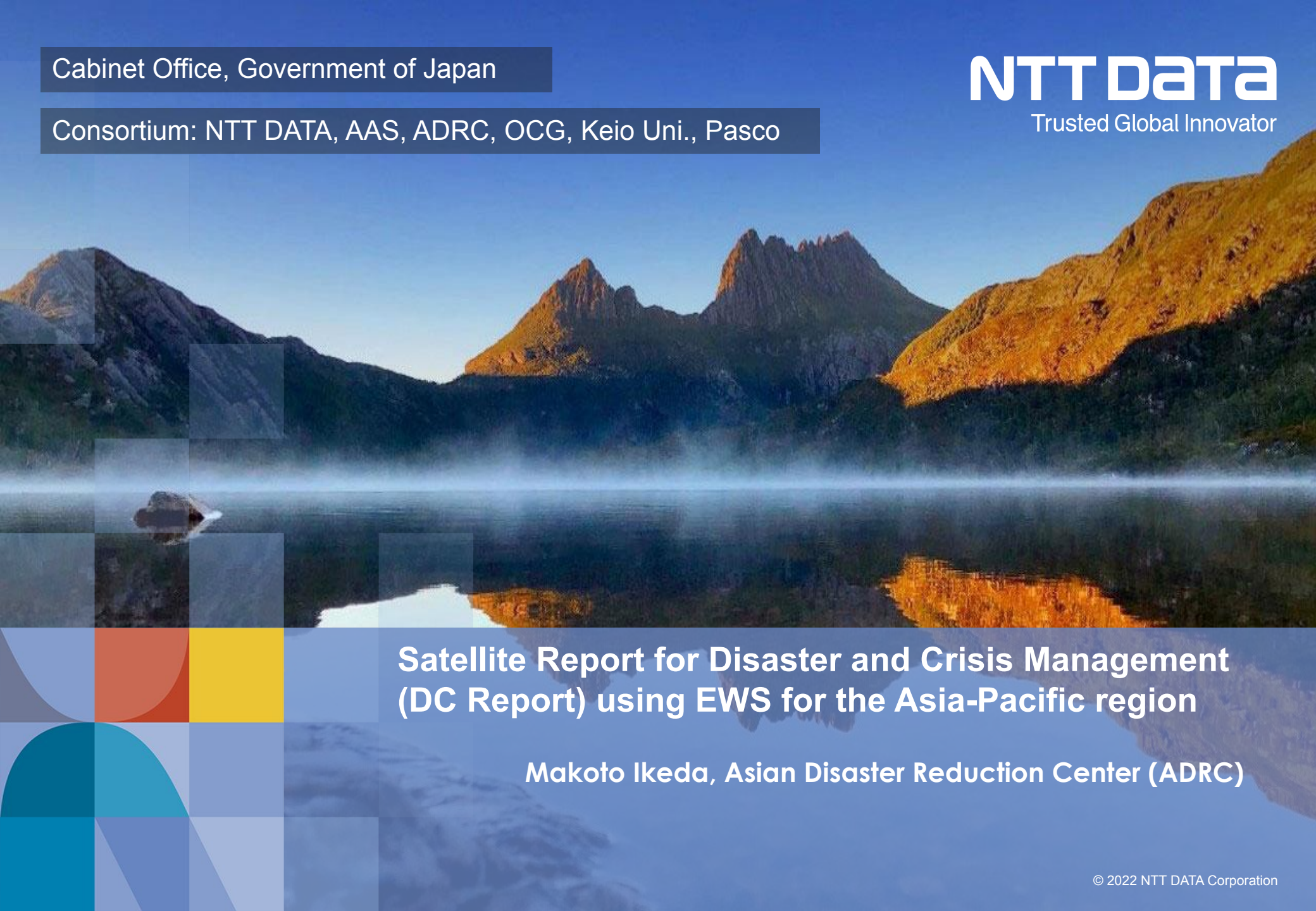Cabinet Office, Government of Japan

Consortium: NTT DATA, AAS, ADRC, OCG, Keio Uni., Pasco

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Trusted Global Innovator

Satellite Report for Disaster and Crisis Management (DC Report) using EWS for the Asia-Pacific region

Makoto Ikeda, Asian Disaster Reduction Center (ADRC)

Michibiki

The Japanese GNSS constellation QZSS (Quasi-Zenith Satellite System), as known as "Michibiki", run and operated by the Japanese Government, has been performing well since officially going live with the 4-satellite constellation in November 2018.

Quasi-Zenith Satellite Syastem:QZSS Michibiki

by courtesy of Mitsubishi Electric Corporation
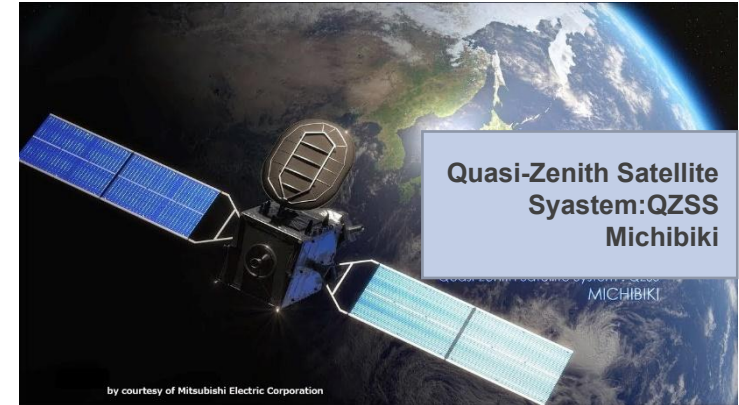
The Japanese Government has tested a disaster early warning system that uses one of its Quasi-Zenith's satellites to transmit information from institutions monitoring weather conditions. The system aims to contribute to better disaster prevention in the Asia-Pacific region. The disaster warning system is expected to be effective in supporting evacuation and managing relief activities in remote areas such as mountainous regions.

Various experiments have already been conducted in Japan to test reciprocal data transmission. The system has not only been used to send warnings but also to connect computers at evacuation shelters and disaster response centers in a simulation.

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What is DC Report
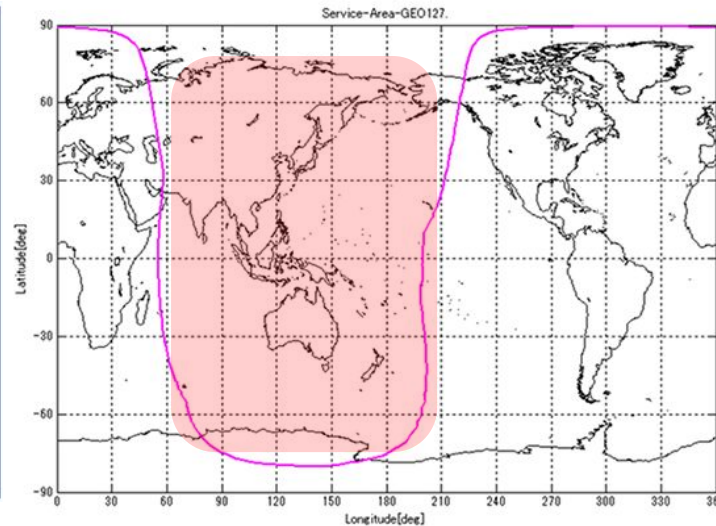
What is DC report?

Satellite Report for Disaster and Crisis Management (DC Report) is a service that to publish crisis management information from organizations for disaster prevention. The information is transmitted via Michibiki satellite .
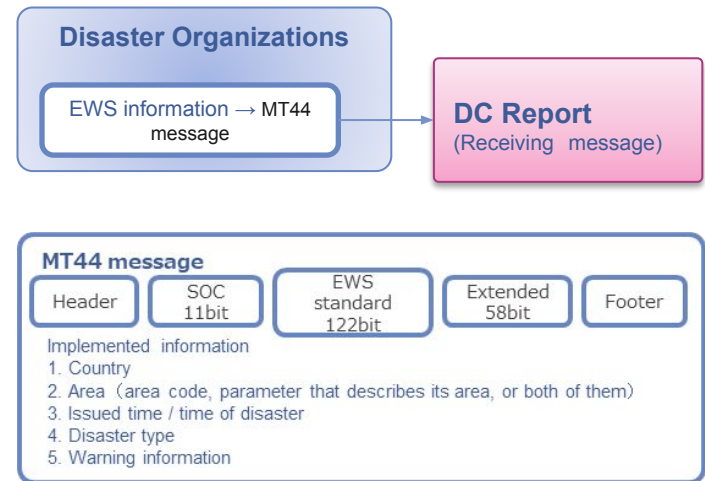
DC Report is generated by Receiving MT44 messages from Disaster organizations.
MT44: Incident information type (optional format)

Orbit of Michibiki

Area where DC report is receivable

Disaster Organizations

EWS information → MT44 message

DC Report
(Receiving message)

MT44 message

| Header | SOC 11bit | EWS standard 122bit | Extended 58bit | Footer |

Implemented information
1. Country
2. Area（area code, parameter that describes its area, or both of them)
3. Issued time / time of disaster
4. Disaster type
5. Warning information
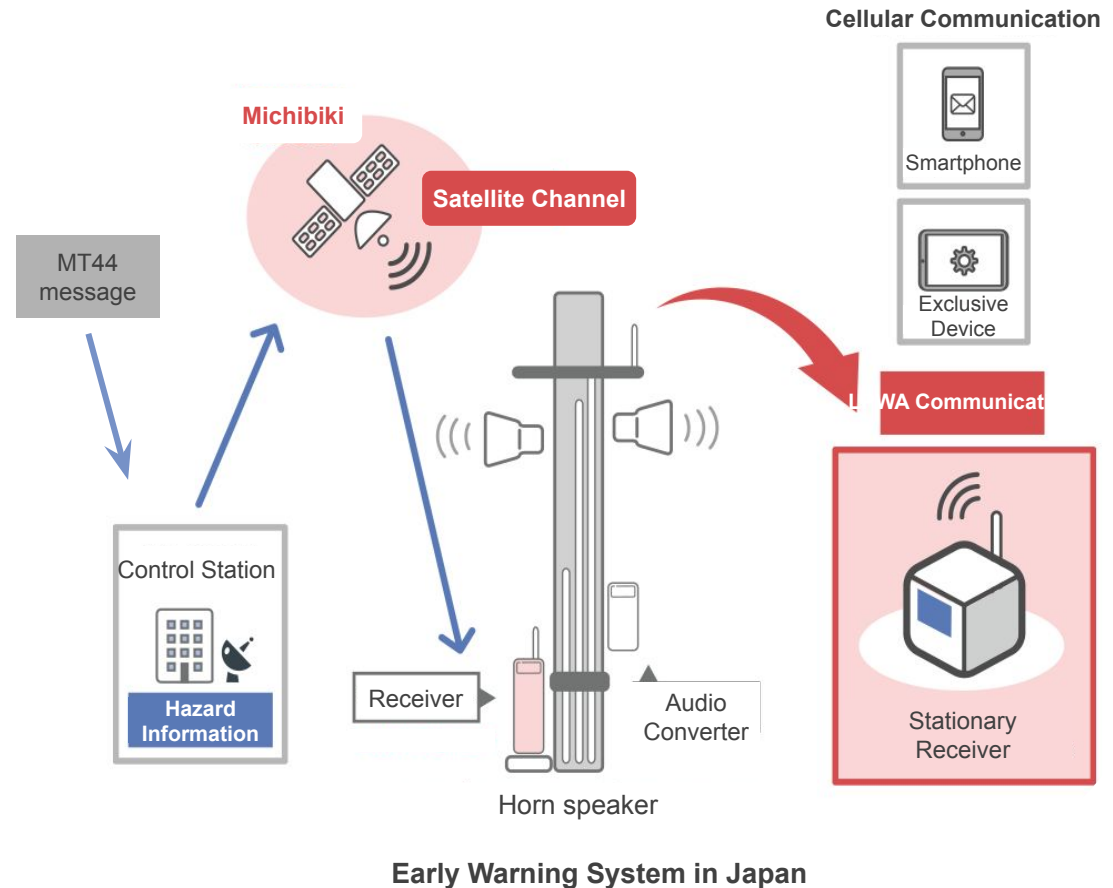
The way Michibiki transmits information in Japan

How it works in Japan

The information received from the satellites is expected to be shared via audio and/or displays over Low Power Wide Area (LPWA).
This enables organizations to promptly convey disaster-related information to people even in regions with limited, or no, telecommunication network available and when telecommunications are unavailable due to damaged ground infrastructure.

Cellular Communication

Smartphone

Exclusive Device

Michibiki

Satellite Channel

MT44 message

LPWA Communication

Control Station

Hazard Information

Receiver

Audio Converter

Horn speaker

Stationary Receiver

Early Warning System in Japan

NTT DaTa

Progress and way forward

2021

 1) Preparation for the project plan by Japan team and discussion on the plan in the national committee

 2) Reporting on the challenges of the early warning systems in Asia and the Pacific by local partners

2022

 1) Online meetings to introduce the project for 9 countries and 1 economy

 2) Development of official document for collaboration (MOC, Note Verbal, Concept Note)

 3) Preliminary on-site validation studies on the technology and the prototype devices

 4) Planning for on-site demonstrations

2023

 On-site demonstrations and validations in 9 countries and 1 economy

 Australia, Thailand, Fiji, Philippines, Malaysia, Indonesia, Cambodia, Nepal, Bangladesh,

 Chinese Taipei

2024

 Wrap-up and prepare for ODA projects

Contact: Koji Suzuki(Mr.), ADRC, ks-suzuki@adrc.asia

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