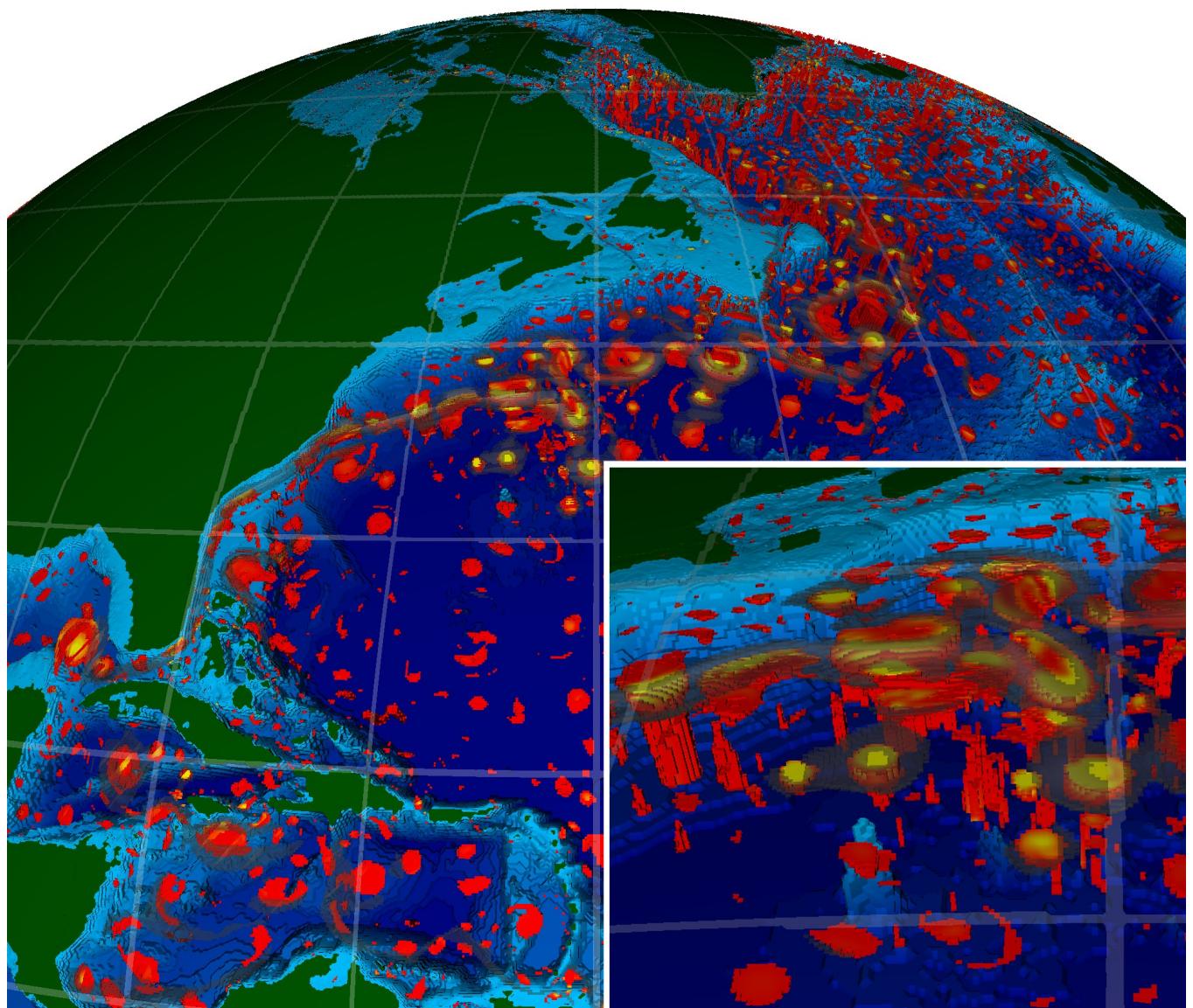
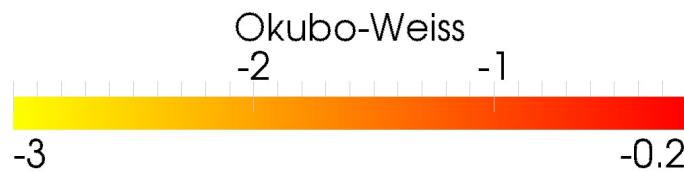
$$\frac{\partial v}{\partial x} - \frac{\partial u}{\partial y}$$


$$OW = \left(\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y} \right)^2 + \left(\frac{\partial v}{\partial x} + \frac{\partial u}{\partial y} \right)^2 - \left(\frac{\partial v}{\partial x} - \frac{\partial u}{\partial y} \right)^2$$

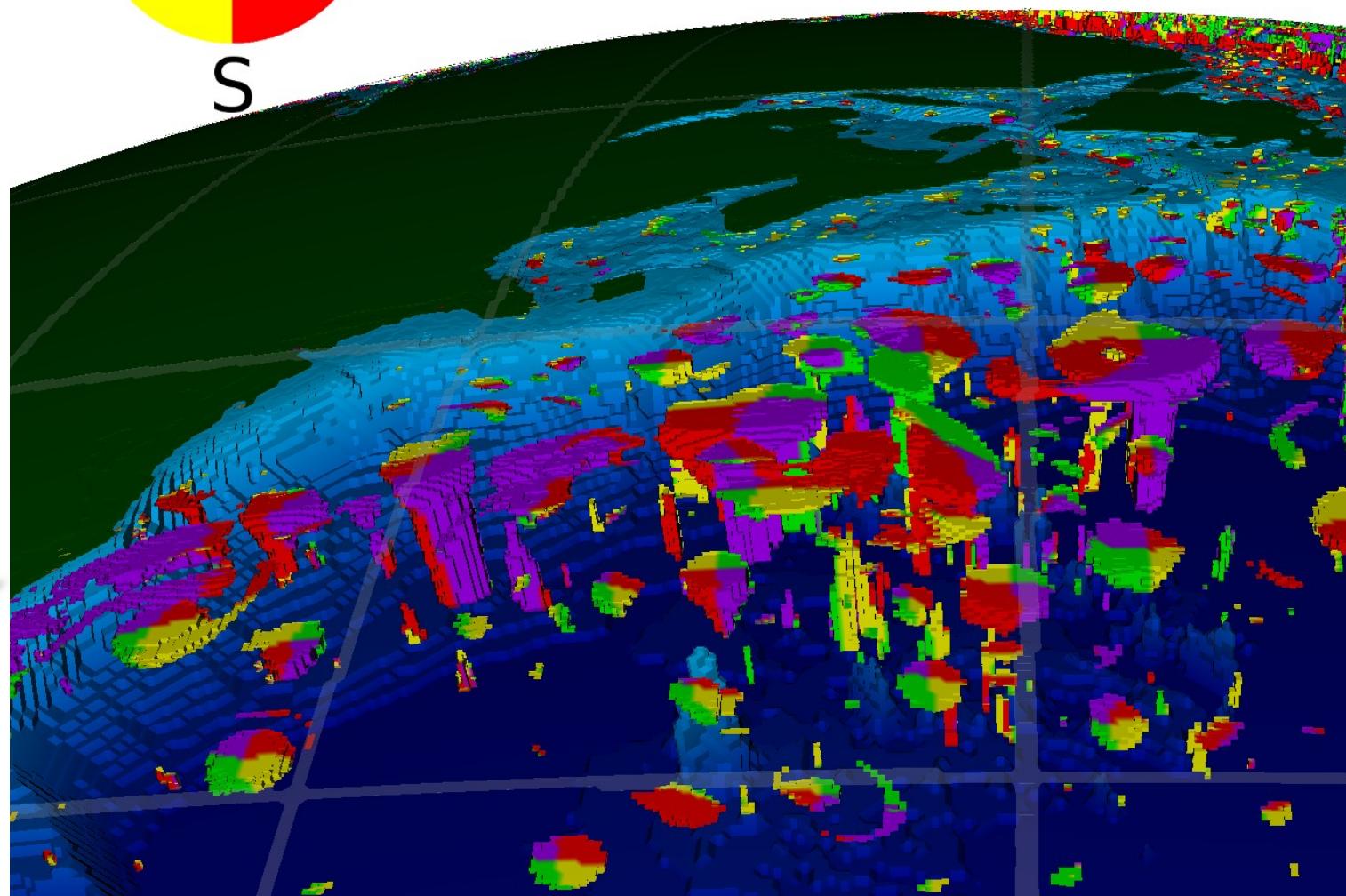
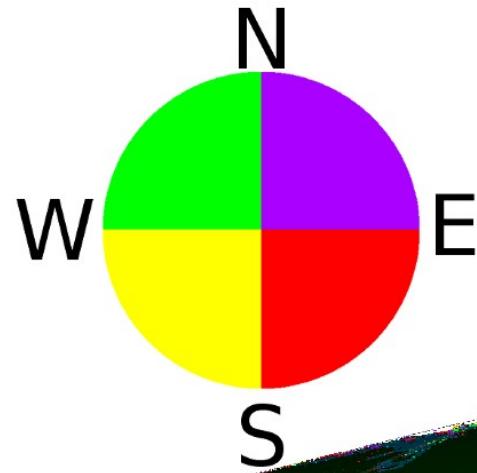
Okubo-Weiss In the North Atlantic



Okubo-Weiss At Depth



Discrete Angle Domains



Angle Domain Distributions

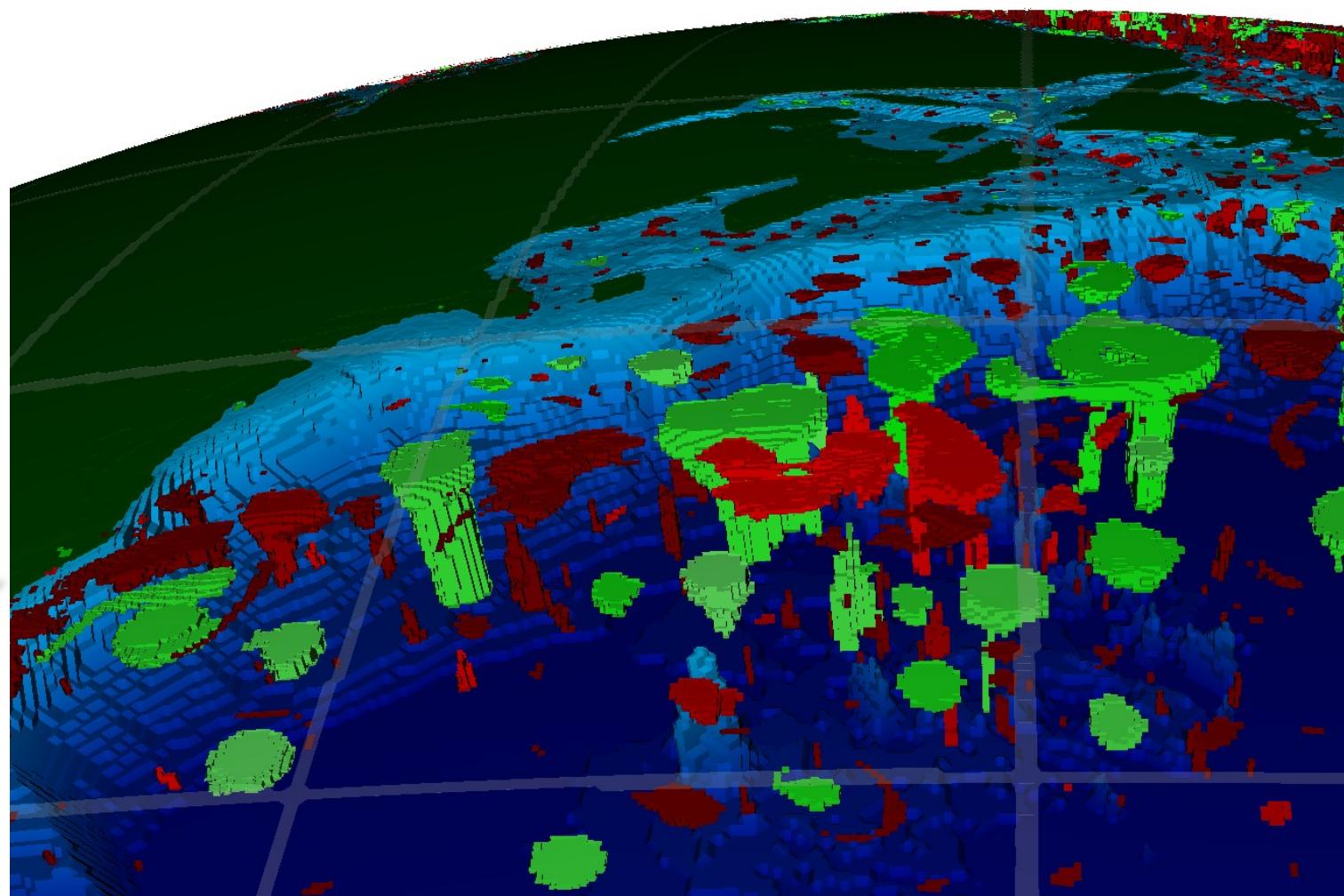
Angle Criterion

0.1

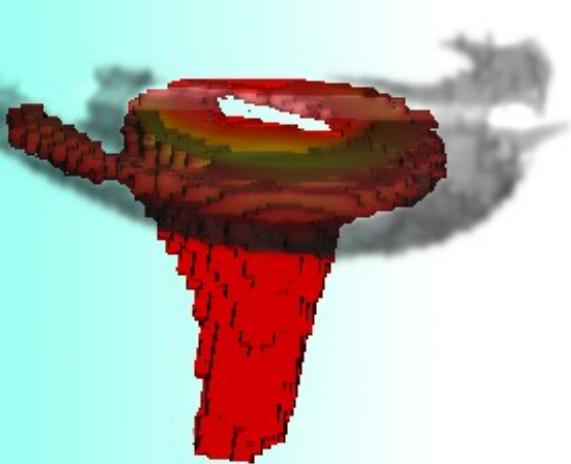
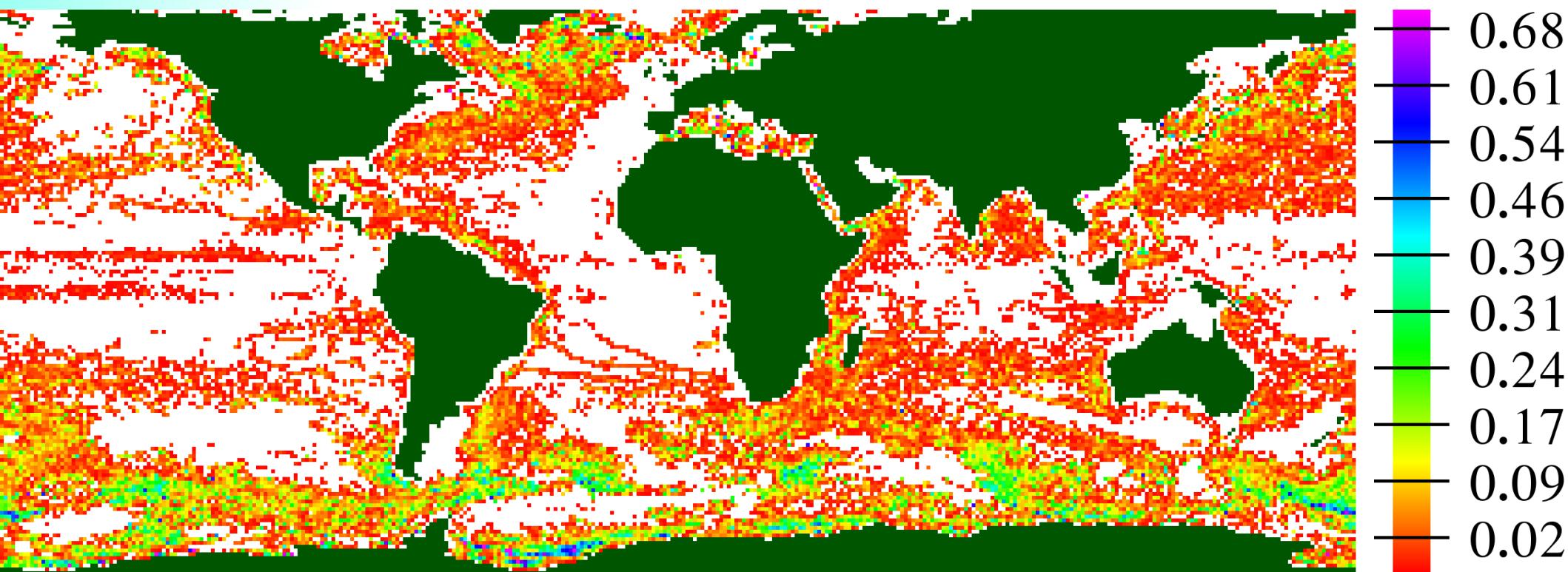
0.2

0

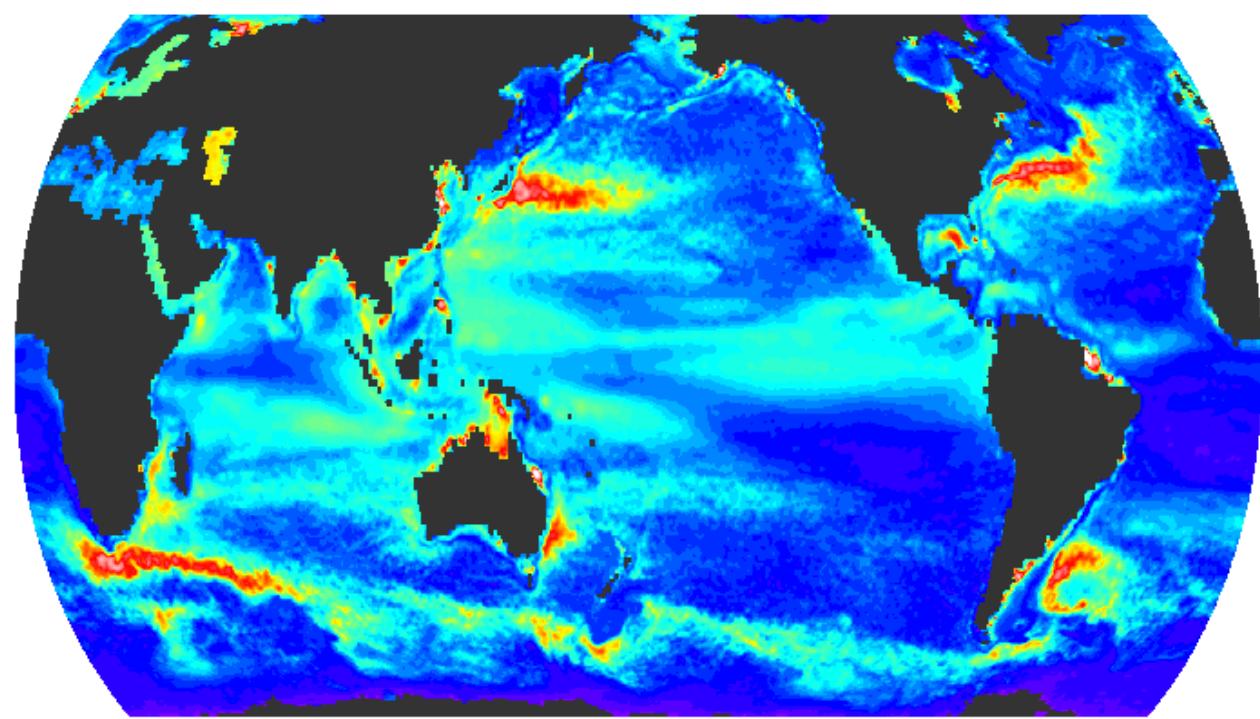
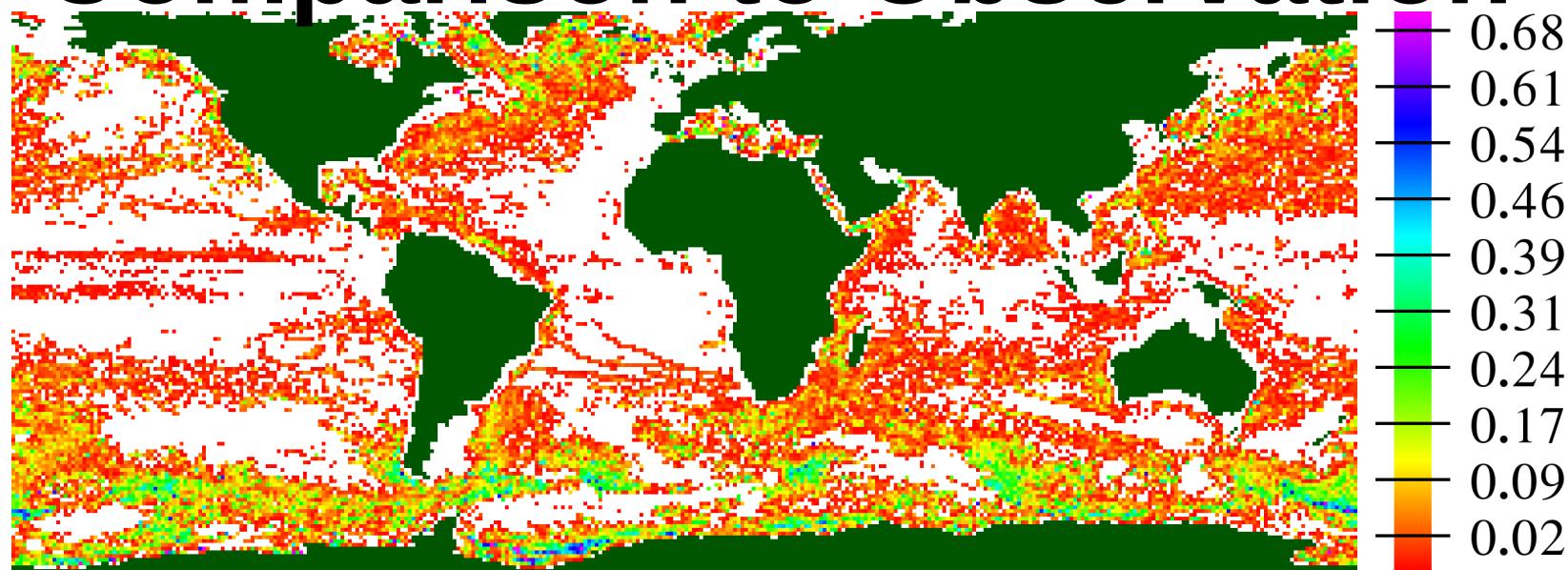
0.25



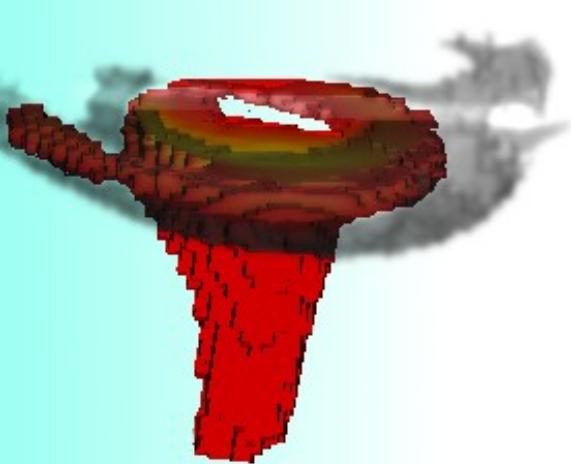
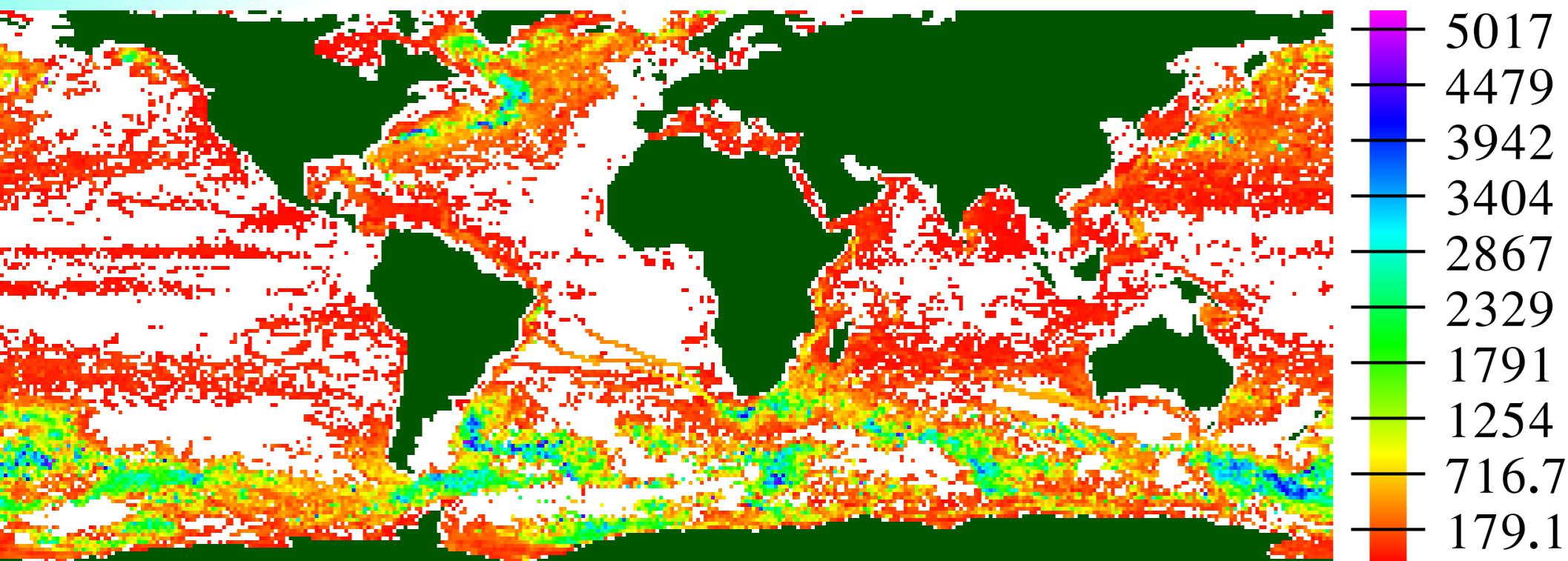
Global Census



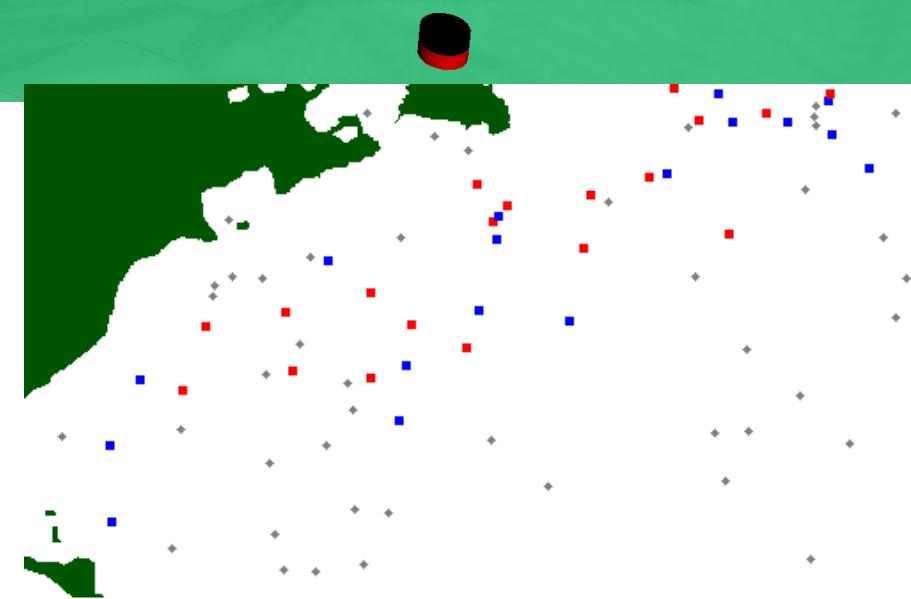
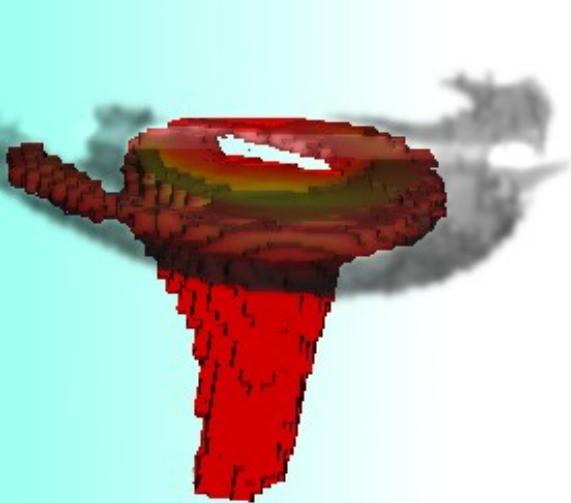
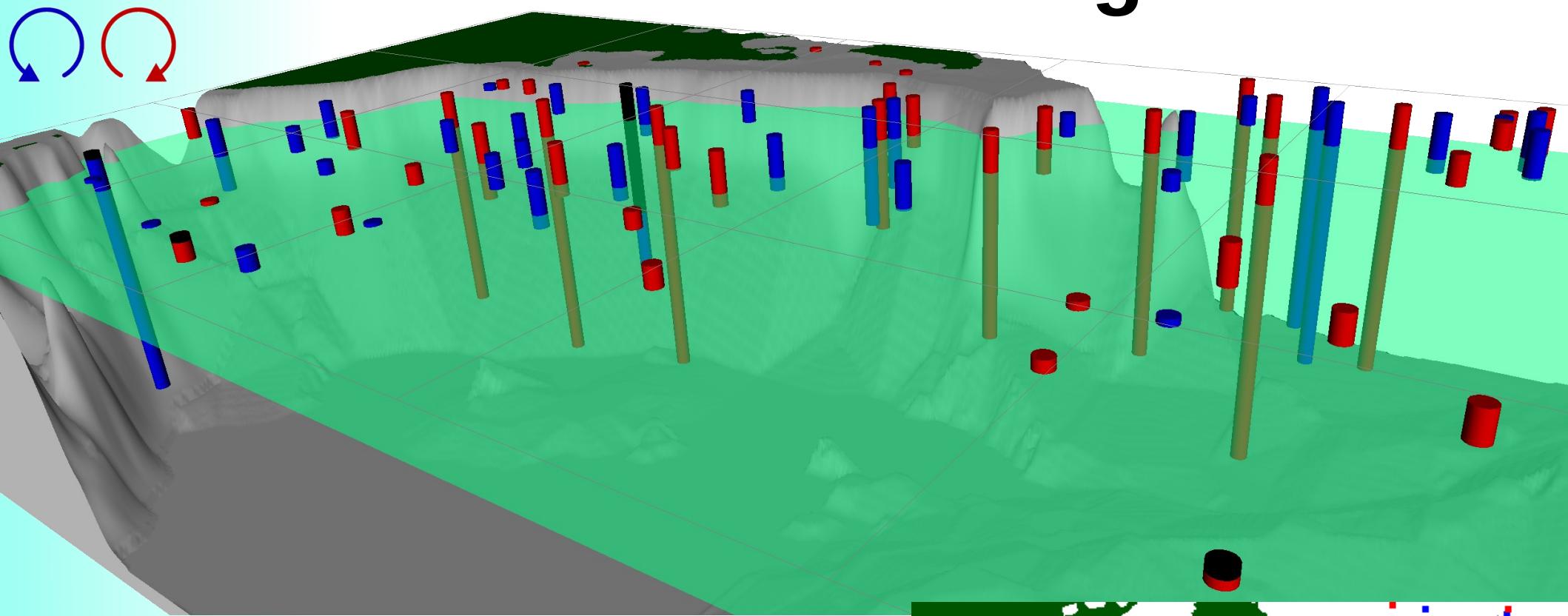
Comparison to Observation



Average Thickness



Thermocline in the Sargasso Sea



Questions

