Response to Executive Editor (Prof. Thom Bogaard)

Comments to the author: Dear authors, I received two mixed referee reports. One was generally happy, and has minor points to address. The other reviewer points out that you did not address the review completely. I do not fully agree, as I think you showed the niche of your work sufficiently. Also, I do not think you have to repeat the discussion on Eulerian/Lagrangian approaches in moisture tracking. However, I do think it is appropriate in a scientific debate to discuss that differences in approach exists and what are the strength and weaknesses. This could be addressed a bit more specific.

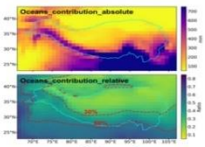
There is one point I am less happy with. You state: "The data generated in this study are available from the corresponding authors upon reasonable request." You indicate all other researchers sharing data and scripts, whereas you seems reluctant. I do not agree with this statement. I think you should be more open in sharing the data underlying your figures with the community. There are ample open repositories available. So please do so.

Response: Thank you very much for handling and reviewing our paper. Per your suggestions, we further strengthened the descriptions about the strength and weaknesses of different approaches in lines 95–102 in our revised manuscript: “In comparison with the commonly used Lagrangian models (e.g., the FLEXible PARTicle (FLEXPART) dispersion model and the Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model) that concern the movement of “air particles” in the atmosphere and identify precipitation and evaporation events mainly based on the dynamic humidity information of the tracked particles, Eulerian models principally focus on moisture transport among fixed grids. In general, Lagrangian models are more accurate and run faster than Eulerian ones for short-term moisture tracking of single grid cells, while Eulerian models are more efficient for long-term moisture tracking over large target regions (Tuinenburg and Staal, 2020). More importantly, the selection of WAM-2layers enables us to consider moisture budget from precipitation and evaporation separately on Eulerian grids (Van der Ent et al., 2013; Van der Ent, 2014).”

We fully agree with your comment on data sharing. We have uploaded the key results of this work as a dataset to the online data repository of the National Tibetan Plateau Data Center (TPDC). The TPDC is the only data center in China with the most complete scientific data for the Tibetan Plateau and surrounding regions. The dataset titled “Dataset of oceanic moisture contribution to precipitation over the Tibetan Plateau simulated by WAM-2 during 1979-2015” is already online and is publicly available at https://data.tpdc.ac.cn/en/data/c6f758cf-6c99-4023-8026-f59e6d3657cb/ (DOI: 10.11888/Atmos.tpdc.272946; see screenshot below). Note that the related literature information will be updated once the paper is published.

Dataset of oceanic moisture contribution to precipitation over the Tibetan Plateau simulated by WAM-2 during 1979-2015

Dataset of oceanic moisture contribution to precipitation over the Tibetan Plateau simulated by WAM-2 during 1979-2015



Zoom in

This is a monthly grided dataset (1°×1°) of the oceanic moisture contribution to precipitation over the Tibetan Plateau during 1979 and 2015, which was produced by using the atmospheric reanalysis product to drive the forward Eulerian moisture tracking model (WAM-2). We tracked the evaporation from global oceans ('oceans' in Masks.nc), the western oceans dominated by the westerlies ('western oceans' in Masks.nc), and the Indian Ocean dominated by the Indian monsoon ('indian ocean' in Masks.nc), and quantified their contributions to precipitation over the plateau from two aspects of absolute contribution (mm, equivalent water height in each grid) and relative contribution (%, ratio of oceanic moisture contribution to each grid). Due to date uncertainties, we used three high-resolution global atmospheric reanalysis products (ERA-I, MERRA2 and JRA55) in the moisture tracking, and we suggest the users of this dataset pay attention to the uncertainties among the different simulations.

File naming and required software

The dataset is stored in nc format. 'Oceanic moisture contribution_ ERA-I.nc' is the dataset of oceanic moisture contribution simulated by WAM-2 driven by ERA-I. Therein, the variables 'oceans_*' , 'western_oceans_*' and 'indian_ocean_*' represent the moisture contributions from global oceans, the western oceans, and the Indian Ocean, respectively. The variables '*_absolute' and '*_relative' represent the absolute and relative moisture contribution. For example, the variable 'indian_ocean_absolute' represents the absolute contribution of moisture from the Indian Ocean. 'Masks.nc' contains the mask data of the global oceans, the western oceans and the Indian Ocean used in the moisture tracking simulations.

Data Citations

What's data citation? Data citation guideline

Cite as:

Li, Y. (2022). **Dataset of oceanic moisture contribution to precipitation over the Tibetan Plateau simulated by WAM-2 during 1979-2015**. National Tibetan Plateau Data Center, DOI: 10.11888/Atmos.tpdc.272946. CSTR: 18406.11.Atmos.tpdc.272946. (Download the reference: RIS | Bibtex)

Related Literatures:

1. Li, Y., Wang, C.H., Haung, R., Yan, D.H., Peng, H., & Xiao, S.B. (2023). Spatial Distribution of Oceanic Moisture Contribution to the Precipitation over the Tibetan Plateau. Hydrology and Earth System Sciences.(View Details | Bibtex)

Using this data, the data citation is required to be referenced and the related literatures are suggested to be cited.

Support Program

Second Tibetan Plateau Scientific Expedition Program

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To respect the intellectual property rights, protect the rights of data authors,expand servglacials of the data center, and evaluate the application potential of data, data users should clearly indicate the source of the data and the author of the data in the research results generated by using the data (including published papers, articles, data products, and unpublished research reports, data products and other results). For re-posting (second or multiple releases) data, the author must also indicate the source of the original data.

Example of acknowledgement statement is included below: The data set is provided by National Tibetan Plateau Data Center (http://data.tpdc.ac.cn).

Related Resources

Related datasets | Service records | Recommendations

1.Distributions of debris flows in CPEC and Tianshan Mountain

2.Modeling results of leaf area index in the middle and lower Heihe River Basin at the north of Qilian Mountains (2001-2015)

3.Driving data of surface meteorological elements in the eastern Qinghai Tibet Plateau with a horizontal resolution of 3km * 3km and an hour (2010)

4.Namuco station (2019) and Southeast Tibet station (2021) air pollutant flux and vertical gradient data set

5.10 m meteorological gradient data set of hulugou basin (2012)

6.Landslide data set of Three Rivers Basin in the southeast of Qinghai Tibet Plateau

7.30 m land cover classification product data set of Qilian Mountain Area in 2021 (V3.0)

8.HiWATER: Dataset of flux observation matrix (eddy covariance system of Zhangye wetland Station) of the MUlti-Scale Observation EXperiment on Evapotranspiration over heterogeneous land surfaces 2012 (MUSOEXE-12)

9.Precipitation observation data of the east bank of Selincuo Lake (2016-2017)

10.1:4 million geomorphic type data of Qinghai Tibet Plateau (1996)

Comments

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Keywords

Discipline: Atmosphere, Terrestrial Surface

Theme: Precipitation, Moisture Source, Moisture Transport, Atmospheric Water Circulation, Atmospheric Water Vapor

Places: Tibetan Plateau

Time: 1979-2015

Geographic coverage

East: 107.00	West: 66.00
South: 23.00	North: 44.00

Details

File List

Temporal resolution: Monthly

Spatial resolution: 0.5° - 1°

File size: 28 MB

Views: 31

Downloads: 0

Access: Open Access

Temporal coverage: 1979-01-01 To 2015-12-31

Temporal coverage: January 1979-December 2015

Updated time: 2022-11-26

Contacts

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Distributor: National Tibetan Plateau Data Center

Email: data@itpcas.ac.cn

Export metadata

Response to Referee #2 (Prof. Ruud van der Ent)

1. "Eulerian grids enable the WAM-2layers to consider moisture budget from precipitation and evaporation separately."
Comments: I think the adapted sentence is better, but it is not the Eulerian grid that enables to evaluate P and E separately. The model by Tuinenburg and Staal cited here is Lagrangian and also uses P and E. Whether a tracking model is Lagrangian or Eulerian is a feature that is unrelated to if and how P and E are treated.

Response: Thanks for correcting this. We have revised this sentence to "the selection of WAM-2layers enables us to consider moisture budget from precipitation and evaporation separately on Eulerian grids".

2. Table AC2 (i.e., Table S2).
Comments: To make it easier for the reader, please add the corresponding pressure (under standard surface pressure).

Response: Thanks. The corresponding pressures were added to the Table (Table S2 in in our revised Supplementary).

Table S2. Summary of the selected 17 model layers in three reanalysis products. The column "Pressure" represents the corresponding pressures under standard surface pressure.

	ERA-Interim		MERRA-2		JRA-55	
	Model layer	Pressure (hPa)	Model layer	Pressure (hPa)	Model layer	Pressure (hPa)
1	60	1012.05	72	1013.25	1	998.50
2	59	1009.06	71	998.05	2	995.50
3	58	1004.64	70	982.77	3	991.50
4	57	998.39	69	967.48	4	985.50
5	56	989.95	68	952.20	5	977.00
6	55	979.06	67	936.91	6	966.00
7	54	965.57	66	921.63	7	953.00
8	51	908.65	65	906.34	9	917.98
9	48	828.05	61	845.21	12	846.96
10	47	796.59	59	809.56	14	786.96
11	44	691.75	55	707.70	17	684.41
12	41	573.38	52	605.88	20	571.90
13	38	461.90	49	491.40	23	458.38
14	35	353.23	46	377.07	26	351.86
15	32	257.36	44	288.93	29	257.36
16	27	132.76	40	150.39	34	132.88
17	17	18.81	28	19.79	44	18.99

3. "Considering the size of the data, we will make the data that support the findings of this study available upon reasonable request."
Comments: I still see no reason not to make the data generated available in an open data

repository. The data holding the content of the figures/tables should not be more than a few megabytes. Moreover, there are many data repositories that can hold terrabytes of data free of charge.

Response: Thanks for the suggestion. We have uploaded the generated data to the National Tibetan Plateau Data Center (TPDC) (available at https://data.tpdc.ac.cn/en/disallow/c6f758cf-6c99-4023-8026-f59e6d3657cb/). Please also see our response to Executive editor above.

4. "In addition, we have detailed the datasets and the code of WAM-2layers used in this work in the Data Availability section."
Comments: I may be mistaken and perhaps the editor can clarify this issue further, but my point was that the data availability should indicate where the data you generated is availabe and NOT where the data that you used is availabe. The latter can be described in methods/acknowledgement and references.

Response: Thanks. We have revised this section to add the link/reference for the dataset generated from this work, which is now archived at the National Tibetan Plateau Data Center (TPDC): "The results of oceanic moisture tracking simulations are archived at the National Tibetan Plateau Data Center (TPDC): http://data.tpdc.ac.cn/en/data/c6f758cf-6c99-4023-8026-f59e6d3657cb/ (Li, 2022)."
Reference: Li, Y.: Dataset of oceanic moisture contribution to precipitation over the Tibetan Plateau simulated by WAM-2 during 1979-2015, Archived at the National Tibetan Plateau Data Center, available at: https://doi.org/10.11888/Atmos.tpdc.272946, last access: 29 November 2022.

Response to Polina Shvedko:

Please ensure that the colour schemes used in your maps and charts allow readers with colour vision deficiencies to correctly interpret your findings. Please check your figures using the Coblis – Color Blindness Simulator (https://www.color-blindness.com/coblis-color-blindness-simulator/) and revise the colour schemes accordingly.

Response: Thanks for the reminder. We have checked all our figures using Coblis and found that Figures 5, 6, 7, and S1 are not color-blind-friendly. We have changed the color schemes of these four figures.