Annual Seminar 2016
Earth system modelling for seamless prediction
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Session 1 - Complexity

• Let’s challenge ourselves and ask ‘what does complexity really bring?’ (A Brown)

• Aerosols impact at weeks 3-4 is larger than the impact of resolution increases or sea-ice (F Vitart)

• The need for complexity increases with increased resolution (B Kirtman)

• Improving forecast reliability is crucially important for both weather and climate communities (T Palmer)
Session 2 – Atmosphere processes

• We should add numerical and structural flexibility in the effort towards full Earth-system complexity (N Wedi)

• Clouds are relevant for predictions across time scales, yet they remain crudely parameterized (B Medeiros)

• We still have a long way to go to understanding MJO initiation (S Woolnough)

• Heat fluxes at the ocean surface play an important role in teleconnections (F Molteni)

• A lack of proper representation of stratosphere processes degrades the potential predictive skill on sub-seasonal to inter-annual time scales in the troposphere (J Perlwitz)
Session 3 – Ocean processes

• New emerging concepts/dynamics but still no clear evidence that increased resolution leads to more skilful predictions (D Ferreira)

• Tropics and boundary currents requires a minimum of ¼ degree resolution; in the vertical allow for enough resolution to resolve the diurnal cycle (H Hewitt)

• A system that is more physically based will in the long term bring more benefits (J Biblot)

• If a model cannot simulate a phenomenon, it cannot predict it (S Bouillon)
Session 4 – Continental surface processes

• Can you imagine what a Global Environmental Monitoring and Prediction system could bring to society? (G Balsamo)

• There is a need for better data for initialisation; we should aim to use more of the existing observations to maximize the impact on forecast skill (R Koster)

• The carbon cycle is at the heart of climate change; for weather, we should explore the use of dynamic vegetation to link water, energy and carbon (A Agusti-Panareda)
Session 5 – Aerosols, GHG and chemical comp

• We have societal demands that go beyond weather forecasting (D Jakob)
• There are clear NWP and climate impacts from including aerosols radiative and cloud interactions (P Colarco)
• Improved ozone representation helped to reduce upper stratosphere biases in 1-year and 10-d runs (J Flemming)
Session 6 – Implementation strategies

• Coupled reanalysis are better capable to reproduce the past Earth-system climate (*P Laloyaux*)
• Coupling: this is not only a science question (*H Tolman*)
• Coupling should be done by ‘shaking hands’ at the initial time (*G Smith*)
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.. thank you!!!!