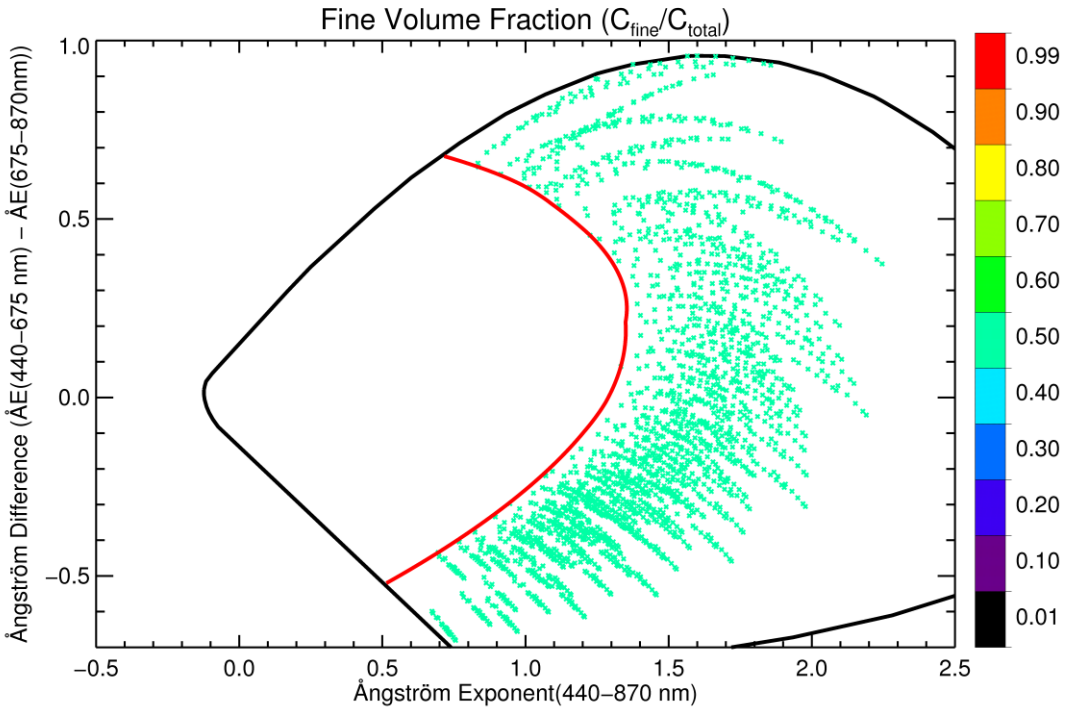
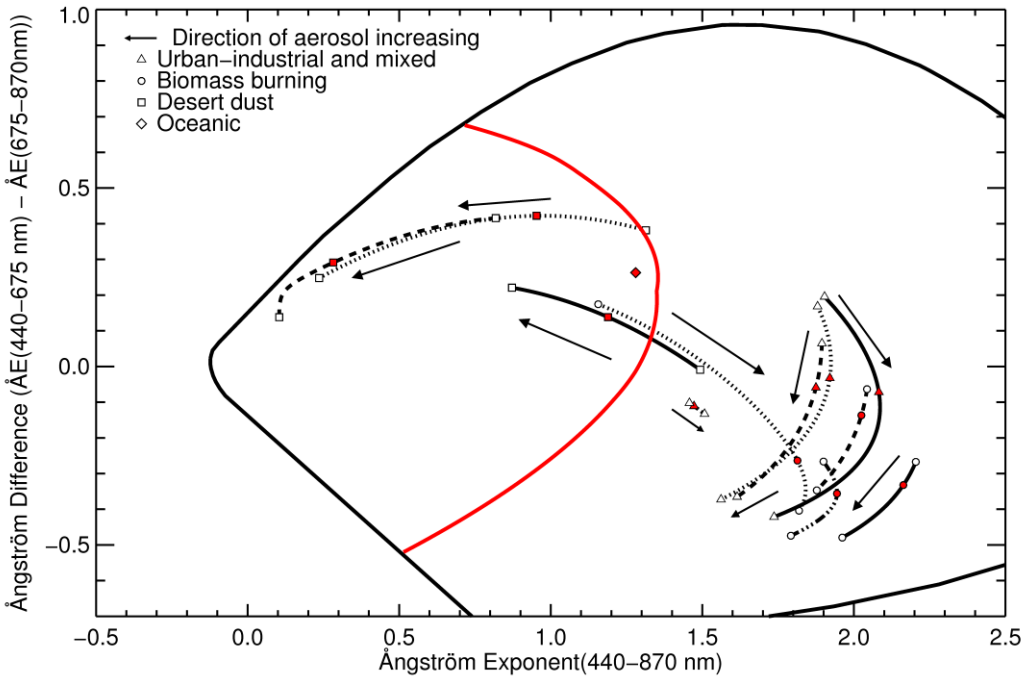


1

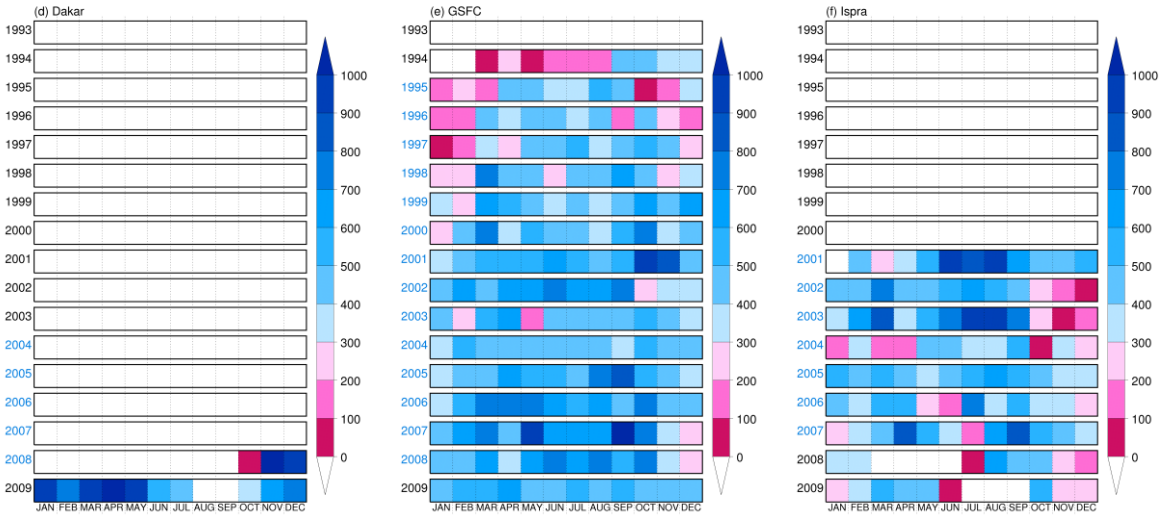
2 S-Figure 1. New classification line (red) for fine- and coarse-mode dominant aerosol.

3



4

5 S-Figure 2. Mie simulations for the typical aerosols and new classification line (red).



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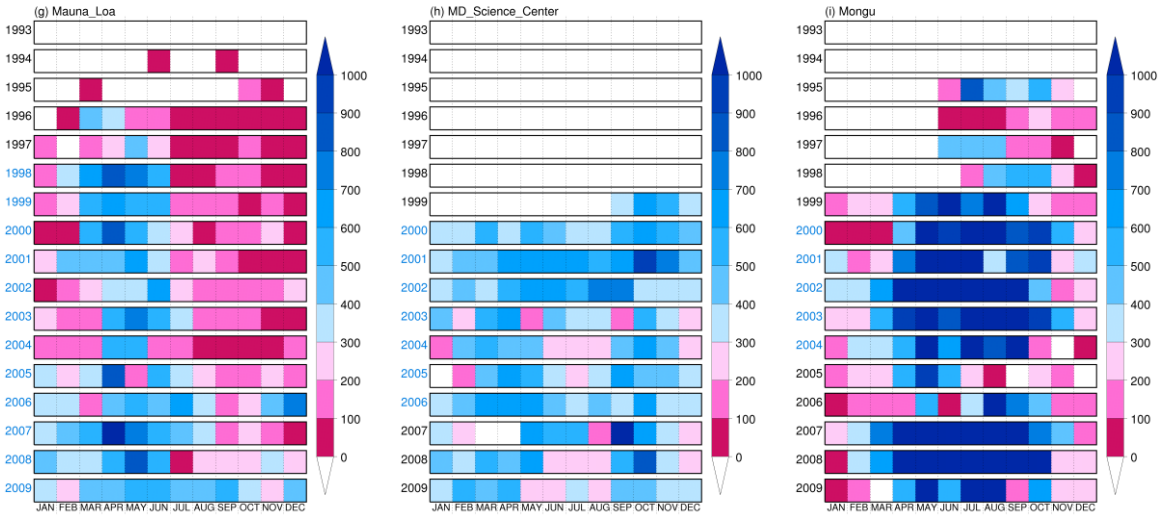
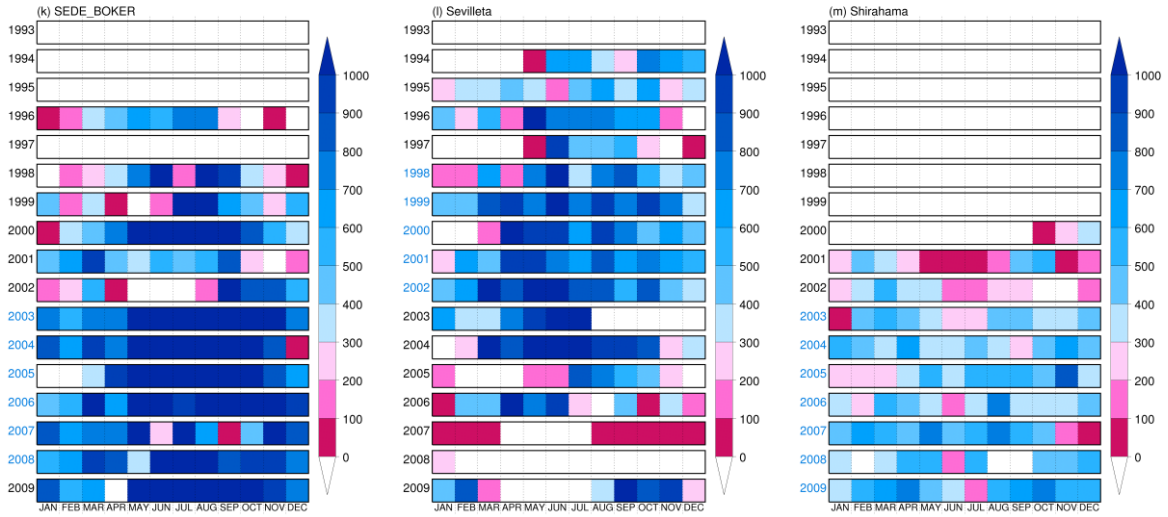
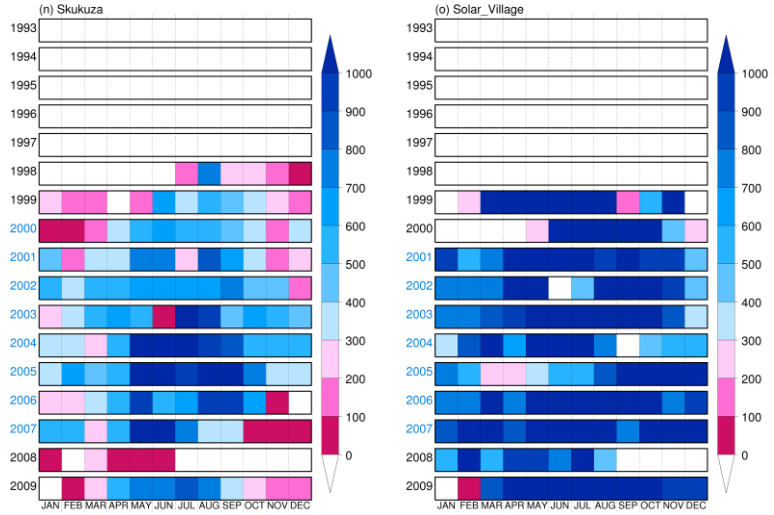


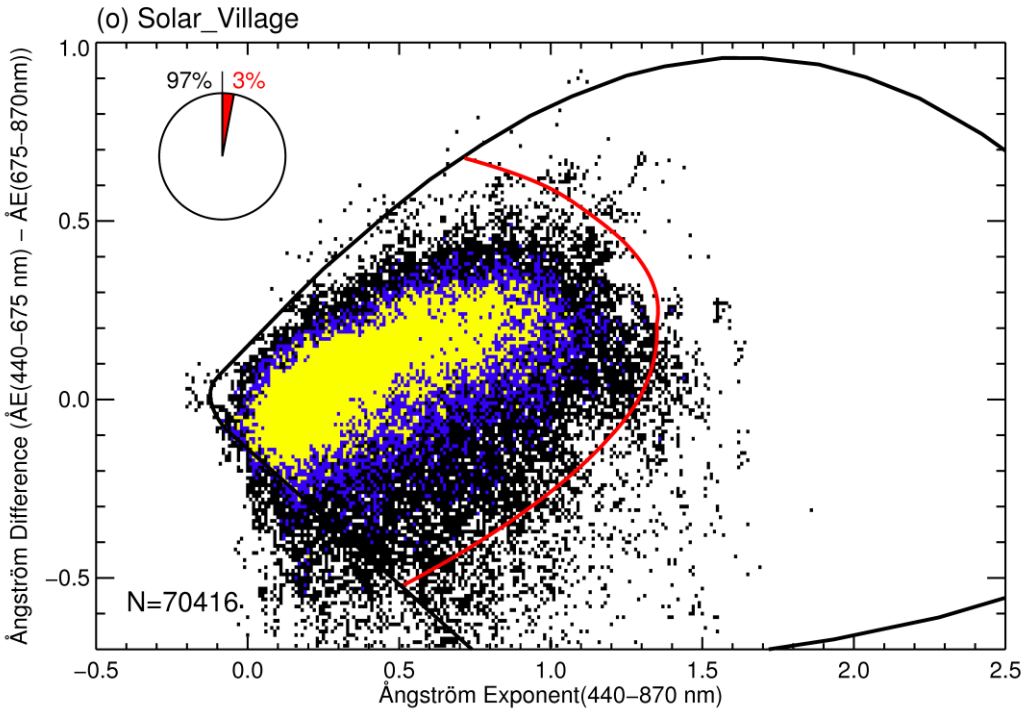
2

3 S-Figure 3. The monthly observation numbers of level 2.0 SDA data at the AEROET stations:
4 (d) Dakar, (e) GSFC, (f) Ispra, (g) Mauna_Loa, (h) MD_Science_Center, (i) Mongu, (k)
5 SEDE_BOKER, (l) Sevilleta, (m) Shirahama, (n) Skukuza, and (o) Solar_Village since 1993.
6 The research period for each station is shown by the blue years at vertical axis





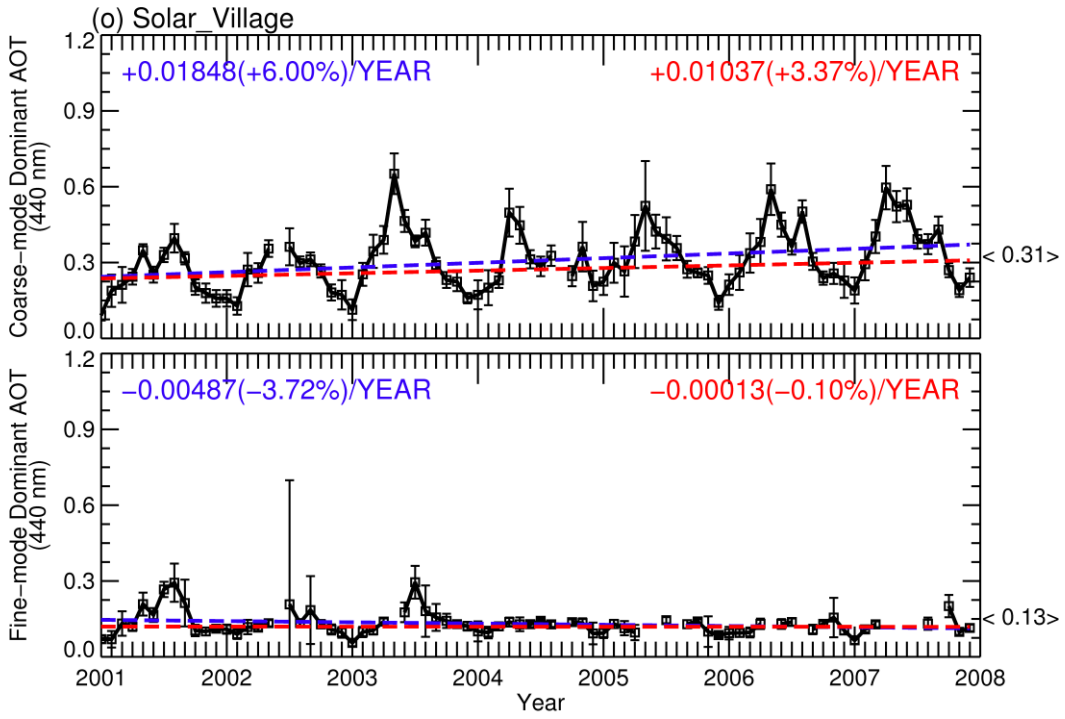
S-Figure 3. Continued.



1

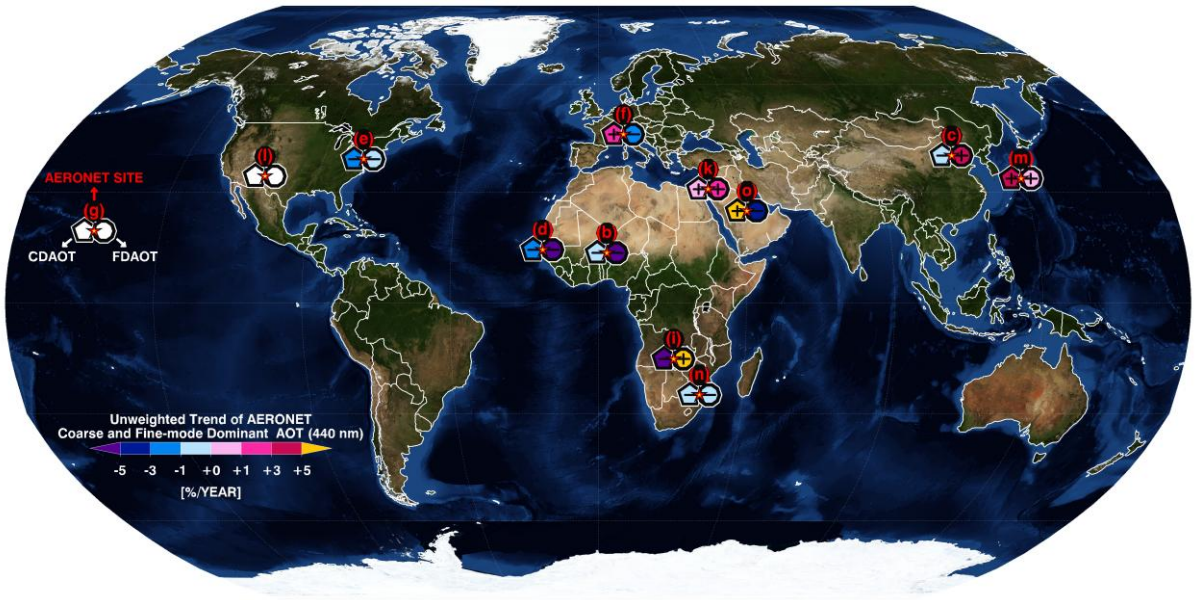
2 S-Figure 4. An example case for applications of new classification method at Solar_Village.

3



4

5 S-Figure 5. An example case for trend analysis of Coarse/Fine-mode Dominant AOTs
6 (440nm) classified by new classification at Solar_Village.



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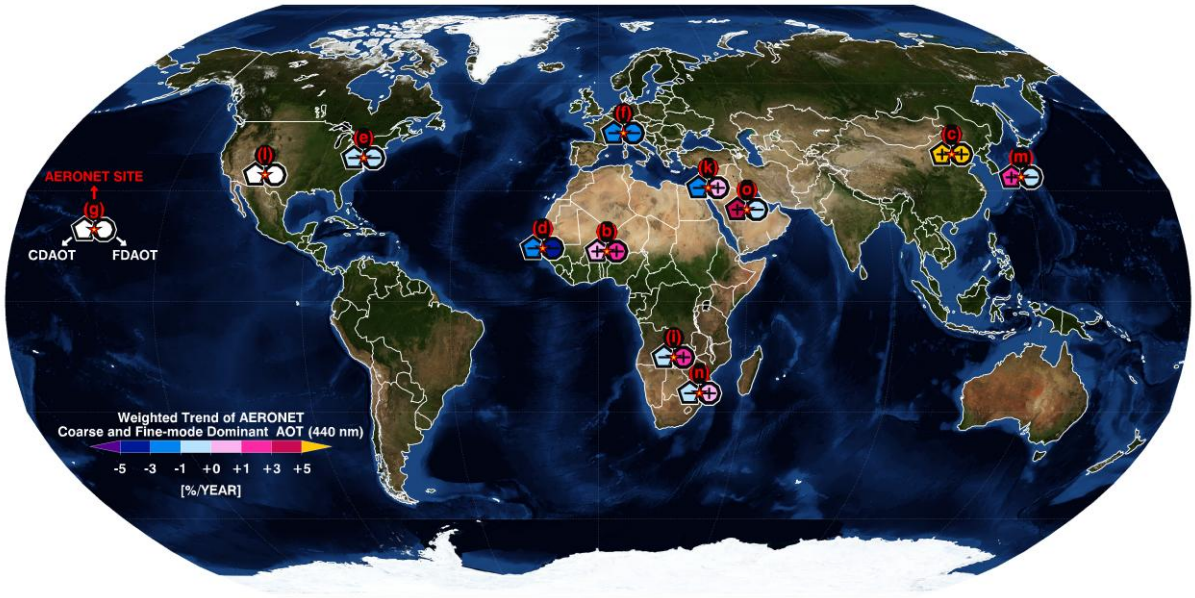

2

3 S-Figure 6. Unweighted and weighted trends of Coarse- (left pentagon) and Fine-mode (right
4 circle) Dominant AOT (440 nm) in percent at the major stations except (a) Avignon over
5 Western Europe, (h) MD_Science_Center over North America, and (j) Ouagadougou over
6 West Africa. Non-applicable cases are shown as a white blank.