**London Mathematical Society – EPSRC Durham Symposium**

**Mathematics of Data Assimilation**

Monday 1st August – Thursday 11th August 2011

All talks will take place in room CLC203 Ken Wade Lecture Theatre, Calman Learning Centre

**Tuesday 2nd August**

09:00-09:10 Opening Remarks I Roulstone/P-J van Leeuwan/NK Nichols

09:10-10:10 M. Ghil *Data assimilation: how we got here and where to next?*

10:1-11:10 A. Majda *Mathematical strategies for real time filtering of turbulent dynamical*

*systems I*

11:10-11:40 Tea/Coffee

11:40-12:40 J. Harlim *Numerical Strategies for Filtering Partially Observed Multiscale*

*Dynamical Systems*

16:00-16:30 Tea/Coffee

16:30-17:00 F. Kwasniok *Deriving dynamical models from palaeoclimatic records using*

*nonlinear Kalman filtering: estimation of parameters and noise levels*

17:00-17:30 A. Lawless *TBA*

17:30-18:00 R. Bannister *TBA*

18:30 *Wine Reception at Grey College (JCR)*

**Wednesday 3rd August**

09:00-10:00 A. Stuart *Filtering for PDEs I*

10:00-11:00 A. Majda *Mathematical strategies for real time filtering of turbulent dynamical*

*systems II*

11:00-11:30 Tea/Coffee

11:30-12:30 E. Somersalo *DA in cell biology I*

16:00-16:30 Tea/Coffee

16:30-17:30 M. Cullen *4D VAR in the presence of model error*

17:30-18:00 M. Ghil *Parameter estimation and some new application areas*

18:00-18:30 H. Tran *Parameter estimation in complex biological systems*

**Thursday 4th August**

09:00-10:00 A. Majda *Mathematical strategies for real time filtering of turbulent dynamical*

*systems III*

10:00-11:00 A. Stuart *Filtering for PDEs II*

11:00-11:30 Tea/Coffee

11:30-12:30 E. Somersalo *DA in cell biology II*

14:00 *Symposium Photograph at Grey College*

15:00 *Cathedral Tour*

16:00-16:30 Tea/Coffee

16:30-17:30 D. Calvetti *TBA*

17:30-18:00 D. McLaughlin *The role of model dynamics in ensemble Kalman filter*

*performance for chaotic systems*

**Friday 5th August**

09:00-10:00 A. Majda *Mathematical strategies for real time filtering of turbulent*

*dynamical systems IV*

10:00-11:00 H. Abarbanel *Statistical Data Assimilation: Exact Formulation as a Path*

*Integral and Approximations in Many Examples I*

11:00-11:30 Tea/Coffee

11:30-12:30 M. Bocquet *Ensemble Kalman filtering without the intrinsic need for inflation*

 16:00-16:30 Tea/Coffee

16:30-17:00 A. Chuter *Modelling the carbon cycle - a dynamical systems approach*

17:00-17:30 S. Delahaies *4DVAR for modelling the carbon cycle*

17:30-18:00 G. Gottwald *Reduced stochastic climate models for data assimilation*

**Saturday 6th August**

09:00-10:00 S. Migliorini *TBA*

10:00-11:00 G. Gottwald *Controlling overestimation in ensemble Kalman filters*

11:00-11:30 Tea/Coffee

11:30-12:30

16:00-16:30 Tea/Coffee

16:30-17:00 H. Abarbanel *Statistical Data Assimilation: Exact Formulation as a Path*

*Integral and Approximations in Many Examples II*

17:00-17:30

17:30-18:00

**Sunday 7th August**

*Day trip to Hadrian's Wall*

**Monday 8th August**

09:00-10:00 TBA

10:00-11:00 P-J. van Leeuwen *TBA I*

11:00-11:30 Tea/Coffee

11:30-12:30 R. Kleeman *Mechanisms for predictability variation*

16:00-16:30 Tea/Coffee

16:30-17:00

17:00-17:30 N. Nichols *TBA*

17:30-18:00

20:00 *Poster Session in JCR (with wine and cheese)*

**Tuesday 9th August**

09:00-10:00 R. Kleeman *Targeted observation strategies for prediction improvement in*

*non-linear and/or non-Gaussian regimes*

10:00-11:00 J. Purser *Adaptive Anisotropic Covariance Operators; Construction,*

*Normalization and Implementation in a Parallel Computing*

*Environment*

11:00-11:30 Tea/Coffee

11:30-12:30 P-J. van Leeuwen *TBA II*

16:00-16:30 Tea/Coffee

16:30-17:00 G. Desroziers *Accelerating minimizations in ensemble variational assimilation*

17:00-17:30 H.L. Du *Better data assimilation through gradient descent*

17:30-18:00

19:00 *Conference Dinner*

**Wednesday 10th August**

09:00-10:00 M. Buehner *The use of ensemble covariances within variational data*

*assimilation for NWP*

10:00-11:00 G. Nicholls: *Monte Carlo methods for model parameter estimation which are*

*robust to errors in likelihood evaluation*

11:00-11:30 Tea/Coffee

11:30-12:30 M. Opper   *Variational approximations to inference in stochastic differential*

*equations*

16:00-16:30 Tea/Coffee

16:30-17:00 O. Talagrand *Assimilation in the Unstable Subspace*

17:00-17:30

17:30-18:00

Meeting closes

**Thursday 11th August**, *departures.*