Oceans: dynamics, transport/mixing and climate change

Bibliography to accompany 2011 MBI lectures by Emily Shuckburgh

Lecture 1: Dynamics

- Ocean surface/ sub-surface circulation: [see Marshall and Plumb, 2008; Neelin, 2011; Talley et al., 2011]
- Rotating fluid dynamics: [see Marshall and Plumb, 2008 for laboratory experiments]; also http://paoc.mit.edu/labweb/experiments.htm
- Equations of motion: [see Gill, 1982; Marshall and Plumb, 2008; Neelin, 2011]
- Eddies in the Southern Ocean: [for extensive detail on eddies and their generation mechanisms see Vallis, 2006]; [Rintoul et al., 2001].
- Overturning circulation: [Marshall and Speer, 2012](Southern Ocean perspective)
- Ocean measurements: [Marshall and Speer, 2012]
- Southern Ocean climate change: [Boning et al., 2008] (ocean); [Thompson and Solomon, 2002] (atmosphere); [G J Marshall et al., 2006] (Antarctic Peninsula); [Domack et al., 2005] (ice shelf); sea ice [Turner et al., 2009]; krill [Atkinson et al., 2004; Atkinson et al., 2009]
- Other good books: [Pierrehumbert, 2010]

Lecture 2. Transport/mixing

- Quantifying mixing by eddies: [Haynes and Shuckburgh, 2000; Nakamura, 1996; E. Shuckburgh and Haynes, 2003]
- Mixing regions and transport barriers:[E. Shuckburgh and Haynes, 2003]
- Eddies in the Southern Ocean: [J Marshall et al., 2006; Emily Shuckburgh et al., 2009a; b]
- Air/sea interactions: [Emily Shuckburgh et al., 2011]
- Manifolds: [d’Ovidio et al., 2009; Samelson and Wiggins, 2006]
- Tracer evolution: [Lehahn et al., 2007]
- AARDVARK – [Sallée, Shuckburgh and d’Ovidio, in prep.]
- Ecological Niches: [d’Ovidio et al., 2010]
- Other useful papers: [Abraham, 1998; Abraham and Bowen, 2002]

References

• Neelin, J. D. (2011), Climate Change and Climate Modelling, Cambridge University Press.
• Shuckburgh, E., and P. Haynes (2003), Diagnosing transport and mixing using a tracer-based coordinate system, Physics of Fluids, 15(11), 3342-3357.


