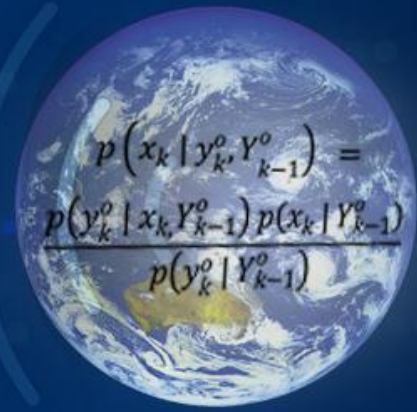


Annual R&D workshop: data assimilation  
5–9 December 2016 | Melbourne



## R&D Workshop 2016 Program

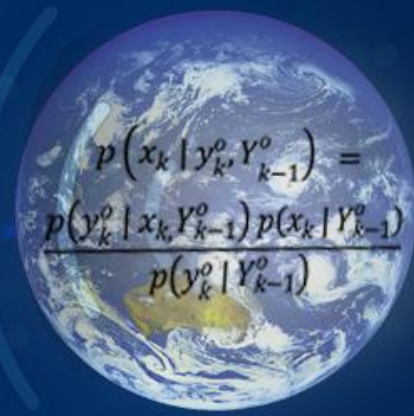
Monday, 5<sup>th</sup> December, 2016

### Theory and Ocean DA

8:30	Registration	
9:00	DDE/ADRD	<i>Opening and Welcome</i>
<b>Chair: Jeff Kepert</b>		
9:10	<b>Keynote: Peter Steinle BoM</b>	<b><i>The importance and future of DA at the Bureau of Meteorology</i></b>
9:50	<b>Keynote: Jeff Anderson UCAR/NCAR, USA</b>	<b><i>Building State-of-the-Art Forecast Systems with the Ensemble Kalman Filter</i></b>
10:30–11:00	<b>Morning Tea</b>	
<b>Chair: Peter Oke</b>		
11:00	Michael Tsyrlunikov, HydroMetCenter of Russia	<i>Stochastic and doubly stochastic spatio-temporal field modelling for data assimilation</i>
11:20	Gary Brassington BoM	<i>Global Ocean Data Assimilation</i>
11:40	Paul Sandery BoM	<i>Aspects of sub-mesoscale ocean analysis and forecasting</i>
12:00	Colette Kerry UNSW	<i>A high-resolution reanalysis of the East Australian Current using ROMS and 4D-Var: System evaluation and observation impact</i>
12:20	Emlyn Jones CSIRO, Hobart	<i>On assimilating reflectance into marine BGC models</i>
12:40–14:00	<b>Lunch</b>	
<b>Chair: Terry O’Kane</b>		
14:00	<b>Keynote : Michael Tsyrlunikov HydroMetCenter - Russia</b>	<b><i>Hierarchical Bayes Ensemble Kalman filtering.</i></b>
14:40	Chaojiao Sun CSIRO WA	<i>Satellite SST assimilation into an ocean model (SHOC) using 4D-Var</i>
15:00	Peter Oke CSIRO, Hobart	<i>Reanalysis and Ocean DA</i>
15:20	Pavel Sakov BoM	<i>Iterative ensemble Kalman filter in presence of model error</i>
15:40 - 16:00	<b>Afternoon Tea</b>	
16:00 – 17:00	<b>Discussion of day's topics Facilitator: Gary Brassington Rapporteur: Paul Sandery</b>	

# Annual R&D workshop: data assimilation

5–9 December 2016 | Melbourne



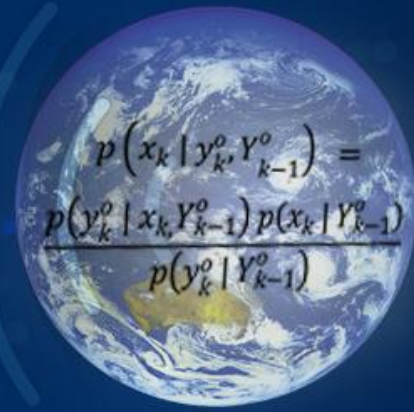
Tuesday 6<sup>th</sup> December, 2016

## Coupled & Atmospheric DA

Chair: Jeff Anderson		
9:00	<b>Keynote: Craig Bishop,</b> NRL, Navy, USA	<i>The GIGG-Delta filter: data assimilation for episodic variable with skewed uncertainty distribution like cloud, precipitation, fire and ice.</i>
9:40	Terry O’Kane CSIRO, Hobart	<i>Coupled DA in CCFS : A prototype multi-year to decadal prediction system</i>
10:00	Oscar Alves/Angus Gray-Weale BoM	<i>Coupled data assimilation in ACCESS-S</i>
10:20	Yonghong Yin BoM	<i>Ocean data assimilation in ACCESS-S2</i>
10:40–11:00	<b>Morning Tea</b>	
Chair: Tijana Janjic Pfander		
11:00	<b>Keynote: Adam Clayton</b> UK Met Office	<i>Development of a 4DEnVar-based ensemble at the Met Office, and experiments with the new ensemble covariances in hybrid DA</i>
11:40	Noel Davidson Emeritus Res. Scientist	<i>Recent Experiences with Operational Initialization, Prediction and Verification of Tropical Cyclones</i>
12:00	Xingbao Wang BoM	<i>The impact of background field on the TC bogus data assimilation</i>
12:20–14:00	<b>Lunch</b>	
Chair: Michael Tsyrlunikov		
14:00	<b>Keynote: Mark Buehner</b> Environ & CC Canada	<i>Recent research on improving the use of ensembles in EnVAR for deterministic weather prediction</i>
14:40	Mark Buehner Environ & CC Canada	<i>An Ensemble Kalman Filter for Numerical Weather Prediction based on Variational Data Assimilation: VarEnKF</i>
15:00	Xudong Sun BoM	<i>Data assimilation background covariance and gain matrix analysis</i>
15:20	Monika Krysta BoM	<i>Some thoughts on hybrid approach to data assimilation</i>
15:40-16:00	<b>Afternoon Tea</b>	
16:00 – 17:00	<b>Discussion of day's topics</b> <b>Facilitator: Craig Bishop</b> <b>Rapporteur: Jin Lee</b>	

# Annual R&D workshop: data assimilation

5–9 December 2016 | Melbourne



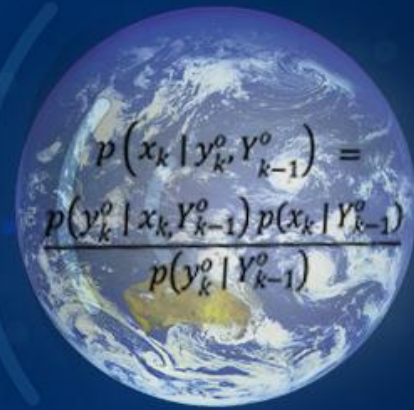
Wednesday 7<sup>th</sup> December, 2016

## Atmosphere, Land & BGC

Chair: Adam Clayton		
9:00	<b>Keynote: Tijana Janjic Pfander</b> Univ of Munich	<b>Approaches to Convective Scale Data Assimilation</b>
9:40	Susan Rennie BoM	<i>Doppler radar wind observations for high resolution data assimilation</i>
10:00	Hyun-Cheol Shin KMA	<i>Current status and future plans for the KMA data assimilation system</i>
10:20	Peter Rayner Univ of Melb.	<i>Data assimilation for terrestrial biogeochemistry, why is it different?</i>
10:40–11:00	<b>Morning Tea</b>	
Chair: Sujay Kumar		
11:00	<b>Keynote: Clara Draper,</b> NASA USA	<b><i>Incorporating land surface observations into reanalyses: NASA, GMAO's MERRA-2 and beyond</i></b>
11:40	Imtiaz Dharssi BoM	<i>A new high resolution land dryness analysis system for Australia.</i>
12:00	Yuan Li Monash Univ	<i>Using remote sensing data for hydrological and hydraulic flood forecasting</i>
12:20	Richard Renshaw UK Met Office	<i>Land surface data assimilation at the Met Office</i>
12:40–14:00	<b>Lunch</b>	
Chair: Clara Draper		
14:00	<b>Keynote: Sujay Kumar</b> NASA	<b><i>Multivariate assimilation of land surface remote sensing datasets: Advances, gaps and challenges</i></b>
14:40	Dongryeol Ryu Univ of Melb.	<i>Assimilation of evaporative Fraction into a Soil Vegetation Atmosphere Transfer model to Improve Root-Zone Soil Moisture</i>
15:00	Richard Matear CSIRO, Hobart	<i>Constraints on the global marine iron cycle from a simple inverse model</i>
15:20	Peter Rayner Univ of Melb	<i>What do you do when you don't know what you're doing: parameter estimation with an ensemble of models</i>
15:40-16:00	<b>Afternoon Tea</b>	
16:00 – 17:00	<b>Discussion of day's topics</b> <b>Facilitator: Imtiaz Dharssi</b> <b>Rapporteur: Vinod Kumar</b>	

# Annual R&D workshop: data assimilation

5–9 December 2016 | Melbourne



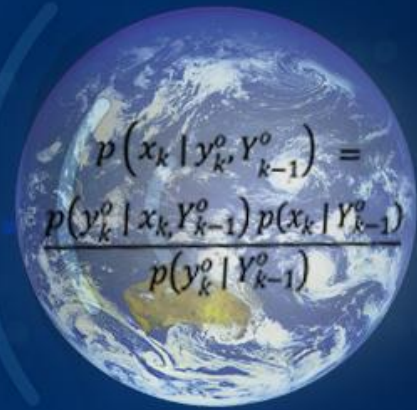
Thursday 8<sup>th</sup> December, 2016

## Assimilating Remotely Sensed Observations

Chair: Mark Buehner		
9:00	<b>Keynote: John Derber</b> NOAA USA	<i>Recent advances in DA at NCEP</i>
9:40	Bill Bell (video) UK Met office	<i>Recent developments in Satellite DA at the Met Office</i>
10:00	Iliana Genkova ( video) NOAA USA	<i>On the use of Atmospheric Motion Vectors at NCEP GFS</i>
10:20–11:00	<b>Morning Tea</b>	
Chair: Stuart Moore		
11:00	John Le Marshall BoM	<i>Recent Advances in Satellite DA meteorology at the Bureau of Meteorology</i>
11:20	Salim Masoumi ANU, Canberra	<i>Estimation of directional tropospheric horizontal gradients and its impact on GPS-derived tropospheric zenith delay products</i>
11:40	Robert Norman RMIT	<i>Anomalous GNSS Radio Occultation data</i>
12:00–14:00	<b>Lunch</b>	
Chair: John Derber		
14:00	Jeff Anderson UCAR USA	<i>Assimilating Observations with Spatially and Temporally Correlated Errors in a Global Atmospheric Model</i>
14:20	John George NCMRWF, India	<i>NCUM Data Assimilation System: Present Status</i>
14:40	Chris Tingwell BoM	<i>Forecast sensitivity to Observations in ACCESS</i>
15:00	Kevin Judd UWA	TBA
15:20-16:00	<b>Afternoon Tea</b>	
16:00 – 17:00	<b>Discussion of day's topics</b> <i>Facilitator: John Le Marshall</i> <i>Rapporteur: Chris Tingwell</i>	

# Annual R&D workshop: data assimilation

5–9 December 2016 | Melbourne



Friday 9<sup>th</sup> December 2016

## Reanalysis, Computational Environment and Future of DA in Australia

Chair: Richard Renshaw		
9:00	<b>Keynote: Stuart Moore</b> NIWA NZ	<i>A Convective-Scale Reanalysis for New Zealand.</i>
9:40	Chun-Hsu Su Univ of Melb.	<i>Towards a high-resolution atmospheric reanalysis for Australia</i>
10:00	Peter Jermey UK Met Office	<i>Ensemble regional reanalysis over Europe</i>
10:20–11:00	<b>Morning Tea</b>	
Chair: Robin Bowen		
11:00	Tim Pugh BOM	<i>Opportunities today - when and how do we get there?</i>
11:20	Phil Brown Cray	<i>4DVAR Optimization and Use-cases for DeepLearning in Earth Sciences</i>
11:40	Intel	<i>"What's inside"– the software developments</i>
12:00	Dale Roberts NCI/ANU	<i>A Performance Exploration of 4D-VAR at High Resolution</i>
12:20–14:00	<b>Lunch</b>	
14:00 – 15:00	<b>Discussion of day's topics</b> <b>Facilitator: Peter Steinle</b> <b>First Rapporteur: Chun-Hsu Su</b> <b>Second Rapporteur: Joerg Heinrich</b>	
15:00	Peter Steinle BOM	Summaries & Closing remarks
15:20-16:00	<b>Afternoon Tea</b>	