Virtual Workshop on New Opportunities in ML/AI for Weather and Climate - Agenda

March 16-18, 2021, 15:00 - 18:30 CET (Central European Time)

Connection details: TBA

14:45-15:00	*VC Available for test*	
15:00-15:05	**Welcome**	**G. D. Riley, G. Aloisio**
15:05-18:30	**Session 1 – Views from Domain Science, Tuesday, 16th March**	**Chair: Marlene Kretschmer**
Q&A : TBA		
15:05-15:45	New approaches based on ML for a range of climate prediction problems	Emily Shuckburgh (U. Cambridge)
15:45-16:05	Philosophy and Targeted Applications of ML/AI Techniques for Climate Risk Analytics at Jupiter	Luke Madaus & Steve Sain (Jupiter Intel.)
16:05-16:25	The optimization dichotomy: Why is it so hard to improve climate models with machine learning.	Stephan Rasp (ClimateAI)
16:25-16:45	*Break*	
16:45-17:05	Improving convection parameterizations with a library of large-eddy simulations	Zhaoyi Shen (Caltech)
17:05-17:25	Stochastic Super-Resolution for Convective Regimes using Gaussian Random Fields	Rachel Prudden (Met Office Inf. Lab)
17:25-17:45	Subseasonal Forecasts of Opportunity Identified by an Explainable Neural Network	Kirsten Mayer (CSU)
17:45-18:05	Using transfer learning and backscattering analysis to build stable, generalizable data-driven subgrid-scale models: A 2D turbulence test case	Pedram Hassanzadeh (U. Rice)
18:05-18:30	Panel Session	
18:30	*End*	

15:00-18:30	**Session 2 – ML/AI Software technologies, Wednesday, 17th March**	**Chair: Caroline Arnold**
Q&A: TBA		
15:00-15:40	Stochastic machine learning for atmospheric fields with generative adversarial networks	Jussi Leinonen (MeteoSwiss)
15:40-16:00	Causal discovery in time series with unobserved confounders	Andreas Gerhardus (DLR Jena)
16:00-16:20	Estimating stochastic closures using sparsity-promoting ensemble Kalman inversion	Jinlong Wu (Caltech)
16:20-16:40	*Break*	
16:40-17:00	Deep Learning on the sphere for weather/climate applications	Gionata Ghiggi and Michaël Defferrard (EPFL)
17:00-17:20	Deep learning-based remote sensing for infrastructure damage assessment	Thomas Chen (AMSE)
17:20-17:40	Leveraging physics information in neural networks for fluid flow problems	Akshay Subramaniam (NVIDIA)
17:40-18:00	Sub-seasonal forecasting with a large ensemble of deep-learning weather prediction models	Jonathan Weyn (U. of Washington)
18:00-18:30	Panel Session	
18:30	*End*	

15:00-18:30	**Session 3 – High performance, Infrastructure and Big data challenges, Thursday, 18th March**	**Chair: Carlos Gomez Gonzalez**
Q&A: TBA		
15:00-15:40	Scaling Up Deep Learning Workloads - A Data-Centric View	Tal Ben-Nun (ETHZ)
15:40-16:00	Radar QPE and Machine Learning	Micheal Simpson (NOAA)
16:00-16:20	Using ML at the Edge to Improve Data Gathering	Pete Warden (Google)
16:20-16:40	*Break*	
16:40-17:00	An Overview of ML and AI on Arm Based HPC Systems for Weather and Climate Applications	Phil Ridley (Arm)
17:00-17:20	Machine-Learned Preconditioners for Linear Solvers in Geophysical Fluid Flows	Jan Ackmann (U. Oxford)
17:20-17:40	You do you. How next-gen data platforms can stop weather and climate scientists from being software engineers and other perversions	Theo McCaie (MO Informatics Lab)
17:40-18:00	3D bias correction with deep learning in the Integrated Forecasting System	Thorsten Kurth (NVIDIA)
18:00-18:30	Panel Session	
18:30	*Wrap-up and End*	

Program Committee

Graham Riley, Giovanni Aloisio, Jean-Claude Andre, Caroline Arnold, V. Balaji, Peter Dueben, Marlene Kretschmer, Carlos Gomez Gonzalez, Donatello Elia