# STANDARD OPERATING PROCEDURES FOR NOAA CDPW DIGEST

***NOAA's National Weather Service***

*OSTI Research to Operation*

*NCEP Climate Prediction Center*

September 2022

# Standard Operating Procedures (SOP) for
# *NOAA CDPW Digest*

## Project Title:

NOAA Climate S&T Digest for Annual Climate Diagnostics and Prediction Workshop Archived by NOAA Institutional Repository (App. A)

## Description of Tasks

***Before the workshop (Mid-to-early October)***

1. Create the cover page using the style template with a representative picture of the place where the workshop is held (App. B).
2. Make the Digest Solicitation AD slide (App. C) to be announced in the workshop.

***During the Workshop (Late October)***

3. Take workshop photos for the Photo Gallery as the Digest Appendix.

***Shortly after the workshop (November)***

4. Send a formal invitation email (App. D) to the participants shortly after the workshop, soliciting extended summaries from both oral and poster presenters. Ask for contribution confirmation for organizer's benefit.
5. Build the CDPW Digest working site (App. E).

***Collection & Preparatory Period (December - March)***

6. Contact excellent presenters to promote outstanding works.
7. Send out reminder monthly. (Monthly-reminder.docx)
8. Timely update the Digest working site to make the progress transparent.
9. Collect contributions by the deadline March 31.
10. Compose the workshop Overview with the CDPW organizing committee (APP. F).
11. Create Photo Gallery and request for review. (App. G)
12. Make section dividers (App. H) and the inside back cover (App. I).

***Production Stage (April)***

13. Conduct editorial reviews.
14. Process each extended summary in a unified format (APP. J (a) & (b)).
15. Remind CPC Director to write the Preface for the Digest (APP. K).
16. Build up Table of Content (APP. L).
17. Create the volume and give authors a preview.

***Completion (May)***

18. Pass the accessibility test.
19. Apply online for a DOI number from NOAA Institutional Repository (IR).
20. Submit the final version with Section 508 accessibility compliance and the DOI number minted to NOAA IR. https://repository.library.noaa.gov/
21. Upload the final version to the OSTI/R2O Climate website and update the NOAA CDPW Digest subpage. https://vlab.noaa.gov/web/osti-r2o/noaa-cdpw-digest
22. Make an email announcement to the public for the completion of the Digest with summary remarks and the public access information. (Completion_Announcement.docx)

## Reference Tools

1. Solicitation working site
   https://sites.google.com/view/46th-noaa-cdpw-digest
2. Templates
   https://drive.google.com/drive/folders/1Vq30dnlxHlIZnAzBcweXcbFAVR2_ITGQ?usp=sharing

   a. Communication:

   Digest-solicit-AD.pptx - Solicitation AD slide
   Digest-solicit-email.htm - Formal solicitation email
   Monthly-reminder.docx - Monthly reminder email
   Completion_Announcement.docx - Announcement with public access information

   b. Digest:

   Cover.pub - Cover page
   Cover2.doc - Inside front cover
   Preface.doc - Preface page
   ToC.doc - Table of Content
   Overview.doc - Overview page
   Section dividers.pptx - Section dividers
   Ext_Summary.doc - Extended summary
   Abstract_pub.doc - Abstract (for the paper has been published)
   Appendix_photo_album_cover.docx - Photo album cover and inside cover
   Appendix_photo_album.docx - Photo album
   Appendix_photo_album_cover2.docx - Photo album back cover
   Backcover.pdf - Back cover
   Backcover2.docx - Inside back cover

3. Section 508 compliance

   Create and verify PDF accessibility (Acrobat Pro):
   https://helpx.adobe.com/acrobat/using/create-verify-pdf-accessibility.html

4. Archives

   NOAA IR (2010 - ): https://repository.library.noaa.gov/gsearch?collection=&terms=NOAA+CDPW+Digest
   NWS OSTI (2008 - ): https://vlab.noaa.gov/web/osti-r2o/noaa-cdpw-digest

## Points of Contact

| Name | Affiliation | Role |
|---|---|---|
| *TBD* | OSTI/R2O | NOAA CDPW Digest Lead Editor |
| David DeWitt | NCEP/CPC | CPC Director, CDPW Host |
| Nicole Kurkowski | OSTI/R2O | OSTI/R2O Lead |

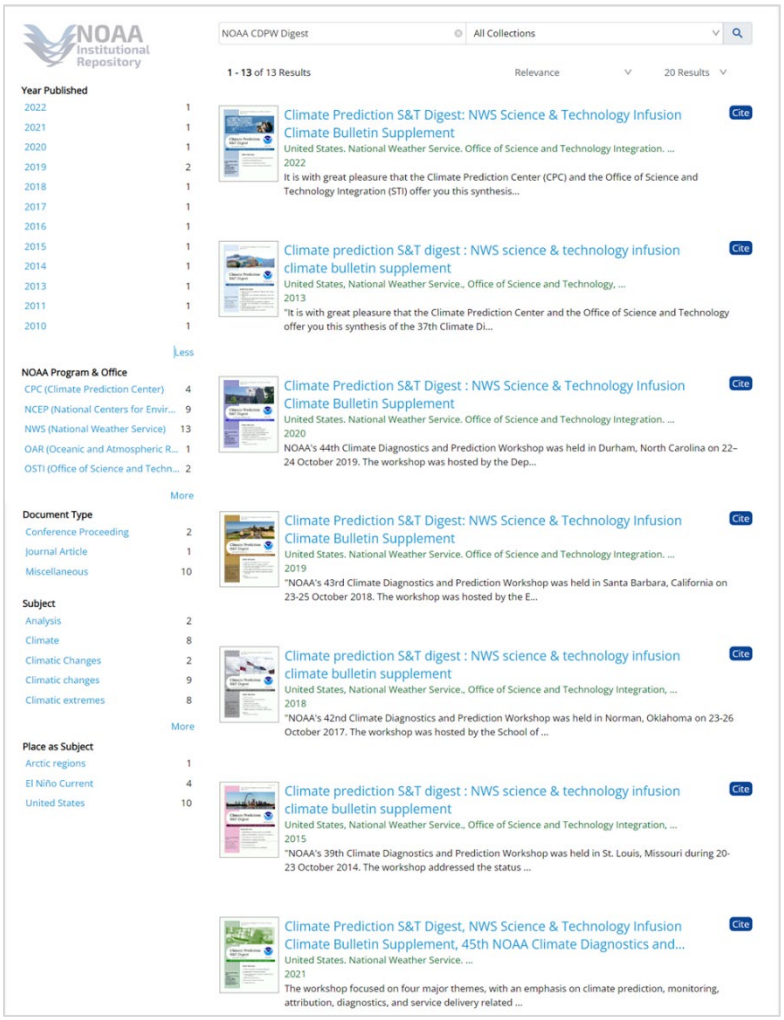
## Notes

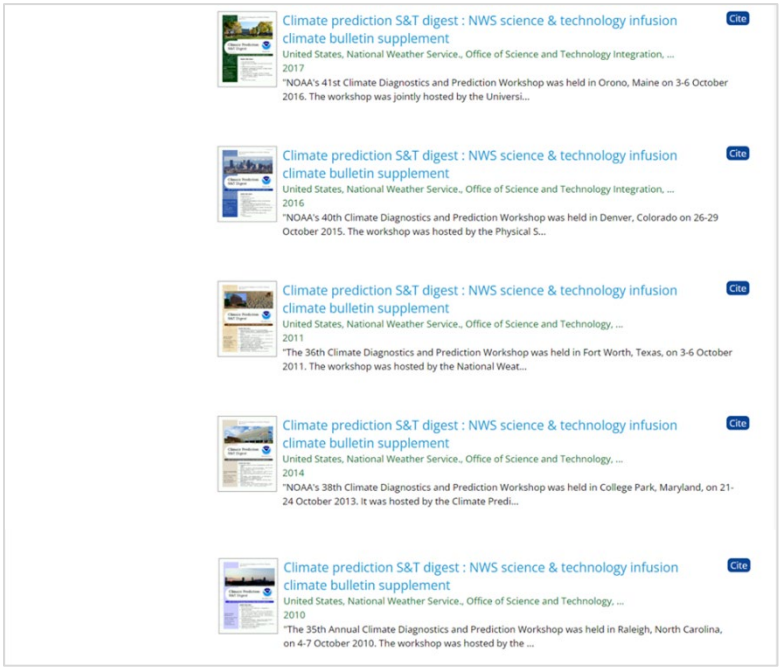
The NOAA Climate Diagnostics and Prediction Workshop is held annually by CPC with the local host during the last ten-day of October. The extended summary solicitation deadline is March 31 and the scheduled release of the final version in the end of May the following year.

**APPENDIX A** :

*CDPW Digest in NOAA IR*

https://repository.library.noaa.gov/gsearch?collection=&terms=NOAA +CDPW+Digest

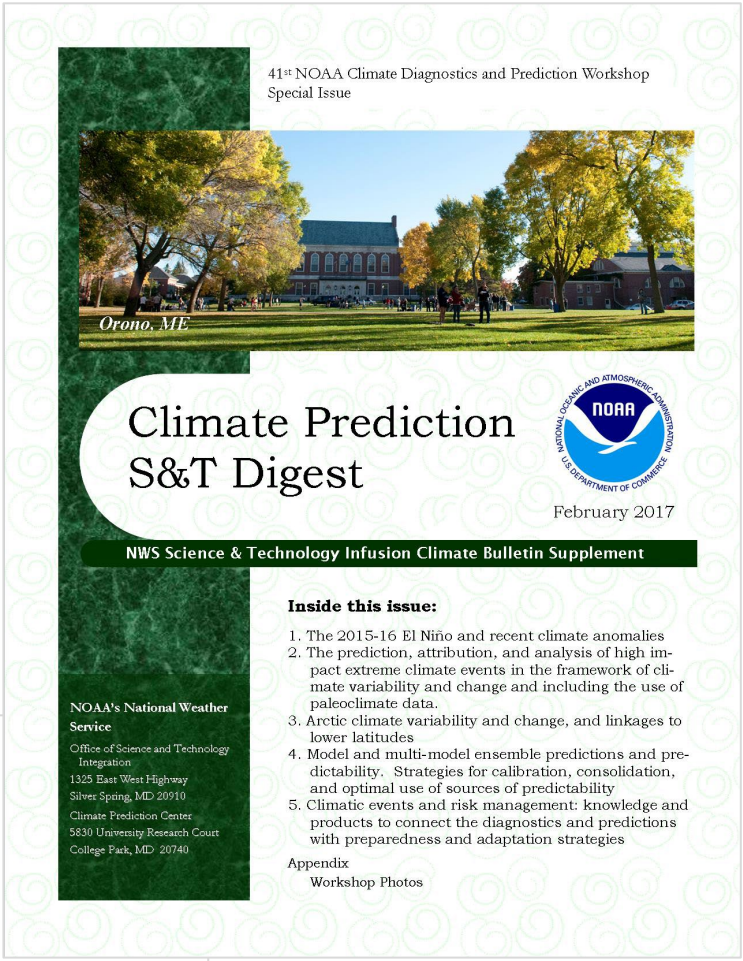


## APPENDIX B :

*Cover and Inside Cover*

Cover.pub


41st NOAA Climate Diagnostics and Prediction Workshop
Special Issue

Orono, ME

# Climate Prediction S&T Digest

February 2017

NWS Science & Technology Infusion Climate Bulletin Supplement

**Inside this issue:**




**NOAA's National Weather Service**
Office of Science and Technology Integration
1325 East West Highway
Silver Spring, MD 20910
Climate Prediction Center
5830 University Research Court
College Park, MD 20740


Cover2.doc


***Article Citation:***
Author(s), 2021: Article title. Extended Summary, *Climate Prediction S&T Digest, 45th NOAA Climate Diagnostics and Prediction Workshop*, Virtual Online, DOC/NOAA, page range. DOI: 10.25923/tpfe-4n87


*Although the skill of current operational climate prediction is limited and the research on the topic presents many challenges, there are promises of improvement on the horizon. To accelerate advancement in climate services, an effective mechanism of S&T infusion from research to operation for application is much needed. This bulletin has been established to clarify science-related problems and relevant issues identified in operation, inviting our partners in the research community to work together on improvement of national climate prediction services.*

Science and Technology Infusion Climate Bulletin
https://www.nws.noaa.gov/ost/STIClimateBulletin/index.htm

National Weather Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

## APPENDIX C : *Solicitation AD Slide*

Digest-solicit-AD.pptx

*The 46th NOAA Annual Climate Diagnostics and Prediction Workshop Digest*

### Solicitation of Extended Summaries

**Objective**: Promote full scope S&T exchanges between research and operation to benefit the entire climate community

**Invitees**: All the 46th CDPW presenters (**both oral and poster**)

**Format**: MS Word document, high quality figures, flexible length (preferably 1-4 pages). Refer to previous volumes* for examples.

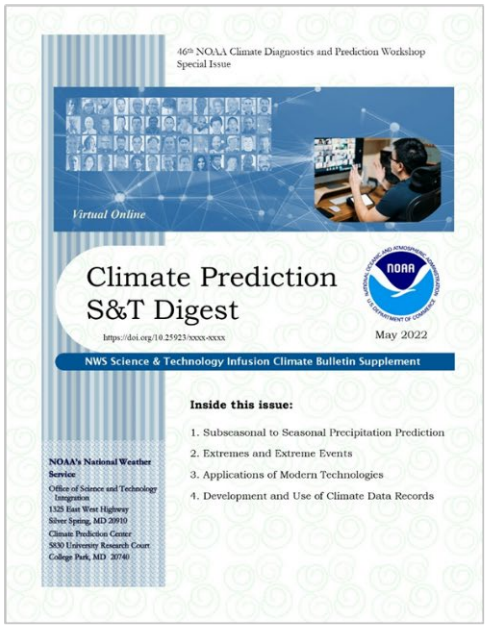
**Submission due**: **March 31, 2022**

**Publication is expected in** May 2022

**Contact**: Jiayu Zhou (jiayu.zhou@noaa.gov)
*Office of Science and Technology Integration, NOAA's NWS Headquarters*
Mike Halpert (mike.halpert@noaa.gov)
*NOAA's Climate Prediction Center & The 46th CDPW Organizing Committee*

* The NOAA CDPW Digest (2009- ) are available via NOAA Library online catalogue, and also at NWS STI Climate Bulletin
http://www.nws.noaa.gov/ost/STIClimateBulletin/Collections.htm.

**DOI number has been assigned since 39th CDPW Digest.**




**Subject:** Acceptance of CDPW Extended Summaries as References in Papers Submitted to AMS

We contacted AMS publication authority for the acceptance of CDPW Digest extended summaries as references in papers submitted to AMS journals for publication. Here are the questions and replies.

**Q:** We have an e-version of the workshop proceedings (having been archived by NOAA Central Library since 2010) named Climate Prediction S&T Digest, which replaced previous paper-version that was discontinued after 2000. People in the community would like to confirm with AMS publication authority that the extended summaries included in the CDPW Proceedings (now the Climate Prediction S&T Digest) are eligible for using as references in their papers submitted to AMS journals for publication so long as following the Authors Guide on referencing conference preprint or proceedings.

**R:** AMS encourages references to peer-reviewed publications, but does not have a policy of completely restriction of references to peer reviewed documents. We do require that any document referred to by an author be accessible either through electronic or paper means, and the extended summaries in the Climate Prediction S&T Digest satisfies that criteria. (by Robert M. Rauber, Commissioner, AMS Publications Commission and Ken Heideman, Director of Publications, AMS Administration)

**APPENDIX D** :

*Formal Solicitation Email*

Digest-solicit-email.htm

# 46th Annual Climate Diagnostics & Prediction Workshop

*26-28 October 2021, Virtual Online*

## Workshop Digest Solicitation


Dear 46th CDPW Oral/Poster Presenter,

Thank you very much for your contribution to the success of the workshop. Following the workshop's objective to give full scope for S&T exchanges between research and operation, NWS Office of Science and Technology Integration (OSTI) and Climate Prediction Center (CPC) are organizing a special issue of the Climate Prediction S&T Digest for the collection of the 46thCDPW extended summaries. We are encouraging **both oral and poster** presenters to take this opportunity to promote your excellent work and benefit the entire climate community.

Following are the guidelines for the extended summary.

- File format: MS Word (.docx)
- Figures: High quality for print
- Author(s): Name(s), Affiliation(s)/Location(s) and Email Address(es)
- Length: Flexible. Preferably, 1-4 pages of text with key figures
- Sections layout: Flexible. Followings are for your reference only.

For research works

1. Introduction: motivations and overview of the work
2. Data and methodology/experimental design
3. Analysis of prominent results with discussions, which can have several subsections as necessary
4. Concluding remarks /discussions
5. References

For projects

1. Overview of motivation and development
2. Highlight major aspects/components of the project with explanations
3. Summary/discussions and future works
4. References

If your work presented has been published, please submit the abstract, including a figure significant to the main result and complete reference information.

Examples can be found from the previous workshop digest at the following address. You don't need to follow the layout design. A unified format will be applied for all summaries of the Digest.

https://doi.org/10.25923/tpfe-4n87

The NOAA CDPW Digest (since 2009) is a continuation of the previous workshop proceedings (1976-2000, printed by DOC) and has been archived and secured with DOI number by NOAA Institutional Repository. It is available via NOAA Library online catalogue.

The deadline to submit your extended summary is **March 31, 2022**. Your cooperation is much appreciated.

For organizer's benefit, **please send me a note to confirm your contribution or let me know any special situations you could have.** I'm looking forward to working with you.

Thank you very much for your cooperation.

*Jiayu Zhou*

with Mike Halpert, Deputy Director of Climate Prediction Center, and 46th CDPW Organizing Committee

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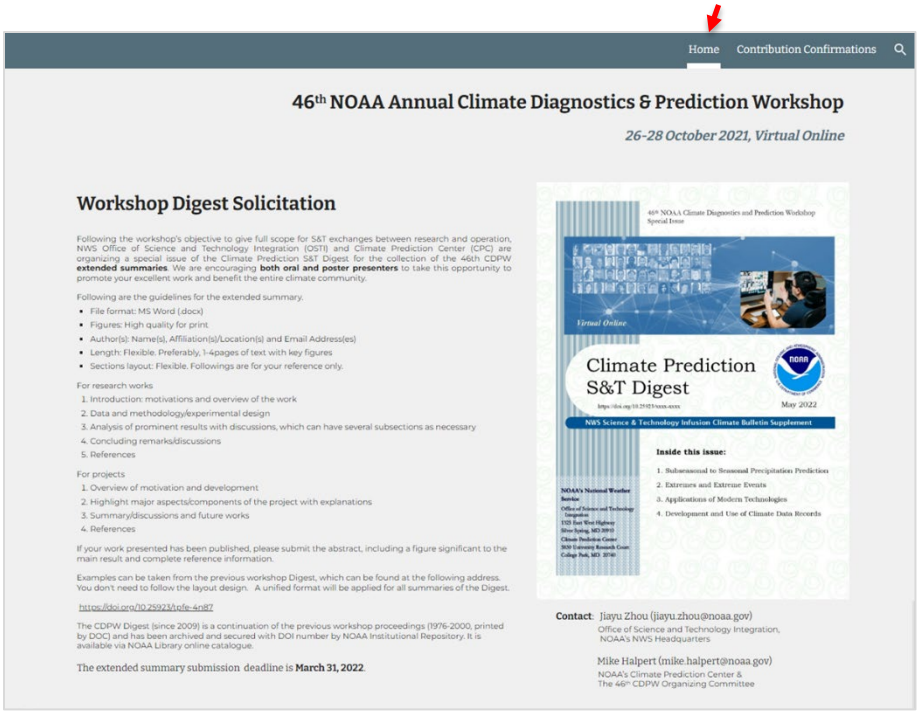
Jiayu Zhou, Ph. D.
Climate Mission Lead
Office of Science and Technology Integration
NOAA's National Weather Service Headquarters
Silver Spring, MD 20910

**APPENDIX E** :

*Solicitation Working Site*

https://sites.google.com/view/46th-noaa-cdpw-digest



Home Contribution Confirmations

## 46th NOAA Annual Climate Diagnostics & Prediction Workshop

*26-28 October 2021, Virtual Online*

### Workshop Digest Solicitation

Following the workshop's objective to give full scope for S&T exchanges between research and operation, NWS Office of Science and Technology Integration (OSTI) and Climate Prediction Center (CPC) are organizing a special issue of the Climate Prediction S&T Digest for the collection of the 46th CDPW **extended summaries**. We are encouraging **both oral and poster presenters** to take this opportunity to promote your excellent work and benefit the entire climate community.

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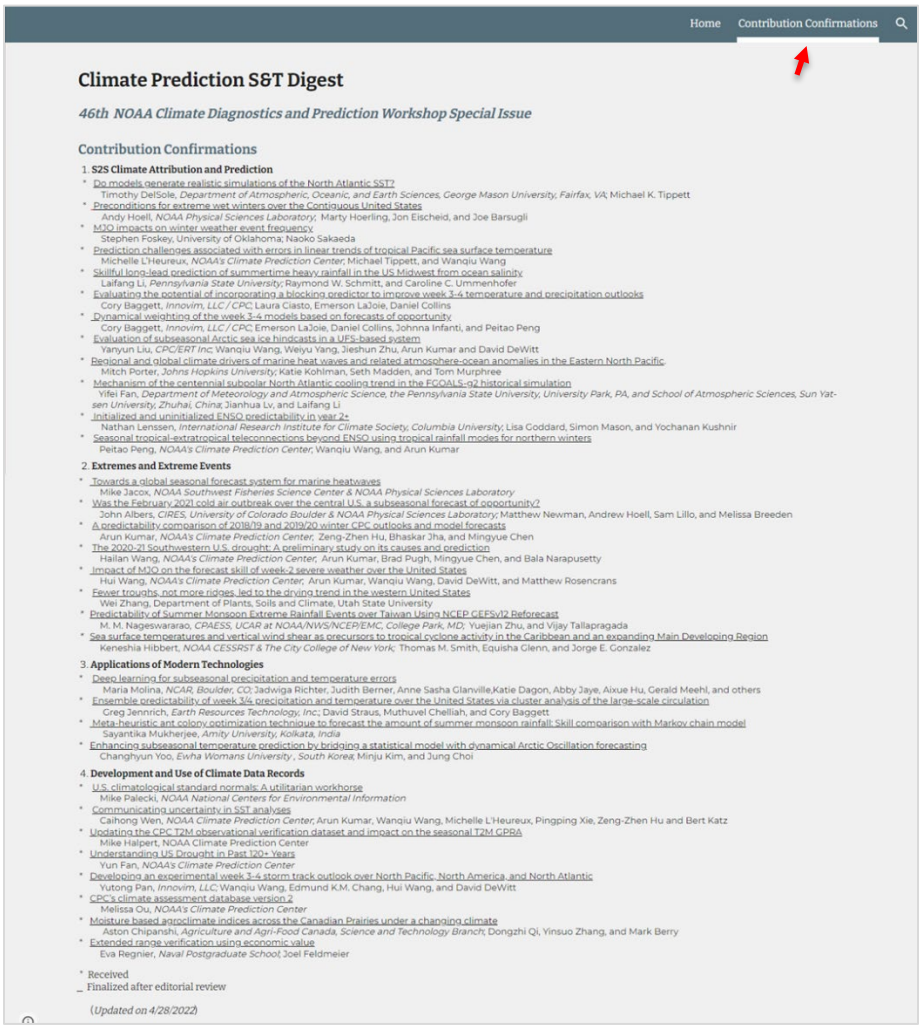
The extended summary submission deadline is **March 31, 2022**.




**Contact**: Jiayu Zhou (jiayu.zhou@noaa.gov)
Office of Science and Technology Integration,
NOAA's NWS Headquarters

Mike Halpert (mike.halpert@noaa.gov)
NOAA's Climate Prediction Center &
The 46th CDPW Organizing Committee



Home Contribution Confirmations

## Climate Prediction S&T Digest

*46th NOAA Climate Diagnostics and Prediction Workshop Special Issue*

### Contribution Confirmations

1. **S2S Climate Attribution and Prediction**
   - * Do models generate realistic simulations of the North Atlantic SST?
     Timothy DelSole, *Department of Atmospheric, Oceanic, and Earth Sciences, George Mason University; Fairfax, VA*; Michael K. Tippett
   - * Preconditions for extreme wet winters over the Contiguous United States
     Andy Hoell, *NOAA Physical Sciences Laboratory*; Marty Hoerling, Jon Eischeid, and Joe Barsugli
   - * MJO impacts on winter weather event frequency
     Stephen Foskey, University of Oklahoma; Naoko Sakaeda
   - * Prediction challenges associated with errors in linear trends of tropical Pacific sea surface temperature
     Michelle L'Heureux, *NOAA's Climate Prediction Center*; Michael Tippett, and Wanqiu Wang
   - * Skillful long-lead prediction of summertime heavy rainfall in the US Midwest from ocean salinity
     Laifang Li, *Pennsylvania State University*; Raymond W. Schmitt, and Caroline C. Ummenhofer
   - * Evaluating the potential of incorporating a blocking predictor to improve week 3-4 temperature and precipitation outlooks
     Cory Baggett, *Innovim, LLC / CPC*; Laura Ciasto, Emerson LaJoie, Daniel Collins
   - * Dynamical weighting of the week 3-4 models based on forecasts of opportunity
     Cory Baggett, *Innovim, LLC / CPC*; Emerson LaJoie, Daniel Collins, Johnna Infanti, and Peitao Peng
   - * Evaluation of subseasonal Arctic sea ice hindcasts in a UFS-based system
     Yanyun Liu, *CPC/ERT Inc*; Wanqiu Wang, Weiyu Yang, Jieshun Zhu, Arun Kumar and David DeWitt
   - * Regional and global climate drivers of marine heat waves and related atmosphere-ocean anomalies in the Eastern North Pacific
     Mitch Porter, *Johns Hopkins University*; Katie Kohlman, Seth Madden, and Tom Murphree
   - * Mechanism of the centennial subpolar North Atlantic cooling trend in the FGOALS-g2 historical simulation
     Yifei Fan, *Department of Meteorology and Atmospheric Science, the Pennsylvania State University; University Park, PA, and School of Atmospheric Sciences, Sun Yat-sen University; Zhuhai, China*; Jianhua Lv, and Laifang Li
   - * Initialized and uninitialized ENSO predictability in year 2+
     Nathan Lenssen, *International Research Institute for Climate Society, Columbia University*; Lisa Goddard, Simon Mason, and Yochanan Kushnir
   - * Seasonal tropical-extratropical teleconnections beyond ENSO using tropical rainfall modes for northern winters
     Peitao Peng, *NOAA's Climate Prediction Center*; Wanqiu Wang, and Arun Kumar
2. **Extremes and Extreme Events**
   - * Towards a global seasonal forecast system for marine heatwaves
     Mike Jacox, *NOAA Southwest Fisheries Science Center & NOAA Physical Sciences Laboratory*
   - * Was the February 2021 cold air outbreak over the central U.S. a subseasonal forecast of opportunity?
     John Albers, *CIRES, University of Colorado Boulder & NOAA Physical Sciences Laboratory*; Matthew Newman, Andrew Hoell, Sam Lillo, and Melissa Breeden
   - * A predictability comparison of 2018/19 and 2019/20 winter CPC outlooks and model forecasts
     Arun Kumar, *NOAA's Climate Prediction Center*; Zeng-Zhen Hu, Bhaskar Jha, and Mingyue Chen
   - * The 2020-21 Southwestern U.S. drought: A preliminary study on its causes and prediction
     Hailan Wang, *NOAA's Climate Prediction Center*; Arun Kumar, Brad Pugh, Mingyue Chen, and Bala Narapusetty
   - * Impact of MJO on the forecast skill of week-2 severe weather over the United States
     Hui Wang, *NOAA's Climate Prediction Center*; Arun Kumar, Wanqiu Wang, David DeWitt, and Matthew Rosencrans
   - * Fewer troughs, not more ridges, led to the drying trend in the western United States
     Wei Zhang, Department of Plants, Soils and Climate, Utah State University
   - * Predictability of Summer Monsoon Extreme Rainfall Events over Taiwan Using NCEP CFSv2 Reforecast
     M. M. Nageswararao, *CPAESS, UCAR at NOAA/NWS/NCEP/EMC, College Park, MD*; Yuejian Zhu, and Vijay Tallapragada
   - * Sea surface temperatures and vertical wind shear as precursors to tropical cyclone activity in the Caribbean and an expanding Main Developing Region
     Keneshia Hibbert, *NOAA CESSRST & The City College of New York*; Thomas M. Smith, Equisha Glenn, and Jorge E. Gonzalez
3. **Applications of Modern Technologies**
   - * Deep learning for subseasonal precipitation and temperature errors
     Maria Molina, *NCAR, Boulder, CO*; Jadwiga Richter, Judith Berner, Anne Sasha Glanville,Katie Dagon, Abby Jaye, Aixue Hu, Gerald Meehl, and others
   - * Ensemble predictability of week 3/4 precipitation and temperature over the United States via cluster analysis of the large-scale circulation
     Greg Jennrich, *Earth Resources Technology, Inc*; David Straus, Muthuvel Chelliah, and Cory Baggett
   - * Meta-heuristic ant colony optimization technique to forecast the amount of summer monsoon rainfall: Skill comparison with Markov chain model
     Sayantika Mukherjee, *Amity University, Kolkata, India*
   - * Enhancing subseasonal temperature prediction by bridging a statistical model with dynamical Arctic Oscillation forecasting
     Changhyun Yoo, *Ewha Womans University , South Korea*; Minju Kim, and Jung Choi
4. **Development and Use of Climate Data Records**
   - * U.S. climatological standard normals: A utilitarian workhorse
     Mike Palecki, *NOAA National Centers for Environmental Information*
   - * Communicating uncertainty in SST analyses
     Caihong Wen, *NOAA Climate Prediction Center*; Arun Kumar, Wanqiu Wang, Michelle L'Heureux, Pingping Xie, Zeng-Zhen Hu and Bert Katz
   - * Updating the CPC T2M observational verification dataset and impact on the seasonal T2M GPRA
     Mike Halpert, NOAA Climate Prediction Center
   - * Understanding US Drought in Past 120+ Years
     Yun Fan, *NOAA's Climate Prediction Center*
   - * Developing an experimental week 3-4 storm track outlook over North Pacific, North America, and North Atlantic
     Yutong Pan, *Innovim, LLC*; Wanqiu Wang, Edmund K.M. Chang, Hui Wang, and David DeWitt
   - * CPC's climate assessment database version 2
     Melissa Ou, *NOAA's Climate Prediction Center*
   - * Moisture based agroclimate indices across the Canadian Prairies under a changing climate
     Aston Chipanshi, *Agriculture and Agri-Food Canada, Science and Technology Branch*; Dongzhi Qi, Yinsuo Zhang, and Mark Berry
   - * Extended range verification using economic value
     Eva Regnier, *Naval Postgraduate School*; Joel Feldmeier

* Received
_ Finalized after editorial review

*(Updated on 4/28/2022)*

# APPENDIX F : *Overview*

Overview.docx

## OVERVIEW

NOAA's 44th Climate Diagnostics and Prediction Workshop was held in Durham, North Carolina on 22–24 October 2019. The workshop was hosted by the Department of Earth and Ocean Sciences at the Nicholas School of the Environment at Duke University and was co-sponsored by the Climate Prediction Center (CPC) of the National Centers for Environmental Prediction (NCEP) and the Climate Services Branch (CSB) of the Analyze, Forecast, and Support Office at the National Weather Service (NWS).

The workshop focused on four major themes, with an emphasis on climate prediction, monitoring, attribution, diagnostics, and service delivery related to:

1. Observations, theories, and models that led to improved understanding and predictions of climate variability spanning various temporal (intraseasonal to multidecadal) and spatial (regional to global) scales. Topics included temperature/precipitation variability, atmospheric and oceanic modes of variability, troposphere-stratosphere coupling, and atmosphere-land-ocean interactions;
2. Applications of modern technologies including GIS, machine learning, and software development at Sub-seasonal to Seasonal (S2S) time scales;
3. Improving climate information delivery and communication methods for impact-based decision support services;
4. Detection, attribution, and prediction of recent extreme events for their occurrence and severity, as well as their societal impacts including air quality, human health, energy structure, and ecosystems;

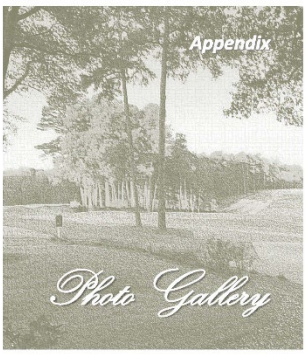
The workshop featured oral and poster presentations, invited speakers, and group discussions. This Digest is a collection of extended summaries of the presentations contributed by participants.

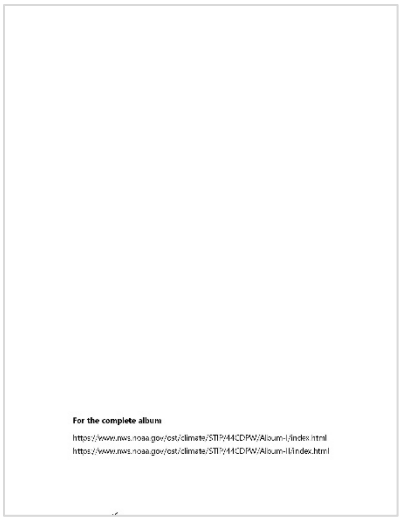
The workshop is continuing to grow and expected to provide a stimulus for further improvements in climate monitoring, diagnostics, prediction, applications and services.

## APPENDIX G :

*Photo Gallery*

Appendix_photo_album_cover.docx

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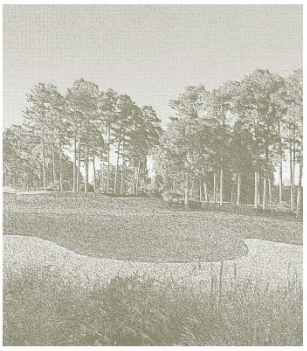
Appendix_photo_album_cover2.docx

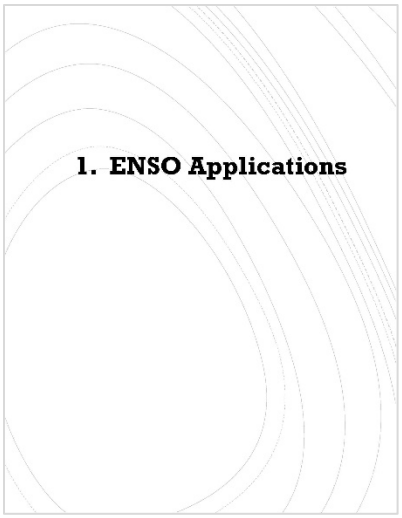


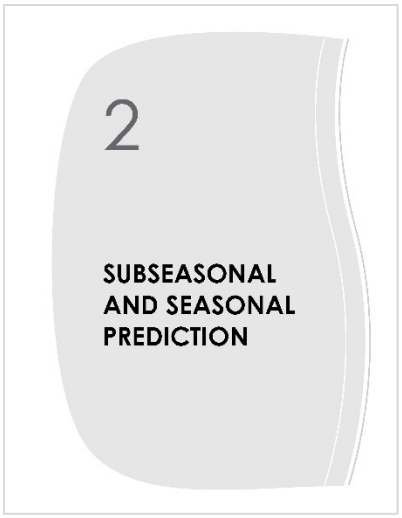


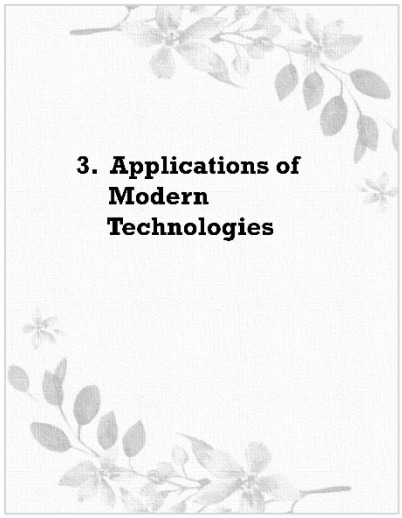
## APPENDIX H :

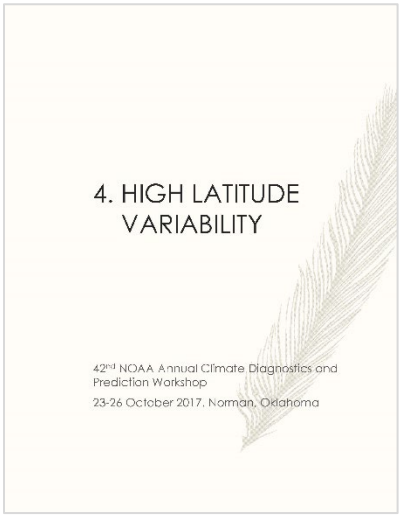
*Section Divider Styles*

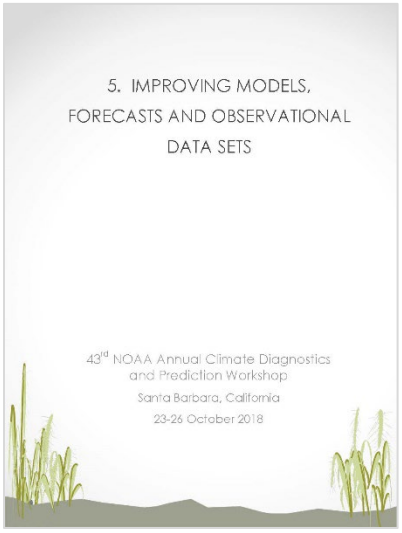
Section dividers.pptx

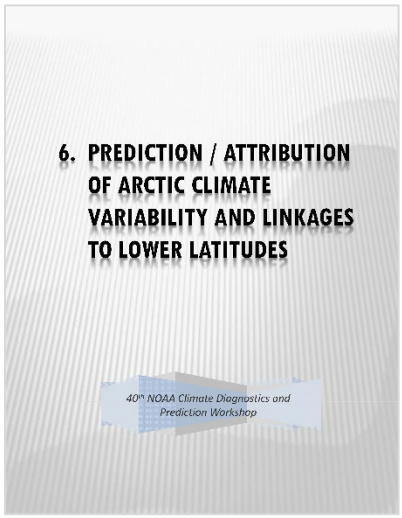


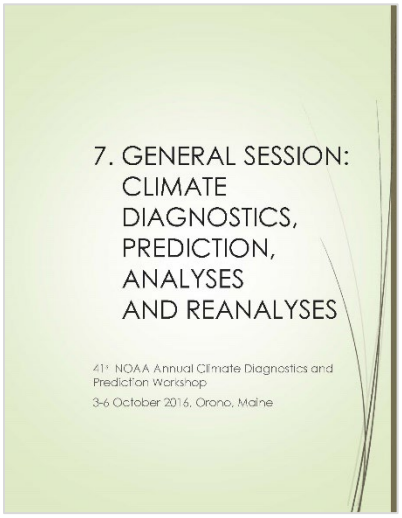




## APPENDIX I : *Inside Back Cover*

Backcover2.docx

**NWS Science and Technology Infusion Climate Bulletin**

# Featured Special Collections

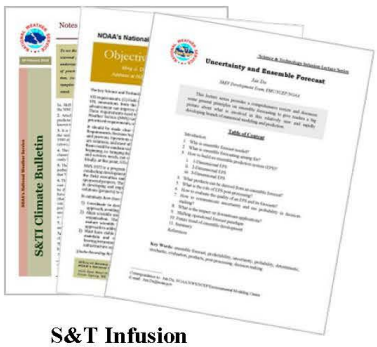
(https://vlab.noaa.gov/web/osti-r2o/climate)

**Climate Prediction Science and Technology Digest (2008 – 2022)**


**STI Climate e-Communications**




**NOAA Climate Test Bed Joint Seminar Series Extended Summaries Collection Volume**


**S&T Infusion e-Lecture Series & Notes**

# **APPENDIX J** : a) *Extended Summary*

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Science and Technology Infusion Climate Bulletin
NOAA's National Weather Service
*33rd NOAA Annual Climate Diagnostics and Prediction Workshop*
*Lincoln, NE, 20-24 October 2008*

## Intensification of Summer Rainfall Variability in the Southeastern United States in Recent Decades

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### 1. Introduction

The Southeastern United States is one of the fastest growing regions in the nation. Water supplies in this area are increasingly stressed especially during summer. The year-to-year fluctuations in summer rainfall over the Southeast thus have vital influence on regional hydrology, agriculture, and related industries. In the past three decades, summer droughts repeatedly struck the Southeast and had a devastating impact on this region socially and economically. For example, the 1986 Southeast summer drought caused billions of dollars of damage in agriculture. The 2007 drought, the most recent one, ranked as the worst in 100 years and pushed water shortages to a crisis point.

The recurrence of these severe droughts raises a question as to whether the magnitudes of anomalous rainfall, especially droughts, in the Southeast have been intensified in recent decades. If so, what might have caused such intensification? This study aims to characterize the change in summer rainfall variability in the Southeast and to explore possible causes of the shift of rainfall variability. In this report, we will present observational evidence that the intensification of Southeast summer rainfall variability closely ties to the variation of tropical Atlantic sea surface temperature (SST). The strong co-variability between the rainfall and SST also suggests some predictability of Southeast summer precipitation based on the tropical SST.

### 2. Data and method

The data used in this study consist of precipitation, atmospheric wind field, and SST from 1948 to 2007. Summer seasonal mean precipitation is an average of June, July and August (JJA) monthly rainfall. The precipitation data are taken from the NOAA Climate Prediction Center (CPC) U.S. Unified Precipitation for 1948–98 and from the realtime U.S. Daily Precipitation Analysis for 1999–2007. The atmospheric winds are the NCEP–NACR Reanalysis product (Kalnay et al. 1996). The SSTs are the NOAA Extended Reconstructed SST (ERSST v3, Smith et al. 2008).

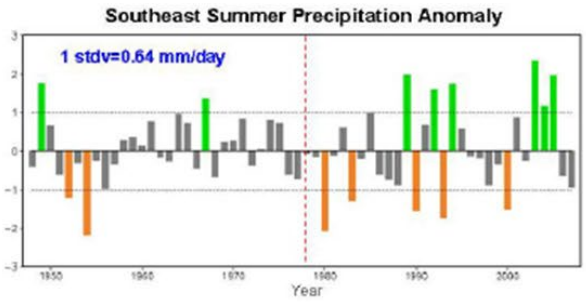


**Fig. 1.** Normalized time series of June–August mean precipitation anomalies averaged over the Southeastern United States (25N–36.5N, 76W–91W). Color bars indicate the summers with rainfall anomalies exceeding one standard deviation.

The relationship between the Southeast summer precipitation and tropical SST is examined by using the singular value decomposition (SVD; Bretherton et al. 1992). This statistical technique is able to objectively identify pairs of spatial patterns with the maximum temporal covariance between precipitation and SST (e.g., Ting and Wang 1997).

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# b) Abstract (Paper published)

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Science and Technology Infusion Climate Bulletin
NOAA's National Weather Service
*37th NOAA Annual Climate Diagnostics and Prediction Workshop*
*Fort Collins, CO, 22-25 October 2012*

## Short-term Climate Extremes: Prediction Skill and Predictability

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**ABSTRACT**

Forecasts for extremes in short term climate (monthly means) are examined to understand our current prediction capability and potential predictability. This study focuses on 2 m surface temperature and precipitation extremes over North and South America, and sea-surface temperature extremes in the Niño3.4 and Atlantic hurricane Main Development regions, using the Climate Forecast System (CFS) global climate model, for the period of 1982-2010. The primary skill measures employed are the anomaly correlation (AC) and root-mean-square error (RMSE). The success rate of forecasts is also assessed using contingency tables.

The AC, a signal-to-noise skill measure, is routinely higher for extremes in short-term climate than those when all forecasts are considered. While the RMSE for extremes also rises, especially when skill is inherently low, it is found that the signal rises faster than the noise. Permutation tests confirm that this is not simply an effect of reduced sample size. Both 2 m temperature and precipitation forecasts have higher anomaly correlations in the area of South America than North America; credible skill in precipitation is very low over South America and absent over North America, even for extremes. Anomaly correlations for SST are very high in the Niño3.4 region, especially for extremes, and moderate to high in the Atlantic hurricane Main Development Region. Prediction skill for forecast extremes is similar to skill for observed extremes. Assessment of the potential predictability under perfect-model assumptions finds that predictability and prediction skill have very similar space-time dependence. While prediction skill is higher in CFS version 2 than in CFS version 1, the potential predictability is not.

This work has been published in the *Journal of Climate* in 2012.

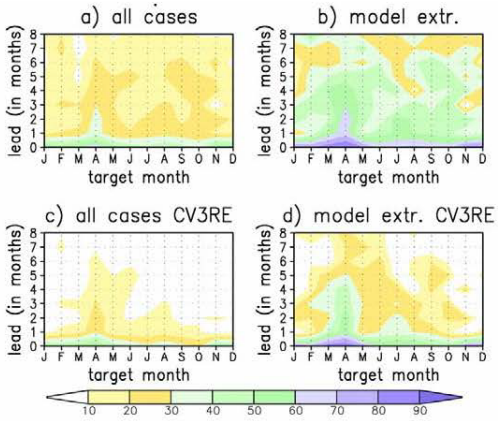


**Fig. 1** CFSv2 2 m temperature anomaly correlations over North America, expressed as a function of the target month(horizontal) and lead (vertical), for a) all cases, b) when the model predicts an extreme, defined as +/- 1.645 local standard deviation, c) all cases with CV3RE applied (Cross-validation when three years are excluded. See the paper for details.), and d) predicted extremes with CV3RE applied. (From Becker *et al.* 2012)

**Paper published**

Becker, E. J., H. van den Dool, and M. Peña, 2012: Short term climate extremes: prediction skill and predictability. *J. Climate*. doi: http://dx.doi.org/10.1175/JCLI-D-12-00177.1.

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## APPENDIX K : *Preface*

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# PREFACE

It is with great pleasure that the Climate Prediction Center (CPC) and the Office of Science and Technology Integration (STI) offer you this synthesis of the 46th Climate Diagnostics and Prediction Workshop (CDPW). The CDPW remains a must attend workshop for the climate monitoring and prediction community. As is clearly evident in this digest, considerable progress is being made both in our ability to monitor and predict climate. The purpose of this digest is to ensure that climate research advances are shared with the broader community and also transitioned into operations. This is especially important as NOAA works to enhance climate services both across the agency and with external partners. We hope you find this digest to be useful and stimulating. And please drop me a note if you have suggestions to improve the digest.

I would like to thank Dr. Jiayu Zhou of the Office of Science and Technology Integration, for developing the digest concept and seeing it through to completion. This partnership between STI and CPC is an essential element of NOAA climate services.

David G. DeWitt
Director, Climate Prediction Center
National Centers for Environmental Prediction
NOAA's National Weather Service

# APPENDIX L : *Table of Content*

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## CONTENTS