

International Workshop on Post-Accident Food Safety Science, 8-10 November 2016, Fukushima Japan

Session No: 1.1

Radiological Release Caused by the Accident, and Status of Contaminated Areas

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(welcome our web site: <http://www.nsr.go.jp/english/index.html>)

(November 2016)

Comprehensive Radiation Monitoring Plan

(Enacted on April 1st, 2016)

http://radioactivity.nsr.go.jp/en/contents/12000/11110/24/274%20_20160401.pdf.pdf

Following the monitoring plan named “Comprehensive radiation monitoring plan”, a series of environmental radiation levels has been monitored and published continuously.

1. Aims

2. Role and Tasks (Which organization initialize monitoring, and for which field)

3. Monitoring subjects / areas (Monitoring tools and targets)

Dose rate & accumulative dose

Dust in air

Fallout and tap water

Land sediment, Index-Plants

Underground water and well water

Sea area

Schools

Ports, airports, parks and sewerage

Natural parks

Wastes

Cultivated soils, forest, pasture and irrigation reservoirs

Food stuff



Monitoring information of environmental radioactivity level

Monitoring data after Fukushima Daiichi NPS accident are
available in this URL:

<http://radioactivity.nsr.go.jp/en/>

The screenshot displays the homepage of the Nuclear Regulation Authority (NRA) of Japan. The page title is "Monitoring information of environmental radioactivity level". The navigation menu includes "Home", "Monitoring plans", "Monitoring results", "Report", "Database / Distribution map", and "Others". The main content area features a large image of a helicopter in flight, with the heading "Airborne monitoring". Below the heading, a text block states: "The relevant ministries (including the NRA) regularly conduct airborne monitoring on an area in and around Fukushima Prefecture, and publish the maps of air dose rates." A green button with a right-pointing arrow and the word "MORE" is positioned below the text. At the bottom of the page, there is a horizontal carousel of five small images: a person in a life vest on a boat, a person in a lab coat working with equipment, a map of Fukushima Prefecture, a person in a lab coat working with equipment, and a map of Fukushima Prefecture. The carousel is flanked by left and right arrow buttons.

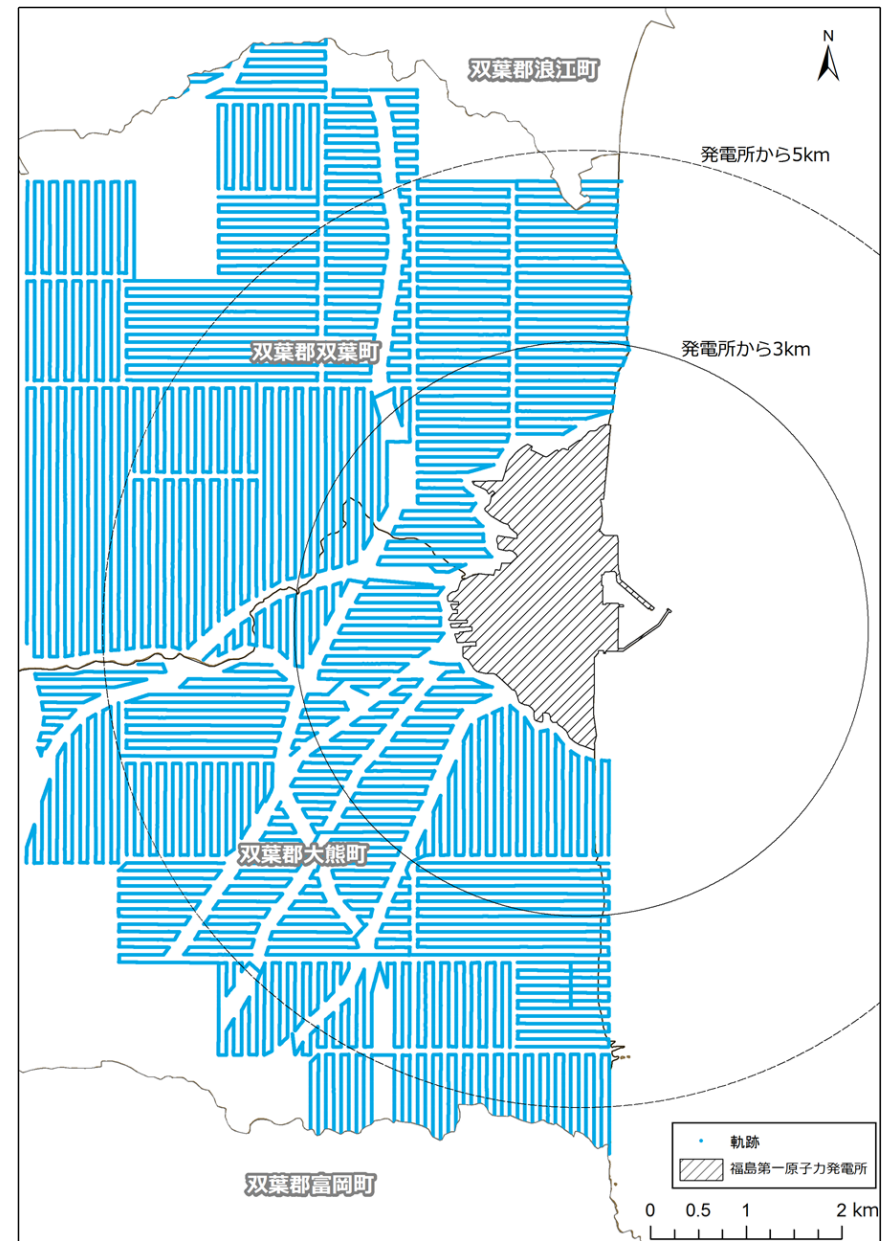


Surveys with a radio-controlled helicopter (an unmanned helicopter), equipped with a LaBr₃(Ce) scintillation detector



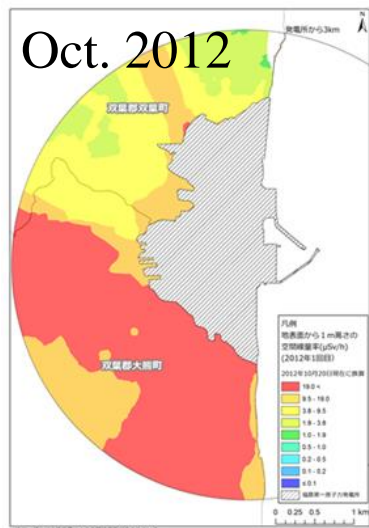
無人ヘリ搭載用放射線測定器の概要

- 検出器 (LaBr₃(Ce)検出器)
(38mm φ × 38mmH × 3本)
 - 検出範囲 : 0.01 ~ 0.1mSv/h
 - 検出エネルギー : 60keV以上
 - データ収集周期 : 1回/秒
 - 測定器重量 : 約 8.0kg (筐体含む)

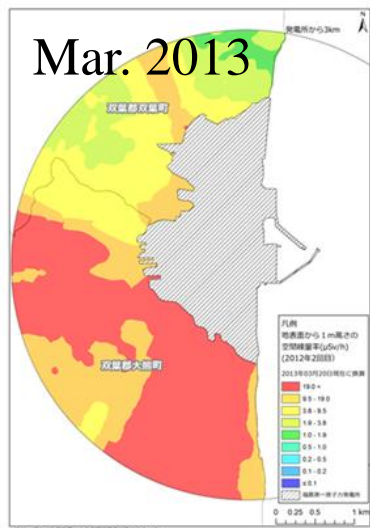


An example of flight paths with in the 5km area.

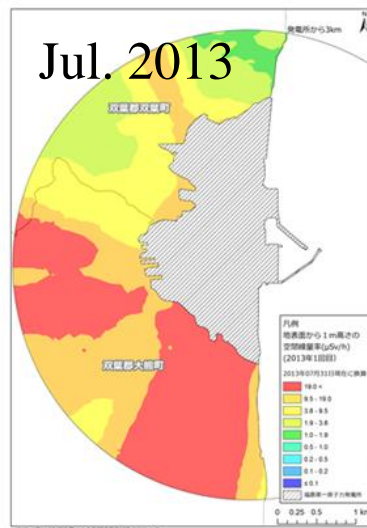
The time course of the environmental radiation rates ($\mu\text{Sv/h}$) at the 1m above the ground obtained by a radio-controlled helicopter (Oct. 2012 to Oct. 2015)



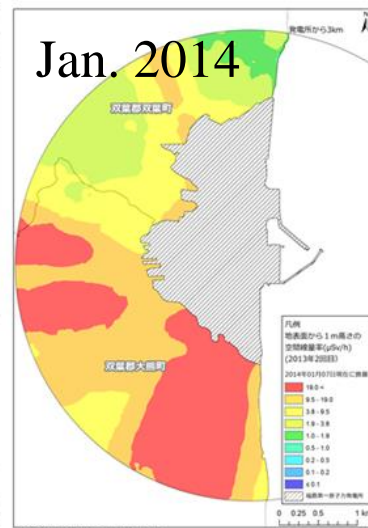
第1回 2012年10月20日に減衰補正



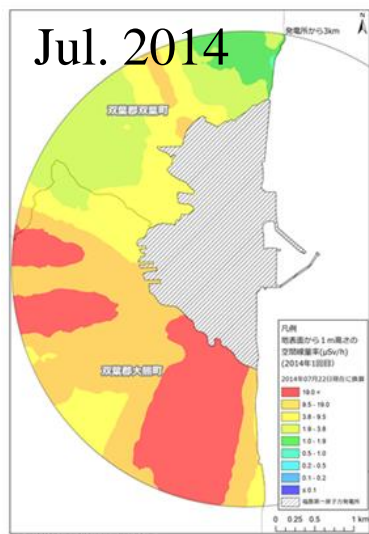
第2回 2013年3月20日に減衰補正



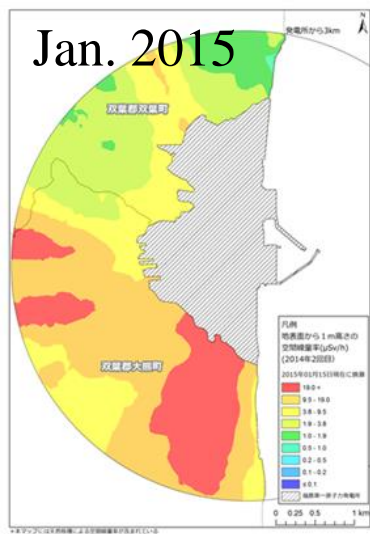
第3回 2013年7月31日に減衰補正



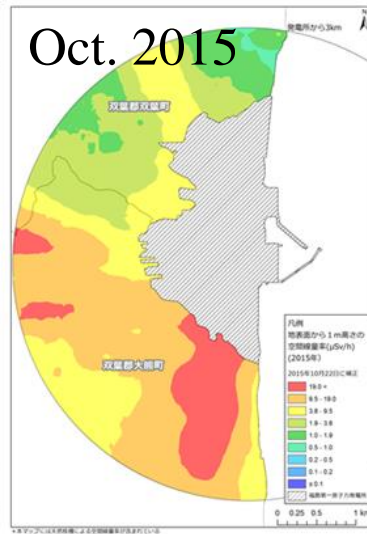
第4回 2014年1月07日に減衰補正



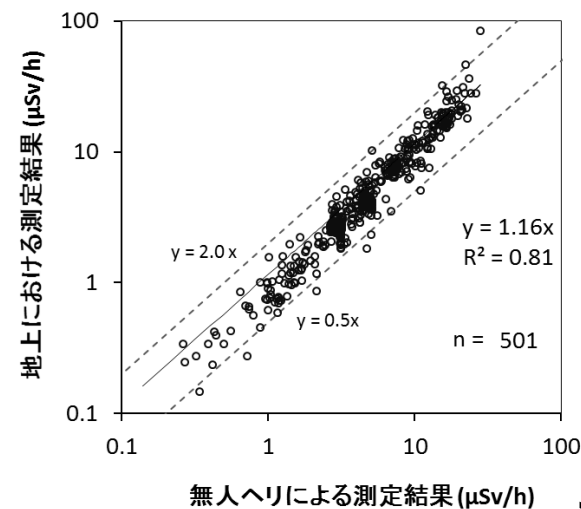
第5回 2014年7月22日に減衰補正



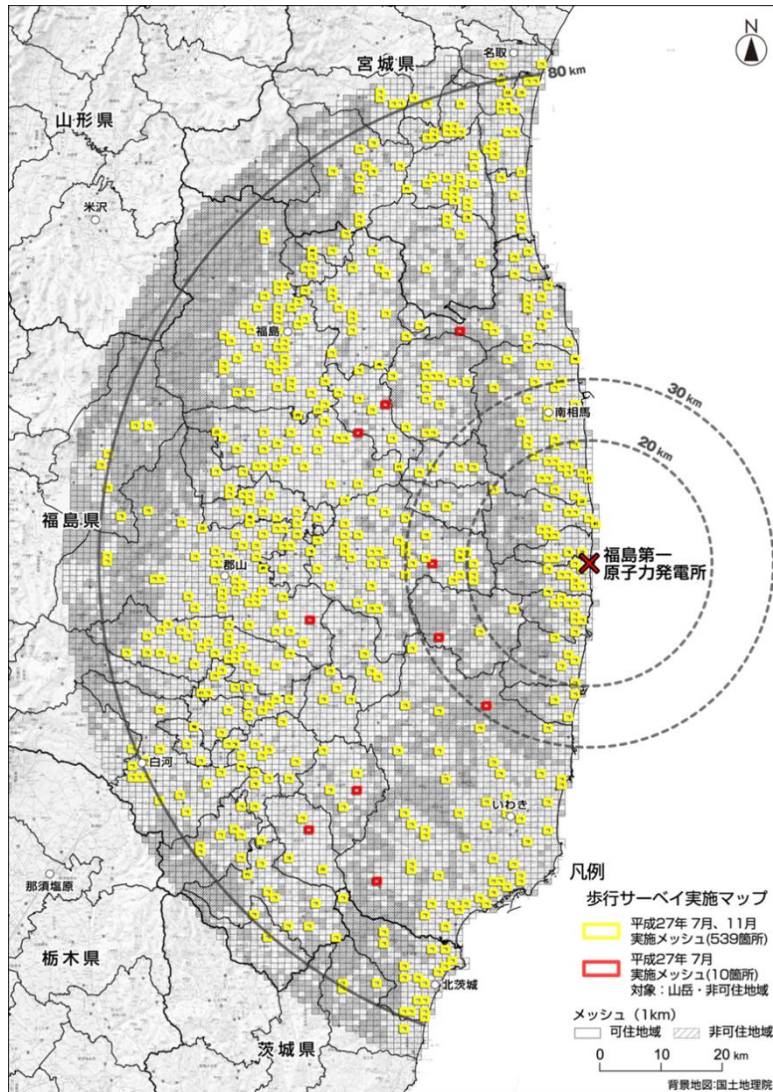
第6回 2015年1月15日に減衰補正



第7回 2015年10月22日に減衰補正



Walking survey, it is a type of complementary environmental radiation survey with vehicle-borne and Air-borne surveys.

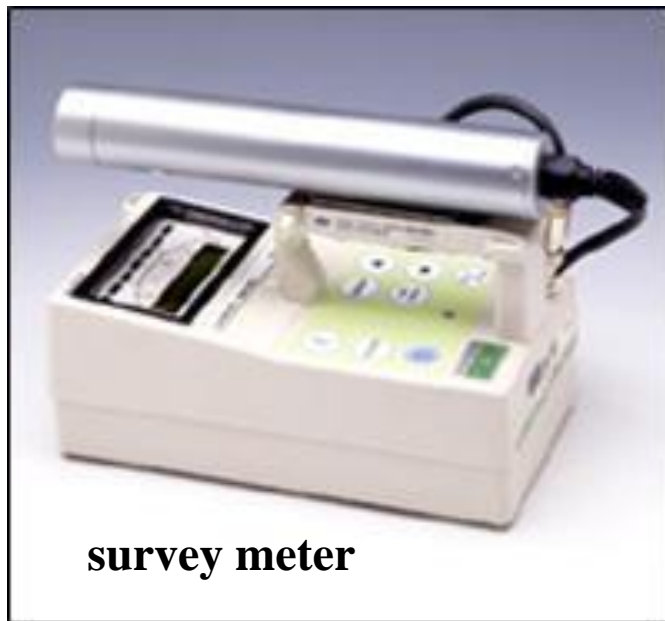


Environmental radiation detectors
(KURAMA-2 system)



Survey meter monitoring

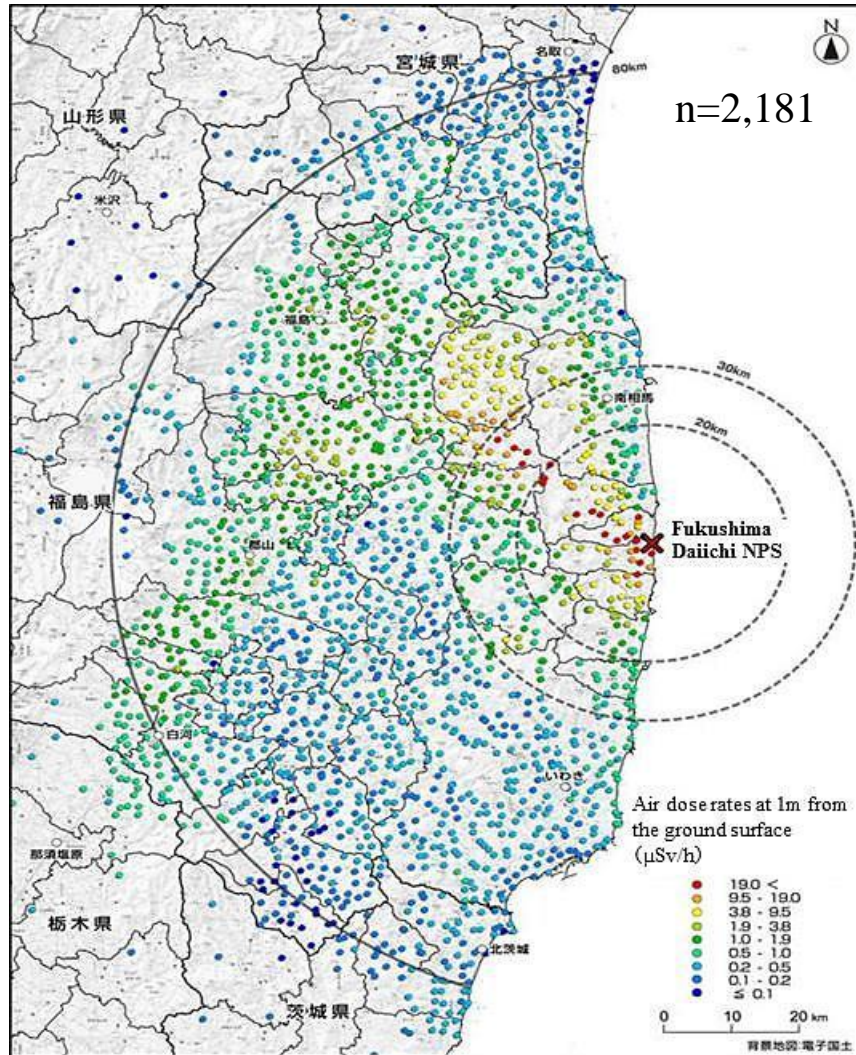
Monitoring is conducted by survey meters on the flat area which has not been disturbed by human activities as shown in the following photos.



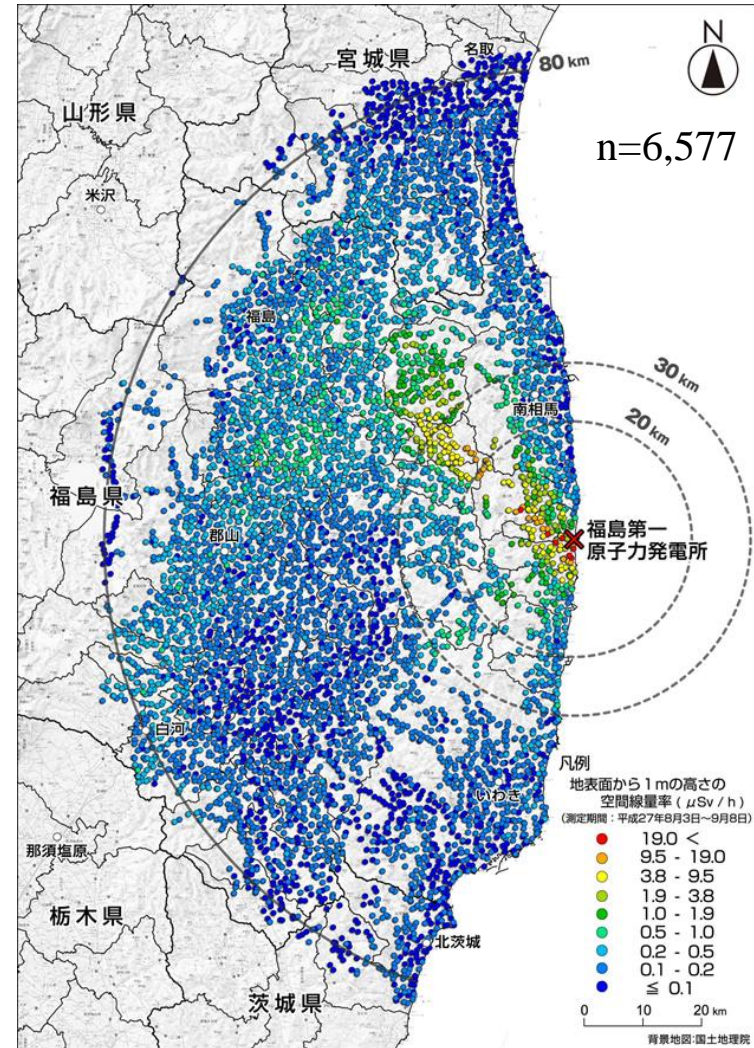
survey meter



Air dose rates measured by survey meters



3 months later
(4 June to 8 July, 2011)



53 months later
(3 August to 8 September, 2015)

n: number of the measured points

Vehicle-borne survey

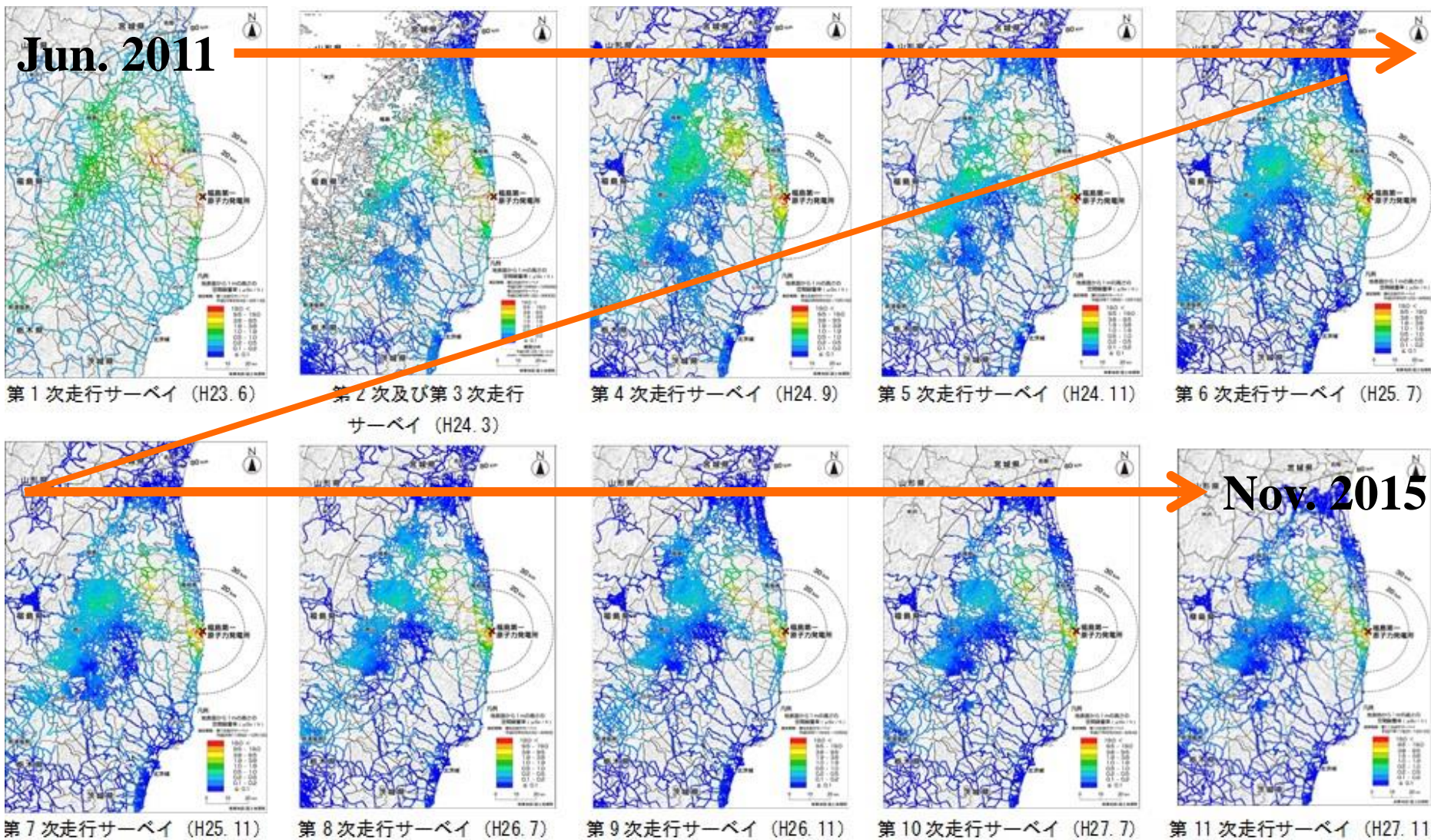
Monitoring is conducted by mobile type radiation detectors (KURAMA-2 system) equipped in vehicles.



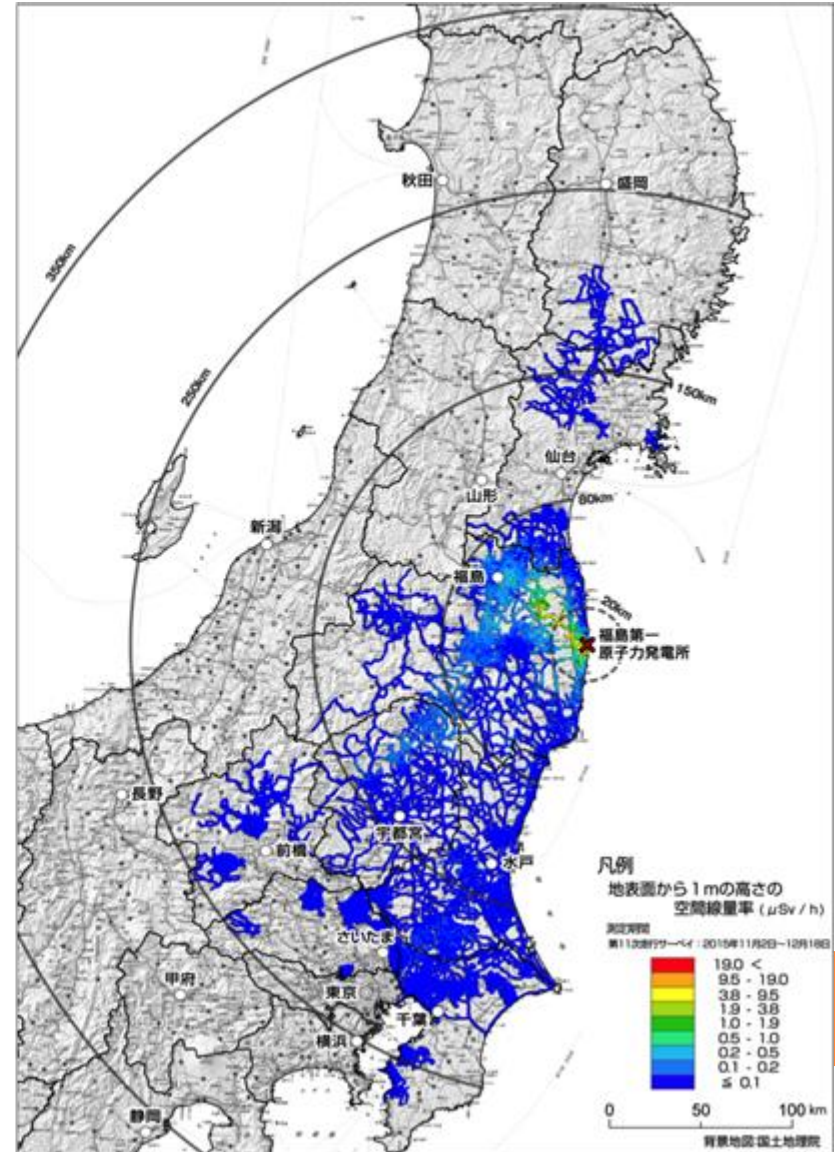
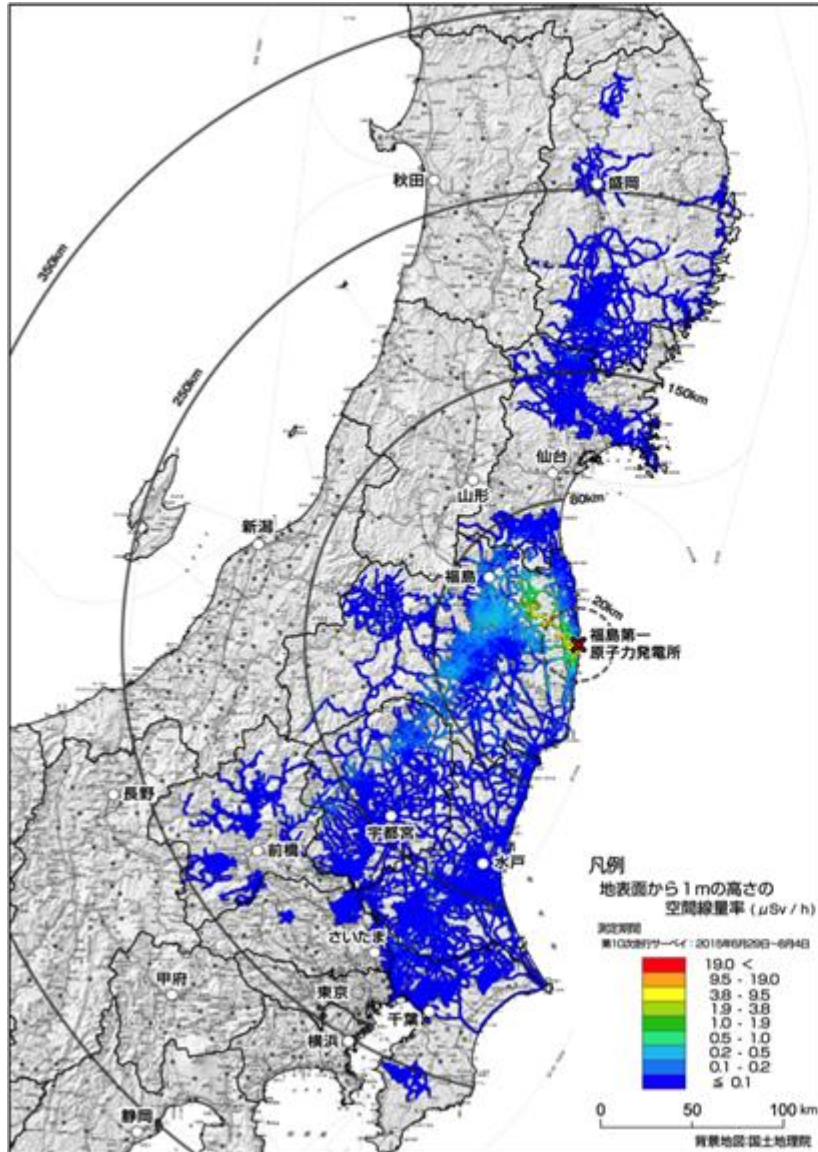
Environmental radiation detectors
(KURAMA-2 system)



The time course of the environmental radiation rates ($\mu\text{Sv/h}$) at the 1m above the ground obtained by the vehicle-borne surveys (June 2011 to November 2015)

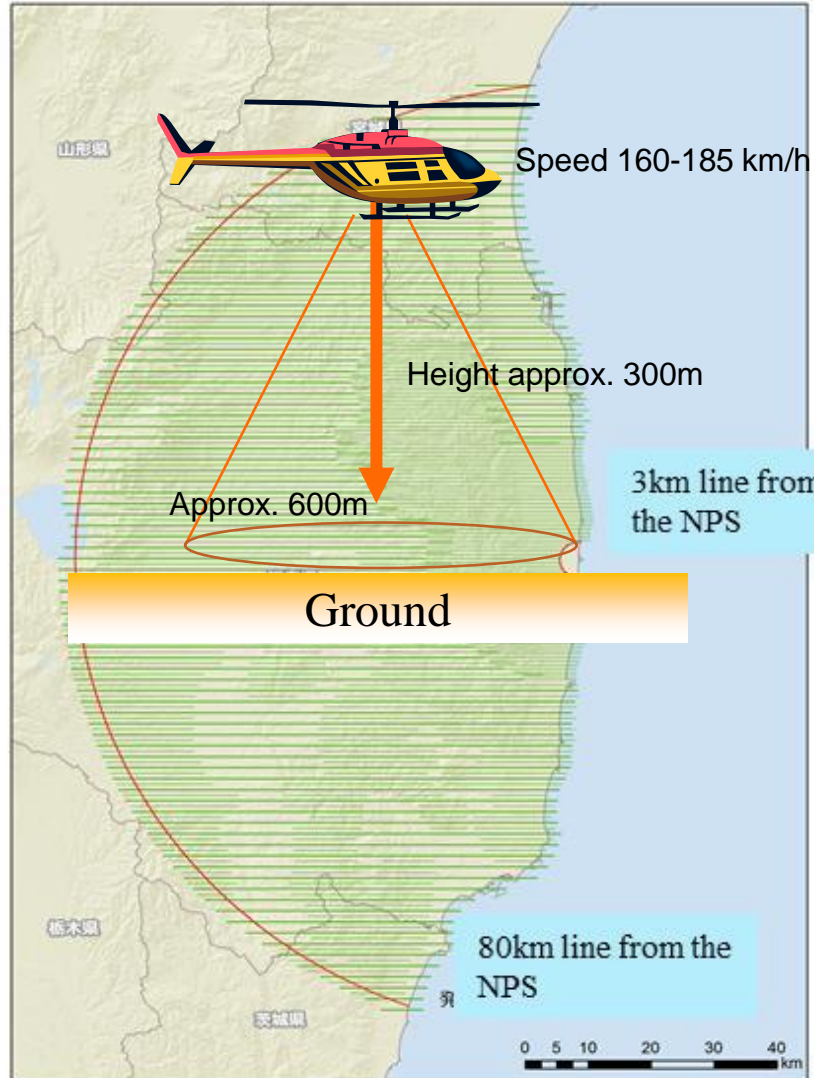


The most recent data for environmental radiation rates ($\mu\text{Sv}/\text{h}$) at the 1m above the ground obtained by the vehicle-borne surveys (Jun.- Dec. 2015)



Air-borne measurement for air dose rate

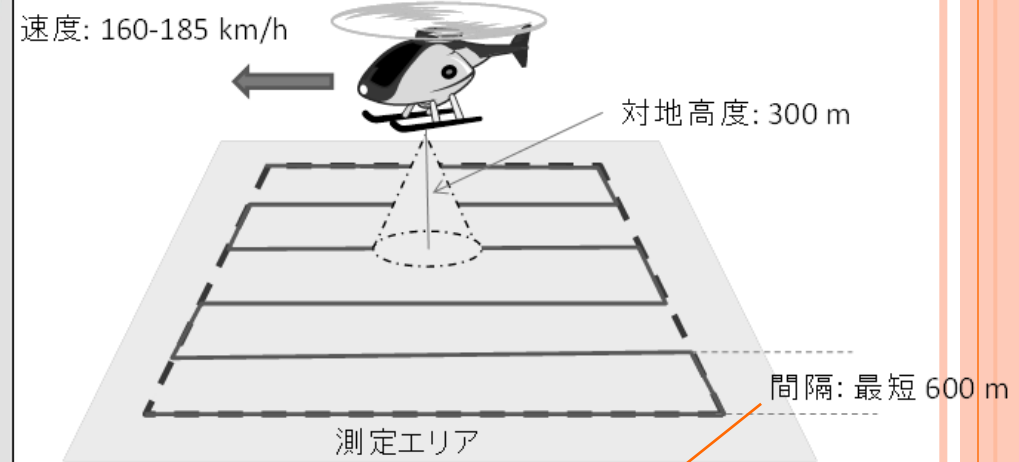
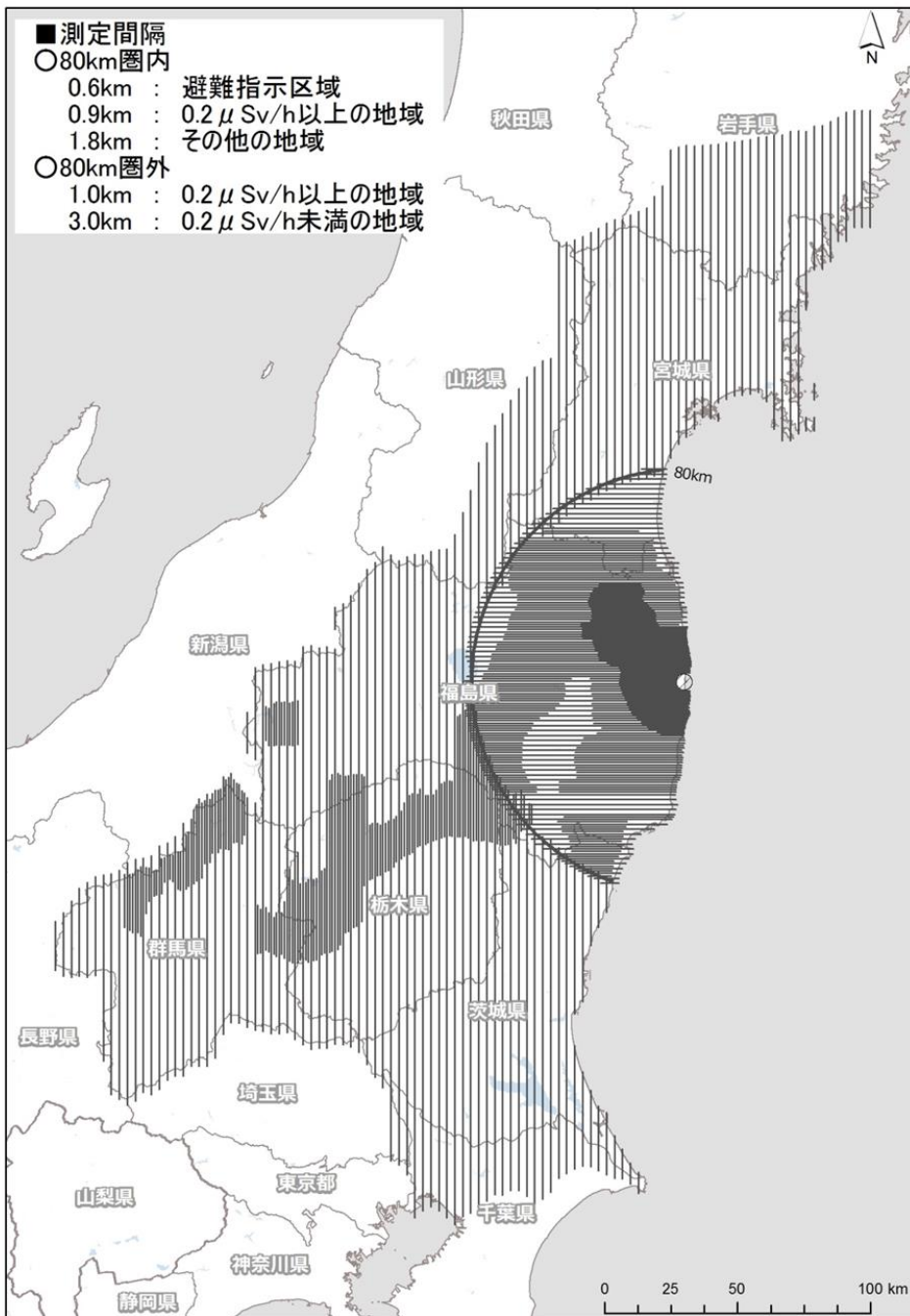
Example topic of scientific report (1)



Gamma rays from the ground are detected by NaI scintillators installed in an helicopter.
Flying approx. 300m above the ground with every 1 second.



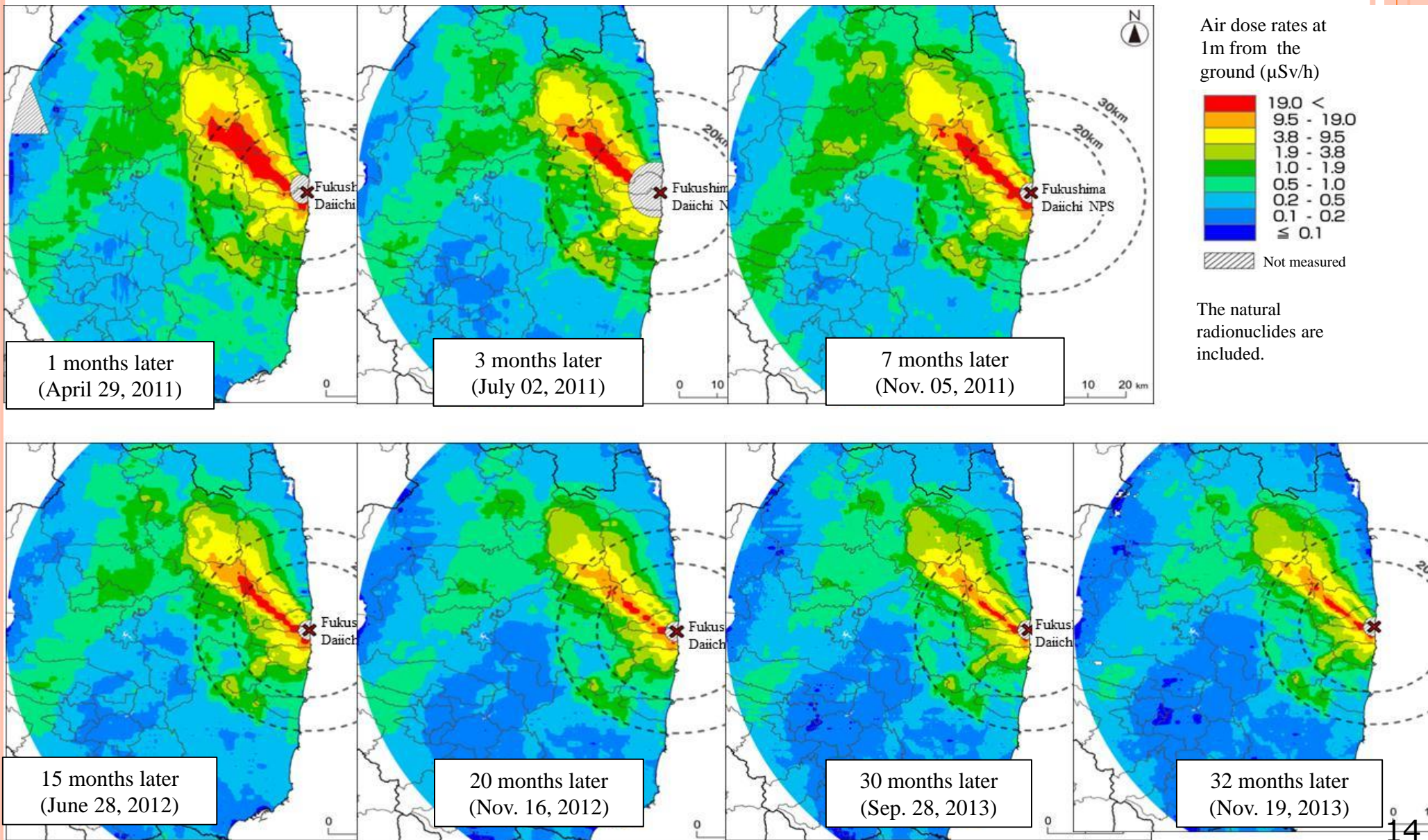
AS 332
アエロスパシアル社製



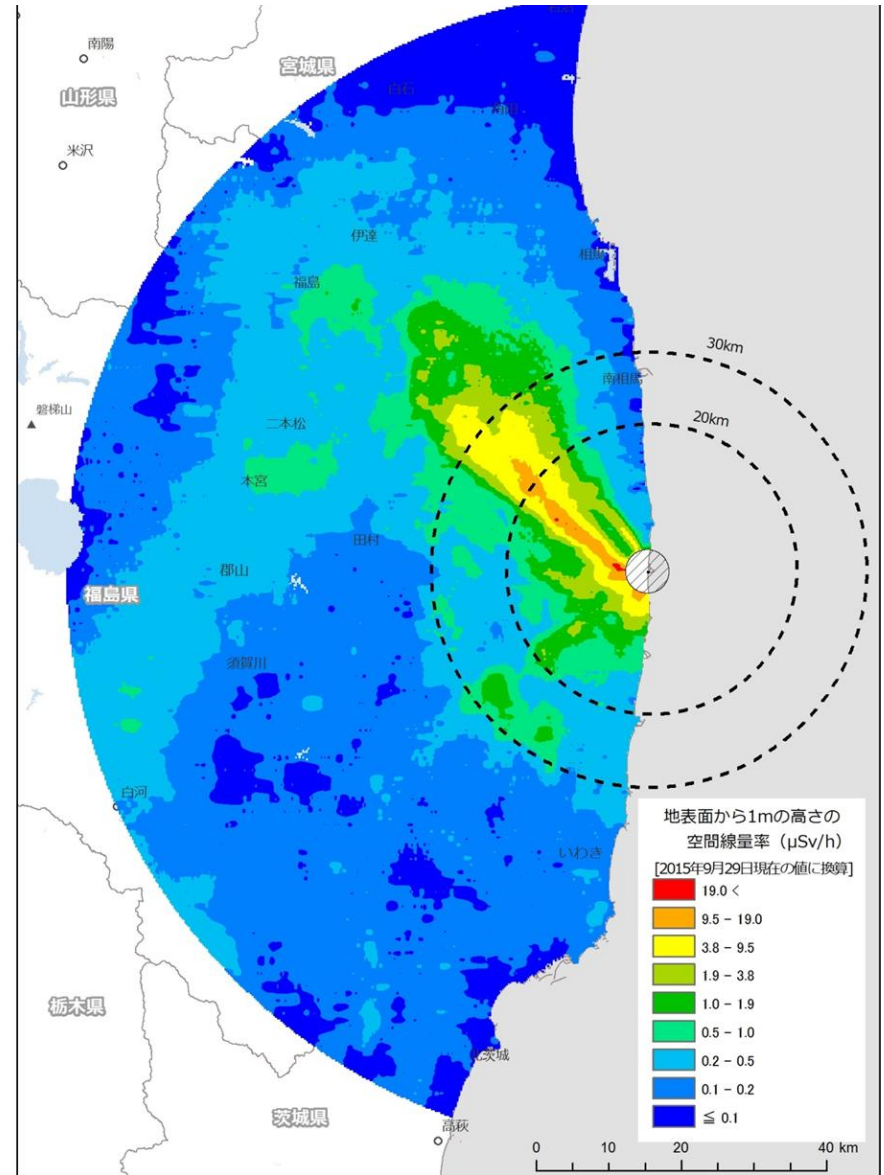
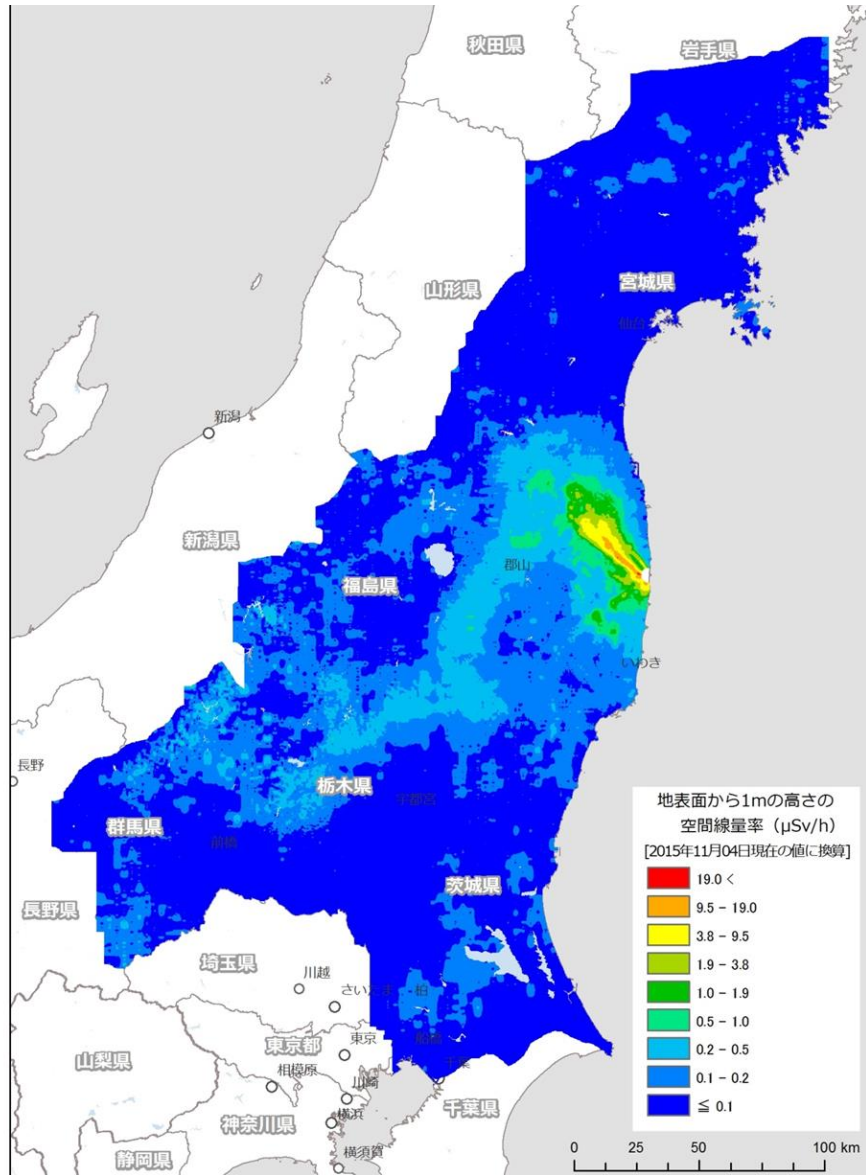
<Flight Intervals>

- 1.85 km: Area of $< 0.2 \mu\text{Sv/h}$ (measured previously);
- 0.93 km: Area of $\geq 0.2 \mu\text{Sv/h}$ (measured previously) (except Evacuation Directed Zones);
- 0.62 km: Evacuation Directed Zones

Air dose rates measured by helicopter within 80km zone



The most recent data for air dose rate ($\mu\text{Sv/h}$) at the east Japan and within 80km zone approx. 53 months after the accident (at Sep. – Nov. 2015)



Summary

With respect to the trend of the environmental radiation monitoring results conducted in the regions around FDNPS;

The air dose rates around FDNPS have continuously been decreasing since May 2011 (after the accident at Fukushima Daiichi NPS on March 11, 2011).

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