Current and Planned Activities

• Method development and testing
• Focus on dual state and parameter correction
• Application of DA to toy problems
• Twin experiments
• Application of DA to 0-D and 1-D case studies

• Delivery of pragmatic DA in eddy-resolving OFAM BGC
• Exploration of DA using 4DVAR in ROMS
• Development of Bayesian Hierarchical Methods in coastal bgc models
Aspirations

- Functioning DA in operational BlueLink system dealing with spatially and temporally variable parameters (short-term forecasts, hindcasts)
- Functioning DA in 3-D coastal models at shelf scale (ribbon model) and bay/estuary scale (relocatable estuary models)
- Formal error/uncertainty propagation for scenarios as well as short-term forecasts
- DA / uncertainty analysis in global carbon cycle models?
- Coastal and ocean BGC OSSE.
- Set of test cases and toolboxes for testing and developing DA methods in BGC models.
• **Compute power.**
  • Can we use GPUs / parallel systems efficiently for 3-D as well as 0-D models? Eg Richard / Andrew’s approach should parallelise very efficiently.

• **Observations**
  • Serious shortage of in situ observations. ARGO, gliders?, …
  • Heavily reliant on ocean colour from satellites.
  • Do we understand error structures in satellite products.
  • Building optics / radiative transfer into models?
Capability

• Very small pool of practitioners
• Likely difficult to recruit BGC DA experts
• Train PhDs, postdocs?
• Attract mathematics graduates?