

Resources and References

Intro to Climpact: Generating Climate Indices to Support Climate Services

1 January, 2021

Complete list of the indices included in Climpact <https://climpact-sci.org/indices/>.

Climpact User Guide <https://climpact-sci.org/assets/climpact2-user-guide.pdf>

ClimPACT2 Quality Control functionality, by Nick Herold, UNSW, Sydney,
<https://youtu.be/guslge2bTNk>

Module 1: Introduction

- Full definitions of the 27 core indices
http://etccdi.pacificclimate.org/list_27_indices.shtml
- Full definitions of the ~60 plus Climpact indices <https://climpact-sci.org/indices/>
- More information about the formation of the ET-SCI: <https://climpact-sci.org/about/project/>
- Observations: Surface and Atmospheric Climate Change, from the Fourth Assessment Report of the Intergovernmental Panel on Climate Change
<https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter3-1.pdf>

Climdex

- <https://www.pacificclimate.org/>
- <https://www.climdex.org>
- <https://github.com/ECCC-CDAS/RClimDex>
- <https://acmad.net/rcc/procedure/RClimDexUserManual.pdf>

Module 2: Key Concepts for Analysis of Climate Extremes

- Information on trend analysis using the R package:
https://www.researchgate.net/publication/275640899_Trend_Analysis_Using_R
- Representative Concentration Pathways (RCPs)
<https://climateinformation.org/data-variables/what-do-different-rcps-mean/>
- Introduction to Statistics for Climatology
<https://www.meted.ucar.edu/afwa/climo/stats/index.htm>
https://www.meted.ucar.edu/afwa/climo/stats/quick_guide.pdf

Module 3: Select Complete & Continuous Data

- Global Historical Climatology Network (GHCNd) (publicly available databases of instrumental observations) <https://www.ncei.noaa.gov/products/land-based-station/global-historical-climatology-network-daily>.
- WMO Standing Committee on Climate Services (SC-CLI)
<https://community.wmo.int/activity-areas/sercom/sc-cli>

- WMO Guide to Climatological Practices
https://library.wmo.int/doc_num.php?explnum_id=5541
- Sources for remote sensing or numerical or statistical climate models
- Climate Prediction Center (CPC)
https://www.cpc.ncep.noaa.gov/products/monitoring_and_data
- CHIRPS: Rainfall Estimates from Rain Gauge and Satellite Observations
<https://www.chc.ucsb.edu/data/chirps>
- ERA5 (Climate reanalyses) <https://climate.copernicus.eu/climate-reanalysis>
- Global Observing System <https://public.wmo.int/en/programmes/global-observing-system>

Module 4: Load Data and Run Quality Control

- WMO Guide to Climatological Practice
https://library.wmo.int/doc_num.php?explnum_id=5541
- Potential resources for historical weather event data:
- Official climate and weather records from the NMHS or local meteorological offices
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- Extreme event records (In some locations, there are specific records of extreme occurrences, e.g. days with flooding or heat wave)
- Media archives (e.g., newspaper articles, web pages)
- Insurance reports (May require special request to companies, sometimes available in the form of indemnity tables/reports)
- The International Disaster Database <https://www.emdat.be/> - (compiled from various sources, including UN agencies, non-governmental organisations, insurance companies, research institutes and press agencies)
- Disaster Inventory Site (in Spanish) <https://www.desinventar.org/> - (based on newspaper disaster records)

Recommended for homogeneity testing and homogenization:

- Climatol <https://climatol.eu/>, <https://cran.r-project.org/web/packages/climatol/index.html>
- RHtest <https://github.com/ECCC-CDAS/RHtests>

WMO resources

- Climate Data Homogenization <https://community.wmo.int/climate-data-homogenization>
- Guidelines on Homogenization,
https://library.wmo.int/doc_num.php?explnum_id=10352
- WMO Guidelines on the Calculation of Climate Normals
https://library.wmo.int/doc_num.php?explnum_id=4166
- Climate Data Homogenization
<http://etccdi.pacificclimate.org/homogenization.shtml>

- WMO Standing Committee on Climate Services (SC-CLI)
<https://community.wmo.int/activity-areas/sercom/sc-cli>

Module 5: Calculate Climate Indices

- Climate Data and Monitoring WCDMP-No. 72 “Guidelines on Analysis of extremes in a changing climate in support of informed decisions for adaptation”:
https://www.ecad.eu/documents/WCDMP_72_TD_1500_en_1.pdf
- Standardized Precipitation Index User Guide
<https://public.wmo.int/en/resources/library/standardized-precipitation-index-user-guide>

Module 6: Analyze Trends

- Resources for creating plots with Excel: Present your data in a scatter chart or a line chart <https://support.microsoft.com/en-us/topic/present-your-data-in-a-scatter-chart-or-a-line-chart-4570a80f-599a-4d6b-a155-104a9018b86e>
- How To Make A Line Graph In Excel-EASY Tutorial
<https://www.youtube.com/watch?v=3PwVWX28dEE>
- What are El Niño and La Niña? <https://www.unocha.org/themes/el-ni%C3%B1o/el-ni%C3%B1o-and-la-ni%C3%B1a>
- The Insignificance of Significance Testing
https://journals.ametsoc.org/view/journals/bams/82/5/1520-0477_2001_082_0981_caatio_2_3_co_2.xml
- Significance Tests in Climate Science
<https://journals.ametsoc.org/view/journals/clim/23/22/2010jcli3746.1.xml>
- Statistical Methods in the Atmospheric Sciences, Volume 100, 3rd Edition, Author: Daniel Wilks, Hardcover ISBN: 9780123850225, eBook ISBN: 9780123850232, Imprint: Academic Press. Published Date: 20th May 2011
<https://www.elsevier.com/books/statistical-methods-in-the-atmospheric-sciences/wilks/978-0-12-385022-5>
- Jones, P. D. and M. Hulme, 1996: Calculating regional climatic time series for temperature and precipitation: Methods and illustrations. International Journal of Climatology, 16, 361-377. [https://doi.org/10.1002/\(SICI\)1097-0088\(199604\)16:4%3C361::AID-JOC53%3E3.0.CO;2-F](https://doi.org/10.1002/(SICI)1097-0088(199604)16:4%3C361::AID-JOC53%3E3.0.CO;2-F)

Module 7: Calculate Correlations with Sectoral Data

- Spurious correlations <https://www.tylervigen.com/spurious-correlations>
- Appendix B: Input data format in Clim pact User Guide:
https://github.com/ARCCSS-extremes/clim pact/blob/master/www/user_guide/Clim pact_user_guide.md#appendixb
- Data Analysis: Detrending data series to avoid false correlations
https://www.youtube.com/watch?v=2-nMsoE_in0
- Bringing physical reasoning into statistical practice in climate-change science
<https://link.springer.com/content/pdf/10.1007/s10584-021-03226-6.pdf>

Module 8: Communicate Indices & Trends

- “WMO, Guidelines On Analysis Of Extremes In A Changing Climate In Support Of Informed Decisions For Adaptation”
https://www.ecad.eu/documents/WCDMP_72_TD_1500_en_1.pdf
- IPCC AR4 <https://www.ipcc.ch/report/ar4/wg1/observations-atmospheric-surface-and-climate-change>
- State of Climate in 2021: Extreme events and major impacts
<https://public.wmo.int/en/media/press-release/state-of-climate-2021-extreme-events-and-major-impacts>
- State of the Climate in Africa 2020
https://library.wmo.int/doc_num.php?explnum_id=10421
- Alexander, L. V., et al. (2006), Global observed changes in daily climate extremes of temperature and precipitation, J. Geophys. Res., 111, D05109, doi:10.1029/2005JD006290. National Communications,
<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2005JD006290>

National Communications

- South Africa’s Third National Communication (TNC)
https://unfccc.int/sites/default/files/resource/South%20African%20TNC%20Report%20to%20the%20UNFCCC_31%20Aug.pdf 2012
- India: Second National Communication to the United Nations Framework Convention on Climate Change
<https://unfccc.int/sites/default/files/resource/indnc2.pdf>
- The National Communications Process, National Communications Support Programme Resource Kit, National Communications Support Programme (NCSP) <https://www.uncclearn.org/wp-content/uploads/library/undp24.pdf>
- UNFCCC Resource Guide Module 1: The Process Of National Communications From Non-Annex I Parties For Preparing The National Communications Of Non-Annex I Parties
https://unfccc.int/resource/docs/publications/09_resource_guide1.pdf
- UNFCCC secretariat (UN Climate Change) <https://unfccc.int/>
- The National Communications Process, National Communications Support Programme Resource Kit, National Communications Support Programme (NCSP) <https://www.uncclearn.org/wp-content/uploads/library/undp24.pdf>
- UNFCCC Resource Guide Module 1: The Process Of National Communications From Non-Annex I Parties For Preparing The National Communications Of Non-Annex I Parties
https://unfccc.int/resource/docs/publications/09_resource_guide1.pdf
- UNFCCC secretariat (UN Climate Change) <https://unfccc.int/>

Nationally determined contributions (NDCs)

- Description of the NDCs provided by the UNFCCC: <https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs>

- UNFCCC NDC Registry
<https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx>

National Adaptation Plans (NAPs)

- Mastering National Adaptation Plans: from Start to Finish (3 hour, self-paced, online course) <https://unccelearn.org/course/view.php?id=141&page=overview#>
- Integrating Climate Risk Information into NAPs (6 hour, self-paced, online course) <https://www.unccelearn.org/courses/integrating-climate-risk-information-into-naps/>
- NAPs Repository <https://www4.unfccc.int/sites/NAPC/Pages/national-adaptation-plans.aspx>
- Example NAP: Saint Lucia's National Adaptation Plan (NAP) 2018–2028
<https://www4.unfccc.int/sites/NAPC/Documents/Parties/SLU-NAP-May-2018.pdf>

Action Plans

- West Bengal, India, State Action Plan on Climate Change 2017–2020
http://www.environmentwb.gov.in/pdf/WBSAPCC_2017_20.pdf
- National Climate Change Adaptation Strategy Republic of South Africa 13 November 2019
https://www.dffe.gov.za/sites/default/files/docs/nationalclimatechange_adaptation_strategy_ue10november2019.pdf
- Africa Climate Business Plan, World Bank Group, Africa Region/June 2020
<http://www.indiaenvironmentportal.org.in/files/file/The-Next-Generation-Africa-Climate-Business-Plan.pdf>
- World Bank Group Climate Change Action Plan 2016–2020
<https://openknowledge.worldbank.org/bitstream/handle/10986/24451/K8860.pdf>
- City of Flagstaff, Arizona, US, Climate Action & Adaptation Plan, Nov 2018
https://www.flagstaff.az.gov/DocumentCenter/View/59413/Flagstaff-Climate-Action-and-Adaptation-Plan_Nov-2018_Introduction
- List of Minimum Actions for Veracruz Facing Climate Change, Veracruz, Mexico (Spanish) https://www.uv.mx/peccuv/files/2019/07/Veracruz-ante-el-CC_Propuestas-minimas-2019-2024.pdf
- The University of Washington Climate Impacts Group Adaptation Guidebook - <https://cig.uw.edu/resources/special-reports/adaptation-guidebook/>
- The U.S. Climate Resilience Toolkit's "Steps to Resilience"
<https://toolkit.climate.gov/#steps>
- The Sonoran Institute Resilient Communities Starter Kit
<https://sonoraninstitute.org/resource/resilient-communities-starter-kit/>
- Planning for Hazards <https://planningforhazards.com/climate-plan>

Project Proposals

- Annex II. Country Case Studies Version 8 September 2021 Developing the Climate Science Basis for Climate Action
https://library.wmo.int/doc_num.php?explnum_id=10836
 - Climate Science Basis: Forestry in Saint Lucia, p. 28

- 7 Tips for Proposals on Climate Change <https://proposalsforngos.com/7-tips-for-proposals-on-climate-change/>
- Crafting a proposal from the bottom-up: An example from Senegal <https://gfcs.wmo.int/crafting-a-proposal-from-the-bottom-up-senegal>
- Proposed Work Plan for Programme of Cooperation for Climate Change Adaptation in West Africa <https://gfcs.wmo.int/sites/default/files/projects/Programme%20of%20Cooperation%20for%20Climate%20Change%20Adaptation%20in%20West%20Africa//Reworded%20Greece%20Project%20proposal%20on%20CC%20%26%20Adaptation%20-%20v4.0%5B1%5D.pdf>
- Green Climate Fund Approved Climate Action Project Proposals <https://www.greenclimate.fund/projects>