

Installation of the Automated Weather Observation System in Mongolia



Project Background

Mongolia frequently experiences natural disasters such as dzud (heavy snow with severe cold conditions), strong wind, cold rain and drought. The zud in 2009 and 2010 killed nine million cattle and forced many herders to move to the city of Ulaanbaatar for a better life. To reduce effects from natural disasters, the Government of Mongolia needed to enhance its capacity for delivering accurate forecasts and weather information by modernizing its weather observation system.

In this context, the modernized national weather observation system was highly required in Mongolia to improve the accuracy of weather forecasts and warnings of natural disasters.

Project Objectives

The objective of this project is to improve response capacity to natural disasters and reduce damage to residents by building a real-time meteorological observation system in Mongolia.

Key Activities

- Conducting a field investigation on weather stations to obtain information about the meteorological status and related infrastructure conditions in Mongolia
- Installing 32 Automatic Weather Stations(AWSs) in Mongolia

- Installing power systems (solar cells and rechargeable batteries) at the weather stations
- Developing a data receiving system at the data center in Ulaanbaatar and a data analysis and display system to support weather forecasting
- Supporting the operation of the systems through training programs

Project Summary

Duration: 2017-2019 (3 years)

Management Agency:
Korea Meteorological Administration (KMA)

Implementing Agency:
Korea Meteorological Institute (KMI)

Beneficiary Agency:
National Agency for Meteorology and Environment Monitoring (NAMEM) of Mongolia

Funding Source: KMA

Target Location: 32 weather stations in Mongolia

Project Budget: 4 M USD

Contact:
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Where We Work

The target sites of the project are six provinces and 32 weather stations in Mongolia.



- 6 provinces: Ulaanbaatar, Tuv, Bulgan, Khovsgol, Bayan-Olgii, Arkhangai
- 32 weather stations: Ulaanbaatar, Partizan, Ulziit, Terelj, Zaluuchuud, Batsumber, Bayanjargalan, Bayantsagaan, Bornuur, Delgerkhaan, Zamar, Algalant, Undurshireet, Saikhan, Orkhon, Khishig-Undur, Khangal, Bayan-Agt, Burenkhangai, Bulgan,

Bayannuur, Bugat, Jargalant, Battsengel, Undur-Ulaan, Khairkhan, Khangai, Khashaat, Khotont, Tsetseleg Post, Tsahir, Tsetserle g Station

Outputs

- Installed 32 AWSs and analysis, display and monitoring system
- Trained 35 staff from NAMEM through capacity building programs
- High quality observation data collected from AWS system

Outcomes

- Enhanced work efficiency through the AWS installation
- Enhanced weather forecasting and disaster preparedness and response capacity of NAMEM



▲ Invitational training for staff from NAMEM in April 2019



“Since the AWSs were installed at 32 weather stations in Mongolia through this project, they have been working very well without any problem. The project was very helpful for modernizing weather observation system and enhancing the accuracy of weather forecasts and warnings of natural disasters. I would like to express my gratitude to the KMA and KMI.”

- Sevjid Enkhtuvshin, Director-General of NAMEM -

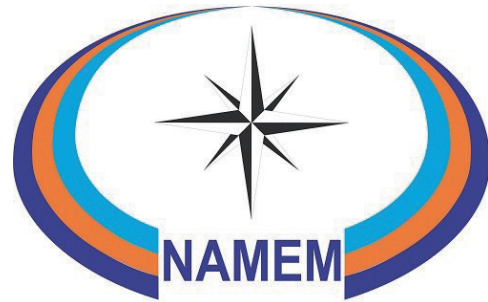
Automatic Weather Station (AWS)

AWS



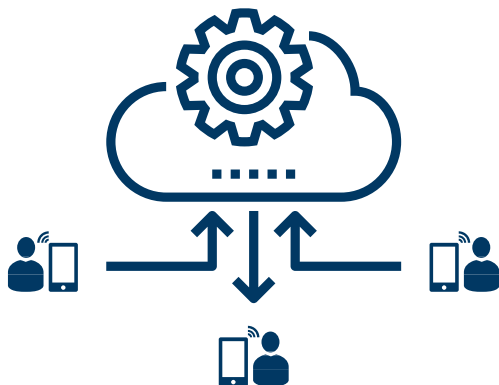
Observe weather every minute with AWS sensors (temperature, humidity, air pressure, wind direction/speed, precipitation, aspirator)

National Agency for Meteorology and Environment Monitoring (NAMEM) of Mongolia



Transfer weather information to NAMEM in Mongolia

People in Mongolia



Provide weather forecast to public through Media, SNS etc.

Analysis / Display / Monitoring system

The screenshot displays a comprehensive meteorological monitoring system interface. It includes a top navigation bar with 'SEATECH' and 'Meteorological observation' labels. The main content area is divided into several panels:

- Temperature:** -8.9 °C
- humidity:** 64 %
- WD - WS:** 2.3 FORM W
- Rainfall:** 0.0 mm
- Today's rainfall:** 0.0 mm
- Sensible temperature:** -13.31
- Discomfort index:** 24.30
- Deep-point temperature:** -14.44
- Ulaanbaatar (1302m):** 2020-10-02 02:01
 - WD: 273
 - WS: 2.3m/s
 - gust WD: 278
 - gust WS: 2.8m/s
 - Precipitation(S): 0.0mm
 - Precipitation(M): 0.0mm
- Pressure:** 878.2hPa / 1,039.3hPa

 A central map shows the location of the station. Below the main data, there are two mobile device screens:

- Tereji:** A mobile app interface showing weather data for 'Ulaanbaatar' (1302m) on 2020-10-02 14:12. It displays:
 - WD: SE, WS: 1.4 m/s, Pressure: 850.0 hPa, Surface Temp: -12.3 °C
 - Temp: -21.4 °C, Humidity: 75 %, Sea LV pressure: 1,047.0 hPa, Precipitation: 0.0 mm
- ST-IDP:** A login screen for the Integrated Display Program, featuring fields for ID and Password, and buttons for LOGIN and SIGN UP.