**Data assimilation and visualization in environmental sciences, 15-19 September 2014.**

Lectures will take place in Palmer Building 1.11
Practical classes will take place in Palmer Building 1.01 PC Lab

**Monday**

9 - 9.30 Registration – Palmer Building 1st floor

9.30 - 9.45 Welcome & introduction

9.45 - 10.45 Student introductions

10.45 - 11.05 Break

11.05 - 12.05 **Lecture:** Introduction to data assimilation - Amos Lawless

12.05 - 13.05 **Lecture:** Further introduction to data assimilation, including covariance functions
– Ross Bannister

13.05 - 14.15 Lunch

14.15 - 15.30 **Practical:** Covariance functions in 1D system – Polly Smith

15.30 - 16.00 Break

16.00 - 17.00 **Lecture (in PC Lab):** Introduction to models and Archer – Phil Browne

17.30 Icebreaker reception

**Tuesday**

9.00 - 10.30 **Lecture:** Theory of variational data assimilation – Nancy Nichols

10.30 - 11.00 Break

11.00 - 12.00 **Practical:** Variational methods – Polly Smith

12.00 - 12.45 **Lecture:** Variational assimilation – practical considerations – Amos Lawless

12.45 - 14.00 Lunch

14.00 - 14.45 **Lecture:** Observation impact – Alison Fowler

14.45 - 15.15 Break

15.15 - 16.30 **Practical:** Variational methods – Polly Smith

**Wednesday**

9 - 10.30 **Lecture:** Ensemble Kalman Filter (EnKF) theory – Sarah Dance

10.30 - 11.00 Break

11.00 - 12.30 **Practical:** EnKF – Sanita Vetra-Carvalho

12.30 - 13.45 Lunch

13.45 - 15.00 **Lecture (in ESSC):** Visualization: Some principles and examples

– Jon Blower & Debbie Clifford

15.00 - 15.30 Break

15.30 - 17.30 **Practical:** Visualization – Jon Blower & Debbie Clifford

**Thursday**

9 - 10.30 **Lecture:** EnKF practical considerations (localization, inflation, etc) – Ross Bannister

10.30 - 11.00 Break

11.00 - 12.30 **Lecture:**  Particle filters (PF) & Markov Chain Monte-Carlo (MCMC)
– Peter Jan van Leeuwen

12.30 - 13.45 Lunch

13.45 - 15.00 **Lecture:**  PF & MCMC – Peter Jan van Leeuwen

15.00 - 15.30 Break

15.30 - 17.00 **Practical:** PF & MCMC – Phil Browne

19.00 Workshop dinner – Zerodegrees, Reading.

**Friday**

9 - 10.30 **Lecture:** DA for a carbon cycle model - Tristan Quaife

10.30 - 11.00 Break

11.00 - 12.30 **Practical:** EnKF & PF using DALEC carbon cycle model - Tristan Quaife

12.30 - 13.30 Lunch

13.30 - 14.45 **Lecture:** Summary of data assimilation methods and what to use when
 – Peter Jan van Leeuwen

14.45 - 15.00 Closing remarks

15.00 Close of course