Program for the 47th Annual Climate Diagnostics and Prediction Workshop
Logan, Utah, October 25–27, 2022
(Program Update: October 23, 2022)

Conference Schedule

Tuesday, October 25, 2022

7:30 – 8:30 am   **Registration**

8:30 – 8:50 am   **Welcoming Remarks**
Mr. Spencer Cox, *Governor of the State of Utah*
Dr. David Dewitt, Director, *Climate Prediction Center/NOAA*
Dr. Kenneth White, Vice President, Utah State University, and Dean,
College of Agriculture and Applied Sciences/Utah State University

8:50 – 9:10 am   **Keynote Speech**
Recent Sub-Seasonal to Seasonal (S2S) Progress at CPC, **David Dewitt**,
NOAA/CPC
Dr. Robert Gillies, Director of Utah Climate Center will introduce Dr.
David Dewitt.

Session 1   **ENSO**
Chair: **Matt Newman**, *NOAA/PSL*

9:10 – 9:30 am   How Skillful are Collective ENSO Predictions, **Michelle L'Heureux**,
NOAA/CPC, Rohan Schroff, *Cornell University*, and Michael Tippett,
Columbia University

9:30 – 9:50 am   The role of the Western North Pacific (WNP) precursor in El Nino
Southern Oscillation (ENSO) development under a warming climate,
Krishna Borhara, *Utah State University,* S. Y. Simon Wang, *Utah State
University*, and Boniface Fosu, *Mississippi State University*

9:50 – 10:10 am   Multi-year variation of ENSO forecast skill since the late 1800s, **Jiale
Lou**, *NOAA/CIRES,* Matthew Newman and Andrew Hoell, *NOAA/PSL*
<mark>Virtual</mark>

10:10 – 10:30 am   Break

Session 2   **Seasonal Predictions**

Chair: **Wanqiu Wang**, *NOAA/CPC*

10:30 – 10:50 am	Consolidation of Monthly and Seasonal Forecast Tools at NOAA's Climate Prediction Center, **Daniel Barandiaran**, *NOAA/CPC* and Stephen Baxter, *NWS Climate Services Branch*
10:50 – 11:10 am	Analyzing a potential upgrade of the CPC consolidated seasonal forecast tool, **Michael Goss**, *NOAA/CPC,* Daniel Barandiaran, Cory Baggett, and Mike Halpert, *NOAA/CPC*
11:10 – 11:30 am	Decadal Trend Aware Calibration of the NMME, **Dan Collins**, *NOAA/CPC,* Emerson LaJoie and Johnna Infanti, *NOAA/CPC*
11:30 – 11:50 am	An Updated NMME-based Hybrid Prediction Scheme for Atlantic Hurricane Season Activity, **Daniel Harnos**, *NOAA/CPC,* Matthew Rosencrans and Hui Wang, *NOAA/CPC*
11:50 – 12:10 am	Correlational Satellite Study of Ocean-Cryosphere Interactions with Climate Variability in Coupled Climate System to Develop Numerical Ocean-Cryosphere Climate Variability Prediction Model (NOC-CVPM) over the North Atlantic-Arctic Sector, **Virendra Goswami**, IIT & Environment and Peace Foundation <mark>Virtual</mark>

12:10 – 1:30 pm	**Lunch**

Session 3	**Subseasonal Predictions** Chair: **Arun Kumar**, *NOAA/CPC*
1:30 – 1:50 pm	The hybrid SST/Soil moisture tool for Weeks 3-4 extreme heat forecasting at the CPC, **Evan Oswald**, *NOAA/CPC* and Jon Gottschalck*, NOAA/CPC* <mark>Virtual</mark>
1:50 – 2:10 pm	Transition of CPC's Global Tropics Hazard Outlook to Weeks 2 and 3, **Lindsey Long**, *NOAA/CPC*, Nicholas Novella and Jon Gottschalck, *NOAA/CPC*
2:10 – 2:30 pm	Subseasonal Prediction of U.S. Drought in NOAA GEFSv12 Reforecasts, **Hailan Wang**, *NOAA/CPC,* Li Xu, Andrew Badger, and David DeWitt, *NOAA/CPC*, and Mike Barlage and Helin Wei, *NOAA/EMC*
2:30 – 2:50 pm	Prediction and Impacts of 14-day Extreme Precipitation Periods within the CONUS, **Melanie Schroers**, *University of Oklahoma* and Elinor Martin, *South Central Climate Adaptation Science Center* <mark>Virtual</mark>
2:50 – 3:10 pm	**Discussion**

3:10 – 3:30 pm   **Break**

Session 4 Part 1   **Attributions Detection and Diagnostics**
Chair: **Michelle L'Heureux**, *NOAA/CPC*

3:30 – 3:50 pm   Rapid development of ENSO-related seasonal forecast errors, **Matt Newman**, *NOAA/PSL,* Jon Beverley, *CIRES/University of Colorado and NOAA/PSL* and Andrew Hoell, *NOAA/PSL*

3:50 – 4:10 pm   Attribution of North American Subseasonal Precipitation Prediction Skill, **Arun Kumar**, *NOAA/CPC*, Lantao Sun and James W. Hurrell, *Colorado State University,* Martin P. Hoerling and Andrew Hoell, *NOAA/PSL*, Jadwiga H. Richter, *NCAR*, Arun Kumar, *NOAA/CPC*

4:10 – 4:30 pm   The Impact of Tropical SST Variability on the Northern Hemisphere Circumglobal Teleconnection Pattern, **Yen-Heng Lin**, *Northern Gulf Institute* and Boniface Fosu, *Mississippi State University & Northern Gulf Institute*

4:30 – 4:50 pm   Importance of Tropospheric Wave Breaking for Subseasonal Forecasts of the February 2021 North American Cold Air Outbreak, **Jason Furtado**, *University of Oklahoma* and Oliver T. Millin, *University of Oklahoma*

4:50 – 5:10 pm   2021 Texas Cold Snap: Manifestation of Natural Variability and a Recent Warming Trend, **Pei-Chun Hsu**, *Research Center for Environmental Changes, Academia Sinica, Taipei, Taiwan,* Huang-Hsiung Hsu, Hao-Jhe Hong, Ying-Ting Chen, Yu-Luen Chen, and Wan-Ling Tseng, *Research Center for Environmental Changes, Academia Sinica, Taipei, Taiwan*

5:30 -7:30 pm   **Poster Session - Ice Breaker (Light refreshments served)**

Wednesday, October 26, 2022

7:30 – 8:30 am   **Registration**

Session 4 Part 2   **Attributions Detection and Diagnostics**
Chair: **Hailan Wang**, *NOAA/CPC*

8:30 – 8:50 am   Investigating the role of convectively coupled equatorial waves in subseasonal tropical predictions, **Juliana Dias**, *NOAA/PSL,* Maria

Gehne, *CIRES & University of Colorado*, and George Kiladis, *NOAA/PSL* <mark>Virtual</mark>

8:50 – 9:10 am   Global and regional discrepancies between early 20th century coastal air and sea-surface temperature detected by a coupled energy-balance analysis, **Duo Chan**, *Woods Hole Oceanographic Institution*, Geoffrey Gebbie, *Woods Hole Oceanographic Institution, and* Peter Huybers, *Harvard University* <mark>Virtual</mark>

9:10 – 9:30 am   Compensation between Poleward Atmospheric and Oceanic Heat Transports in CMIP6 Climate Simulations, **Prajvala Kurtakoti**, *Los Alamos National Laboratory,* Wilbert Weijer and Milena Veneziani, *Los Alamos National Laboratory,* Tarun Verma, *Princeton University*, and Phil Rasch, *University of Washington*

9:30 – 9:50 am   Implications of AMOC base-state to the mode of variability of the US summer precipitation, **Christopher Sala**, *Pennsylvania State University,* Yifei Fan and Dr. Laifang Li, *Pennsylvania State University* <mark>Virtual</mark>

9:50 – 10:10 am   Upper ocean diurnal cycle in CFS, **Jack Reeves** Eyre, *NOAA/CPC*, Jieshun Zhu, Arun Kumar, and Wanqiu Wang, *NOAA/CPC*

10:10 – 10:30 am   Break

Session 5 Part 1   Observations Model Analysis and Prediction
Chair: **Yan Xue**, *NOAA/OSTI*

10:30 – 10:50 am   A New GFSv15 based Climate Model Dataset and Its Application to Understanding Climate Variability, and Predictability, **Tao Zhang**, *ESSIC & NOAA/CPC,* and Bhaskar Jha, *NOAA/CPC & ERT,* Jieshun Zhu, Arun Kumar, and Wanqiu Wang, *NOAA/CPC*, Martin P. Hoerling, *NOAA/PSL*, Joseph J. Barsugli and Xiao-Wei Quan, *NOAA/PSL* & *CIRES, Univ. of Colorado Boulder*

10:50 – 11:10 am   Idealized Simulation of Convectively Coupled Kelvin Wave Using the Single-column Unified Forecast System, **I-Kuan Hu**, *NOAA/CIRES,* Stefan Tulich and Sara Michelson, *CIRES & NOAA/PSL*, George Kiladis, Juliana Dias, and Jian-Wen Bao, *NOAA/PSL*

11:10 – 11:30 am   Circulation Study: On the Relationship of Temperature and Precipitation with 500-hPa Heights at the Week 3-4 timescale, **Cory Baggett**, *NOAA /CPC, Emerson LaJoie, Johnna Infanti, and Michael Goss, NOAA/CPC*

11:30 – 11:50 am	A New Processing System for the SHEF Daily Precipitation Reports, **Ping-Ping Xie**, *NOAA/CPC,* Shaorong Wu, Thomas Collow, Ryan Bolt, Brt Katz and Wei Shi, *NOAA/CPC*
11:50 – 12:10 am	Land use analysis of Kumira-Hathazari region of Chittagong, Bangladesh from MODIS land cover from 2005 to 2020, **Md. Sajidul Hossain**, *Bangladesh University of Engineering and Technology*, Nusrat Nasrin Khan, *Bangladesh University of Engineering and Technology* <mark>Virtual</mark>
12:10 – 1:30 pm	**Lunch**
Session 5 Part 2	**Observations Model Analysis and Prediction** Chair: **Emerson LaJoie**, *NOAA/CPC*
1:30 – 1:50 pm	Trends from Reanalyses: Progress over the last 10 years, **Wesley Ebisuzaki**, *NOAA/CPC,* Leigh Zhang and Arun Kumar, *NOAA/CPC,* Jeffrey Whitaker*, NOAA/PSD,* and Jack Woollen*, NOAA/EMC*
1:50 – 2:10 pm	Trends in Global Tropical Cyclone Activity: 1990 - 2021, **Philip Klotzbach**, *Colorado State University,* Kimberly M. Wood, *Mississippi State University,* Carl J. Schreck III, *North Carolina State University,* Steven G. Bowen, *Aon*, Christina M. Patricola, *Iowa State University*, and Michael M. Bell, *Colorado State University*
2:10 – 2:30 pm	Next Generation Global Ocean Data Assimilation System (NG-GODAS): reanalysis and applications, **Jieshun Zhu**, *NOAA/CPC,* Shastri Paturi and Guillaume Vernieres, *NOAA/EMC,* Travis Sluka, *UCAR,* Arun Kumar and Wanqiu Wang, *NOAA/CPC* <mark>Virtual</mark>
2:30 – 2:50 pm	Development of a Multi-physics Forecast System for the Sub-seasonal Scale Prediction, **Manpreet Kaur**, *Goethe University Frankfurt Am Main*, Susmitha Joseph, R. Phani, R Mandal, A Dey, and A. K. Sahai, *Indian Institute of Tropical Meteorology Pune* <mark>Virtual</mark>
2:50 – 3:10 pm	Development of UFS Coupled GEFS for Subseasonal Forecasts, **Yuejian Zhu**, *NOAA/CPC,* Bing Fu, Hong Guan, Bo Yang, Wei Li, Jiayi Peng, Xianwu Xue, Sanghoon Shin, and Dingchen Hou, *NOAA/EMC*, Eric Sinsky, *NOAA/CPC*, Phillip Pegion, *NOAA/PSL*, Xin-Zhong Liang, *University of Maryland* <mark>Virtual</mark>
3:10 – 3:30 pm	Improving NWS Subseasonal-to-Seasonal Forecast with Unified Forecast System: Highlights of Modeling and Analysis Results, **Yan Xue**, *NOAA/OSTI,* Avichal Mehra, Fanglin Yang, Michael Barlage, Yuejian Zhu, and Vijay Tallapragada, *NOAA/EMC*, Cristiana Stan, Jim Kinter, *George*

Mason University, Jeff Whitaker, NOAA/PSL, Wanqiu Wang, *NOAA/CPC,* and Deepthi Achuthavarier, *NWS/OSTI*

3:30 – 3:50 pm   **Break**

Session 6 Part 1   **Applications of Modern Technologies to S2S Forecasting**
Chair: **Md Abul Ehsan Bhuiyan**, *NOAA/CPC*

3:50 – 4:10 pm   The Development of a Machine Learning-based Probabilistic Seasonal Outlook for the Famine Early Warning Systems Network (FEWS NET), **Nachiketa Acharya**, *CIRES, University of Colorado & NOAA Physical Sciences Laboratory,* Kyle Joseph Chen Hall, *NOAA/CIRES* and Andrew Hoell, *NOAA/PSL*

4:10 – 4:30 pm   Development of neural networks to statistically post-process sub-seasonal precipitation accumulation forecasts over the contiguous United States, **Rochelle Worsnop**, *Cooperative Institute for Research in Environmental Sciences (CIRES) and NOAA/ESRL/Physical Sciences Laboratory,* Michael Scheuerer, *Norwegian Computer Center*, Thomas M. Hamill, *IBM/Weather Company* <mark>Virtual</mark>

4:30 – 4:50 pm   Post-Processing of Week 2 GEFSv12 Heat Forecasts via Neural Nets, **Greg Jennrich**, *NOAA/CPC & ERT,* Li Xu, Evan Oswald, *NOAA CPC & ERT,* and Matt Rosencrans, *NOAA/CPC*

4:50 – 5:10 pm   Predictability of Summer Extreme Maximum Temperatures over Taiwan by using NOAA NCEP GEFSv12 Reforecast Products, **Murali Malasala Nageswararao**, *NOAA/EMC,* Yuejian Zhu, and Vijay Tallapragada, *NOAA/EMC,*and Meng-Shih Chen, *Central Weather Bureau, Taipei, Taiwan* <mark>Virtual</mark>

5:10 – 6:00 pm   **Networking - Dinner Follows**

Thursday, October 27, 2022

7:30 – 8:30 am   **Registration**

Session 6 Part 2   **Applications of Modern Technologies to S2S Forecasting**
Chair: **Nachiketa Acharya**, *NOAA/CIRES*

8:30 – 8:50 am	Assessing Decadal Variability of Subseasonal Predictability using Artificial Neural Networks, **Marybeth Arcodia**, *Colorado State University* and Elizabeth Barnes, *Colorado State University*
8:50 – 9:10 am	Improving Sub-seasonal Precipitation and Temperature Outlooks with Deep Learning, **Yun Fan**, *NOAA/CPC,* Li Xu and Jon Gottschalck, *NOAA/CPC* <mark>Virtual</mark>
9:10 – 9:30 am	Evaluation and Bias Correction of S2S Reforecast Ensemble for Forecasting US Extreme Precipitation Events, **Devin McAfee**, *University of Oklahoma,* Elinor R. Martin and Jason C. Furtado, *University of Oklahoma* <mark>Virtual</mark>
9:30 – 9:50 am	Advancing Machine Learning-Based Bias Correction Technique for Rainfall Estimation Over the Complex Terrain Region, **Md Abul Ehsan Bhuiyan**, *NOAA/CPC,* Raihan Sayeed Khan, *Intel,* and Wassila Thiaw, *NOAA/CPC*
9:50 – 10:10 am	**Break**
Session 7 Part 1	**Improving Climate Services** Chair: **Stephen Baxter**, *NWS/Climate Services Branch*
10:10 - 10:30 am	An Improved Analysis of Daily Maximum and Minimum Surface Air Temperature over the Global Land, **Wanqiu Wang**, *NOAA/CPC,*Pingping Xie, Yanjuan Guo, Shaorong Wu, and Wei Shi, *NOAA/CPC*
10:30 - 10:50 am	The Recent Development of Global Drought Monitor and Outlook, **Li Xu**, *NOAA/CPC,* Miliaritiana Robjhon, Yun Fan, and Wassila Thiaw, *NOAA/CPC*
10:50 - 11:10 am	Verification of a Drought Prediction System over the Horn of Africa, **Miliaritiana Robjhon**, *NOAA/CPC,* Li Xu, Wassila Thiaw, and Yun Fan, *NOAA/CPC*
11:10 - 11:30 am	Understanding the Connection between Soil Moisture and Safe Water Access Using Earth Observations, **Farah Nusrat**, *University of Rhode Island*, Joseph Goodwill, Jason Parent, Kristin Johnson and Ali Shafqat Akanda, *University of Rhode Island,* Ashraful Islam Khan, Md. Taufiqul Islam, and Firdausi Qadri, *International Centre for Diarrhoeal Disease Research, Bangladesh*
11:30 - 11:50 am	Applying Climatology for Strategic Planning: The 14 WS Capabilities in Eastern Europe, **Christina Maurin**, *USAF 14th Weather Squadron,* Justyn Jackson, Kevin Havener, Patrick Johnston, Bret Kerstetter,

Stephanie Smith, Robert Falvey, and William Henning, *USAF 14th Weather Squadron*

11:50 - 12:10 pm	Machine learning based Prediction of Land Use/Land Cover and Land Surface Temperature using Landsat imagery for Rajshahi, Bangladesh using Google Earth Engine, **Md Shihab Uddin**, *Bangladesh University of Engineering and Technology,* and Indronil Sarkar, *Bangladesh University of Engineering and Technology* <mark>Virtual</mark>

12:10-1:30 pm   **Lunch**

Session 7 Part 2   **Improving Climate Services**
Chair: **Christina Maurin**, *USAF 14th Weather Squadron*

1:30 - 1:50 pm	Ohio River Forecast Center Support for the Lake Erie Harmful Algal Bloom Forecasts, **Abram DaSilva**, *NWS/OHRFC* <mark>Virtual</mark>
1:50 - 2:10 pm	A Prototype Forecast-Informed Reservoir Operation (FIRO) for Lake Conroe, TX – Application of NOAA/WPC's QPF and CPC's Outlooks in Reservoir Operational Modeling, **John Zhu**, *Texas Water Development Board* and Nelun Fernando, *Texas Water Development Board*
2:10 - 2:30 pm	A Real Time Fire Weather 8-14 Day Outlook Tool Based on NCEP GEFS, **Mingyun Chen**, *NOAA/CPC,* Wanqiu Wang and David DeWitt, *NOAA/CPC*
2:30 - 2:50 pm	Evaluation of a supply-chain climate model for its long-range temperature forecasting ability, **Wayne Bancroft**, *Retired* <mark>Virtual</mark>
2:50 - 3:10 pm	NWS Climate Services Capabilities for Building a Climate Ready Nation, **Marina Timofeyeva**, *NWS Climate Services Branch,* Stephen Baxter, Margaret Hurwitz, Jenna Meyers,Viviane Silva, and James Zdrojewski, *NWS Climate Services Branch* <mark>Virtual</mark>

3:10 - 3:30 pm   **Break**

Session 8   **Hydroclimate in the Western United States**
Chair: **Wei Zhang**, Utah State University

3:30 - 3:50 pm	CPC's Experimental Water Year Outlook Tool, **Emerson LaJoie**, *NOAA/CPC,*

3:50 - 4:10 pm	Improving NWS Drought Messaging and Regional Collaboration, Margaret Hurwitz, *NWS Climate Services Branch,* **Stephen Baxter** and Marina Timofeyeva, *NWS Climate Services Branch*
4:10 - 4:30 pm	Utilizing causal inference on single-model initial condition large ensembles for future Great Salt Lake predictability, **Siiri Bigalke**, *Utah State University,* Simon Wang, Wei Zhang, and Yoshi Chikamoto, *Utah State University*
4:30 - 4:50 pm	Can dynamically downscaling the CFSv2 model improve operational sub-seasonal climate services?, **Jon Meyer**, *Utah Climate Center,*
4:50 - 5:10 pm	North Pacific High anomalies and the extreme pan-Western drought, **Matthew LaPlante**, *Utah State University* and Shih-Yu Simon Wang, *Utah State University*
5:10 - 5:30 pm	Human Influence Increased the Risk of the 2021 Extreme Western U.S. Drought, **Grace Affram**, *Utah State University* (She has agreed to do a oral presentation), Wei Zhang, Lawrence Hipps, and Cody Ratterman, *Utah State University*

End of Workshop