Summary of the Seventh Meeting of Working Group I for Joint Research on Dust and Sand Storms Xi'an, 13-14 November 2014

1. The seventh meeting of the Working Group I (WG I) for Joint Research on Dust and Sand Storms (DSS) under the Tripartite Environment Ministers Meeting (TEMM) was held in Yan Ta International Hotel, Xi'an, Shaanxi province, China on 13 and 14 November 2014. Representatives from China, Korea, and Japan participated in this meeting (annex1 List of participants).

2. In Session One, Dr. Li Guogang, deputy Director General of China National Environmental Monitoring Center (CNEMC), as a moderator announced the opening of the meeting. He warmly welcomed the experts from Japan and Korea and introduced the cooperation progress in DSS research among the three countries. Mr. Zheng Haohao introduced the schedule of this meeting and upon his request, all participants took a moment to officially introduce with each other.

3. In Session two titled with WG I Activities, Mr. Hiroshi Fujita from Ministry of the Environment Japan (MOEJ), reviewed on the discussion points of the 8^{th} SCM, the 9^{th} TDGM, and the 16^{th} TEMM. He pointed out several issues on DSS to discuss in 7^{th} meeting.

4. Dr. Eunha Lim, Asian Dust Research Division, National Institute of Meteorological Research (NIMR), Korea, reviewed and summarized what was discussed at the 6^{th} WG I Meeting held in Incheon, Korea in which total 27 participants attended.

5. Mr. Benfeng Pan, China National Environmental Monitoring Center (CNEMC) made a presentation on the DSS activities and air quality monitoring progress in China during 2013-2014.He analyzed several results of DSS events, and proposed the publication plan about joint research paper in the international journal He suggested experts of each country submit their papers to the Particuology by the end of 2014 for publication in 2015.

6. Dr. Sang-Sam Lee, Asian Dust Research Division, National Institute of Meteorological Research, Korea, introduced what has been achieved regarding the cooperative data sharing of DSS during 2012. According to his report, China has provided with hourly average PM_{10} (10 sites), Korea with hourly average PM_{10} (36 sites), LIDAR (1 site), and visibility and RH(6 sites), AOT and angstrom exponent(1 site), while Japan has submitted hourly average of SPM (21 sites), PM_{10} (11 sites), $PM_{2.5}$ (3 sites), LIDAR (15 sites), and visibility and RH(60 sites), AOT and angstrom exponent(1 site).

7. Dr. Masataka Nishikawa, Tokyo University of Science and Working Group members of DSS Investigative commission, Japan made a presentation on A Study on Dust and Sand Storm. He introduced the Air Quality Standard in Japan, and different percentage of the number of the date whose $PM_{2.5}$ exceeded the air quality standard, presented the chemical composition and temporal variations of particles in DSS and Haze event.

8. Session Three began with the announcement made by Dr. Nishikawa, a chairperson. All participants were invited to discuss "the study on DSS monitoring and modeling from each country."

9. Mr. Beomcheol Shin ,Asian Dust Research Division, National Institute of Meteorological Research

(NIMR), Korea showed 3 DSS events monitoring results composed of weather chart, COMS AI images, PM_{10} variation , AOT and Alpha distributions, Ion Concentration.

10. Dr. Nobuo Sugimoto, National Institute for Environmental Studies, Japan, presented the monitoring and analysis results of DSS 2012 in Japan, which combined Lidar data, shared PM_{10}\SPM and $PM_{2.5}$ data, visibility and RH, AOT, simulation results by CFORS. A new DSS detection method using $PM_{2.5}/PM_{10}$ or $PM_{2.5}$/SPM was also presented.

11. Ms. Luo Yining showed the Sand and Dust Monitoring activity, Dust Monitoring Network and results in Shaanxi Province.

12. Dr. Seungbum Kim, Asian Dust Research Division, National Institute of Meteorological Research, Korea, introduced Simulation Results of DSS 2012 cases with ADAM, compared with shared PM10, LIDAR, skyradiometer data . He mentioned the ADAM-Haze model has a capability to forecast not only dust but also haze aerosols. As the accuracy of ADAM simulations depends on the meteorological condition, he suggested that the sharing of meteorological data as well as aerosol optical data is needed.

13. Mr. Takashi Maki, Meteorological Research Institute, Japan presented JMA upgraded global aerosol transport model (MASINGAR to MASINGAR mk-2) from Nov. 2014. JMA has a plan to upgrade MASINGAR mk-2 horizontal resolution from 110km to 55km from 2015, which also could capture forest fire event by using GFASv1. He emphases good prediction depends on good observation data (not only meteorological data but also aerosol and related data (forest fire, vegetation and so on.).

14. Ms. Zhao Yilin, Environment Quality Forecast Center of China National Environmental Monitoring Center introduced China air environment forecast Technology including forecast working platform, emergency responses, public outreach.

15. Dr. Ikuko Mori, Overseas Environmental Cooperation Center, Japan, introduced monitoring methods for $PM_{2.5}$ and SPM in Japan, monitoring technique, requirements for automatic sampler, equivalency test, approved instrument, QA/QC requirement. She showed the idea of the next joint research report and proposed making it following the prepared universal format.

16. Ms. Gu Yu showed the monitoring situation of Dust Storm in Inner Mongolia. She analyzed 3 DSS transport path, DSS monitoring progress and results in Inner Mongolia.

17. Dr. Masao Mikami, Meteorological Research Institute (MRI) , explained the basic principle of wind erosion and characteristics of Asian dust storm. He also introduced a field work on the sparce grass land in Mongolia.

18. Ms. Tai Shanshan introduced dust and sandstorm monitoring of Liaoning Province. She emphasized the dust production in Liaoning Province was mainly effected by dust from other area, mainly occurs in spring, and the west and north area were more susceptible to be effected and more serious. She suggested enlarging the monitoring scale; enrich the monitoring method, enhancing the DSS study.

19. Dr. Yin Xixian introduced work situation and research results of Dust and Sandstorm monitoring in Shandong Province, included Sandstorm Monitoring Sites in Shandong province, sandstorm monitoring equipment, typical dust event and DSS forecast model.

20. Mr. Hiroshi Fujita, Ministry of the Environment Japan (MOEJ), introduced QA/QC activity of

particulate matters by Acid Deposition Monitoring Network In East Asia (EANET) and proposed further collaboration between WG1 and EANET.

21. In terms of data sharing for the year of 2013, Korea will provide hourly average PM_{10} (36 sites), $PM_{2.5}$ (hourly dat a, number of sites to be determined later), lidar (3 sites), visibility and RH (6 sites), and AOT (COMS, KMA skyradiometer), Japan was willing to share hourly average SPM (21 sites), PM_{10} (11 sites), $PM_{2.5}$ (3 sites), lidar (11 sites), visibility and RH (60 sites), AOT (3 sites (JMA), SKYNET), MTSAT, and China will offer hourly average PM_{10} (10 sites). Two DSS cases (2013. 3. 5. ~ 3. 22 and 2013.12.26 ~ 2014.01.06) were decided by participants. Regarding data sharing with hourly basis, all the WG1 member will make a relevant effort to accomplish this, in accordance with TEMM16 communique.

22. Experts of 3 countries discussed Draft of mid-term Action Plan (2015-2019)of the Working Group 1 for Joint Research on DSS. The document was finalized as in Annex2 .

23. It was agreed that WG1 and WG2 would hold a joint workshop utilizing SCM or other opportunities.

24. Before closing the Meeting, it was announced that the eighth meeting of the WG I will be held in Japan in 2015 based on the decision of the TOR of the WG I. The detailed information of the eighth meeting will be confirmed later.