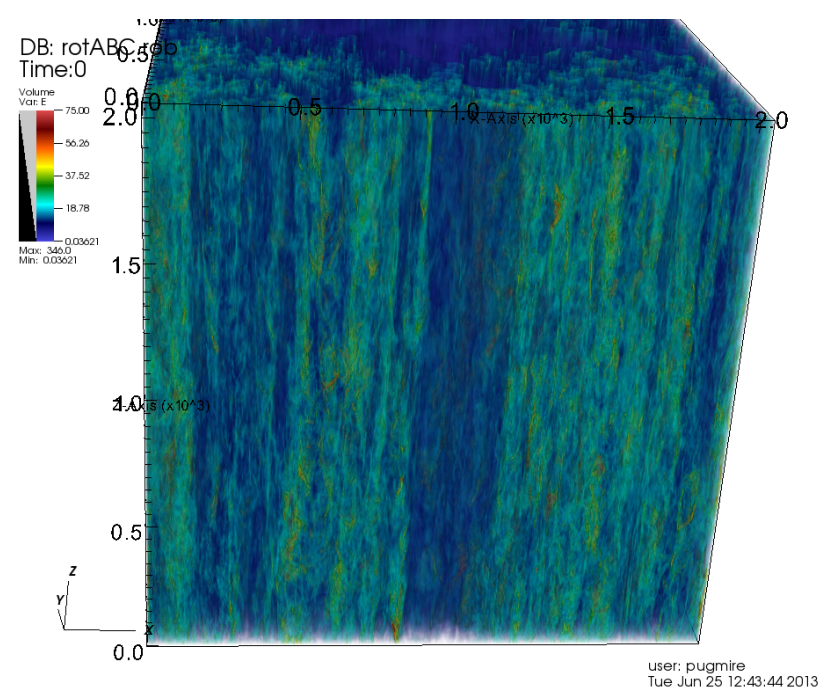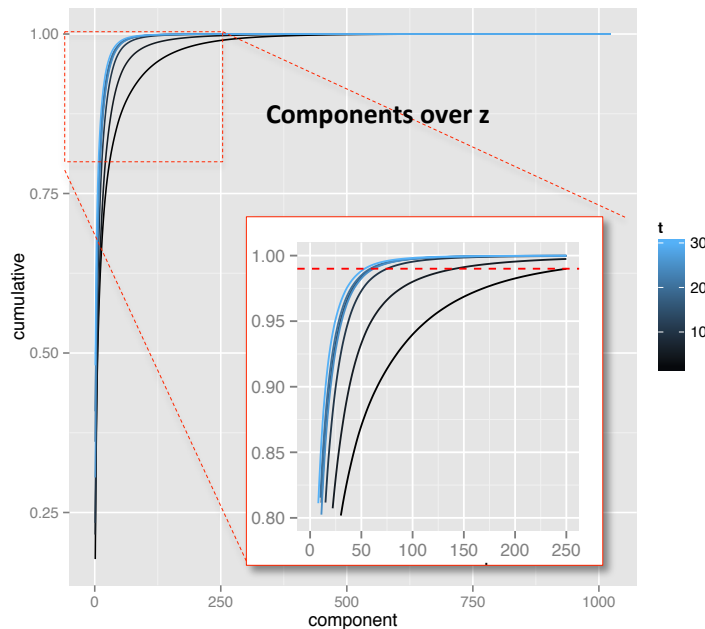- Data: Turbulence cube: $2048^3 \approx 8.6$ Billion elements ≈ 70 GiB per time step

- Principal components analysis across z

- Subset: 512 x 512 x 1,024

- I/O + subset + PCA + plots $\approx$ 60 seconds per time step with 128 cores

- **Coherence in z increases over time:**

- *Time 1:* **25%** components capture 99% variability

- *Time 30:* **5%** components capture 99% variability

2013 INCITE "Parameter Studies of Boussinesq Flows" Susan Kurien, PI, Duane Rosenberg, Co-PI, et al