Development of Climate Risk Management Techniques for Agriculture at JMA

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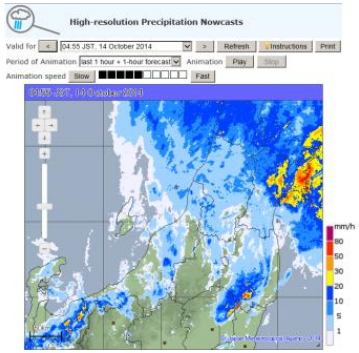
Fifth Session of the East Asia winter Climate Outlook Forum (EASCOF-5)
8 – 10 November 2017, Tokyo, Japan

JMA Weather/Climate information

Today Tomorrow One week One month Three month

Nowcasts



Warnings/
Advisories

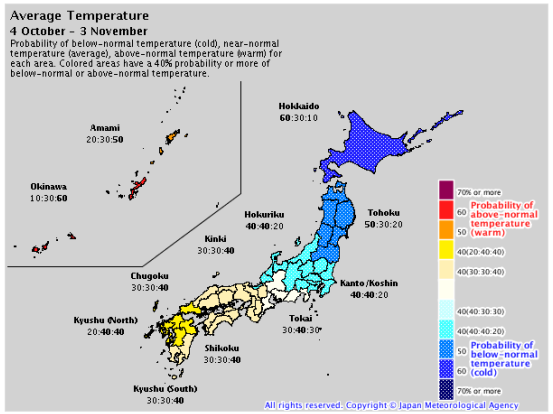
Weather forecasts

One-week forecasts

JMA forecasting services cover a wide range of meteorological information.

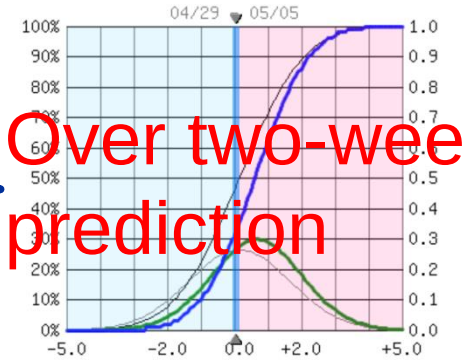
Updated at 05:00 JST, 10 March 2015

Date	10 Tue	11 Wed	12 Thu	13 Fri	14 Sat	15 Sun	16 Mon
Tokyo Daily Forecast							
Probability of Precipitation (%)	-/10/20/10	0/10/10/0	10	20	20	50	40
Reliability	/	/	A	A	A	C	C



Early warning information on extreme weather

One-month forecasts



Over two-week prediction

Seasonal forecasts/
El Niño outlook

Outline

1. Introduction and motivations

2. Pilot Project to Develop Climate Risk Management Techniques for Agriculture

3. Developed Products

4. Summary

Introduction and motivations

JMA expect its climate information to be used practically in agricultural sector for **assessment** the influence of extreme weather and climate for the **adaptation**.

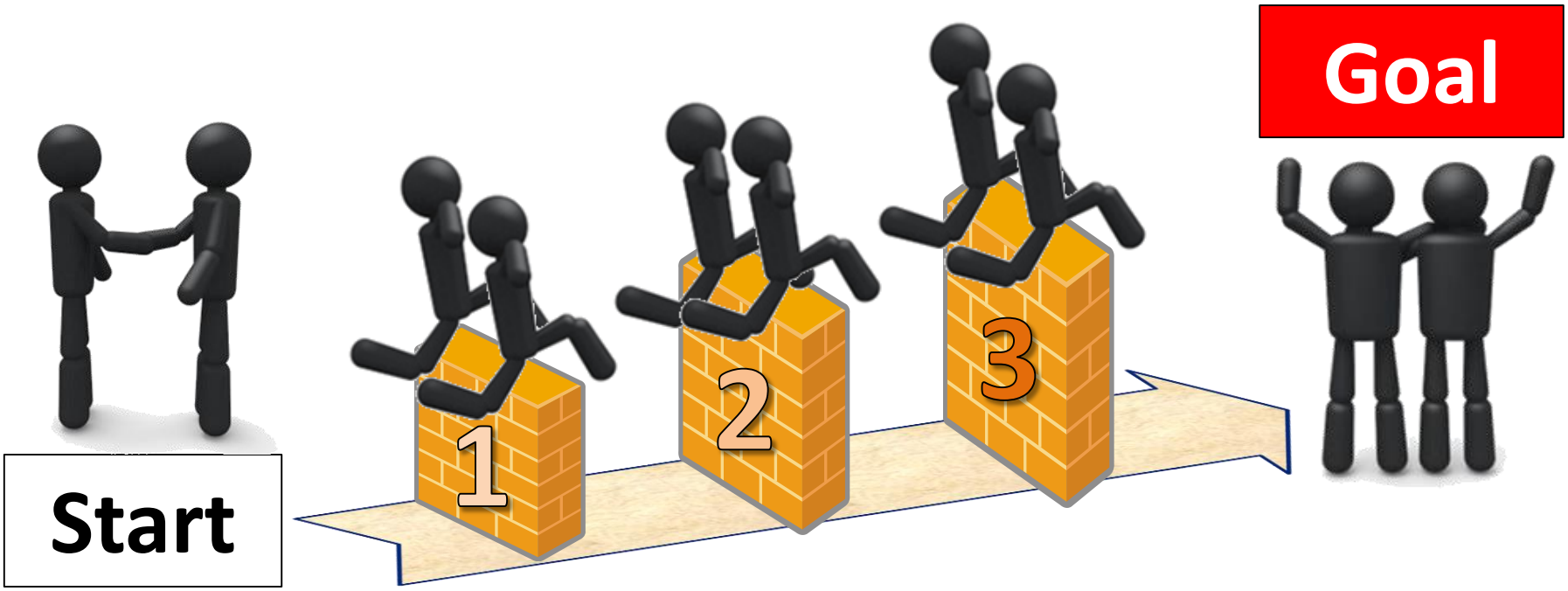
Climate risk management process

JMA takes activities to develop best practices of the use of long-range forecasting in collaboration with user-sector organizations.

JMA and the Agricultural Research Institute (National Agricultural and Food Research Organization:NARO) have Pilot Project to “Develop Climate Risk Management Techniques for Agriculture” from 2011 to 2016※.

※ In 2016 the summary of the detailed report of these activities were published (in Japanese).
http://www.data.jma.go.jp/gmd/risk/nogyo_hokoku.html

Key processes of Pilot Project



1. Dialogue & Sharing knowledge

2. Joint technology development

3. Expansion of best practices

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Wheat Calendar in Japan

dry season → wet season

Nov. ・・・ | Apr. | May | June

plant

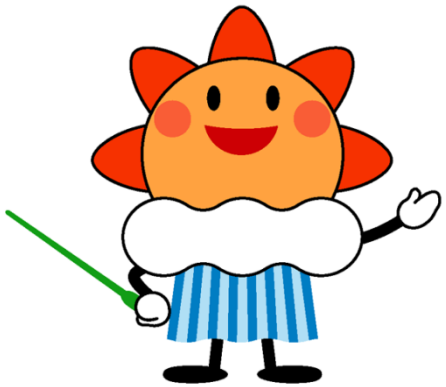
- In spring（Mar.～May）, it has gradually wet toward summer.
- Wheat come into flower around May.
- Farmer have to reserve a herbicide duster over two weeks before.

Risk of red mold disease of wheat raise

Photos；http://www.naro.affrc.go.jp/org/warc/tenjin-field/index.html

Dialogue & Sharing knowledge

Matching



reserve a herbicide duster

over two weeks

prediction

JMA

Provider

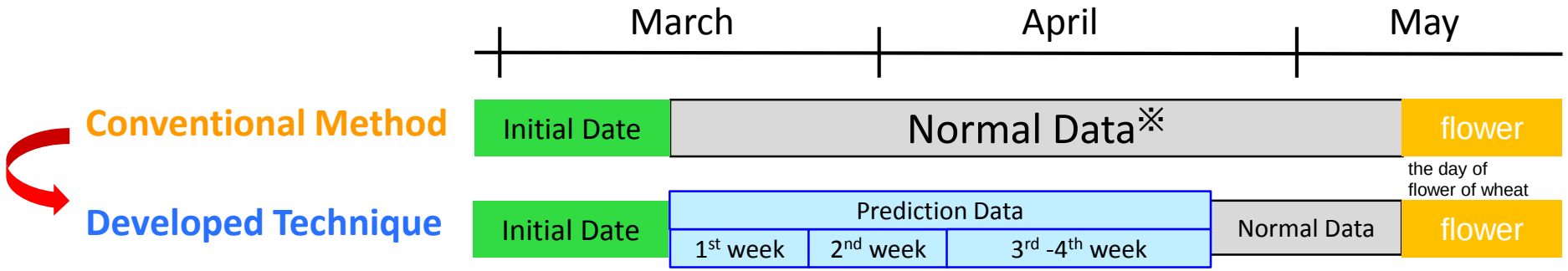
NARO

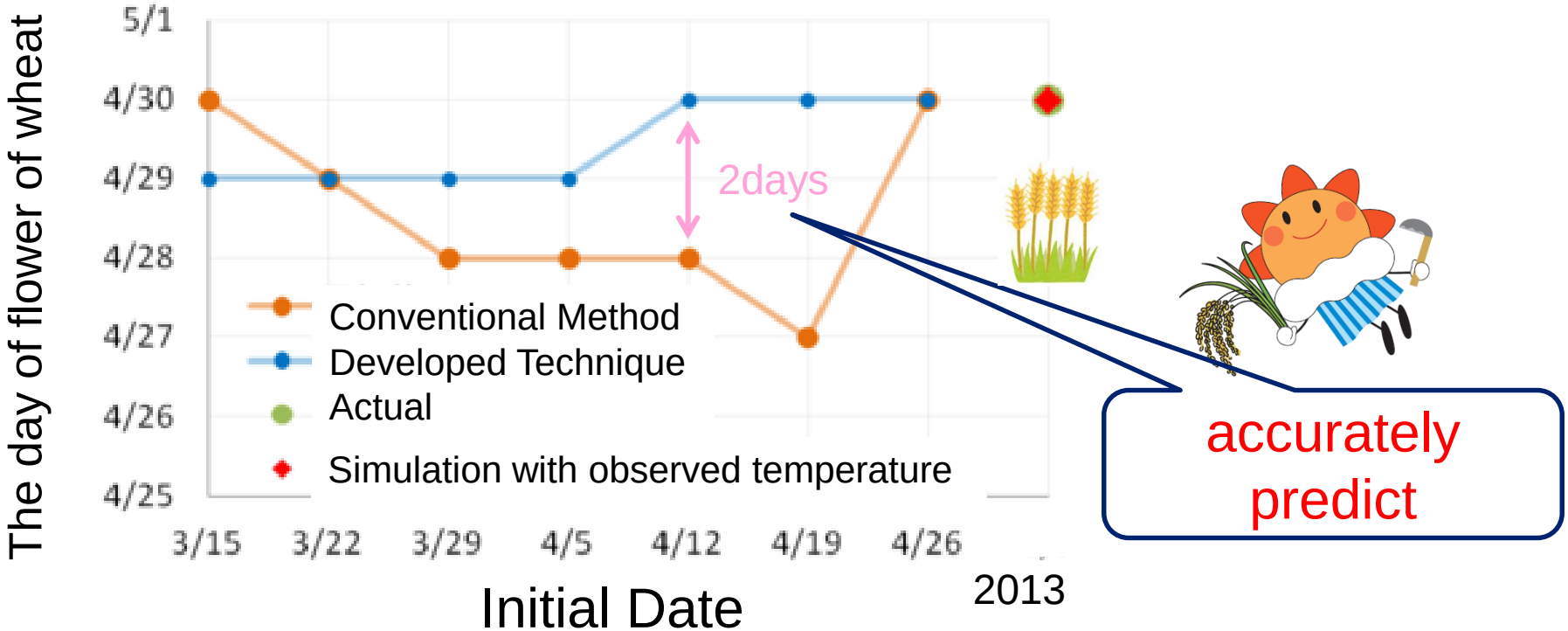
User/Intermediary

Agricultural Research Institute

Collaboration!

Joint technology development





Comparison of Conventional Method and Developed Technique

※Normal data is based on the cumulative annual average over 30 years between 1981 and 2010

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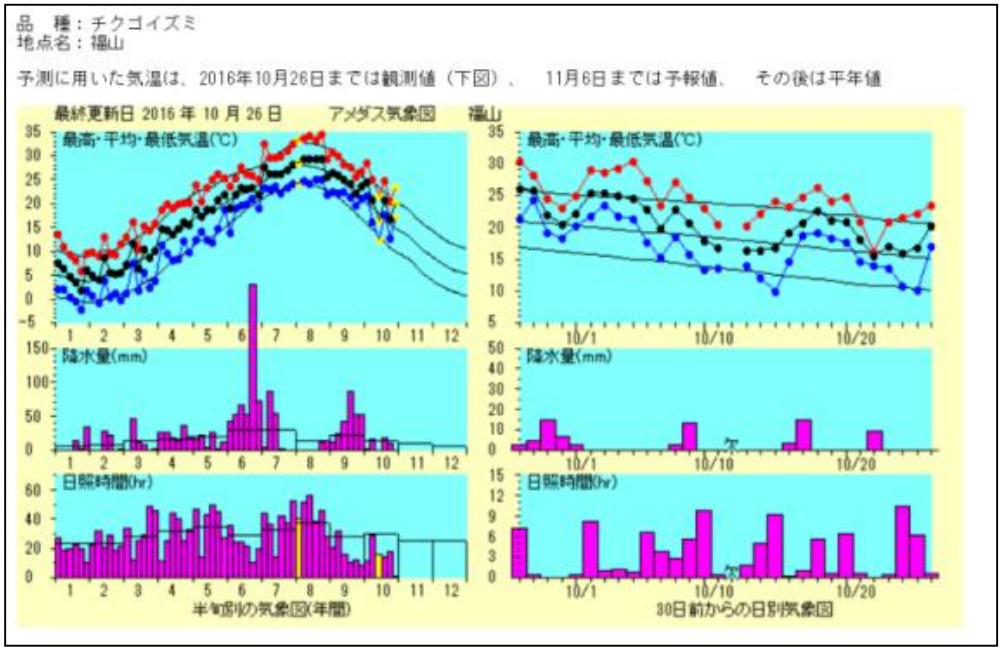
Developed Products

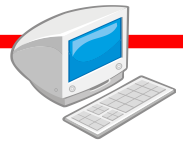
Website



http://www.naro.affrc.go.jp/org/warc/meteo_fukuyama/WEB/wheat/index_mugi.html

Agricultural Research Institute (NARO)

Tailored climate information



Farmers

Action!

Farmers can obtain the information at their desired points through the internet.

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JMA conducted pilot project with agricultural research Institutes（NARO）all over Japan.

there were various technical developments.

Hokkaido
Beating potatoes harmful for field condition

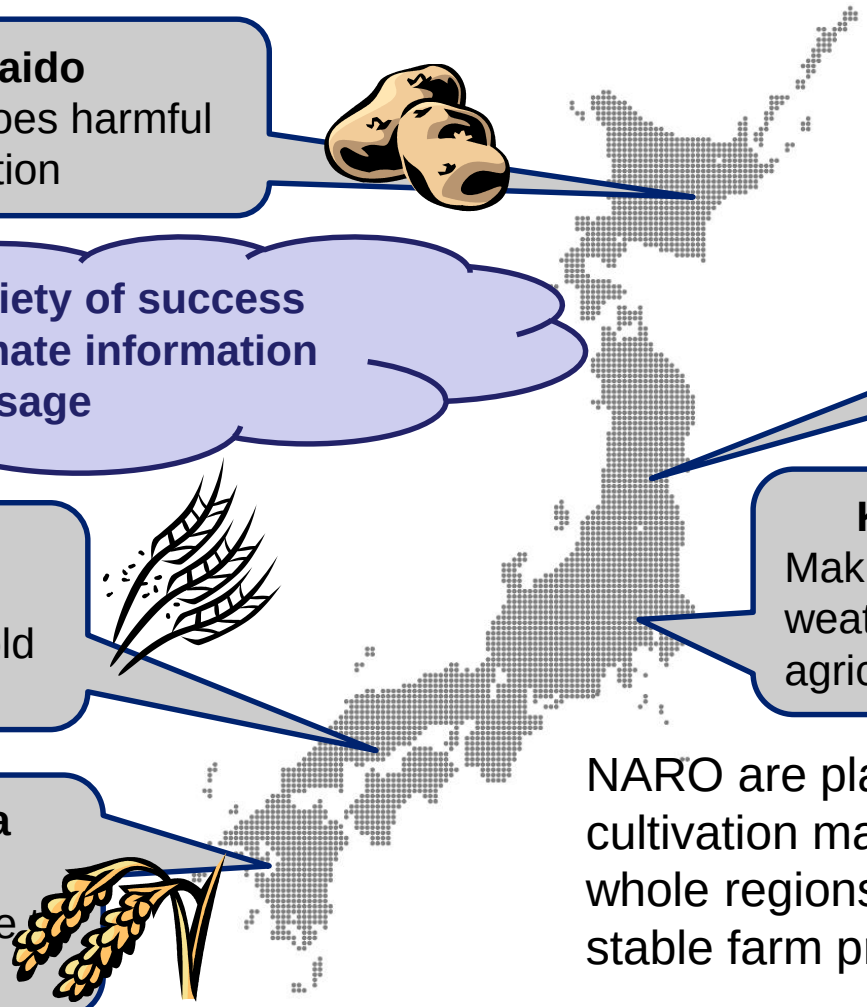
Create a variety of success cases of climate information usage

Tohoku
2-weeks ahead Temperature prediction for rice crops .etc

Kinki-Chugoku-Shikoku
Prediction of Red mold disease of wheat

Kanto (Central)
Making data set of weather information for agriculture .etc

Kyushu-Okinawa
Prediction of High-Temperature Damage Rice Grain



NARO are planning to launch the cultivation management systems for whole regions in Japan, to supply stable farm products.

Expansion of best practices

JMA makes effort to continue dialogue with local agricultural organization to promote a use of climate information in agricultural decision-making.

Meteorological Office

Climate Services

local agricultural organization
（research center and
government agricultural association)

Farming information with agricultural extension worker

Farmers

- Dialogue & Sharing knowledge
- Joint technology development

dialogue with local agricultural organization

They usually have close contact with farmers in their territory

Thank you so much for your kind attention.