| Continental   Water soluble   0.4914-0.5914   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.100   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150   1.150 | Aerosol types        | Basic component types | Range variation of the number density<br>mixing ratios for aerosol components<br>(limits are consistent with OPAC and literature) | Aspect ratio |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------|
| Soot   0.4000-0.5000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Continental          | Water soluble         | 0.4914-0.5914                                                                                                                     | 1.100        |
| Continental polluted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      | Insoluble             | 0.0086-0.0086                                                                                                                     |              |
| Continental polluted         Insoluble Soot 0.6000–0.7000 0.6000 0.7000 0.6000 0.1000         1.040           Smoke         Water soluble 0.3900–0.4900 0.5000–0.6000 0.5000–0.6000 0.5000–0.6000 0.1150 0.5000–0.6000 0.1000         1.150           Smoke         Water soluble 0.1949–0.2949 0.0100–0.0100 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000                                                                                                                       |                      | Soot                  | 0.4000-0.5000                                                                                                                     |              |
| Soot Sulfate   0.6000-0.7000 Sulfate   0.1000-0.1000   1.040                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Continental polluted | Water soluble         | 0.1998-0.2998                                                                                                                     | 1.040        |
| Soot   0.6000-0.7000   Sulfate   0.1000-0.1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      | Insoluble             | 1.8E-4–1.8E-4                                                                                                                     |              |
| Smoke   Water soluble   0.3900-0.4900   1.150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      | Soot                  | 0.6000-0.7000                                                                                                                     |              |
| Smoke         Soot Sulfate         0.5000-0.6000 0.0100         1.150           Dust         Water soluble Mineral Nucleation mode Accumulation mode Coarse mode Soot         0.1170-0.1170 0.870         0.870           Water soluble Soot         0.6e-04-0.6e-04 0.6e-04 0.5000 0.5000-0.6000         0.5000-0.6000           Marine         Water soluble Sea salt Accumulation mode Coarse mode 0.0e+00-0.1e-06 0.5000-0.6000         1.007           Marine         Mineral Nucleation mode 0.5000-0.6000         0.5000-0.6000           Volcanic         Mineral Nucleation mode 0.1470-0.1719 0.850 0.4e-04-0.5e-04 0.4e-04-0.5e-04 Sulfate         0.0391-0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      | Sulfate               | 0.1000-0.1000                                                                                                                     |              |
| Sulfate   0.0100-0.0100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Smoke                | Water soluble         | 0.3900-0.4900                                                                                                                     | 1.150        |
| Dust       Water soluble Mineral Nucleation mode Accumulation mode Coarse mode Soot       0.1170-0.1170 0.880 0.880 0.880 0.0880-0.0880 0.6e-04-0.6e-04 Soot       0.0880-0.0880 0.870 0.6e-04-0.6e-04 Soot         Marine       Water soluble Sea salt Vaccumulation mode Coarse mode Insoluble       0.1652-0.1662 0.8320 0.8320 0.8320 0.0e+00-0.1e-06 0.0e+00-0.1e-06 0.0e+00-0.1e-06 0.5000-0.6000         Mineral Nucleation mode Accumulation mode Accumulation mode O.1470-0.1719 Coarse mode O.4e-04-0.5e-04 Sulfate       0.0915-0.1070 0.850 0.850 0.850 0.850 0.0391-0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      | Soot                  | 0.5000-0.6000                                                                                                                     |              |
| Dust       Mineral Nucleation mode Accumulation mode Coarse mode Soot       0.1170-0.1170 0.0880 0.0880 0.0880-0.0880 0.66e-04-0.6e-04 0.6e-04 0.6e-04 0.5000 0.5000-0.6000       0.6e-04-0.6e-04 0.5000-0.6000         Marine       Water soluble Sea salt Water soluble Sea salt Sea                                                                                            |                      | Sulfate               | 0.0100-0.0100                                                                                                                     |              |
| Dust       Nucleation mode Accumulation mode O.0880-0.0880 Coarse mode Soot       0.0880-0.0880 O.0880-0.0880 O.66e-04-0.6e-04 O.66e-04 O.5000-0.6000       0.06e-04-0.6e-04 O.5000-0.6000         Marine       Water soluble Sea salt Water soluble Sea salt O.8320-0.8320 O.08320 O.08320 O.00e+00-0.1e-06 O.00e-00-0.1e-06 O.00e-00-0.1e-06 O.00e-00-0.1e-00 O.00e-00-00-0.1e-00 O.00e-00-00-0.1e-                                                                                           | Dust                 | Water soluble         | 0.1949-0.2949                                                                                                                     | 0.870        |
| Dust                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      | Mineral               |                                                                                                                                   |              |
| Accumulation mode Coarse mode Coarse mode Soot  Water soluble Sea salt  Marine  Accumulation mode O.6e-04-0.6e-04 Soot  O.5000-0.6000  Water soluble Sea salt  Accumulation mode O.8320-0.8320 O.0e+00-0.1e-06 Insoluble O.5000-0.6000  Mineral Nucleation mode O.0915-0.1070 Accumulation mode O.1470-0.1719 Coarse mode Sulfate O.0391-0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      | Nucleation mode       | 0.1170-0.1170                                                                                                                     |              |
| Soot   0.5000-0.6000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      | Accumulation mode     | 0.0880 – 0.0880                                                                                                                   |              |
| Water soluble 0.1652–0.1662 Sea salt  Marine Accumulation mode 0.8320–0.8320 1.007 Coarse mode 0.0e+00–0.1e-06 Insoluble 0.5000–0.6000  Mineral Nucleation mode 0.0915–0.1070 Accumulation mode 0.1470–0.1719 Coarse mode 0.4e-04–0.5e-04 Sulfate 0.0391–0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      | Coarse mode           | 0.6e-04-0.6e-04                                                                                                                   |              |
| Marine   Sea salt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      | Soot                  | 0.5000-0.6000                                                                                                                     |              |
| Marine         Accumulation mode<br>Coarse mode<br>Insoluble         0.8320-0.8320<br>0.0e+00-0.1e-06<br>0.5000-0.6000         1.007           Mineral<br>Nucleation mode<br>Accumulation mode<br>Accumulation mode<br>Coarse mode<br>Sulfate         0.0915-0.1070<br>0.1470-0.1719<br>0.850         0.850                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Marine               | Water soluble         | 0.1652-0.1662                                                                                                                     |              |
| Coarse mode   0.0e+00-0.1e-06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      | Sea salt              |                                                                                                                                   | 1.007        |
| Insoluble   0.5000-0.6000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                      | Accumulation mode     | 0.8320-0.8320                                                                                                                     |              |
| Mineral   Nucleation mode   0.0915-0.1070   Accumulation mode   0.1470-0.1719   0.850                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                      | Coarse mode           | 0.0e+00-0.1e-06                                                                                                                   |              |
| Nucleation mode 0.0915-0.1070 Accumulation mode 0.1470-0.1719 Coarse mode 0.4e-04-0.5e-04 Sulfate 0.0391-0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      | Insoluble             | 0.5000-0.6000                                                                                                                     |              |
| Volcanic Accumulation mode 0.1470–0.1719 Coarse mode 0.4e-04–0.5e-04 Sulfate 0.0391–0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Volcanic             | Mineral               |                                                                                                                                   | 0.850        |
| Volcanic Coarse mode 0.4e-04-0.5e-04 Sulfate 0.0391-0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                      | Nucleation mode       | 0.0915-0.1070                                                                                                                     |              |
| Coarse mode 0.4e-04-0.5e-04 Sulfate 0.0391-0.0457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      | Accumulation mode     | 0.1470-0.1719                                                                                                                     |              |
| ***************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      | Coarse mode           | 0.4e-04-0.5e-04                                                                                                                   |              |
| Soot 0.6753-0.7224                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      | Sulfate               | 0.0391-0.0457                                                                                                                     |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      | Soot                  | 0.6753-0.7224                                                                                                                     |              |