

2018 EnKF workshop program

Monday 28/05/2018

08:30-8:45:	Coffee & registration	
08:45-09:00:	Welcome (Xiaodong Luo, IRIS, Norway)	
09:00-09:45:	Diagnosis, conditioning and regularization of error covariance matrices in data assimilation	Session chair:
	<u>Nancy Nichols</u> University of Reading, UK	
09:45-10:15	Estimation of model error covariances for nonlinear dynamical systems using Particle Filters and the Expectation-Maximization algorithm	
	<u>M. Lucini</u> ^{1,2} , <u>P.J Van Leeuwen</u> ¹ , <u>M. Pulido</u> ^{1,2} ¹ University of Reading, UK; ² Universidad Nacional del Nordeste, Argentina	
10:15-10:45	Shadowing for data assimilation with imperfect models	
	<u>Bart de Leeuw</u> , <u>Svetlana Dubinkina</u> CWI, Netherlands	
10:45-11:00	Break	
11:00-11:45	Relevance of conservation laws for an Ensemble Kalman Filter	Session chair:
	<u>Svetlana Dubinkina</u> CWI, Netherlands	
11:45-12:15	EnKF using selection Gaussian prior	
	<u>Maxime Conjard</u> , <u>Henning Omre</u> NTNU, Norway	
12:15-12:45	Adaptive covariance inflation in the EnKF by Gaussian scale mixtures	
	<u>Patrick N. Raanes</u> ¹ , <u>Marc Bocquet</u> ² , <u>Alberto Carrassi</u> ¹ ¹ NERSC, Norway; ² CEREA-ENPC, France	
12:45-13:45	Lunch	
13:45-14:15	Assimilation onto the unstable subspace and asymptotic properties of Kalman - Bucy filter for zero noise dynamical system	Session chair:
	<u>Amit Apte</u> ¹ , <u>Sreekar Vadlamani</u> ² , <u>Anugu Sumith Reddy</u> ¹ ¹ ICTS, India; ² Lund University, Sweden	
14:15-14:45	Chaotic dynamics and the role of covariance inflation for reduced rank Kalman filters with model error	
	<u>Colin Grudzien</u> ¹ , <u>Alberto Carrassi</u> ¹ , <u>Marc Bocquet</u> ² ¹ NERSC, Norway; ² CEREA-ENPC, France	
14:45-15:15	An adaptive scheme for MCMC in infinite dimensions	
	<u>Sreekar Vadlamani</u> Lund University, Sweden	
15:15-15:30	Break	
15:30-16:00	Revised Implicit Equal-Weights Particle Filter	Session chair:
	<u>Jacob Skauvold</u> ¹ , <u>Peter Jan van Leeuwen</u> ² , <u>Javier Amezcua</u> ² , <u>Jo Eidsvik</u> ¹ ¹ NTNU, Norway; ² University of Reading, UK	
16:00-16:30	The variational mapping particle filter	
	<u>Manuel Pulido</u> ^{1,2} , <u>Peter Jan Van Leeuwen</u> ¹ ¹ University of Reading, UK; ² Universidad Nacional del Nordeste, Argentina	
16:30-17:00	On the localization in ensemble coupled data assimilation using a multi-scale Lorenz model	
	<u>Junde Li</u> ¹ , <u>Youmin Tang</u> ^{1,2} , <u>Zheqi Shen</u> ¹ ¹ State Oceanic Administration, China; ² University of Northern British Columbia, Canada	
17:00-17:30	Localisation in particle filters: methods comparison and improvements	
	<u>Alban Farchi</u> , <u>Marc Bocquet</u> CEREA-ENPC, France	

17:30-18:30 **Poster session**

19:00 **Dinner**

*Invited talks in **blue** color, speakers' names underlined, and titles in **boldface**

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08:30-09:15	Coupled data assimilation for the atmosphere-land surface-subsurface models <u>H.J. Hendricks Franssen</u> ¹ , W. Kurtz ¹ , H. Zhang ¹ , P. Shrestha ² , D. Baatz ¹ , C. Simmer ² , S. Kollet ¹ , H. Vereecken ¹ , P. Shrestha ² ¹ Forschungszentrum Julich GmbH & Centre for High Performance Computing in Terrestrial Systems, Germany; ² University of Bonn, Germany	Session chair:
09:15-09:45	Ensemble based and implicit cross-correlations in coupled data assimilation <u>Patrick Laloyaux</u> ¹ , Sergey Frolov ¹ , Massimo Bonavita ¹ , Benjamin Ménétrier ² ¹ ECMWF; ² Météo France	
09:45-10:15	Ensemble data assimilation on non-conservative adaptive moving mesh Colin T. Guider ¹ , <u>Ali Aydogdu</u> ² , Chris K.R.T Jones ¹ , Alberto Carrasi ² ¹ University of North Carolina, USA; ² NERSC, Norway	
10:15-10:30	Break	
10:30-11:00	Data assimilation for a multi-compartment porous media model for blood flow in the brain <u>Geir Nævdal</u> ¹ , Erlend Hodneland ² , Ove Sævareid ¹ ¹ IRIS, Norway; ² CMR, Norway	Session chair:
11:00-11:30	Towards assimilation of ExoMars trace gas orbiter observations into the LMD Mars GCM using the LETKF <u>R. M. B. Young</u> ¹ , E. Millour ¹ , F. Forget ¹ , T. Navarro ^{1,2} ¹ Sorbonne Université, France; ² UCLA, USA	
11:30-12:00	The impact of assimilating SST, Argo and SLA data into a tidally driven model for the Brazil current region <u>Rafael Santana</u> ¹ , Filipe Costa ¹ , Davi Mignac ² , Alex Santana ³ , Clemente Tanajura ¹ ¹ Federal University of Bahia, Brazil; ² University of Reading, UK; ³ University of the Balearic, Spain	
12:00-12:30	Assessing the ecological state of the ocean by integration of models and observations using data assimilation in MIKE 21/3 FM biogeochemical models <u>Johan Henrik Andersson</u> , Jesper Sandvig Mariegaard DHI Group, Denmark	
12:30-13:30	Lunch	
13:30-19:00	Time off / Activities on your own	
19:00	Dinner	

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2018 EnKF workshop program

Wednesday 30/05/2018

08:30-09:15	Uncertainty representation in reservoir history matching with ensemble methods: how complex does a model have to be? Yan Chen Total GCR, UK	Session chair:
09:15-09:45	Integration of model diagnostic tools within ensemble history matching: methodology application and experiences Stefania Lo Forte , Patrizia Anastasi , Giorgio Fighera , Fulvia Turri , Ernesto Della Rossa Eni S.p.A, Italy	
09:45-10:15	Accounting for model errors in iterative ensemble smoothers Geir Evensen ^{1,2} , Xiaodong Luo ¹ ¹ IRIS, Norway; ² NERSC, Norway	
10:15-10:30	Break	
10:30-11:15	TBC Remus Hanea Statoil AS, Norway	Session chair:
11:15-11:45	Application of ensemble smoother to history matching study of a North Sea chalk reservoir E. Tolstukhin ¹ , V. Demyanov ² , R. Hutton ² , A. Khrulenko ³ ¹ ConocoPhillips, Norway; ² Heriot Watt University, UK; ³ IRIS, Norway	
11:45-12:15	Hybrid sparse dictionary construction Using K-SVD and DCT for history matching by ES-MDA Sungil Kim ¹ , Baehyun Min ² ¹ CERFACS, France; ² Ewha Womans University, Republic of Korea	
12:15-13:15	Lunch	
13:15-13:45	Joint utilization of geophysical data types for monitoring of CO2 injection in the Skade formation S. Tveit ¹ , T. Mannseth ¹ , J. Park ² , G. Sauvin ² , R. Agersborg ³ ¹ Uni Research CIPR, Norway; ² NGI, Norway; ³ Octio, Norway	Session chair:
13:45-14:15	Subdomain adjoint-based variational data assimilation for reservoir history matching Cong Xiao ¹ , Arnold Heemink ¹ , Olwijn Leeuwenburgh ^{1,2} , Hai Xiang Lin ¹ ¹ TU Delft, Netherlands; ² TNO, Netherlands	
14:15-14:30	Break	
14:30-15:00	Using the Ensemble Transform Kalman Filter to estimate uncertainty in Full Waveform Inversion J. Thurin , R. Brossier , L. Metivier Universite Grenoble-Alpes, France	Session chair:
15:00-15:30	A novel multilevel method for assimilating spatially dense data Kristian Fossum , Trond Mannseth Uni Research CIPR, Norway	
15:30-16:00	History matching real production and seismic data for the Norne field combining seismic inversion, petroelastic models, and fluid flow simulations Rolf Lorentzen ¹ , Tuhin Bhakta ¹ , Dario Grana ² , Xiaodong Luo ¹ , Randi Valestrand ¹ , Geir Naevdal ¹ ¹ IRIS, Norway; ² University of Wyoming, USA	
16:00-16:05	Concluding remarks (Randi Valestrand, IRIS, Norway)	

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Poster session: 17:30-18:30, Monday 28/05/2018

A general data assimilation scheme and the comparison with the standard Kalman filter counterpart

K. Belyaev^{1,2}, A. Kuleshov³, I. Smirnov², C.A.S. Tanajura⁴

¹Russian Academy of Science; ²Moscow State University, Russia; ³Keldysh Institute of Applied Math, Russia; ⁴Federal University of Bahia, Brazil

Data assimilation in coupled hydrological models: challenges and opportunities

Natascha Brandhorst¹, Daniel Erdal², Insa Neuweiler¹

¹Leibniz Universität Hannover, Germany; ²Eberhard Karls Universität Tübingen, Germany

Impacts of assimilating ARGO into a hybrid coordinate ocean model 1/12°

F. B. Costa, C. A. S. Tanajura

Federal University of Bahia, Brazil

Seismic inversion using waveform data and EnKF framework

Michael Gineste

NTNU, Norway

Towards an automatic and adaptive localization scheme for ensemble-based history matching

Xiaodong Luo

IRIS, Norway

Estimation of model error covariances using the expectation-maximization algorithm combined with the ensemble Kalman filter

Manuel Pulido^{1,2}, Pierre Tandeo³, Marc Boquet⁴, Alberto Carrassi⁵, Magdalena Lucini^{1,2}

¹University of Reading, UK; ²Universidad Nacional del Nordeste, Argentina; ³IMT-Atlantique, France; ⁴CEREA-ENPC, France; ⁵NERSC, Norway

Stochastic, iterative ensemble Kalman smoothers

Patrick N. Raanes

NERSC, Norway

Bayesian Inversion for High Dimensional systems using Data Assimilation

Sangeetika Ruchi¹, Svetlana Dubinkina¹, Marco Iglesias²

¹CWI, Netherlands; ²University of Nottingham, UK

A new formulation of vector weights in localized particle filter

Zheqi Shen¹, Youmin Tang^{1,2}

¹State Oceanic Administration, China; ²University of Northern British Columbia, Canada

Towards more robust optimization for iterative filters and smoothers

Martin Verlaan^{1,2}, Xiaohui Wang¹

¹TU Delft, Netherlands; ²DELTA RES, Netherlands

Assimilation of sea level anomaly and sea surface temperature into HYCOM using EnOI

Changxiang Yan, Jiang Zhu, Yueliang Chen

Chinese Academy of Sciences, China

*Presenters' names underlined