

The Government of Japan

Submission on possible topics for consideration at the RD18 (SBSTA64)

March 2026

Japan welcomes the opportunity to provide views on the eighteenth Research Dialogue (RD18) during the 64th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA64) which is in line with the mandate given in June 2025¹.

Japan believes that the RD18 is a valuable forum for exchanges on the latest research findings and the need for climate change research to inform climate action, facilitating the dialogue between Parties and regional and international climate research programmes and organisations.

For a full understanding of scientific research and needs from all regions, it is important to ensure that the presenters and contributors to the RD18 represent a wide geographical distribution.

Format for the RD18

To ensure that the Research Dialogue is engaging, inclusive and able to deliver impactful messages on latest climate science to the United Nation Framework Convention on Climate Change and the Paris Agreement, Japan would like to make the following suggestions:

- The dialogue should focus on several well-defined topics selected from submissions.
- Both in-person and virtual participation as well as plenary and breakout sessions should be available to expand the opportunity for participation.
- The poster sessions should be provided as a valuable space for Parties to engage with scientists on specific areas of latest scientific research.

Possible topics for the RD18

The Research Dialogue provides an important forum for technical experts to engage with policymakers to provide a better understanding of the current state of the science across a range of topics. Japan is pleased to submit the following possible topics for consideration: 1. model development in Japan for semi-real-time greenhouse gas (GHG) monitoring, 2. abrupt climate shifts in Earth system models and 3. refinements to Japan's early warning system.

All these topics align with the purpose and long-term goals of the Paris Agreement. Japan looks forward to further in-depth discussions in these areas at the RD18.

1. Model development in Japan for semi-real-time GHG monitoring

Background: The need to rapidly monitor atmospheric GHG variations, distinguish anthropogenic from natural sources, and evaluate changes in anthropogenic emissions is growing in policy formulation and the implementation of countermeasures.

Japan has a rich history of independently developing various atmospheric and terrestrial GHG models to utilize data from the Asia-Pacific observation network and satellites. These models (NICAM, MIROC, and VISIT) are being improved and accelerated under the Japan MOE-funded S-22 project.

Near-real-time assessments of atmospheric GHG concentrations and emissions significantly contribute to WMO G3W, the Second Global Stocktake, detection of overshoot, and various IPCC reports.

¹ Paragraph 14, FCCC/SBSTA/2025/L.5 <https://unfccc.int/documents/648220>

2. Abrupt Climate Shifts in Earth System Models

Recent observational data, such as those on global average temperatures, suggest that climate change may be progressing at a greater pace than previously anticipated. Understanding the causes of this rapid climate change, grasping the various changes in associated climate elements, and identifying and predicting possible future abrupt changes have become more critical than ever.

The Amazon rainforest and the Antarctic cryosphere are often cited as potential elements of abrupt climate shift triggered by anthropogenic climate change. This report details (1) analysis of Amazon dieback projected under a high emission scenario continuing into the 23rd century, using models participating in the international climate projection project CMIP6, and (2) model analyses of the causes behind Antarctic sea ice fluctuations, which recorded a sharp decline in 2016 followed by several years of record-low levels.

3. Refinements to Japan's Early Warning System

Global warming has brought more heavy rain in Japan in recent years. Hence disaster prevention measures need to be taken in light of the climate change impact. The IPCC's Sixth Assessment Report recognized the importance of the provision of early warning systems for disaster risk reduction as a climate change adaptation option.

Japan had established and reinforced an early warning system that consists of a variety of weather warnings, advisories, and real-time risk maps for floods, heavy rain, landslides and storm surges, etc. However, the challenge has been to deliver this information more clearly to motivate individual residents to take disaster prevention actions. To address this issue, the system has been reconstructed, incorporating the advice of external experts and stakeholders from government and private sectors, and it will be implemented from May 2026.

The new system includes alert levels 1 – 5 in information titles to show what actions residents would be required to take. Furthermore, based on recent advances in river water level observation and forecasting techniques, the new system includes emergency warnings for floods. In addition, supplementary information accompanying warnings and advisories will be categorized into two types: information providing rapid alerts about the possibility of record-breaking heavy rain or tornadoes, and information providing comprehensive explanations of the meteorological conditions. This will improve understanding of information recipients.

Japan is working to raise widespread awareness of the new early warning system so that it becomes firmly established in society and is used effectively, thereby addressing the increased risk of disasters associated with climate change.

Japan can show a case of refining an early warning system through collaboration among government bodies, private sectors and academics to adapt to the impacts of climate change.