

This study investigated the spatial and temporal variations of Ncn, Nccn and a few other pollutants over China marginal seas. The authors also examined the relationship between Ncn, Nccn and SO₂, which is useful to predict Ncn and Nccn when the observation of SO₂ is available. This study is interesting and important to understand the characteristics of Ncn and Nccn over the marine atmosphere.

A few specific comments shown below need to be addressed.

1. Line 45-46 (abstract): Moreover, the influences of the transported new particles from the continent on Ncn and Nccn in the marine atmosphere were also investigated.

The sentence illustrated the transport of new particles. Are there any findings or conclusions from this analysis?

2. Line 76-78: different marine atmospheres, e.g., over Mediterranean, Sea of Japan, Bay of Bengal, coast of California and the Northwest Pacific Ocean etc. (Bougiatioti et al., 2009; Ramana and Devi, 2016; Ruehl et al., 2009; Wang et al., 2019; Yamashita et al., 2011). Are the locations correspond to the five references? It is better to list the reference following each location.

3. Line 115-116

The correlation equations are valuable for a rough estimation of Ncn and Nccn from SO₂ when their direct observations are not available.

Please rephrase this sentence. For example, “their direct observation” mean the observation of Ncn and Nccn?

4. Line 153: ECMWF

There is a couple of data sets from ECMWF. What did the authors use, ERA-40, ERA-Interim, or ERA5? Please be specific.

5. Line 157-159: Meanwhile, the data of fire spots was available at the Fire Information for Resource Management System (FIRMS;<http://firefly.geog.umd.edu/firemap>).

It does not seem the fire spots were used in this study. If not, the descriptions need to be removed.

6. Line 430-431: The Aitken mode particles evidently enhanced at 14:00-15:00

The enhancement here means the number concentration? Please clarify.

Technical corrections:

Line 102. continent al aerosols. An extra space before al, please remove it.

Line 126-128: The FMPS were used; CPC were
The word “were” changed to “was”

Line 150-151: Ambient Ion Monitor-Ion chromatography (AIM-IC)
AIM-IC has been defined at Line 125. Please avoid the duplication of definition.

Line 164: one extra comma. Please delete it. Similar for Line 509.

Line 189: “Fib” should be changed to “Fig”

Line 198: “.” needs to be changed to “,”

Line 273: “relative” should be revised to “relatively”

Line 382: Hoppel W. A. (1986) proposed cloud-modified aerosols to be ...
The citation is not appropriate. Hoppel et al. (1986)

Line 384: Cloud-modified aerosols are quietly common

Line 452. prior to the signal disappeared
Grammar error exist here.

Line 484. with diameters down 40 nm
Changed to “with diameters down to 40 nm”

Nccn at SS of 0.2%-1.0% ($3.2 - 3.9 \times 10^3 \text{ cm}^{-3}$)
The values inside the parenthesis should be moved next to Nccn.