General Comments：

The manuscript „China Coastal GNSS Network …" submitted by Wu et al. described PWV determination and results for a network of GNSS stations located along the Chinese coastlines. The paper is well written and supported by figures and numbers. Nevertheless, I have some general questions and suggest modifications to improve the draft before submission.

Response: Thank you for the constructive and encouraging comments regarding our manuscript. We have enclosed a carefully revised manuscript according to the comments and suggestions provided, and provide an item-by-item response to all comments in the accompanying rebuttal document.

Major Comment:

The authors processed GNSS data from 55 stations; however, the PVW results are available, but the data and metadata are not. It would be beneficial to get access to the GNSS data and to know whether there are plans to release this important dataset. In any case, I recommend updating the station table in the dataset with more accurate locations (currently roughly at the 10km level), start/end dates, and equipment for the stations.

Response: Thank you very much for your valuable suggestion. We agree that access to the GNSS data and metadata would be highly beneficial. However, the original data are provided by FIO, MNR. We have contacted FIO, but unfortunately, the data cannot be made publicly available and are only accessible through individual requests. In response to your suggestion, we have updated the dataset to include more accurate station locations (to better than 10 km precision), along with start/end dates and equipment information (https://zenodo.org/records/14723402).

The title contains "climate," but the authors processed only the years 2009-2019. At least 20-30 years of data are required to derive climate trends. I expect the authors to extend the dataset to 2024 (at least 15 years) or provide a profound explanation if this is impossible.

Response: Thank you very much for your insightful comment. We fully agree that a dataset spanning 20–30 years would provide a stronger basis for analyzing climate trends. We have attempted to acquire additional GNSS data to extend the dataset through 2024. However, the processing is complex and subject to delays due to the need for approval to access the original observations. We are committed to expanding the dataset and will continue our efforts in future research to build a time series exceeding 20 years for more robust climate change analysis.

I suggest adding more information to the PWV records in the dataset. Why not provide the inputs taken from ERA5 (Eqn. 3 and 4)? Furthermore, I miss the uncertainty information. This is a minor detail, but I wonder about the different spacing of the PWV values in the dataset (+/—3s). Is there a reason for this?

Response: Thank you very much for your thoughtful suggestions. As recommended, we have added the ERA5-derived PWV values to the dataset. Regarding uncertainty, it is challenging to quantify the absolute uncertainty of GNSS-derived PWV, as GNSS tends to offer higher accuracy while ERA5 provides more stability. To offer a reference, we have included the differences between GNSS and ERA5 PWV for each station in the file CGN_sites.txt. The irregular spacing of PWV values (±3 seconds) was due to a minor time transfer error, which has now been corrected in the revised dataset (https://zenodo.org/records/14723402).

Minor comments:

Is there a particular reason for using the ESA GNSS products?
Response: Thank you so much for the question. The precise satellite orbits and clocks were obtained from the European Space Agency's (ESA) second reprocessing products (2009-2014) and operational final products (2014-2019) for both high accuracy and internal consistency between the orbit and clock solutions (Springer et al., 2014; Schoenemann et al., 2024).
Springer T., C. Flohrer, M. Otten, W. Enderle (2014) ESA Reprocessing: Advances in GNSS analysis. IGS workshop 2014, June 23-27, Pasadena, USA
Schoenemann E., F. Gini, W, Enderle, F. Dilssner, V. Mayer, M. van Kints, I. Romero, T. Springer, B. Traiser (2024) ESA/ESOC IGS Analysis Centre Technical Report 2023. In International GNSS Service Technical Report 2023. IGS Central Bureau and University of Bern; Bern Open Publishing DOI:10.48350/191991

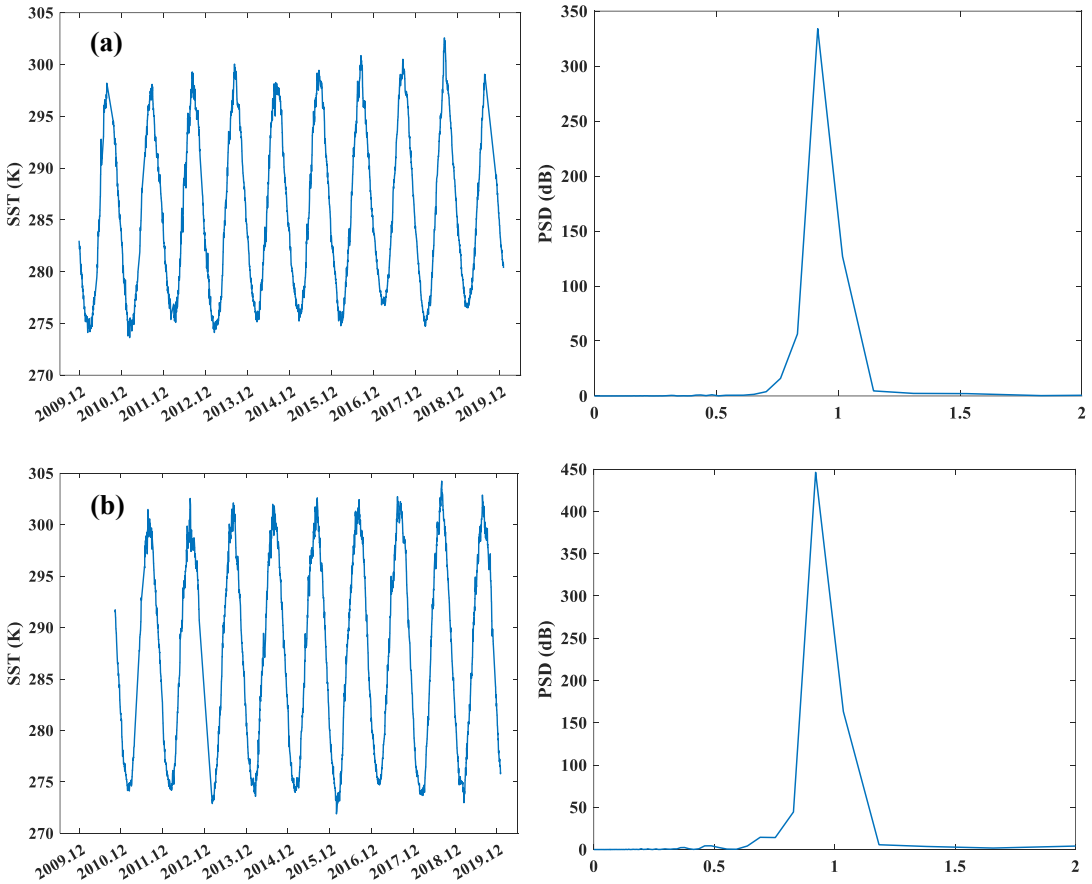
Is there a public source for the radiosonde data? Same for the sea surface temperatures.
Response: Thank you so much for the comment. The radiosonde data is provided by Integrated Global Radiosonde Archive (IGRA), which is accessible at (https://www.ncei.noaa.gov/products/weather-balloon/integrated-global-radiosonde-archive), which is described in section 2.2.2. Sea surface temperature is provided by ERA5 reanalysis data, which is introduced in section 2.2.1.

Provide a consistent description for the GNSS processing with suitable references. A reference to ESA products is missing. The reference for antenna information is outdated. Add the length of the troposphere interval (1h) [l115].
Response: Thank you very much for your helpful suggestions. We have added appropriate references for the ESA products and updated the outdated reference for antenna information. Additionally, we have included the tropospheric delay interval in the manuscript: “The batch least-squares estimation method was used to estimate the GNSS station static coordinates, epoch-wise clock offsets, and tropospheric delay at a 1-hour interval.”
Schmid, R., Dach, R., Collilieux, X., Jäggi, A., Schmitz, M., and Dilssner, F.: Absolute IGS antenna phase center model igs08. atx: status and potential improvements, Journal of Geodesy, 90, 343-364, 2016.

I somehow miss the climate aspect of the discussion - the trend estimation against SST covers, to my understanding, seasonal variations.

Response: Thank you so much for your suggestion. We added the discussion of SST seasonal variations as suggested:

"Additionally, the variations in SST are analyzed based on the six selected GNSS stations. The SST time series are shown in the left panel, while their Fourier spectrum analysis is presented in the right panel of Fig. 17. It is evident that all SST values around the GNSS stations exhibit a clear annual variation. However, the semi-annual pattern is not as prominent across the stations, which contrasts with the pattern observed in the PWV variation. Furthermore, the minimum SST values decrease from high to low latitudes, with SST values around 275 K in high-latitude areas and approximately 290 K in low-latitude regions.



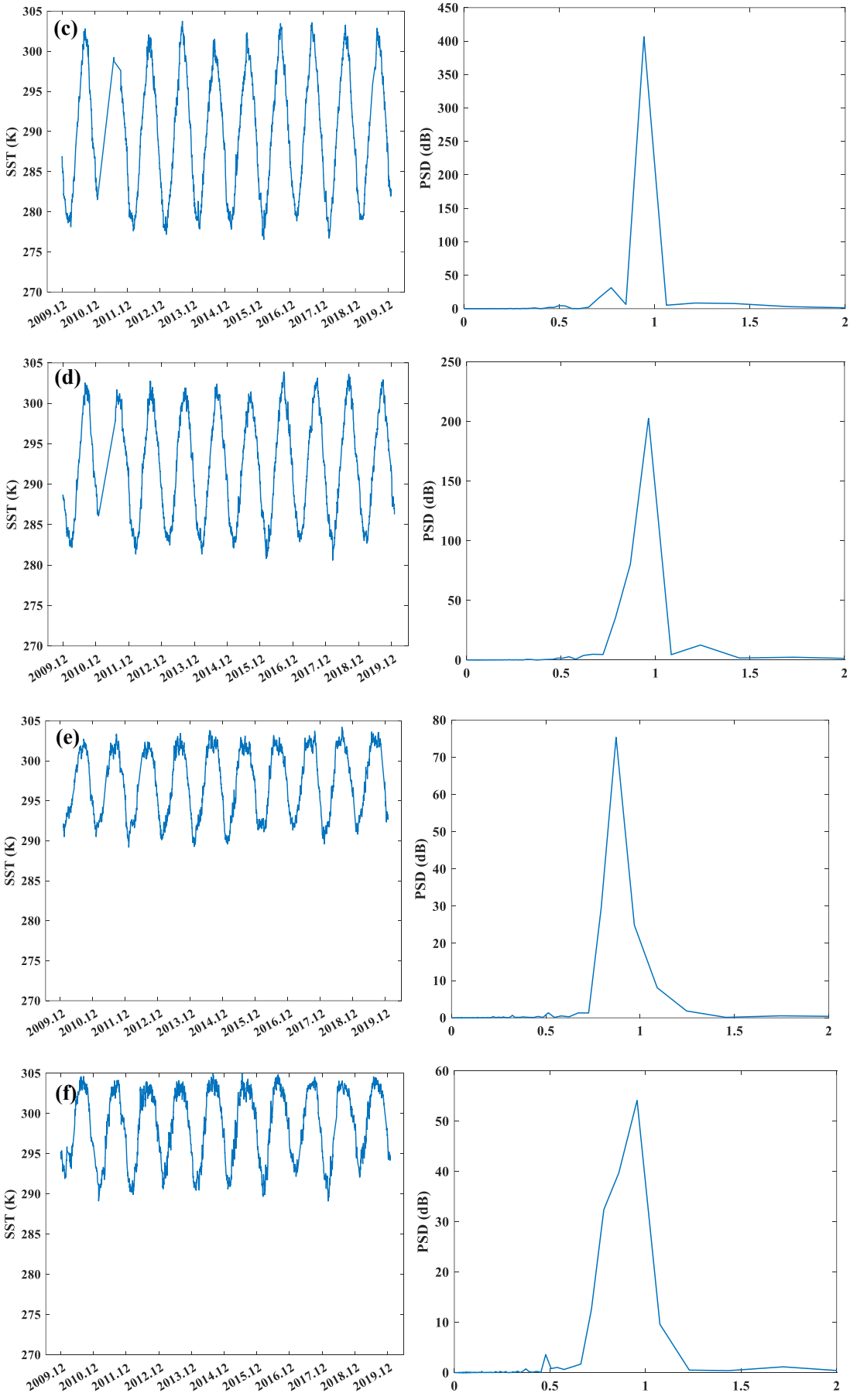

(c)
SST (K)
PSD (dB)
(d)
SST (K)
PSD (dB)
(e)
SST (K)
PSD (dB)
(f)
SST (K)
PSD (dB)
2009.12
2010.12
2011.12
2012.12
2013.12
2014.12
2015.12
2016.12
2017.12
2018.12
2019.12

Figure 17: SST time series and corresponding spectrum analysis in BLHT(a), BTGU (b), DLSI (c), DSPU (d), NHZH (e), and NWZU (f).

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