

**Summary of the Fifteenth Meeting  
of  
the Working Group I for Joint Research  
on  
Dust and Sand Storms**

**Offline/Online Meeting, Jeju, Korea, 1-2 November 2022**

1. The 15th 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 hosted by Korea virtually and on-site on 1 and 2 November 2022. The representatives of the WG members from Korea, Japan, and China as well as invited representatives from Mongolia participated in this meeting (Annex1: Agenda of the Meeting and List of participants).
  
2. In Session One, chaired by Ms. Seungsook Shin from National Institute of Meteorological Sciences of the Korea Meteorological Administration (NIMS/KMA), Korea, Dr. Hyun-Seok Kang, Director of Forecast Research Department, from NIMS/KMA delivered the opening remarks and warmly welcomed the participants. Ms. Seungsook Shin introduced in-person participants as well as online participants from four countries including Korea, Japan, China, and Mongolia. Then, she went over the agenda of the two-day meeting which was adopted by all participants. There was a commemorative photo time.
  
3. In Session Two on “Taking stock of discussions and activities” chaired by Dr. Liang LI from China National Environmental Monitoring Centre of the Ministry of Ecology and Environment of China (CNEMC/MEE), two participants made presentations. Ms. Hiroka Watarai from the Overseas Environmental Cooperation Center, Japan (OECC) of Japan gave a presentation entitled “Review on the 14th Meeting of Working Group (I)”. In her presentation, she summarized the 14th Meeting of the WG I (28-29 September 2021) and DSS WG I Extended Workshop (30 September 2021) hosted by Japan, and other related events including the launch of TEMM DSS Online Portal.

4. Dr. Jeong Eun KIM from NIMS/KMA made a presentation on the current status of DSS 2020 data sharing. According to her report, there were four cases, one in February and other three were between October and November. She explained data shared by each country. Then, she pointed out the Webhard storage issue of last year and mentioned that all satellite data is now deleted to secure enough space in the storage. After her presentation, Japan offered to share a set of DSS data for the period which covers whole DSS transport as a voluntarily basis from the viewpoint of research. Then, four countries recalled the discussion made last year by China regarding backup of data in online storage called the Webhard. Korea agreed to use a separate storage device for the data backup.
  
5. In Session Three on “The study on DSS monitoring modeling” chaired by Mr. Takashi Maki from Meteorological Research Institute (MRI), Japan, the four participants made their presentations. Mr. Maki gave the first presentation entitled “Recent DSS-related activities at the Meteorological Research Institute”. According to his presentation, although the total annual amount of SDS emissions around the Gobi Desert has not changed significantly, we still see an increase in early spring and autumn. He focused on friction velocity that is closely related to dust emissions noting that the friction velocity tends to increase significantly compared to the base period in the accelerated warming scenario. This increase would result in transporting dust to distant locations which could be a societal concern. He also introduced a dust simulation model that was conducted which incorporated the stone coverage effects with an actual soil/stone map. He stressed the significance of the UN coalition on combating SDS by going through the “five-point plan”, 5 working groups as well as resources.
  
6. Dr. Liang LI from CNEMC/MEE made a presentation entitled “A introduction to DSS Monitoring in China in 2020”. According to his report, there were 11 large-scale dust weather processes across the country in 2020 and the number of days that DSS occurred in China is 31 days. From 2018 to 2020, China experienced 41 large-scale sand and dust processes, an average of 13.7 times per year, and an average of 36.3 days of cumulative impact per year. In the spring of 2020, although climate factors such as temperature and precipitation are favorable for sand dust, the frequency of sand dust weather is still reduced due to relatively weak cold air.
  
7. Mr. Jeong Hoon CHO from NIMS/KMA gave a presentation on the topic of recent improvements in the Asian dust aerosol model version3 (ADAM3) in KMA. He started

off his presentation by sharing a brief introduction to ADAM3. Then he went on to explain more about Asian dust emission and operational procedure which covers five Asian dust emission regions. He also touched upon the implementation of the 3DVAR system on KIM-ADAM3 and looked at the comparison experiment with OI and 3DVAR with an example on the Asian Dust case on March 29th, 2021. The future plans were also shared including the development of the GK2A AOD application for the 3DVAR system and advanced dust emission scheme with the soil moisture effect adding that his team is testing a new version and he believes that the updated algorithm will be available next year.

8. Dr. Buyantogtokh Batjargal from Department of Meteorological and Environmental Analysis, Mongolia made a presentation entitled “Estimating the sand saltation thresholds from Sentinel-1 SAR data in the Gobi Desert, Mongolia”. In his presentation, He introduced his research with its background which is sand transport in wind erosion. He mentioned that sand saltation transport is the most important process of dust emission. There were two research objectives. One was to evaluate the effect of stone on the threshold friction velocity during natural sand and dust storm and the other one was to investigate the relationship between the threshold and the Sentinel-1 data. To conclude, he stressed that the stone, dry vegetation, and crust are important factors affecting the sand saltation threshold in the Gobi Desert. Also, The Sentinel-1 SAR intensity has the potential to estimate the spatial distribution of the threshold at dry natural heterogeneous surfaces.
  
9. In Session Four on “Report from the countries on DSS Events” chaired by Dr. Jeong Eun Kim from NIMS/KMA, the four presentations were delivered. First, Dr. Jeong Eun Kim from NIMS/KMA gave a presentation entitled “Observation and Analysis of DSS2020 Case”. This study presents the observation and analysis results of the DSS2020 case in NIMS/KMA. She selected case number two, which is the severe one in 2020. She explained how dust impacted Korea by showing three surface weather charts. Also, she showed that GK-2A satellite dust RGB images and ADAM3 simulation well matches each other. And PM<sub>10</sub> mass concentration was compared between China and Korea. In China, PM<sub>10</sub> mass concentration maximized on 20th October, and it peaked on two days later in Korea. She went on to the LIDAR observation where the dust signal depolarization ratio shows uniform distribution of dust. When analyzing chemical composition, the most dominant chemicals were soil components such as Mg, Ca, Al and Fe. To conclude, for the DSS2020-02 case, a strong dust outbreak was observed over the Gobi Desert and inner Mongolia on 20 October 2020. DSS moved

and dispersed along the low-pressure system and affected the Korean Peninsula on 22 October. DSS duration time in South Korea was 20h 20m. PM<sub>10</sub> peak concentration was 195 ug/m<sup>3</sup>.

10. Dr. Mingyuan LIU from CNEMC/MEE made a presentation entitled “Chemical composition characteristic of PM<sub>2.5</sub> in North China Plain during dust and sandstorms events”. Continuous online monitoring for chemical composition of PM<sub>2.5</sub> is performed at CNEMC monitoring site in Beijing, He showed the variation trend of concentration of SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>2.5</sub>/PM<sub>10</sub>, organic matter, ions, trace elements in PM<sub>2.5</sub> from 20th October to 14th November, 2020, including three dust and sandstorms events (DSS2020-02/03/04) and three moderate haze events. The crustal elements in three DSS2020 cases share similar chemical composition, indicating the similar source. The haze events in Beijing are dominated by nitrate under the control measures of SO<sub>2</sub> emission reduction.
11. Dr. Atsushi Shimizu from National Institute for Environmental Studies (NIES), Japan made a presentation entitled “Asian Dust Events Detected by AD-Net in 2020”. The presentation covered the introduction of AD-Net, which is a lidar observation network for Asian dust and anthropogenic aerosols, 2020 Asian dust events reported by JMA, Annual variations of Asian dust over Japan, and time-height sections of Asian dust revealed by AD-Net. In summary, in Japan, there was no significant Asian dust event detected in 2020. Also, the dust extinction coefficient obtained in AD-net was not so high on Asian dust days reported by JMA. Regarding data sharing periods, Asian dust during four data sharing periods showed a variety of transport patterns. Finally, dust detection using an air pollution monitoring system was examined, and the lowest dust occurrence in the last 10 years was confirmed.
12. The selection of DSS 2021 cases was discussed in this section led by Dr. Jeong Eun Kim from NIMS/KMA. In Korea, there were 10 dust events in 2021. Two in winter and others are observed in spring. In spring, there were two very strong events, one from the end of March to April 1st and the other one is in May. She proposed the following two cases, which were also observed in China and Japan: 1) 2020.03.25-04.25 2) 2021.05.05-05.10. After the presentation, Dr. Shimizu expressed that his agreement, then suggested that the case in March is also to be considered as it seems to have a distinctive feature. The participants agreed on the three periods for data sharing of this WG I: 15-20 March 2021 [DSS2021-01], 25 March to 2 April 2021 [DSS2021-02], and 5-10 May 2021 [DSS2021-03].

13. In Session Five on “Updates on the actions of mid-term action plan (2020-2024): Act1-3” chaired by Dr. Liang LI from CNEMC/MEE, three presentations were made. Dr. JaeYoung Byon from National Meteorological Satellite Center of Korea introduced “GeoKOMPSAT-2A data status for the DSS research”. In the presentation, he shared GK-2A satellite products and observations, improvements in aerosol detection and AOD in 2022 as well as validation and plans ahead. According to him, GK-2A was launched in 2018 and introduced 75 types of satellite information. Most of the information is publicly available. His focus is aerosol particles and improvements made this year. GK-2A aerosol products are produced in three regions including the full disk region, East Asia, and Korea. He also introduced an algorithm for GK-2A dust and sandstorm. Information including GK-2A Dust and sandstorm monitoring and dust sand monitoring were followed. Then he went on to touch on improvements made in 2022. NMSC modified background surface reflectance in order to improve overestimated AOD over China. There was also an improvement made on the validation side. Future plans would cover providing surface aerosol concentration and dust height as well as data fusion with satellite, surface observation, and numerical model.
  
14. The next presentation was delivered by Ms. Purevsuren Nyamsuren from the Ministry of Environment and Tourism, Mongolia on behalf of Mr. Altangerel Enkhbat from the Department of Environment and Natural Resources Management of the Ministry, Mongolia. The presentation was titled “Desertification, Land Degradation, and Impacts of Dust Storms in Mongolia”. The first part of the presentation was the policy and legal framework on desertification that includes joining the UN convention to combat desertification, vision 2050, and the government action plan for 2020-2024. Then she briefly touched on the climate change-related situation in Mongolia including rising temperatures, changes in precipitation in winter and summer, and some other severe weather-related events. The current status of desertification and land degradation as well as measures to reduce desertification and land degradation were shared as well. Also, she mentioned that a total of 11 monitoring research stations are measuring dust concentration in Mongolia. Trends in the number of days with sand storms were also covered. Then in the last part, a national campaign called “Billion Trees” was introduced.
  
15. Ms. Hiroka Watarai from OECC gave a brief presentation “Updates of the TEMM DSS Online Portal”. She presented information to be posted on the TEMM DSS Online Portal ([www.temm-dss.com](http://www.temm-dss.com)) this year, according to what was agreed upon last year. Four

countries agreed to post the updated list of published research articles and the 14<sup>th</sup> DSS WG I meeting summary to the Portal. Then, Japan recalled the discussion on Data Set page which remains “Coming soon”. Japan proposed to disclose “the Data Set” page and to publish “Data Catalogue” as an alternative idea, which is a list of parameters (available time periods, monitoring sites, data owners with contact address) of the data set shared among four countries, instead of publishing actual data sets. Japan offered to develop and publish “Data Catalogue” with others cooperation and confirmation in mid-2023. The meeting agreed these proposals Japan raised for publishing “Data Catalogue” as an alternative option and agreed to have a further discussion on content of “Data Catalogue”. After the further discussion concluded, the Data Catalogue Page will be shown in the TEMM DSS Online Portal in 2023.

16. In Session Six on “Discussion on the detailed milestones for the Mid-Term Action Plan: Activities 4 to 6” chaired by Ms. Hiroka Watarai from OECC, four presentations were delivered. Ms. Woojeong Lee from NIMS/KMA shared “Seasonal Asian Dust Forecasting using GloSea6”. In her presentation, she explained what GloSea6 is with its dust emission process and showed the evaluation results for springtime seasonal Asian dust event hindcasting and forecasting. She started off by covering the history of seasonal Asian dust forecasting using GloSea and compared GloSea5 with GloSea6. Next, she touched on the dust emission process in GloSea6 and for verification, the results for spring time Asian dust seasonal forecasting indicates that GloSea6 is underestimated for the hindcast period and the anomaly is well consistent with observation. For next year, GloSea6 will be used for springtime seasonal Asian dust forecasting.
17. Dr. Atsushi Shimizu from National Institute for Environmental Studies (NIES), Japan gave a presentation on “Prediction and Detection of Variability in Asia Dust Emission and Transport”. According to Dr. Shimizu, a research program ERTDF-2001 was organized by Japan team to promote studies along with MTAP2020-2024. In the study which is consist of 3 sub themes, dust monitoring, numerical model, surface experiments are coupled interactively to understand the mechanism of generation and transportation of Asian dust and to forecast chances of Asian dust that may come with global warming. He wrapped up the presentation by mentioning that ERTDF-2001 would be completed in next four months and there will be discussions among the experts for next steps.
18. Ms. Yilin Zhao’s presentation was on “Evaluation of Sand and Dust Forecast Products based on NAQPMS Model.” The presentation included four parts, the current situation

of the mode operation, case selection, model prediction path and concentration comparison as well as aging and product evaluation. According to her, MULTI forecast model working platform has been revised and upgraded in 2019. And the new platform has powerful functions such as big data docking and more convenient business operation mode. After going through the case selection, she showed the hourly value curve of PM2.5 and PM10 concentration in cities covered by sand and dust. Then she went on to explain how evaluation is done and wrapped up the presentation by providing a short summary.

19. Dr. Sumikoshi Masae from OECC proposed that Japan will organize and host an WG II Extended Workshop by hybrid format back to back with the 16th WG II meeting in 2023 using the document of the Proposal (Annex2: WGII Extended Workshop (Proposal)). The main idea of the Workshop is to facilitate the collaborations between the DSS WGII and WGI with participation of both DSS WGII and WGI members including Mongolia, in line with the Mid Term Action Plan of WGII. Japan expressed its willingness to invite one or two WGI members each from China, Korea and Mongolia to the Extended Workshop, with in the budget availability. Four countries welcomed the proposal. Japan explained that elaborated plan will be announced to each focal point of the WGII and WGI by Japan focal point through e-mail communications, taking into other countries comments/inputs account.

20. The last session was on “Summary”. Ms. Seungsook Shin from NIMS/KMA chaired the session. The four countries made initial discussions for the three items at the Session The three items were as follows: 1) Identify DSS events in 2021 2) Updates of the TEMM DSS Online Portal 3) DSS WGII Extended Workshop. China, the host country of the next 16th WG I Meeting. Detailed date, venue, timeline for preparing agenda and meeting materials would be informed by China more than three months ahead of the Meeting. For closing remarks, the representatives acknowledged the efforts and contributions, collaborations made by participants and expressed sincere appreciation to the host country.

## Annex1: Agenda of the Meeting and List of participants

# The 15<sup>th</sup> Meeting of Working Group (I) for Joint Research on Dust and Sand Storms

### (Online & On-site Meeting)

- ◆ **Date:** November 1<sup>st</sup> and 2<sup>nd</sup> (Tue. and Wed.), 2022
- ◆ **Venue:** Lotte City Jeju (5F Ruby)
- ◆ **Host:** National Institute of Meteorological Sciences/KMA
- ◆ **Tool:** Zoom meeting
- ◆ **Language:** English

### ◆ DAY 1 (November 1)

<b>09:50 (UTC+9) Connection Test</b>	
<b>Session I</b>	<b>Opening</b> Chair: Ms. Seungsook Shin (KOREA)
<b>10:00 - 10:05</b>	<b>Opening Remarks</b> Dr. Hyun-Suk Kang, KOREA
<b>10:05 - 10:15</b>	<b>Introduction of participants</b>
<b>10:15 - 10:20</b>	<b>Adoption of the agenda</b>
<b>10:20 - 10:30</b>	<b>Group Photo</b>
<b>Session II</b>	<b>Taking stock of discussions and activities</b> Chair: Dr. Liang Li (CHINA)
<b>10:30 - 10:40</b>	<b>Review on the 14th Meeting of Working Group (I)</b> Ms. Hiroka Watarai, JAPAN
<b>10:40 - 10:50</b>	<b>Current status of DSS Data Sharing</b> Dr. Jeong Eun Kim, KOREA
<b>10:50 - 11:10</b>	<b>BREAK</b>
<b>Session III</b>	<b>The study on DSS monitoring and modeling from each country</b> Chair: Mr. Takashi Maki (JAPAN)
<b>11:10 - 11:30</b>	<b>Recent DSS related activities at the Meteorological Research Institute</b> Mr. Takashi Maki, JAPAN
<b>11:30 - 11:50</b>	<b>An introduction to DSS Monitoring in China in 2020</b> Dr. Liang Li, CHINA
<b>11:50 - 12:10</b>	<b>Recent improvements of Asian Dust Aerosol Model version3 (ADAM3) in KMA</b> Mr. Jeong Hoon Cho, KOREA
<b>12:10 - 12:30</b>	<b>Estimating the sand saltation thresholds from Sentinel-1 SAR data in the Gobi Desert, Mongolia</b> Dr. Buyantogtokh Batjargal, MONGOLIA
<b>12:30 - 14:00</b>	<b>LUNCH</b>
<b>Session IV</b>	<b>Report from the countries on DSS Events</b>



	Chair: Dr. Jeong Eun Kim (KOREA)
14:00 - 14:20	<b>Observation and Analysis of DSS2020 Case</b> Dr. Jeong Eun Kim, KOREA
14:20 - 14:40	<b>Chemical composition characteristic of PM2.5 in North China Plain during dust and sandstorms events</b> Dr. Mingyuan Liu, CHINA
14:40 - 15:00	<b>Asian Dust Events Detected by AD-Net in 2020</b> Dr. Atsushi Shimizu, JAPAN
15:00 - 15:20	<b>Selection of DSS2021 cases</b> Dr. Jeong Eun Kim, KOREA
15:20 - 15:40	<b>BREAK</b>
<b>Session V</b>	<b>Updates on the actions of mid-term action plan (2020-2024): Act 1 - 3</b> Chair: Dr. Liang Li (CHINA)
15:40 - 16:00	<b>GeoKOMPSAT-2A data status for the DSS research</b> Dr. JaeYoung Byon, KOREA
16:00 - 16:20	<b>Desertification, Land Degradation, and Impacts of Dust Storms in Mongolia</b> Mr. Altangerel Enkhbat, MONGOLIA
16:20 - 16:40	<b>Updates of the TEMM DSS Online Portal</b> Ms. Hiroka Watarai, JAPAN +Discussion
17:00 ~	<b>Bangquet</b>

◆ **DAY 2 (November 2)**

<b>10:00 (UTC+9) Opening</b>	
<b>Session VI</b>	<b>Discussion on the detailed milestones for mid-term action plan: Act. 4 - 6</b> Chair: Ms. Hiroka Watarai (JAPAN)
10:00 - 10:15	<b>Seasonal Asian Dust Forecasting using GloSea6</b> Ms. Woojeong Lee, KOREA
10:15 - 10:30	<b>Prediction and Detection of Variability in Asian Dust Emission and Transport</b> Dr. Atsushi Shimizu, JAPAN
10:30 - 10:45	<b>Evaluation of Sand and Dust Forecast Products based on NAQPMS Model</b> Ms. Yilin Zhao, CHINA
10:45 - 11:00	<b>Proposal: DSS WG II Extended Workshop</b> Dr. Masae Sumikoshi, JAPAN
11:00 - 11:20	<b>BREAK</b>
<b>Session VII</b>	<b>Summary</b> Chair: Ms. Seungsook Shin (KOREA)
11:20 - 12:20	<b>Making a Meeting summary</b>
12:20 - 12:30	<b>Closing Remarks</b> Representative from China Representative from Japan Representative from Mongolia Representative from Korea
12:30 - 14:00	<b>LUNCH</b>
14:00 - 16:00	<b>Technical Tour</b>

**List of the participants:**

	<b>Name</b>	<b>Nationality</b>	<b>Organization</b>	<b>Position</b>
1	Mr. Koki AZUMA	Japan	Ministry of the Environment, Japan (MOEJ)	Counsellor for Transboundary Pollution Analysis
2	Mr. Takashi MAKI	Japan	Meteorological Research Institute (MRI)	Head of 3rd laboratory
3	Dr. Atsushi SHIMIZU	Japan	National Institute for Environmental Studies (NIES)	Chief Senior Researcher
4	Dr. Masao MIKAMI	Japan	Japan Meteorological Business Support Center (JMBSC)	Senior Engineer
5	Dr. Nobuo SUGIMOTO	Japan	National Institute for Environmental Studies (NIES)	Visiting Researcher
6	Dr. Keiya YUMIMOTO	Japan	Kyushu University	Professor
7	Mr. Takashi OHMURA	Japan	Overseas Environmental Cooperation Center, Japan (OECC)	Senior Advisor
8	Dr. Masae SUMIKOSHI	Japan	Overseas Environmental Cooperation Center, Japan (OECC)	Senior Researcher
9	Ms. Hiroka WATARAI	Japan	Overseas Environmental Cooperation Center, Japan (OECC)	Researcher
10	Mr. Yizheng QIU	China	Overseas Environmental Cooperation Center, Japan (OECC)	Researcher
11	Chuan SHI	China	Department of International Cooperation, Ministry of Ecology and Environment of the People's Republic of China (MEE)	Officer
12	Liang LI	China	Air Quality Monitoring Division, CNEMC	Senior Engineer
13	Yilin ZHAO	China	Environmental quality forecast center, CNEMC	Senior Engineer
14	Congying JIAO	China	Technology Division, CNEMC	Senior Engineer
15	Mingyuan LIU	China	Air Quality Monitoring Division, CNEMC	Engineer

	Name	Nationality	Organization	Position
16	KANG In-sook	Korea	Air Quality Bureau Ministry of Environment, Korea	Deputy Director
17	YOU Sojung	Korea	Air Quality Bureau Ministry of Environment, Korea	International Cooperation Advisor
18	Dr. Hyun-Suk KANG	Korea	National Institute of Meteorological Sciences/KMA	Head of Forecast research department
19	Dr. Seungsook SHIN	Korea	National Institute of Meteorological Sciences/KMA	Senior Researcher
20	Dr. Jeongeun KIM	Korea	National Institute of Meteorological Sciences/KMA	Senior Researcher
21	Ms. Myounghee LEE	Korea	National Institute of Meteorological Sciences/KMA	Officer
22	Ms. Woojeong LEE	Korea	National Institute of Meteorological Sciences/KMA	Researcher
23	Mr. Jeonghoon CHO	Korea	National Institute of Meteorological Sciences/KMA	Researcher
24	Ms. Misun KANG	Korea	National Institute of Meteorological Sciences/KMA	Researcher
25	Ms. Migyeong KIM	Korea	National Institute of Meteorological Sciences/KMA	Researcher
26	Dr. Jae-Young BYON	Korea	National Meteorological Satellite Center/KMA	Senior Researcher
27	Ms. Purevsuren NYAMSUREN	Mongolia	Ministry of Environment and Tourism	Officer
28	Mr. Altangerel ENKHBAT	Mongolia	Department of Environment and Natural Resources Management of the Ministry	Director General
29	Dr. Buyantogrokh BATJARGAL	Mongolia	Department of Meteorological and Environmental Analysis	Specialist
30	Ms. Avimed TSEEPIL	Mongolia	Laboratory of Forest Genetics and Ecophysiology, School of Applied Sciences and Engineering, NUS	Researcher

**[Note] No. 2, 3, 9, 18-26, and 29 attended the meeting on-site. Others participated in the meeting online.**

## Annex2: WGII Extended Workshop (Proposal)

**DUST AND SAND STORMS (DSS) WORKING GROUP II (WGII)  
THE 16<sup>th</sup> MEETING AND EXTENDED WORKSHOP  
to be held on  
Consecutive 2 days in between 16<sup>th</sup>, Oct. and 10<sup>th</sup> Nov. (TBD), 2023**

**CONCEPT NOTE (VER. 0)**

### **THE 16<sup>th</sup> DSS WGII MEETING (on the 1<sup>st</sup> day)**

#### ■ Main Activities

The Mid-Term Action Plan (2020-2024) (MTAP) of the DSS WGII sets two main activities for DSS prevention and control measures, together with the expected outcomes as shown below.

MTAP Activities	
Activity 1	Continue the cooperation of joint research within the three countries.
Activity 1-(1)	Share the scientific information and views on research for DSS mitigation among WGII researchers by reinforcing the role as an academic and policy exchange.
Activity 1-(2)	Establish a concrete “3 (China, Japan, and Korea) +1 (Mongolia)” platform including and explore further opportunities for regional cooperation.
Activity 1-(3)	Gather good practices of the past two terms of MTAP related to DSS mitigation and vegetation restoration and compile them into a report.
Activity 2	Enhancement of collaboration between the WGII and WGI.
MTAP Expected Outcomes	
1.	A report of best practices related to DSS mitigation and vegetation restoration in the name of WGII.
2.	A summary note on the discussion of the WGII on the potential cooperative activities between the WGI and WGII to overcome the DSS challenges in Northeast Asia.

In line with the Activity 1, the DSS WGII and Mongolian experts will continue to share the latest scientific information and views as well as good practices; and to explore cooperation opportunities related to DSS mitigation using major time.

In addition, the DSS WGII meeting is expected to start discussions how to prepare the

expected outcomes defined in the MTAP using some time towards the end of the MTAP period (2020-2024).

Regarding the Activity 2, as it needs participation of the DSS WGI members, the Extended DSS WGII Workshop with a participation of the DSS WGI members is proposed to be organized in conjunction with the 16<sup>th</sup> DSS WGII Meeting. The details are introduced in this concept note.

## ■ OUTLINE

Date: One day in between 16<sup>th</sup>, Oct. and 10<sup>th</sup> Nov. (TBD)

Format: Hybrid (TBC)

Venue: Tokyo, Japan (TBC)

Language: English

Expected Participants:

- DSS WGII Members (Experts, Focal Points and Officials)
- Mongolian Expert(s) and Official(s)

## ■ PROVISIONAL AGENDA

- Opening Remarks from Japan, Korea, China and Mongolia
  
- Session 1: Review of the 15<sup>th</sup> DSS WGII Meeting and TEMM 23
  - Presentation by China
  
- Session 2: Sharing Scientific Information and Views on Research for DSS Mitigation
  - 2 or 3 presentations from each country, totally up to 12 presentations, are expected to be delivered, and followed by discussions.
  
- Session 3: Discussion on Preparation of the MTAP Outcomes
  - Expected outcome 1: “A report of best practices related to DSS mitigation and vegetation restoration in the name of the DSS WGII”
    - China [or Korea] is expected to take lead with its initial proposal
  - Expected outcome 2: “A summary note on the discussion of the WGII on the potential cooperative activities between the DSS WGII and WGI to overcome the DSS challenges in Northeast Asia”
    - Japan is ready to take lead with its initial proposal.
  
- Closing Remarks from Japan, Korea, China and Mongolia

### **DSS WGII EXTENDED WORKSHOP (on the 2<sup>nd</sup> day)**

## ■ BACKGROUND, OBJECTIVES AND ACTIVITIES

Dust and Sand Storms (DSS) is a common trans-boundary environmental problem throughout Northeast Asia. Despite of the great efforts on sand control in deserted grassland, the DSS have still caused various adverse impacts in downstream areas. Therefore, desertification control, rehabilitation and sustainable land use in DSS source area are essential for the long-term DSS prevention. However, DSS occurrence and mechanism including its transport routes is very complicated and not yet clearly understood.

In order to deal with DSS, Environmental Ministers of China, Japan and Korea agreed to launch cooperative research activities on DSS and established two Working Groups (DSS WGI and DSS WGII) under the framework of Tripartite Environmental Ministers Meeting among China, Japan and Korea (TEMM) in 2009. The mission of the DSS WGII is to study environmental rehabilitation towards sustainable land use to prevent the sand emission from land in DSS source area by integrating knowledge of the reactive and proactive approaches while the WGI focuses on DSS monitoring and modelling to improve early warning systems of DSS. Since the onset of the DSS Working Groups, they form own 5-year Mid-Term Action Plan (MTAP) and conduct the joint research in line with the respective missions.

During the 14<sup>th</sup> DSS WGII meeting in 2021, Japan proposed to host an Extended Workshop back-to-back with the 16<sup>th</sup> DSS WGII meeting to materialize the DSS WGII Activity 2 – “the enhancement of collaboration between the DSS WGII and WGI”. This Extended Workshop is similar to the DSS WGI Extended Workshop held in 2021.

Objective of the proposed Extended Workshop is to facilitate the collaborations between the DSS WGII and WGI with participation of both DSS WGII and WGI members including Mongolia. Certain international / regional organization, such as United Nations of Convention to Combat Desertification (UNCCD) could possibly be invited for getting inspirations.

To achieve the objective, the Extended Workshop will exchange views and discuss on technical and scientific aspects on DSS occurrence mechanisms, DSS countermeasures how to mitigate DSS occurrences and its impacts; as well as their implications on the policy relevant matters with a view to enhance and identify scientific collaboration on DSS countermeasures to tackle the DSS issues.

## ■ OUTPUTS

A summary note of the Extended Workshop is to be initially compiled by Japan, and confirmed by the DSS WGII and WGI members, following the similar manners for the previous Extended Workshop in 2021. The finalized summary notes shall be uploaded to the TEMM-DSS Online Portal (<http://temm-dss.com/>).

## ■ POTENTIAL ASSISTANCE FOR PARTICIPATION

Japan is planning to bear the DSA for the DSS WGI Experts (2 for each country), Mongolian

Experts including government officials (2 from DSS WGII and 2 from WGI) and invited speakers, based on the regulation of the Ministry of the Environment, Japan, subject to the budget availability, and if workshop is held by face to face format.

■ **OUTLINE OF THE EXTENDED WORKSHOP**

Date: next day to the 16<sup>th</sup> WGII Meeting (One day-event)

Time:

Open - 10:30 JST, KST/ 9:30 CST (TBC)

Close - 17:00 JST, KST/ 16:00 CST (TBC)

Format: Hybrid (TBC)

Venue: Tokyo, Japan (TBC)

Language: English

Expected Participants:

- DSS WGII Members (Experts, Focal Points and Officials)
- DSS WGI Members (Experts, Focal Points and Officials)
- Mongolian Expert(s) and Official(s) related to both the DSS WGII and WGI

## ■ PROVISIONAL PROGRAM OF EXTENDED WORKSHOP

*Moderator: Overseas Environmental Cooperation Center, Japan (OECC)*

### **10:30-10:35 Opening Remarks (5 min)**

*Ministry of the Environment, Japan*

### **10:35-11:00 Keynote Speech by Japan (25 min)**

*Dr. YOSHIKAWA Ken*

- *Considering the importance of the collaboration between the DSS WGII and WGI, relationship between DSS occurrence mechanism and issue of draught will be introduced with a focus on impact of vegetation that is one of DSS countermeasures practiced in arid and semi-arid region. (TBC)*

### **11:00-12:40 Presentations (15 min x max. 6 presentations)**

To understand the latest research, strategy and activities on DSS mitigation with a view to identify a concrete collaboration work between the DSS WGII and WGI, 6 presentations will be introduced.

- Presentation: Mongolia\*1
- Presentation: Invited Speaker (e.g. UNCCD\*2)
- Presentation: DSS WGII, China
- Presentation: DSS WGI, China / Korea / Japan
- Presentation: DSS WGII, Japan
  - “Prediction and Detection of Variability in Asian Dust Emission and Transport”*
- Presentation: WGII, Korea

\*10 min Mobility Break will be inserted between the presentations.

*CALL for Your Inputs / Suggestions on the specific themes or presentations.*

### **12:40-13:10 Q&A (30 min)**

\*1: Mongolia may wish to introduce the Green Belt Project and 1 Billion Tree nationwide movement launched by the President o

\*2: UNCCD may wish to introduce their Sand and dust storms compendium, SDS management strategy in Central Asia and The Sand and Dust Storms Toolbox.

Relevant Links:

<https://www.unccd.int/resources/publications/sand-and-dust-storms-compendium-information-and-guidance-assessing-and>

<https://www.unccd.int/land-and-life/sand-dust-storm/overview>

<https://www.unccd.int/land-and-life/sand-and-dust-storms/toolbox>

### **13:10-14:30 Break for Lunch Time**



**14:30-14:40 Guidance (10 min)**

*Chair: DSS WGII Expert from Japan*

The Chair and Japanese Focal Point introduce:

- 1) Purpose of the Breakout Parallel Session; and
- 2) How to facilitate the session for brainstorming (Topics and facilitators, summary presentations for the wrap-up session, etc.)

**14:40-16:10 Breakout Parallel Session (90 min)**

Participants will split into two/three small groups and conduct a 90 min in-depth discussion. They could focus on cross cutting topics or common interests, which may include policy support, policy implications, scientific themes to jointly resolve, potential areas for synergy among the DSS WGII and WGI domains, and potential collaboration between the DSS WGII and WGI including with external partners. (e.g. Effect of vegetation on DSS mitigation and its assessment method including effective usage of DSS monitoring data collected by the DSS WGI members.)

A facilitator will be assigned in each group and will facilitate discussions and report back to the wrap-up session.

If certain cross-cutting themes or common interests are identified among the participants, small groups would be organized following such themes or interests. Otherwise the Secretariat (OECC) will assign the participants to each groups considering country and research field balance.

*CALL for Your Inputs/Suggestions:*

Cross cutting theme and/or common interests for small group discussion

**16:10-16:40 Break for preparing wrap-up materials by the each facilitator (30 min)**

Facilitators (and some friends) of each group are expected to prepare a short presentation material by summarizing the discussion in the breakout session for the wrap-up session during this break time.

**16:40-16:55 Wrap-up Session (15 min)**

To summarize the discussion and the Outreach Webinar.

- Wrap-up comments from Breakout Session Facilitators (5 min x 2 or 3 facilitators)
- The Chair's summary statement (5 min)

Note: The wrap up reporting and the Chair's summary will be compiled into a summary note as an output of the collaboration work. It will be further developed and finalized through email communications lead by Japan after the workshop. Further, the finalized output will be posted on the DSS Online Portal.

**16:55-17:00 Closing**

*Ministry of the Environment, Japan*

**Work Timeline:**

- |                                       |   |
|---------------------------------------|---|
| 24 Oct. 2022                          | - The concept note will be circulated among the DSS WGII and WGI focal points and Mongolia.   |
| Nov. 2 and 3, 2022                    | - The concept note will be explained to the DSS WGI members at the 15 <sup>th</sup> DSS WGI Meeting, for their consideration, inputs and endorsement for the part of Extended Workshop. |
| Nov. 15, 2022                         | - The concept note will be discussed with the DSS WGII members at the 15 <sup>th</sup> DSS WGII Meeting, for their consideration, inputs and endorsement.                               |
| Nov. 16 – Dec. 2022                   | - Collecting further comments on the concept note from the DSS WGII and WGI members.  |
| Jan. 2023 – Apr. 2023                 | - The concept note will be finalised.<br>- Asking each focal points to nominate presenters / speakers and presentation subjects.  |
| July-Aug, 2023                        | - Registration for participation  |
| One week before the Extended Workshop | - Due date for presentations of the Extended Workshop   |
| The day of Event                      | - 16 <sup>th</sup> DSS WGII Meeting and Extended Workshop   |
| Oct or Nov, 2023                      |   |

(End of Note)