



World Meteorological Organization
Organisation météorologique mondiale

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Weather • Climate • Water
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Form for Regular Reporting of CIMO Testbeds and Lead Centres

(expand the cells as required to properly reflect your activities)

Terms of Reference for CIMO Testbeds and Lead Centres are available under:
<http://www.wmo.int/pages/prog/www/IMOP/Testbeds-and-LC.html>

Name of Testbed / Lead Centre	Chupungnyeong Lead Centre
Location of Testbed / Lead Centre	Place: Chupungnyeong, Yeongdong-gun, Chungcheongbuk-do, Republic of Korea Location: 36.22°N, 127.99°E, 241m above mean sea level (AMSL)

Contact Person for the Testbed/Lead Centre	
Courtesy Title	Dr.
Family name	Park
First name	Young-San
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Has contact person changed in last 2 years?	Yes
If yes, who was the previous contact person?	Dr. Sangok Han

Report on Activities
Main activities that TB/LC carried out in the last 2 years for which results are already available: <ul style="list-style-type: none">• Intercomparison of sunlight shields on the ground (2014~2015).<ul style="list-style-type: none">- Installed and using same thermometers and hygrometers inside 4 different models of sunlight shields.

<ul style="list-style-type: none"> • Intercomparison of snow depth sensors (2013~2015). <ul style="list-style-type: none"> - Four ultrasonic type, one 3point laser type and one optical type sensors. • Comparison of evaporation manually observed(using pan) and calculated from Penman-Monteith equation. • Field experiments for the newly developed instruments by domestic companies. <ul style="list-style-type: none"> - Automated cloud observing system . - Multi-weather sensor that measure T, RH, WD, WS, and P. - Precipitation gauge: application of an ultrasonic flow measurement technique.
<p>Main activities that TB/LC carried out in the last 2 years for which results will soon be available:</p> <ul style="list-style-type: none"> • Solid Precipitation Intercomparison Experiment(SPICE) Project. <ul style="list-style-type: none"> - SPICE preparation started in 2013 and the observation officially began in January 2014. • Intercomparison of hygrometers on the ground. <ul style="list-style-type: none"> - Field testing 4 models of hygrometers and using same sunlight shields. • Intercomparison of snow depth sensors (2015~2016). <ul style="list-style-type: none"> - One ultrasonic type, two multipoint laser type, one 3point laser type and one optical type sensors.
<p>Which guidance documents/standard procedures were developed during the last 2 years (please include full reference and web-link if available)?</p> <ul style="list-style-type: none"> • Operation manual and intercomparison results of snow depth monitoring CCTV (Technical Note in Korean). • Operation guideline of temperature calibration equipment (Technical Note in Korean). • Intercomparison results of snow depth sensors (Technical Note in Korean). • Intercomparison results of evaporation measurement (Technical Note in Korean). • Enhancement of verification/calibration techniques of meteorological instruments (Report in Korean). • Development of evaluation techniques for the accuracy of precipitation observation (Report in Korean).
<p>Which IOM reports / peer-reviewed publications were published in the last 2 years (please include full reference and web-link if available)?</p> <ul style="list-style-type: none"> • N/A
<p>Title(s) of IOM report(s) presently being developed by your Testbed/Lead Centre: (please specify level of development: draft, ready for review, ...)</p> <ul style="list-style-type: none"> • N/A
<p>Has your Testbed/Lead Centre collaborated with one or more CIMO Expert Teams in developing guidance material? No</p>
<p>If yes, with which CIMO Expert Team(s)?</p> <p>N/A</p>

<p>Capacity Building and Training Activities</p>
<p>Which capacity building/training activities have been carried out by the Testbed in the last 2 years?</p> <ul style="list-style-type: none"> • Held a workshop on traceability establishment of pyranometer calibration (February 2013). • Held a workshop on improvement observation method of evaporation (May 2013).
<p>Has your testbed developed a twinning activity / special relationship with a companion station/site</p>

from a developing country? Yes
If yes, with which station/site? KMA(Korea Meteorological Administration) collaborated with Indonesia for joint research. <ul style="list-style-type: none"> - Representatives of Indonesia visited Chupungnyeong site for intercomparison and calibration of standard meteorological equipment (October 2013).
Is your Testbed/Lead Centre making an oral/poster presentation at this year's TECO? Yes (If yes, please specify Title(s) and Author(s) of the presentation(s)) <ul style="list-style-type: none"> • Rha, D.K., H.J. Hee, E.J. Choi, H.L. Kim, J.E. Lee, G.W. Lee, 2014: WMO Solid Precipitation Intercomparison Experiment(SPICE) : Overview and results of Gochang site • Kim, B.M., C.W. Lee, C.J. Lee, J.Y. Choi, 2014: A multipoint snow depth measurement system • Lee, K.W., G.S. Choi, J.H. Park, H.L. Kim, 2014: Precipitation gauge: application of an ultrasonic flow measurement technique

Recent Changes in Circumstance
Have there been any recent changes in your Test Bed/Lead Centre's capabilities? If so, please specify: <ul style="list-style-type: none"> • N/A
Have there been any recent changes in your Test Bed/Lead Centre's infrastructure? If so, please specify: <ul style="list-style-type: none"> • KMA rearranged several instruments following WMO recommendations to participate SPICE project. <ul style="list-style-type: none"> - Two DFIR systems equipped with Geonor T-200M3 and OTT Pluvio² weighing gauge were set up. - Rain gauges were rearranged at regular distances and each rain gauge model was paired with Alter-type shield gauge and non-shield gauge. - Two sets of ultrasonic snow depth measurement system, three sets of multi-laser system, one optical type system, and three manual measurements were equipped. - Instruments employing emerging technologies e.g. 2DVD(2-Dimensional video disdrometer), POSS(Precipitation Occurrence Sensor System), MRR(Micro Rain Radar), PARSIVEL(PARTicle Size VELOCITY), VertiX(X-band vertically pointing radar) were operated(2013~2014 winter).
Have there been any recent changes in your staffing? If so, please specify, and advise whether replacement staff have the required competencies: N/A

Future Plans	
What are your plans for the next two years? <ul style="list-style-type: none"> • Continuation of the SPICE project. • Intercomparison of visibility sensors to utilize for operational observation network in Korea. • Intercomparison of precipitation gauges on rainfall amount and intensity measurements. • Field experiments for the newly developed instruments. 	
Is your Testbed/Lead Centre able to continue in the role of a Test Bed/Lead Centre during the coming two years?	Yes

Other relevant information (other activities of special interest to CIMO, etc...)

- N/A

15th March 2016

Date

Young-San Park

Name of Person Filling the Form