Monday, June 3	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
WELCOMING REMARKS 9:30 – 9:40 9:40 – 9:50	**Eitan Tadmor**, Center for Scientific Computation & Math. Modeling (CSCAMM) **Jim Wallace**, Burgers Program
MORNING SESSION	**Chair: Eitan Tadmor** (University of Maryland)
9:50 - 10:45	**Kayo Ide** Overview of Data Assimilation and DAS13 Summer School
10:45 - 11:15	*COFFEE BREAK*
11:15 - 12:30	**Andrew Stuart** Mathematical and Statistical Perspectives on Data Assimilation. I
12:30 - 2:00	*LUNCH (hosted by CSCAMM)*
AFTERNOON SESSION	**Chair: Brian Hunt** (University of Maryland)
2:00 - 3:15	**Kayo Ide** 3D-Var
3:15 - 3:45	*COFFEE BREAK*
3:45 - 5:00	**Kayo Ide** and **Brian Hunt** Computer Laboratory I (KEB 2107)

Tuesday, June 4	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Eitan Tadmor** (University of Maryland)
9:30 - 10:45	**Brian Hunt** Optimal Interpolation
10:45 - 11:15	*COFFEE BREAK*
11:15 - 12:30	**Andrew Majda** Mathematical Strategies for Real Time Filtering of Turbulent Dynamical Systems
12:30 - 2:00	*LUNCH (hosted by CSCAMM)*
AFTERNOON SESSION	**Chair: Kayo Ide** (University of Maryland)
2:00 - 3:15	**Andrew Stuart** Mathematical and Statistical Perspectives on Data Assimilation. II
3:15 - 3:45	*COFFEE BREAK*
3:45 - 5:00	**Kayo Ide** and **Brian Hunt** Computer Laboratory II (KEB 2107)

Wednesday, June 5	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Andrew Stuart** (University of Warwick)
9:30 - 10:45	**Kayo Ide** 4D-Var
10:45 - 11:15	*COFFEE BREAK*
11:15 - 12:30	**Andrew Majda** Dynamic Stochastic Super resolution of Sparsely Observed Turbulent Systems
12:30 - 2:00	*LUNCH*
AFTERNOON SESSION	**Chair: Kayo Ide** (University of Maryland)
2:00 - 3:15	**Andrew Stuart** Mathematical and Statistical Perspectives on Data Assimilation. III
3:15 - 3:45	*COFFEE BREAK*
3:45 - 5:00	**Student Session I** **Walter Acevedo Valencia**, Freie Universität Berlin "Data assimilation of tree-ring-width-like observations using ensemble Kalman filtering techniques" **Mohammad Ebtahaj**, University of Minnesota "Variational data assimilation via sparse regularization" **David Kelly**, University of Warwick "Catastrophic filter divergence and EnKF" **Li Yang**, Michigan State University "Existence of the homoclinic connections corresponding to the bilayer structures in amphiphilic polymer systems"
6:30 - 8:00	*DINNER (hosted by CSCAMM)*

Thursday, June 6	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Brian Hunt** (University of Maryland)
9:30 - 10:00	**Kayo Ide** Observation and Information
10:00 - 10:15	***COFFEE BREAK***
10:15 - 11:30	**Andrew Majda** Models for Multi-Scale Data Assimilation: Test Models for Filtering and Prediction of Moisture-coupled Tropical Waves
11:30 - 12:15	***LUNCH*** *(hosted by CSCAMM)*
AFTERNOON SESSION	
12:15 – 5:00	**NASA TOUR** *(hosted by NASA Global Modeling and Assimilation Office)*

Friday, June 7	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Kayo Ide** (University of Maryland)
9:30 - 10:45	**Brian Hunt** Extended Kalman Filter
10:45 - 11:15	***COFFEE BREAK***
11:15 - 12:30	**Andrew Majda** Models for Multi-Scale Data Assimilation: Test Models for Filtering with Superparameterization
12:30 - 2:00	***LUNCH***
AFTERNOON SESSION	**Chair: Andrew Majda** (Courant Institute of Mathematical Sciences)
2:00 - 3:15	**Jeff Anderson** Introduction to the Ensemble Kalman Filter. Part 1
3:15 - 3:45	***COFFEE BREAK***
3:45 - 5:00	**Jeff Anderson** Computer Laboratory III (KEB 2107)

Saturday, June 8	
10:00 - 5:00	**Planned Hike with Brian Hunt** (Weather permitting)
Sunday, June 9	
All day	**Free Day**

Monday, June 10	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Kayo Ide** (University of Maryland)
9:30 - 10:45	**Brian Hunt** Ensemble Forecasting
10:45 - 11:15	*COFFEE BREAK*
11:15 - 12:30	**Jeff Anderson** Introduction to the Ensemble Kalman Filter. Part 2
12:30 - 2:00	*LUNCH (hosted by CSCAMM)*
AFTERNOON SESSION	**Chair: Brian Hunt** (University of Maryland)
2:00 – 3:15	**Kayo Ide** Model Error and Bias
3:15 - 3:45	*COFFEE BREAK*
3:45 - 5:00	**Jeff Anderson**, **Kayo Ide**, and **Brian Hunt** Computer Laboratory IV (KEB 2107)

Tuesday, June 11	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Kayo Ide** (University of Maryland)
9:30 - 10:45	**Brian Hunt** Local Ensemble Transform Kalman Filter
10:45 - 11:15	***COFFEE BREAK***
11:15 - 12:30	**Jeff Anderson** The Data Assimilation Research Test bed and Scalable Algorithms
12:30 - 2:00	***LUNCH** (hosted by CSCAMM)*
AFTERNOON SESSION	**Chair: Jeff Anderson** (NCAR)
2:00 - 3:15	**Student Session II** **Robin Weber**, Catalan Institute of Climate Sciences "On the problem of initializing climate predictions" **Nara Santitissadeekorn**, UNC Chapel Hill "Observing System Simulation Experiments of Lagrangian Data Assimilation for point-vortex systems" **Laura Slivinski**, Brown University "Lagrangian Data Assimilation and Its Application to Geophysical Fluid Flows" **Liao-Fan Lin**, Georgia Institute of Technology "Dynamic downscaling of GPM precipitation observations through data assimilation"
3:15 - 3:45	***COFFEE BREAK***
3:45 - 5:00	**Reza Malek-Madani** A Guide for Proposal Writing

Wednesday, June 12	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Brian Hunt** (University of Maryland)
9:30 - 10:45	**Eugenia Kalnay** Advances in EnKF: 4D-Var and EnKF
10:45 - 11:15	***COFFEE BREAK***
11:15 - 12:30	**Kayo Ide** Hybrid
12:30 - 2:00	***LUNCH***
AFTERNOON SESSION	
2:00 – 5:00	**NOAA Tour** *(hosted by NOAA National Centers for Environmental Prediction)*

Thursday, June 13	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Kayo Ide** (University of Maryland)
9:30 - 10:45	**Brian Hunt** Particle Filter
10:45 - 11:15	*COFFEE BREAK*
11:15 - 12:30	**Eugenia Kalnay** Advances in EnKF: Some improvements to EnKF
12:30 - 2:00	*LUNCH (hosted by CSCAMM)*
AFTERNOON SESSION	**Chair: Brian Hunt** (University of Maryland)
2:00 - 3:35	**Student Session III** • **Tyrus Berry**, George Mason University "Adaptive ensemble Kalman filtering of nonlinear systems" • **Maringel Garcia**, San Diego State University "Application of a Three-Dimensional Hydrodynamic Model for San Quintin Bay, B.C., Mexico: Validation and Calibration Using OpenDA" • **Nan Chen**, New York University "Filtering Turbulent Signals with Gaussian and non-Gaussian Filters" • **Jong-Im Park**, Korea Institute of Atmospheric Prediction Systems "Implementation and Application of LETKF Data Assimilation System to KIAPS Global NWP Model" • **Lili Lei**, National Center for Atmospheric Research "An Empirical Localization Technique for Ensemble Kalman filter in global models"
3:35 - 4:00	*COFFEE BREAK*
4:00 - 5:00	**Kayo Ide** and **Brian Hunt** Computer Laboratory V (KEB 2107)

Friday, June 14	2013 Interdisciplinary Summer School: Data Assimilation in Geosciences
MORNING SESSION	**Chair: Kayo Ide** (University of Maryland)
9:30 - 10:45	**Eugenia Kalnay** Advances in EnKF: Ensemble and Adjoint Sensitivity
10:45 - 11:15	**All** Data Assimilation Discussion
11:15	**CLOSING**