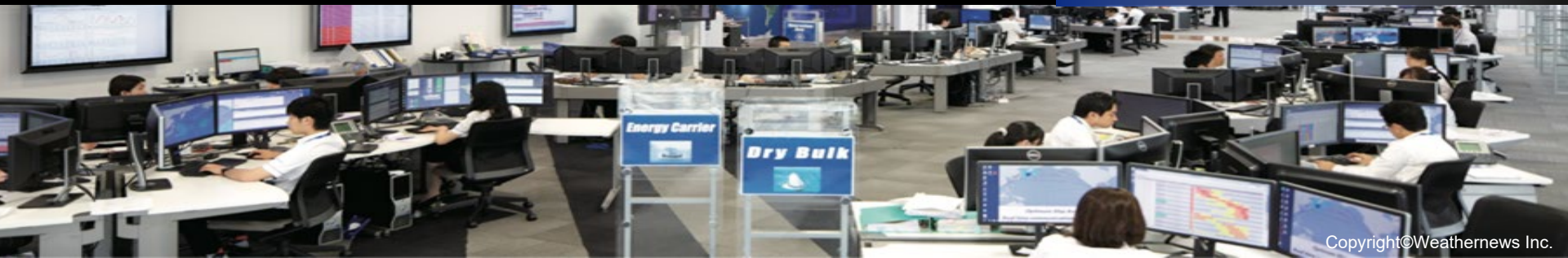
The 2nd Philippines-Japan Environment Week

Weather and Climate Innovation for a Climate-Resilient Future

15 Jan 2024

Enhancing Early Warning Systems (EWS) Deployment & Further Collaboration in the Philippines

Daisuke Abe
Executive Officer
Service Operation and Development
Weathernews Inc. (WNI)




MANILA OBSERVATORY

Introduction

The Origin of Weathernews.Inc (WNI)

“I want to protect the lives of mariners.”
“I want to help in time of crisis.”

Ship Hits Breakwater; 7 Men Die

IWAKI, Fukushima Pref (Kyodo)—Seven persons were killed and eight others reported missing after an 11,463-ton Japanese freighter sank near a breakwater off stormy Onahama Port here Saturday, according to the Onahama Marine Safety Office.

The freighter Kuko Maru of Sanko Kisen Co. in Hyogo Prefecture started sinking at around 3 a.m. after losing its anchor cable and crashing into a breakwater. The ship sank four hours later after breaking into two.

Winds up to 25 meters per second and high waves were raging at the time because of the approaching low air pressure mass.

Founder
Hiroyoshi Ishibashi

January 1970, an explosive low-pressure system hit the port of Onahama, Japan, and lives of 15 crew on the vessel has lost.

“This tragedy might have been prevented if truly useful weather information had been available”

Weathernews Inc. was established in 1986 with a sense of responsibility and will of company founder Hiro Ishibashi.

Since then, our “Risk Communication services” have been expanded and innovated to cover all business and lives.

We need both Early Warning for ALL & Early Warning for YOU

WNI in Brief

Established in 1986 (FY39)
1100+ Employees
200+ Forecasters
250+ IT Experts: 300+
30 Offices in 21 countries
2,600+ BtoB Customers
Original App 42 Million DL
Business in 50+ Countries
45 Targeted Markets
+40 Years Data

Update: 2024/5/8

Our 45 Global Markets

Risk communication service covering 45 markets

Sea Planning


Shipping


Offshore Energy


Sea Logistics


Offshore & Near Sea


Fishery

Wonderland Planning


Road Management


Railway


Transportation


Facility Management


Local Government


Construction


Event Management


River Administration


Telecom Carriers


Manufacturing Management


Insurance


Dynamic Climate Change


Terrestrial Phenomena


Air Quality Analysis

Environment Planning


Energy


Retailer


Agriculture


Dam Operation Management

Sky Planning


Aviation

Broadcast Planning


Broadcasting

Climate tech Planning


Climate tech

Mobile / Internet Planning


Mobile


Internet


Travel


Wellness


Flower


Weather Literacy


Farm


Disaster Reduction


Star


Photo


Space Weather

Sports Planning


Sports


Football


Motor Sports

Boat

Sports Festival

Baseball

Sky Sports

Mountain

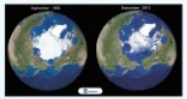
Our Traditional Weather Services

Teams of Specialists

1 Global Storm Center

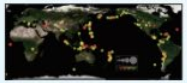
Twenty numerical models and over 30 kinds of observation data from across the world, including pressure, wind, and wave observations from vessels at sea are utilized in our analyses to provide Weathernews' (WNI's) highly accurate forecasts. The WNI Global Storm Center issues our forecasts earlier than any other meteorological entity, providing five-day track and intensity forecasts from before the tropical depression stage.

2 Global Ice Center



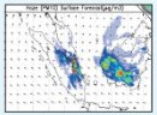
The WNI Global Ice Center (GIC) has a team of specialists monitoring and forecasting global ice conditions around the world, starting with the Arctic. Using analysis of global satellite images and our own sea-ice prediction model I-SEE Engine, the GIC monitors the state of sea ice in the North Pole where the ice is receding seasonally with global climate changes.

3 Terrestrial Phenomena Center



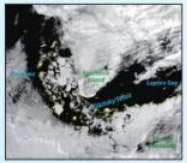
WNI Terrestrial Phenomena Center (TPC) is constantly monitoring geological phenomena like earthquakes, tsunamis, and volcanos around the globe. The TPC also predicts the dispersal of ash when a volcano erupts.

4 Air Quality Center



WNI Air Quality Center measures and forecasts various phenomena that may become the causes of air pollution like PM 2.5 and pollen. WNI is creating the content needed for both healthy businesses and daily life.

5 Space Vehicle Operation Center

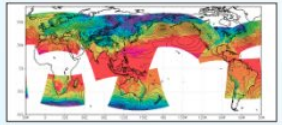


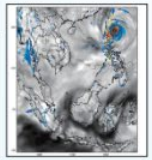
This center handles remote operations ofproprietary satellites (WNISAT-1/ WNISAT-1R) and creates optimized observation data from these satellites, such as sea ice, tropical cyclones, volcanic ash plumes and geomagnetic activity, etc.
These data enable us to improve accuracy of meteorological and oceanographic analyses and to develop our risk communication services.

Analysis and Forecast

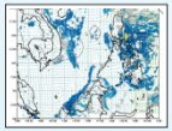
1 The world's largest data base of weather, maritime conditions and geologic al phenomenon

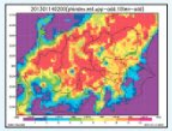
2 Proprietary forecasting models





3 Expertise of forecasters refl ected in the KN-Expert A.I. system





4 24-hour monitoring year -round

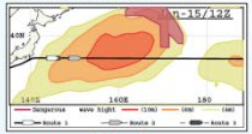
5 Coordinating with meteo rologists and researchers at the University of Okla homa

Risk Communication

[Providing countermeasure responses based on the 10V scale]

10V Scale for voyage planning service = DASH INDEX

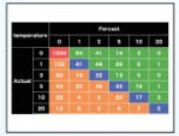
DA : Dangerous (Consideration of drifting and sheltering)
S : Severe (Study of changes in course/speed adjustment en-route)
H : Heavy (Analysis of speed changes)



Optimum Route Recommendation

Evaluation (Service feedback and verification)

1 Quantitative evaluation of forecasts and daily service



2 Service review & planning meetings with the customer

Legal Framework for Meteorological Services in Japan
- Meteorological Service Act - (enact 1952)

1993: Enhancement of Public-Private Partnership

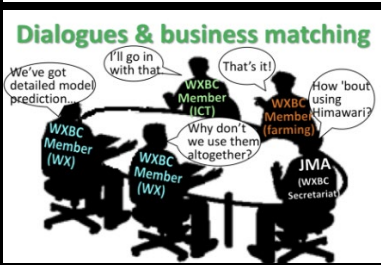
- Establishment of an authorized organization for dissemination of meteorological data to the private sector

- Establishment of "certified meteorological forecasters" system

- Authorization of Public Weather Forecast by the Private Sector

気象庁 Japan Meteorological Agency	weathernews Always WITH you!
Public Weather Service	Your Weather Platform (Info. Exchange Platform)
Weather Forecast Warning	Weather Forecast Solutions for Risks Warning Dissem. to End-users
Basic Observation	User-oriented Obs. for Specific Services

Japan Meteorological Business Support Center



WXBC

Weather Business Consortium

Our Activities for EWS

EWS: Roles & Responsibilities in Japan




Public Sector

Disaster

JMA

Early Warning

Private Sector

Lifeline company

Mobile Carrier

Weathernews

Lifeline Information

Emergency Call

Risk Communication

Service & Support

Media

Internet

Mobile

TV

Information Dissemination

Feedback Current Condition

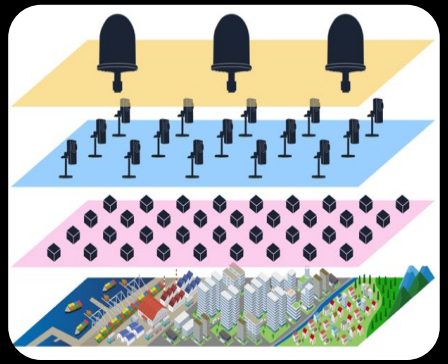
Business Data

Transportation Companies

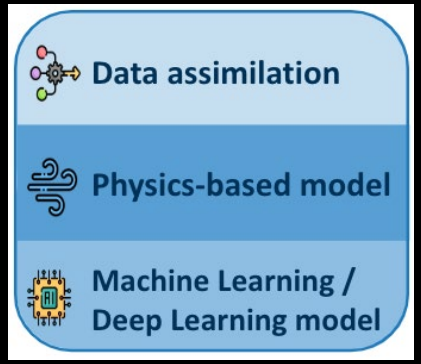
The Private Sector plays a key role in disseminating & collecting information on disasters to/from end-users.

Alerting Service for Asia

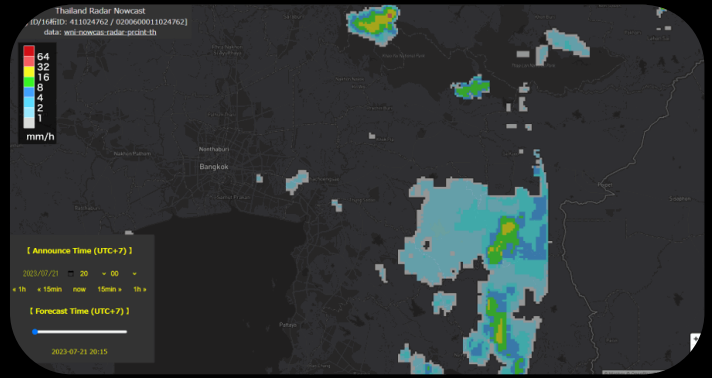
Deploy Obs. Network

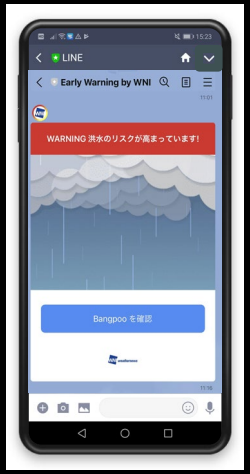


Original Forecast Model

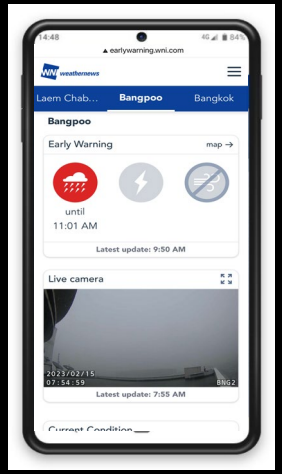


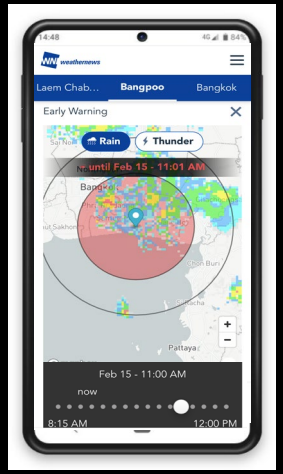
WNI Radar Nowcast





Risk Alert Notification





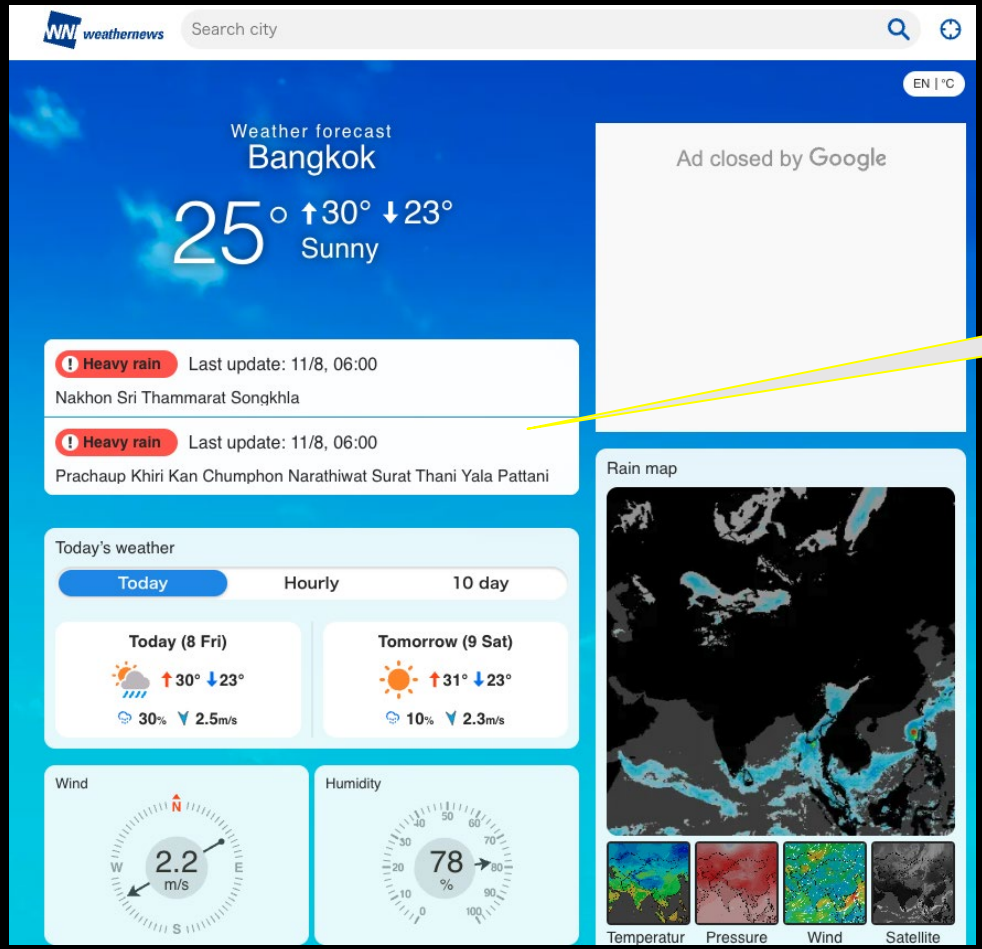
1. Protect the safety of workers
→ Alert the risk of heavy rain when going / leaving work

2. Reduce the damages on facilities
→ Alert the risk of flooding around the facilities

3. Ensure the products delivered
→ Alert the risk of traffic jam due to rain

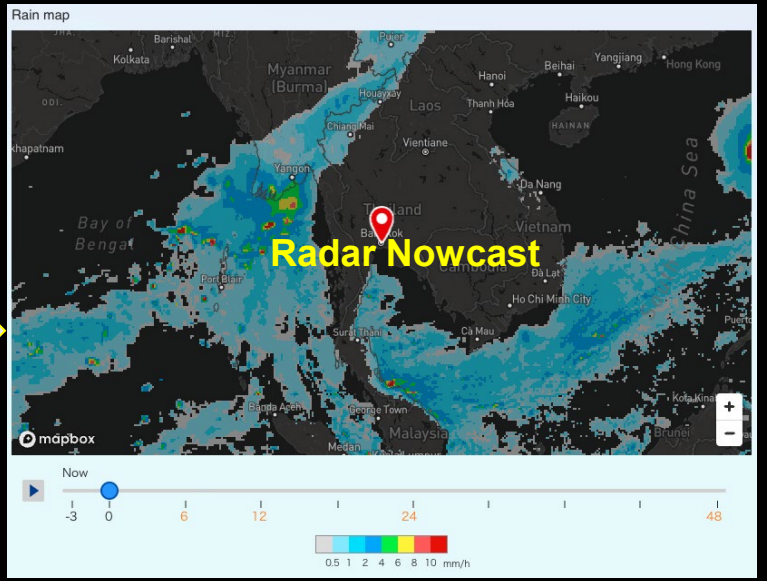
4. Work effectively outdoors
→ Alert the risk of working outside

Global Website for Individuals



Latest weather information for free

Warning Information issued by
The National Gov.
(Supportring Distribution)



https://weathernews.com/weather/

Progress of Our Global Collaboration in EWS

Partnership with National Government (Early Warning Initiative, MOE Japan)

COP29 (Azerbaijan, 2024)

Innovative Collaboration with Academia (Oklahoma University, US)

Collaboration with Local Government (Bangkok City)

International Conference of EW4All (World Bank)

Contribution for International Organization (IMO/WMO 2nd Symposium)

Innovation in Climate Change Services

Innovation: Forest Fire Risk Index Forecast

In 2024, heatwave in Asia, Africa, Europe, the Middle East, and North America has already caused significant damage, claiming hundreds of lives, reducing labor productivity and crop yields, disrupting education and energy supplies, and increasing the risk of wildfires.

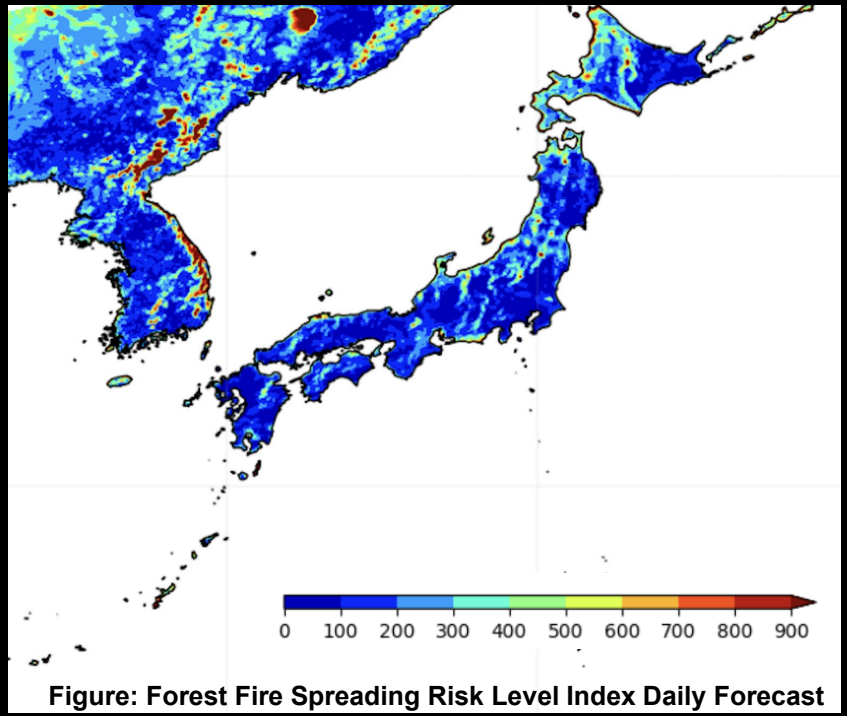


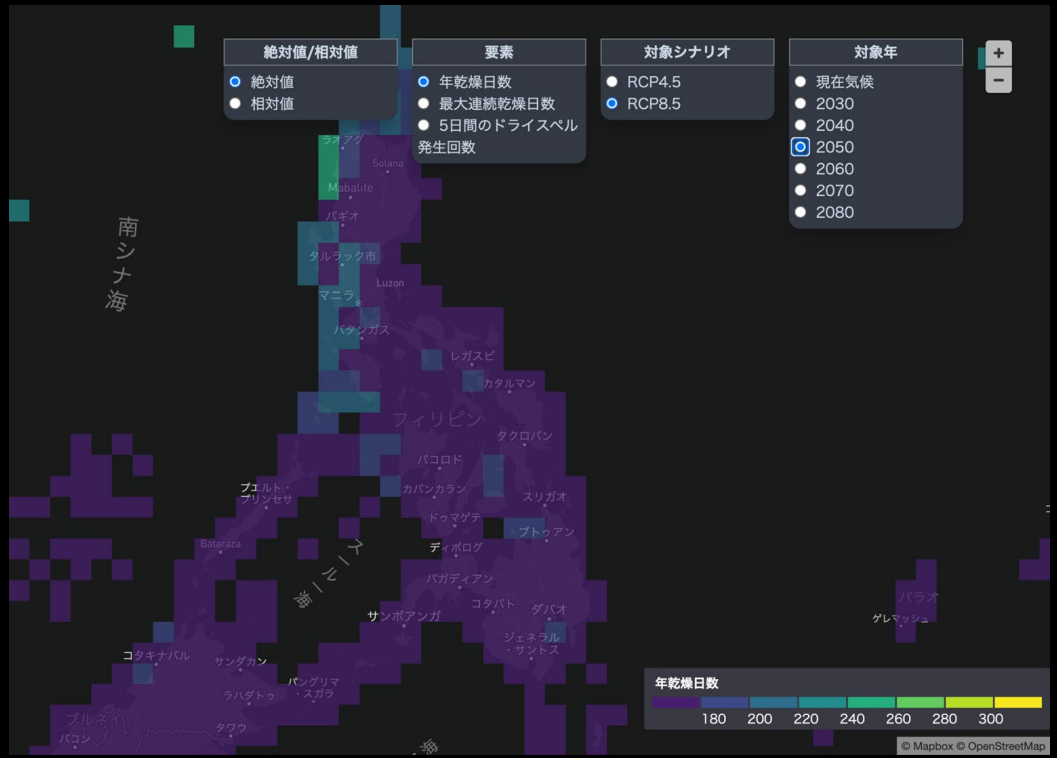
Figure: Forest Fire Spreading Risk Level Index Daily Forecast

WNI has been developing the Forest Fire Forecasting System with the Forestry Agency of Japan. Forest Fire Risk Index is calculated by meteorological data, remote sensing forest condition data, topography, and population density.* (*90% of forest fires are caused by human factors)

Using these technologies, WNI is trying to collaborate with local government agencies in the Balkans to build a forest fire information system, and is aiming to use this system to strengthen disaster prevention and mitigation.
(Detail was shared at the Faith Pavilion G14a on Tue 19 noon, COP29)

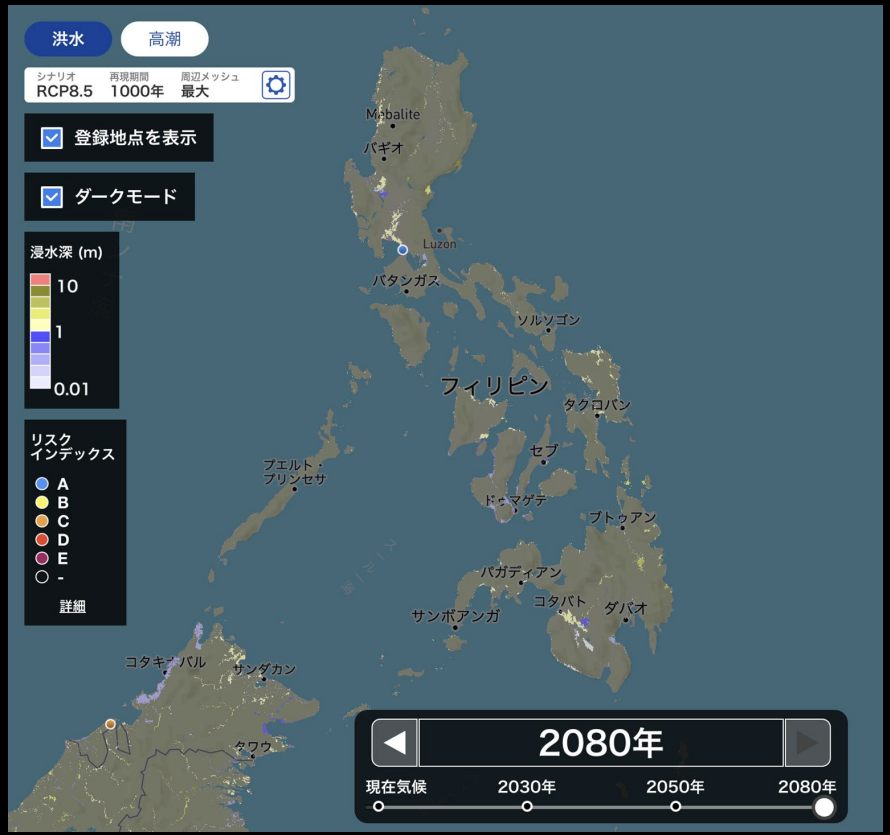
Innovation: Drought risk Index Forecast

We know that rising temperatures due to global warming cause soil moisture to evaporate, leading to dryness and drought on the land surface. These dry land conditions make wildfires more likely to occur and cause more damage.



This is a forecast of future drought risk and can help in the study of forest and dam management measures.

Innovation: Flood risk Index Forecast



Rising temperatures due to global warming can cause heavy rainfall and flooding in short periods of time.

Future flood risk analysis is important from the perspective of disaster prevention.

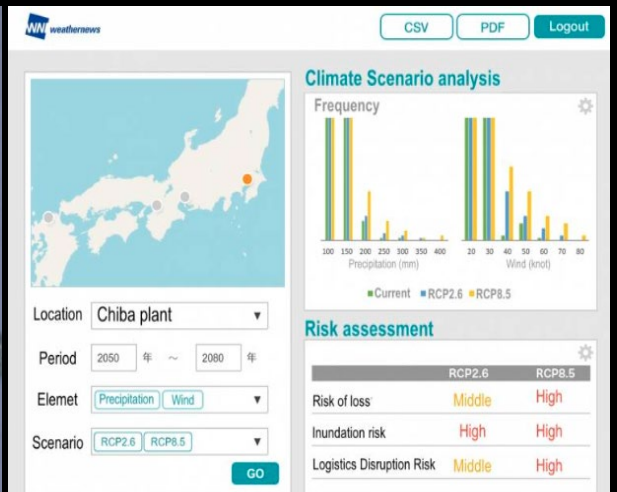
WNI can provide not only such long-term climate risk analysis, but also nowcast weather monitoring services (e.g., precipitation forecasts).

Innovation: Climate Risk Analysis & Countermeasure (LAND)

Understanding the risk and setting countermeasure correctly reduces social loss & damage from climate change.

Some of our client company had very high risk of their train inundation risk due to flood, and they had succeeded to avoid damages (approx. 170M USD) by utilizing our Train Evacuation Countermeasure Service for flooding. After the disaster, they also had succeeded to reduce their insurance cost effectively.

We provide a service that analyzes the financial impact of the physical risk to the asset that a company will be exposed to in the event of climate change in different Representative Concentration Pathways (RCP) scenarios. It enables company's managements and investors to understand the company's business risk from the perspective of climate change. Of course, these data will be utilized for disclosure (e.g. **CSRD & TCFD)** actions.



Innovation: CO2 Emission Monitor & Support Service (SEA)

Maritime service is our foundation, but it is still in the process of our innovation. There are millions of voices from including captains, shipowners, charterers, operation managers, engineers, and pool managers for new issues to solve, and they are not only for their safety operations.

In recent years, the company has been particularly interested in monitoring environmental impact data in line with the need to reduce CO2 emissions and optimize their fuel consumption in the face of climate change mitigation-related concerns.

And with the latest technology, the company is providing services around the world to analyze and support the risk of ship sway as well as weather, and to support the navigation of autonomous vessels.

Optimum Ship Routeing

Performance Status Monitoring

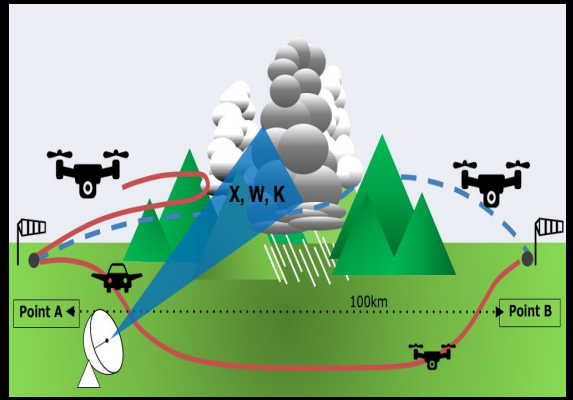
Safety Status Monitoring

Emission Status Monitoring

Innovation: Drone Operation Services (SKY)

By Drone

Drones are expected to be utilized in various markets such as disaster response, aerial photography, aerial inspections, and logistics. WNI employs the use of drones to make observations of low-level airspace. These drones are equipped with proprietary observational instruments which can make visualizations and observations to be used in improving our forecast accuracy of local weather.



For Drone

Although drones can fly in drizzle or light rain, it is difficult to fly in strong rain. For this reason, a detailed understanding of the clouds along the flight route is necessary to determine the intensity of the rain and to ensure arrival at the destination. However, it is difficult to observe the interior of clouds at high resolution using conventional technologies such as existing weather radar, live cameras, and satellite images. Therefore, in order to support the safe operation of next-generation air mobility vehicles and the selection of optimal routes, WNI has begun development of **a new multi-frequency weather radar** that can more finely observe weather phenomena at low altitudes where drones fly.

Conclusion

Challenges and Opportunities for EWS

- **Collaboration with Mutual Trust**

  As the first step, a place/opportunity for collaboration between public and private sector would be needed to establish the mutual trust and efficient PPE/PPP framework for EWS.

- **Effective Data/Infra Sharing**

  Advanced observation & monitoring and effective data sharing / utilization are required for enhancement of new value-creation in weather & climate services supporting EWS.

- **Quantification the Risk for Sustainability**

  Quantifying & correctly understanding the weather and climate risk would enhance the social resource optimization for the sustainable EWS which minimizes loss & damage.

Our dream is to be the Weather Information Platform
to reduce the weather / climate risks & damages
for 8 billion people living in the world, with you.

We believe, combination of traditional approach
and innovative cutting edge contents with the efficient
Public Private Engagement/Partnership Framework
will enhance the climate change adaptation service
& people centered Early Warning System.

Thank you

& Always WITH you!