LSMS 2022
LAND SURFACE MODELLING SUMMIT

DAY 1 - Monday 12th September				
Start	**End**	**Process**	**Topic / Theme**	**Speaker**
09:00	09:30	Arrival – Registration & Coffee		
09:30	09:45	Welcome and Introduction		▪ Dave Lawrence & Eleanor Blyth
09:45	10:10		History of land modelling	▪ Andy Pitman and Eleanor Blyth - 'Where are we now? And how did we get here?'
10:10	11:00	Plenary – Overview talks on the 4 big themes or requirements of the future	Ecosystem resilience to climate change Ecosystem services (food, fuel, fibre) and human management of the land and water	▪ Martin De Kauwe - 'Predicting ecosystem resilience' ▪ Sonali McDermid -'Eating our cake without losing it: Key questions for achieving both global food security and environmental goals'
Break – 30 Minutes				
11:30	12:20	Plenary – Overview talks on the 4 big themes or requirements of the future	Net Zero Plus – how to quantify this Hazard prediction (floods, droughts and heatwaves)	▪ Julia Pongratz –'Effectiveness of land-based natural climate solutions towards Net Zero plus goals' ▪ Simon Dadson - 'Prediction and trends in hydrometorological hazards under climate change'
Lunch – 60 Minutes				
13:20	14:40	Plenary – Overview talks on key model development activities	Demographic models Optimality approaches Soils Nutrients	▪ Rosie Fisher – 'Vegetation demographics in Earth system models: More progress, new priorities?' ▪ Colin Prentice - 'How well-tested eco-evolutionary optimality hypotheses can make land-surface models more reliable and robust' ▪ Will Wieder – 'Building models that reflect our understanding of soil organic matter dynamics' ▪ Sonke Zaehle - 'Nutrient processes: where we are now and where we need to go'
Break -30 Minutes				
15:10	16:10	Plenary – Overview talks on key model development activities	Hydrology Land-atmosphere interactions Permafrost	▪ Dai Yamazaki - 'Horizontal water dynamics in land modelling, a missing link to connect hydrology and biogeochemistry' ▪ Paul Dirmeyer - 'Land Atmosphere Interactions: what is needed to improve their representation in Land Surface Models' ▪ Sarah Chadburn/David Lawrence - 'Challenges to improve permafrost carbon dynamics in ESMs'
16:10	16:30	Discussion		
16:30	18:00	Poster Session		Every participant encouraged to present a poster on some aspect of their land modelling research
18:00		End		

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DAY 2 – Tuesday 13th September				
Start	**End**	**Process**	**Topic / Theme**	**Speaker**
09:00	09:30	Arrival – Registration & Coffee		
09:30	09:50	Plenary	Land modelling challenges	▪ Martyn Clark – 'Pathways to better land modelling systems'
09:50	10:50	Plenary (4 x 15 min talks)	Overview of technical challenges for model complexity and heterogeneity and input/forcing data	▪ Nate Chaney – 'Sub-grid heterogeneity in Land Surface Models: Where do we go from here?' ▪ Elena Shevliokova - 'Land heterogeneity emerging from interactions among ecological, hydrological, and geomorphological processes' ▪ Charlie Koven –' Managing model complexity' ▪ Philippe Peylin – 'Modularity'
Break – 30 Minutes				
11:20	11:40			▪ David Lawrence / Anne Verhoef – 'Developing and sharing input and forcing datasets' ▪ Eleanor Blyth and David Lawrence – Introduction to breakouts
11:45	13:00	Breakout Groups: start with 15 mins of mini talks	<u>Breakout Groups</u> 1. New approaches for subgrid heterogeneity 2. Managing model complexity 3. Towards sharing of modules across LSMs 4. Input and forcing datasets	<u>Breakout Leads</u> 1. Nate Chaney / Elena Shevliakova 2. Charlie Koven 3. Philippe Peylin / Martyn Clark 4. Dave Lawrence / Anne Verhoef
Lunch – 60 Minutes				
14:00	15:00	Breakout Groups continued. Offer solutions and next steps?		
Break – 30 Minutes				
15:30	17:00	Poster Session		
18:00	23:00	EVENT: Conference Dinner at Christchurch, Oxford		

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DAY 3 – Wednesday 14th September				
Start	**End**	**Process**	**Topic / Theme**	**Speaker**
09:00	09:30	Arrival – Registration & Coffee		
09:30	10:45	Plenary, 5 x 15 min	Overview technical challenges for adding people to models and coupling	▪ Sam Rabin – 'Challenges of simulating agriculture in global land models' ▪ Jennifer Holm - 'Representing forestry and forest management in land models' ▪ Kei Yoshimura - 'Treatment of water management processes in land models' ▪ Ben Bond Lamberty - 'Coupling GCAM into E3SM: a technical look at progress, plans, and science goals' ▪ Doug Kelley - 'Fire model uncertainty as barriers to informing policy and decision making'
Break – 30 Minutes				
11:15	12:30	Breakout Groups. Start up to 15 mins of mini talks from participants	<u>Breakout Groups</u> 5. Crop modelling and Forestry practice 6. Water and land management 7. Coupling external models to LSMs 8. Fire and humans	<u>Breakout Leads</u> 5. Sam Rabin / Jennifer Holm 6. Kei Yoshimura 7. Ben Bond-Lamberty 8. Doug Kelley
Lunch – 60 Minutes				
13:30	14:30	Breakout groups continued / Offer solutions and next steps		
Break -30 Minutes				
15:00	16:00	Plenary, 4 x 15 mins	Use of Data Science in Land Surface Modelling	▪ Gab Abromowitz – 'Benchmarking land models: what we're doing now and what we already know how to do better' ▪ Nuno Carvalhais – 'Machine learning-based parameterizations' ▪ Natasha McBean - 'Land surface model parameter estimation and data assimilation: where are we now and where do we want to go?' ▪ Daniel Kennedy – 'Parameter estimation: where we are now and where we want to go'
16:00	17:00	Plenary	iLEAPS/GEWEX/AIMES	Kirsti Ashworth, Garry Hayman, Natasha MacBean, Julia Pongratz, Peter Van Oevelen, Anne Verhoef - 'Introduction to the Global Research Programmes and discussion of how they can help promote land model development'
18:00	23:00	EVENT: Dinner & Music in Oxford (pre-booking required)- Cherwell Boathouse, Oxford		

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DAY 4 – Thursday 15th September				
Start	**End**	**Process**	**Topic / Theme**	**Speaker**
09:00	09:30	Arrival – Registration & Coffee		
09:30	10:45	Breakout Groups: start with 15 mins of mini talks from participants	Breakout Groups 9. Land model benchmarking 10. Machine learning approaches and LSMs 11. Parameter estimation and uncertainty 12. TBD based on missing topics identified during previous days	Breakout Leads 9. Gab Abromowitz 10. Nuno Carvalhais 11. Natasha MacBean / Daniel Kennedy
Break – 30 Minutes				
11:15	12:15	Breakout Groups continued. Offer solutions and next steps		
Lunch – 60 Minutes				
13:15	14:45	Breakout reports and discussion		
Break -30 Minutes				
15:15	16:45	Plenary – Wrap up and planning for workshop manuscript	Discuss proposed activities	
17:00	19:30	EVENT: Hydro-JULES Showcase at Natural History Museum, Oxford - optional -Everyone welcome to attend		