Activities of Resurrection of Fukushima

SEPTEMBER 14, 2012
SPECIFIED NON-PROFIT CORPORATION
“RESURRECTION OF FUKUSHIMA”
(FUKUSHIMA SAISEI NO KAI)

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About Iitate

Distances From Major Points:

- From Tokyo 300km
- From Fukushima Daiichi Nuclear Plant 30-50km in the North West Direction

Village Geography:

East to West 15.2km, North to South 16.8km

Area 230.13km^2

Altitude 220m-600m

Climate:

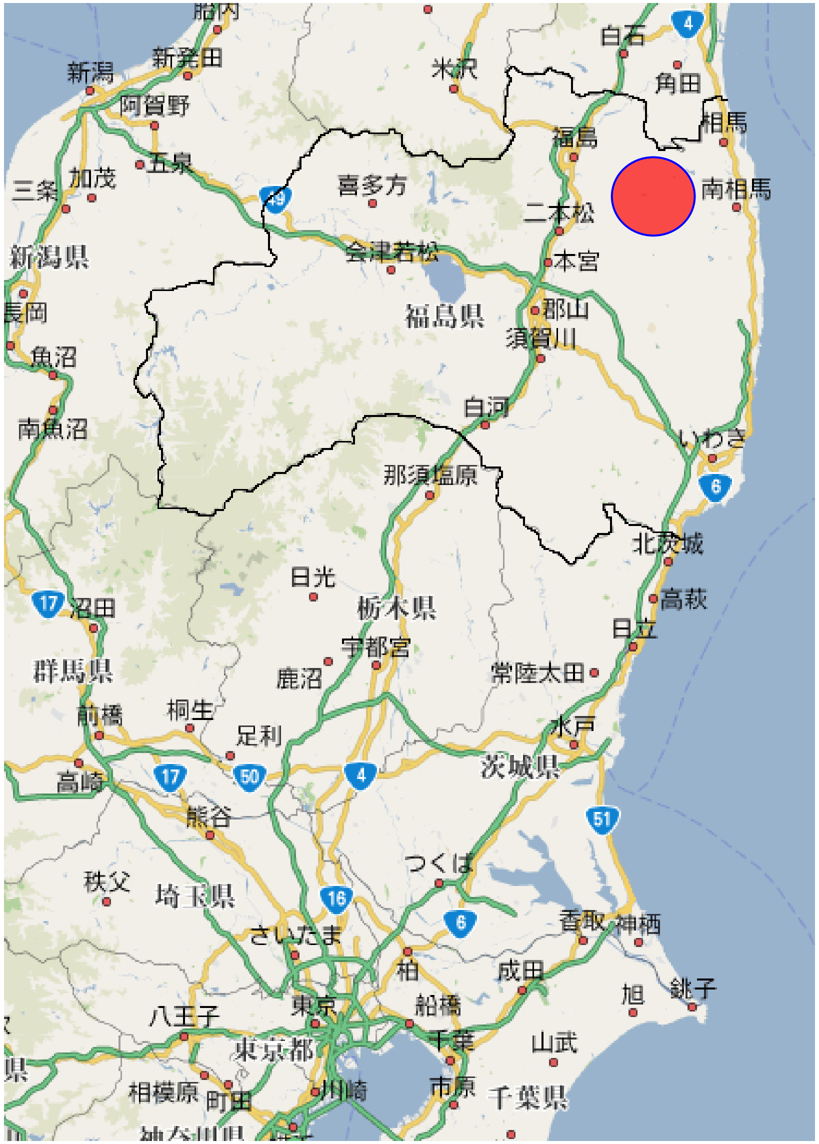
Very Cold in Winter with Little Snow

Demographics:

Population 6,588 (Aged Over 65: 1,904)

Number of Households 1,707

Number of Households After Evacuation is Over 2,700



白石
角田
相馬
南相馬
新潟
新発田
米沢
阿賀野
福島
五泉
三条
加茂
喜多方
二本松
新潟県
会津若松
本宮
長岡
福島県
郡山
須賀川
魚沼
南魚沼
白河
いわき
那須塩原
北茨城
高萩
日光
栃木県
日立
沼田
宇都宮
群馬県
鹿沼
常陸太田
前橋
桐生
足利
水戸
高崎
茨城県
熊谷
つくば
秩父
埼玉県
香取
神栖
さいたま
柏
成田
旭
銚子
東京
船橋
八王子
千葉
山武
東京都
相模原
町田
川崎
市原
千葉県

Predominant Industry in Iitate - Agriculture

Operations of Multiple Products Such as Rice, Livestock, Highland Vegetable and Flowers

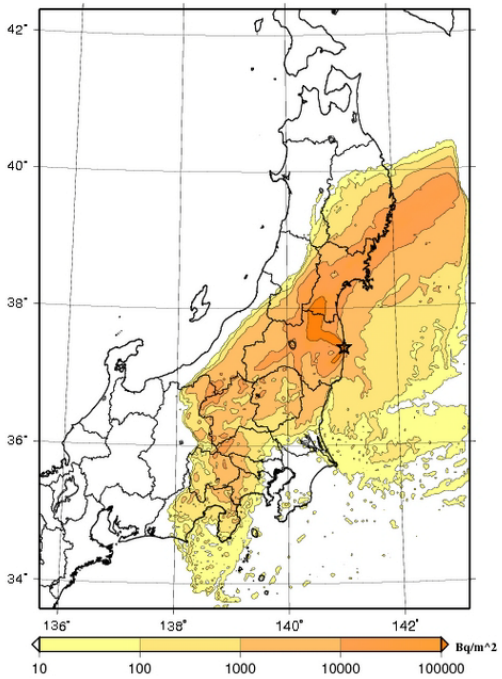
Number of Japanese Cattles 2500
（High Grade Beef Marked Under the Brand of “Iitate-gyu” ）

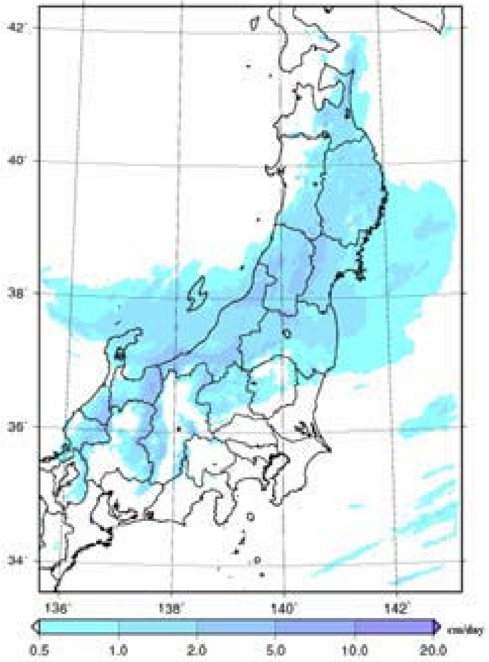
Farm Land for
- Rice and Vegetable Crops
  2500 ha
- Grass Crops 1970 ha

How Evacuation Took Place

March 11, 2011	Nuclear Plant Accident at TEPCO Fukushima Daiichi
March 15, 2011	Radioactive Substances, Which had been Blown up in the Air of Iitate by South-East Wind, Fell Over Iitate with Rain and Snow
March 30, 2011	IAEA Advised Government of Japan to Carefully Assess the Evacuation of Iitate
March 31, 2011	The government of Japan showed negative opinions on enlargement of evacuating zone.
April 11, 2011	The Government Released the Policy to Designate Iitate Village as “Planned Evacuation Zone”
April 22, 2011	Designated as “Planned Evacuation Zone”
June 2011	Evacuation of the Entire Village Completed
July 17, 2012	Government Reorganized the Zones to “Difficult-to-Return Area”, “Area with Restricted Residency” and “Area Preparing for the Lifting of Evacuation Orders”

SPEEDI (System for Prediction of Environmental Emergency Dose Information) data


42°
40°
38°
36°
34°
136°
138°
140°
142°
Bq/m^2
10
100
1000
10000
100000


42°
40°
38°
36°
34°
136°
138°
140°
142°
0.5
1.0
2.0
5.0
10.0
20.0

http://nsed.jaea.go.jp/fukushima/data/20110906.pdf

Left: Fallout Cs137 evaluated by SPEEDI (9:00 Mar. 15 – 9:00 Mar. 16)
Right: precipitation amount (9:00 Mar. 15 – 9:00 Mar. 16)

SPEEDI data was not published at all until March 23, 2011.

What is “Resurrection of Fukushima”?

Aim

To reconstruct the lives and the industries of the afflicted areas destroyed by the nuclear disaster.

Management and Operations

Run by volunteering staffs on income from membership due and donations. Authorized as a non-profit organization in June 2012. The members include 177 individuals and 1 corporation as of September 2012. Cooperating with a plurality of research organizations and university laboratories.

Our Policies

“On-Site of the Afflicted Areas”
“By Cooperating with the Disaster Victims”

Major Activities at Present

- Radiation dose measurement and radioactivity analyses
- Decontamination experiments (residences, agricultural lands and forests)
- Various measurements and experiments for lifting agriculture
- Health Care for the Afflicted by Medical Doctors and Carers

Foundation of “Resurrection of Fukushima”

May 2011
Meeting was held in Tokyo among Mr. Tao, one of the representatives, and his friends. Conducting an investigation in some places was determined.

June 2011
Inspecting Iwaki, Minami-Soma, Soma and Iitate as a preliminary investigation. Agreed with Mr. Muneo Kanno of Iitate village to place a base of activities on his home.

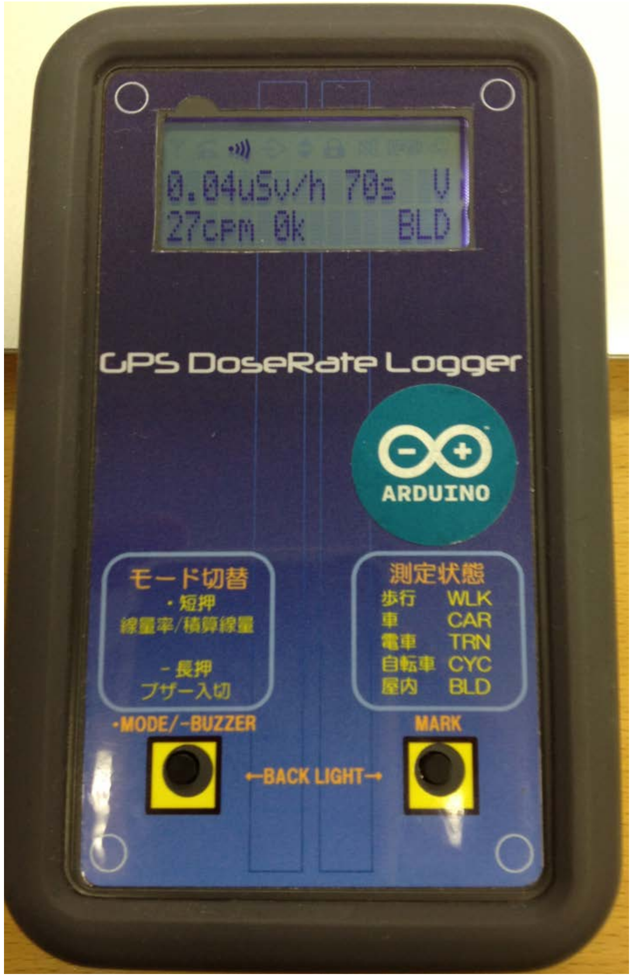
Since July 2011
Activities have been continued on almost every weekend.

Development of Radiation Monitor

Purpose of Development
To obtain detailed radiation dose survey map of the village. The final goal is to form a structure where the residents themselves can conduct measurements and can continuously maintain the detailed survey map.

Capabilities
2 Geiger-Muller tubes are installed.
Also equipped with global positioning system (GPS) so that latitude, longitude and dose rate are stored in the built-in SD card.

The data in the SD card are uploaded to a server to perform automatic map generation.


0.04uSv/h 70s V
27cpm 0k BLD
GPS DoseRate Logger
ARDUINO
モード切替
・短押
線量率/積算線量
・長押
ブザー入切
測定状態
歩行 WLK
車 CAR
電車 TRN
自転車 CYC
屋内 BLD
·MODE/-BUZZER
MARK
←BACK LIGHT→

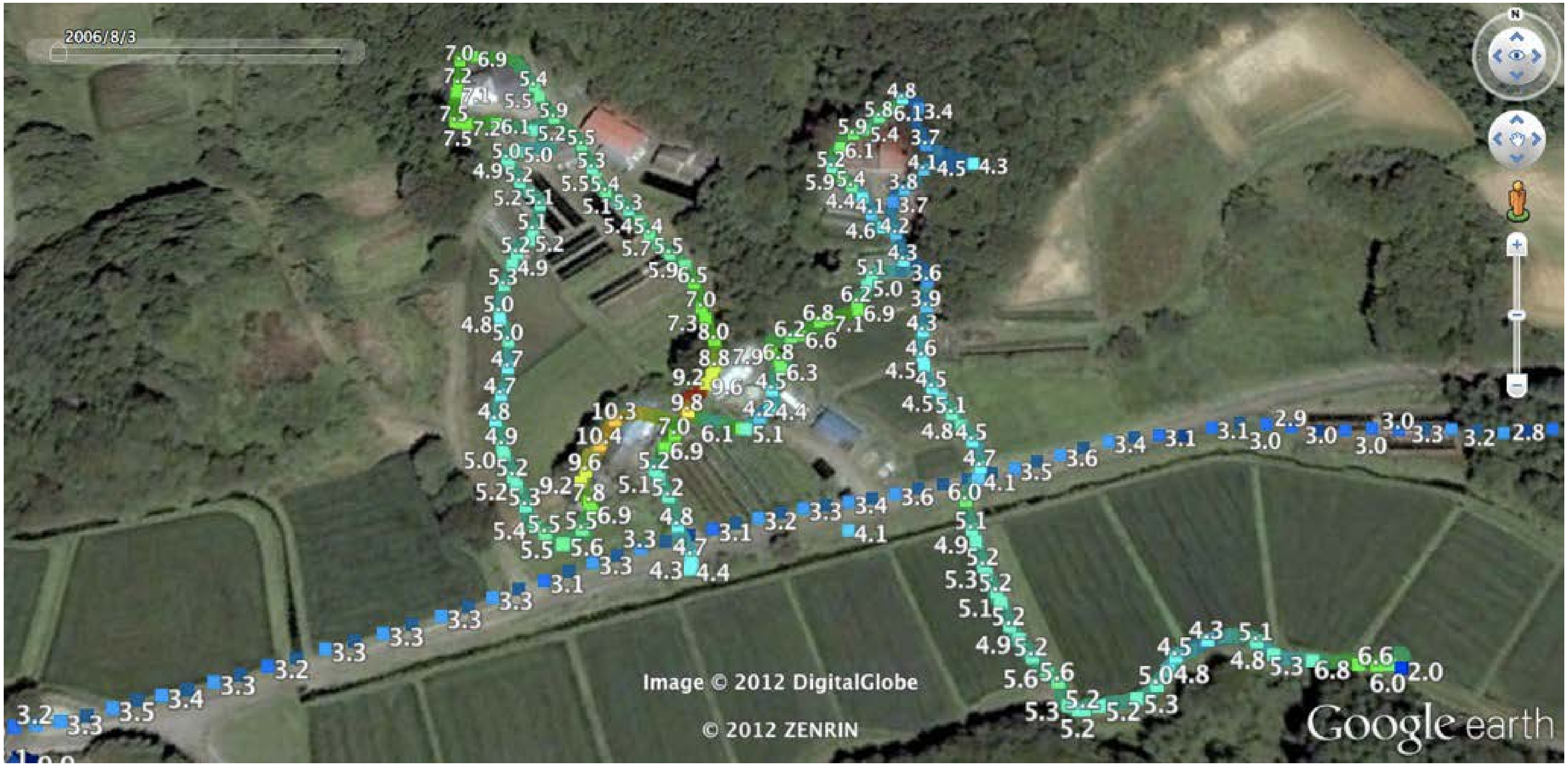
Development of Data Logger for High Sensitive Radiation Monitor

Purpose of Development
To make radiation survey map with more accuracy by high sensitive monitor.

Capabilities
When attached to a high sensitive monitor (manufactured by ALOKA), it stores latitudes/longitudes and respective dose rate in the built-in SD card.

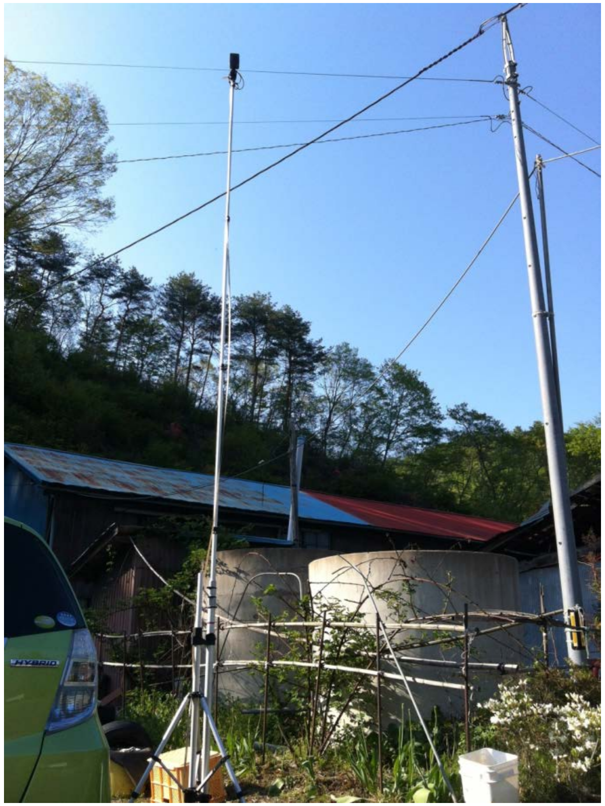
The data in the SD card are uploaded to a server to perform automatic map generation.

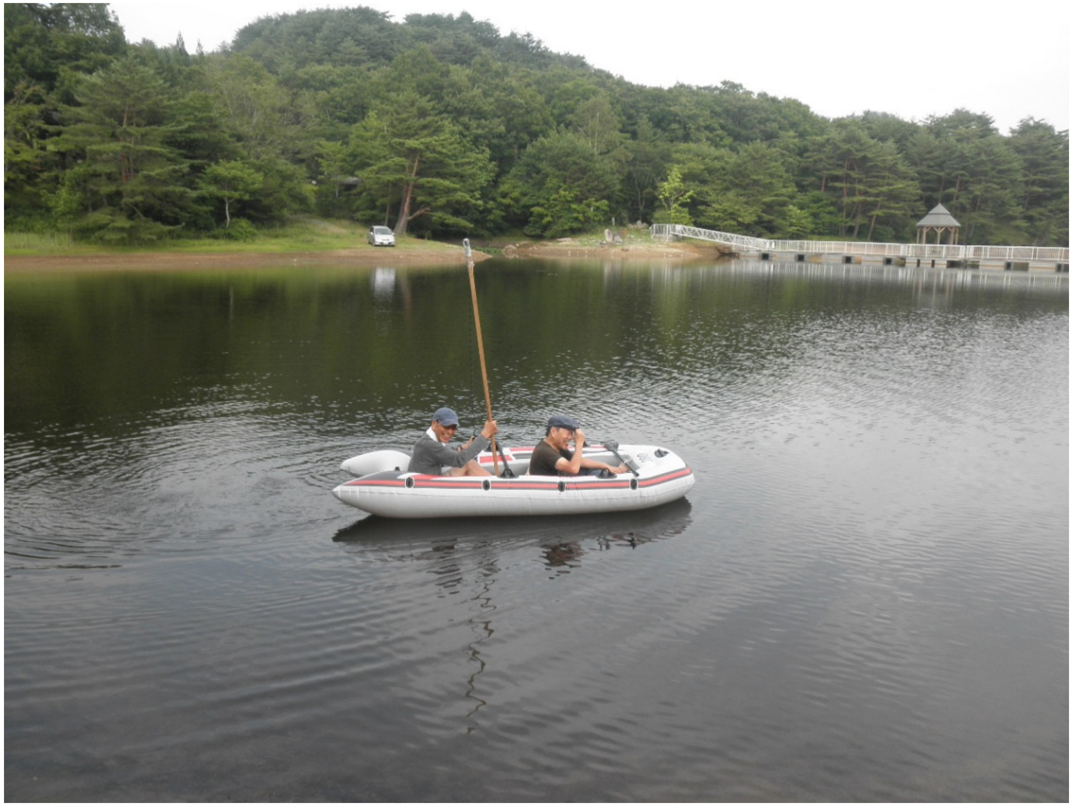
Making Radiation Dose Survey Map


2006/8/3
Image © 2012 DigitalGlobe
© 2012 ZENRIN
Google earth

The village residents make measurements of the radiation dose by themselves and form the detailed dose survey map to assess the actual contamination. The map is used for validation of the measurement data by the government, validation of the planning and the effects of the decontamination projects and future planning such as returning home.

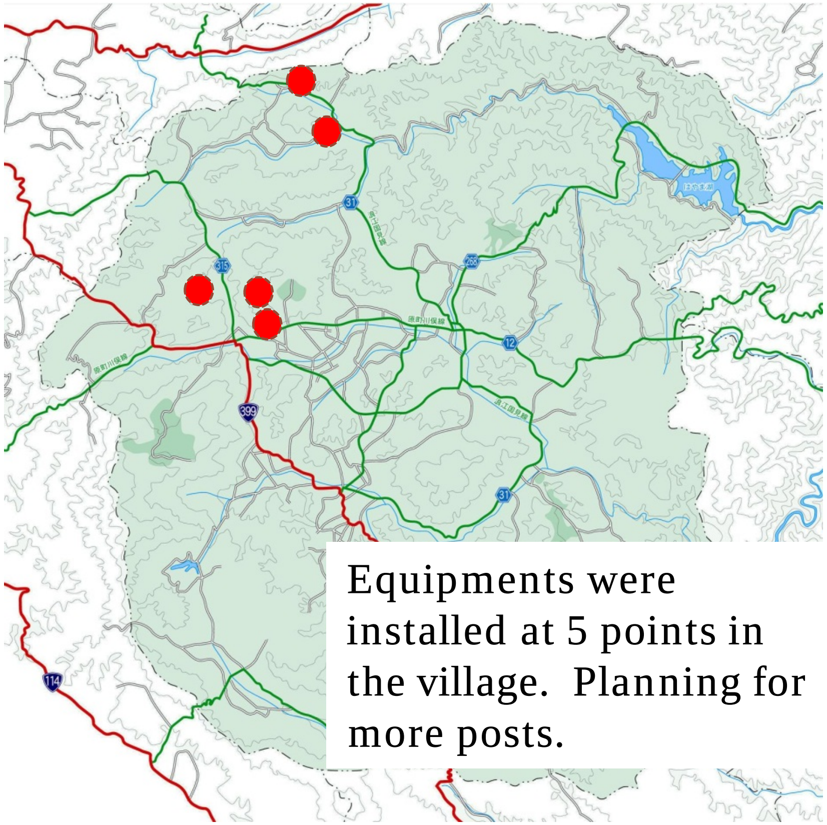
Detecting Radiation By Various Methods





Detecting radiation dose up in the air in order to evaluate the radiation from the top of the trees (left).
Detecting radiation dose on a lake in order to evaluate the ambient radiation in the condition where the radiation from the ground can be ignored (right).

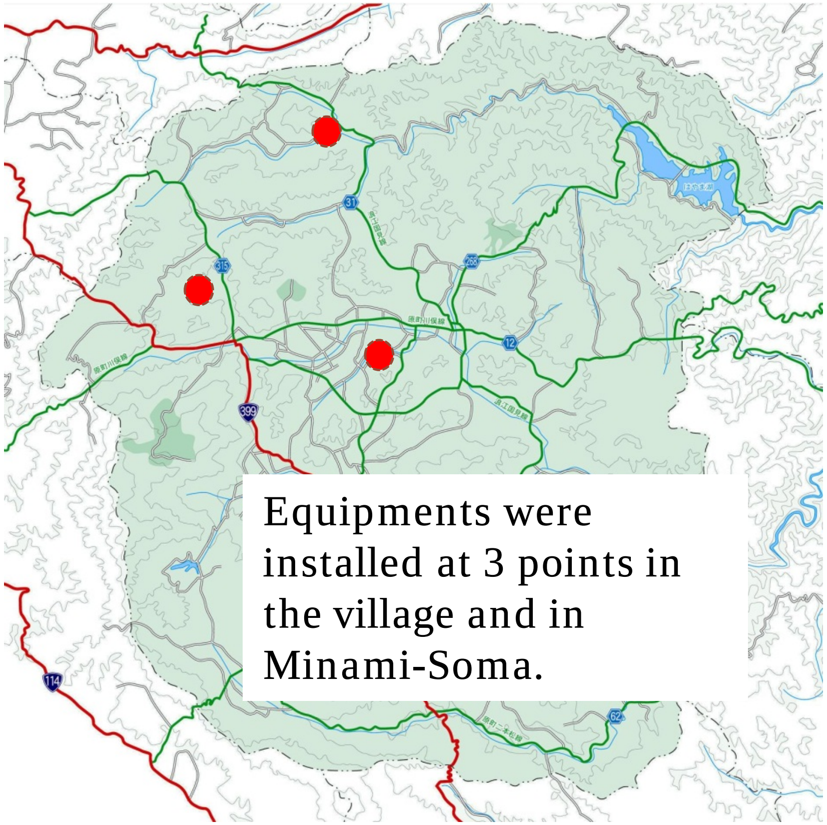
Fixed-Point Observation of Radiation (1)



Equipments were installed at 5 points in the village. Planning for more posts.

Recording weather data (precipitation amount, wind direction, wind speed, ambient temperature and soil temperature) associated with dose rate. The data are constantly sent to the server through G3 line. Powered by solar cell panel.

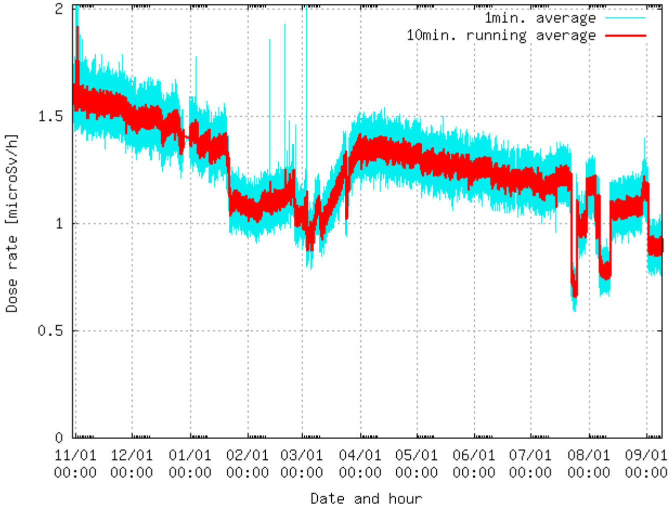
Fixed-Point Observation of Radiation (2)


31
315
266
12
399
114
62

Equipments were installed at 3 points in the village and in Minami-Soma.

Radiation dose is detected by high sensitive GM tube monitor. The dose data are sent to the server every 5 minutes through G3 line. Published on the Web.

RADIATION MONITOR
ALARM
G 0096 μSv/h
CLEAR-PULSE

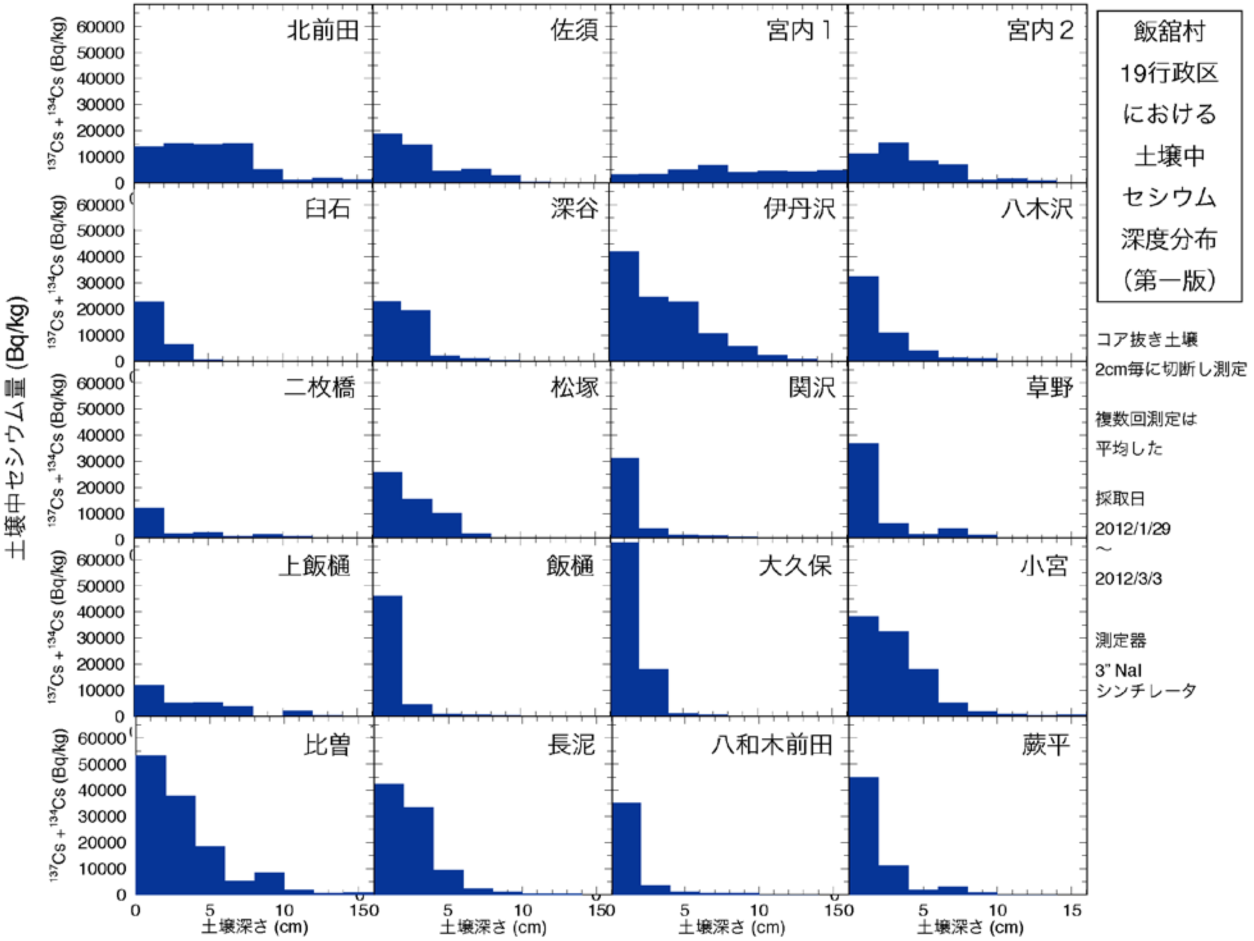


Radioactivity Detection of Aerosol

Sample	Date of Collection (Start-End)	Flow（m^3）	Concentration in Air（Bq/m^3）		
			Cs-134	Cs-137	Total
No.1	Mar.20 14:10 - Mar. 31 11:46	7847.6	0.000328	0.000484	0.000812
No.2	Mar.31 11:50 - Apr.8 17:28	5926.2	0.00165	0.00233	0.00398
No.3	Apr. 8 17:40 - Apr. 14 11:00	4122.2	0.0005	0.000697	0.0012

Continuous detection of radioactivity in the aerosol by using high volume air sampler (ongoing).

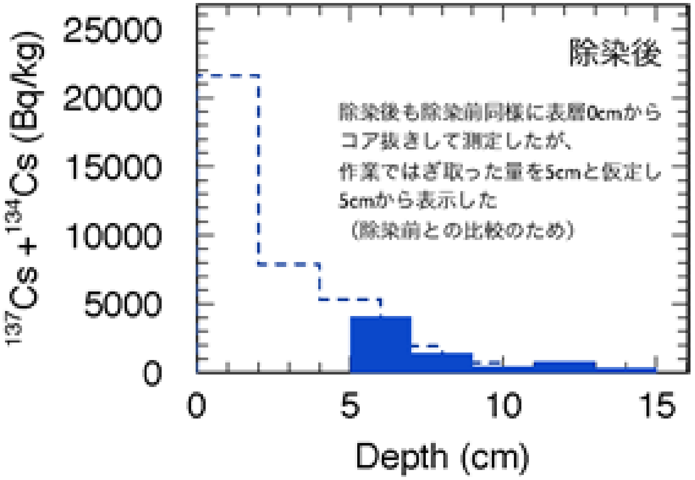
Radioactivity Analyses of Agricultural Land Soil



Sampling soils from 19 different lands in the village and measuring radioactivity of a section of soil by sectioning at each 2 cm depth

Decontamination of Agricultural Land (1)

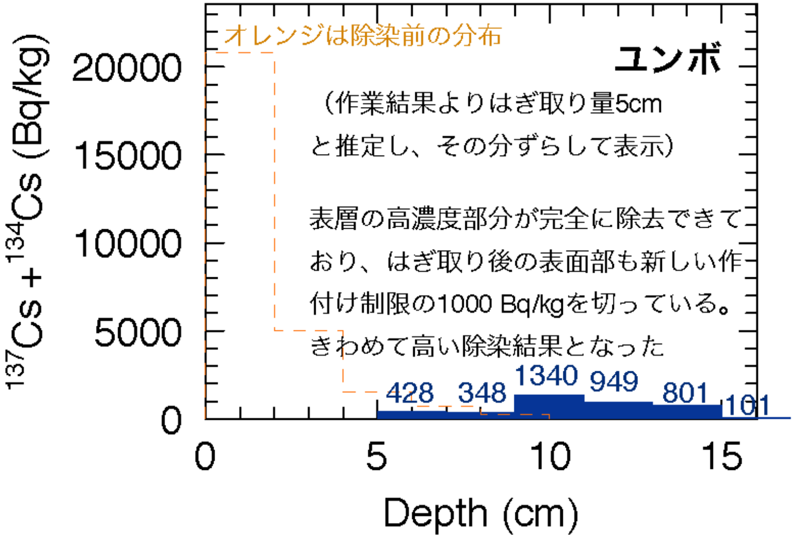
Drawing water into the agricultural land to wash out soil from the surface to approximately 5cm depth.



除染後も除染前同様に表層0cmから
コア抜きして測定したが、
作業ではぎ取った量を5cmと仮定し
5cmから表示した
（除染前との比較のため）

Decontamination of Agricultural Land (2)

Removing surface soil to 5cm deep with backhoe

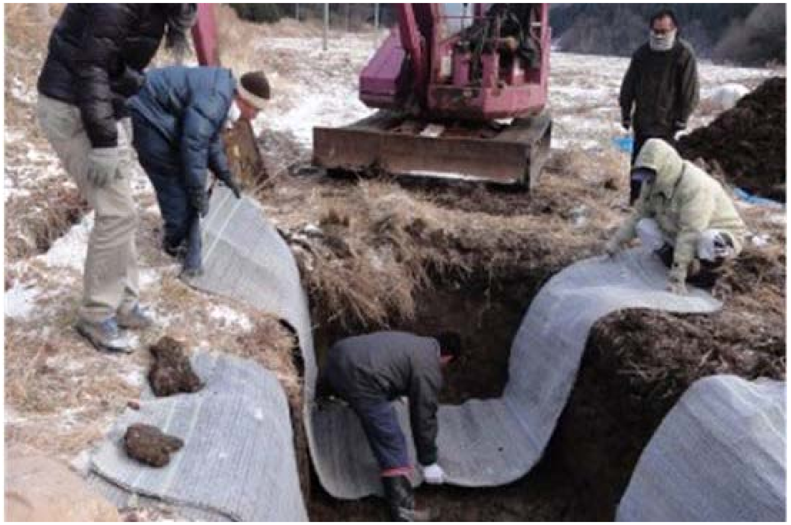


（作業結果よりはぎ取り量5cm
と推定し、その分ずらして表示）

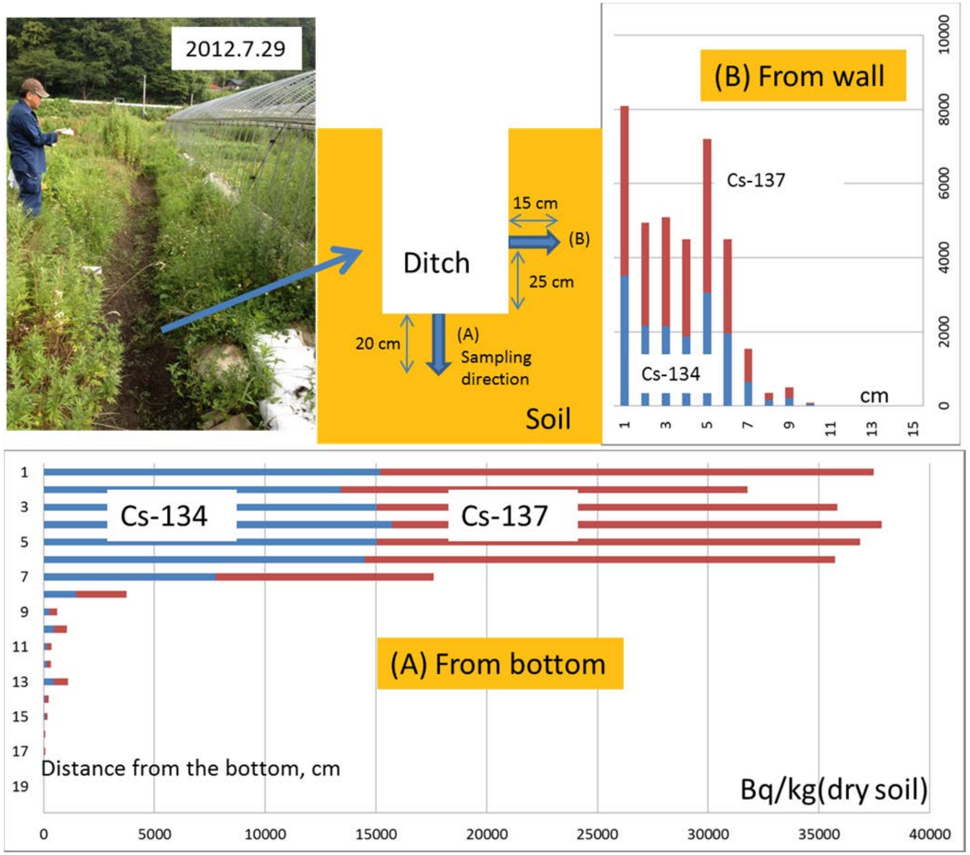
表層の高濃度部分が完全に除去できて
おり、はぎ取り後の表面部も新しい作
付け制限の1000 Bq/kgを切っている。
きわめて高い除染結果となった

Decontamination of Agricultural Land (3)

The surface soil to 5cm deep is removed when the soil is frozen and the lump is embedded in the ground.

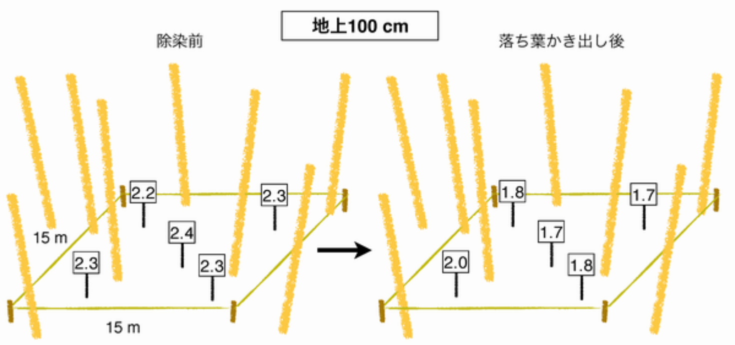


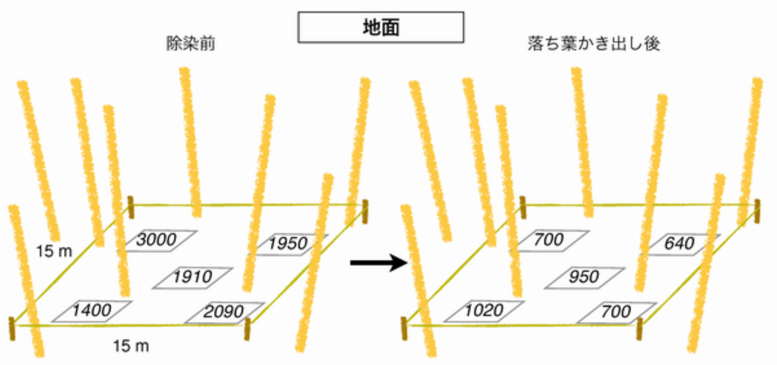
Treatment of Removed Soil



The washed out mud is accumulated in a groove. The soil is sampled from the bottom and the sidewalls at various depths after the water evaporated. The graphs show results of radioactivity measurements of the samples.

Decontamination of Forests

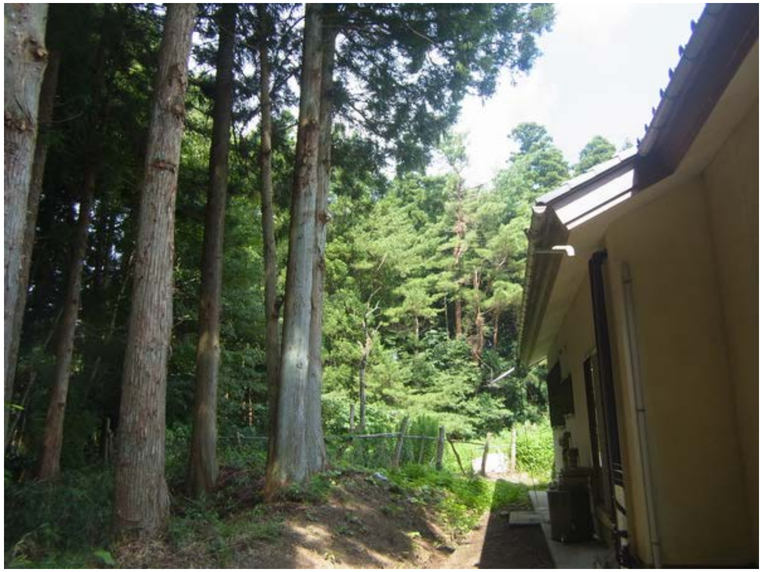

除染前
地上100 cm
落ち葉かき出し後
2.2
2.3
2.4
2.3
2.3
15 m
15 m
1.8
1.7
1.7
2.0
1.8

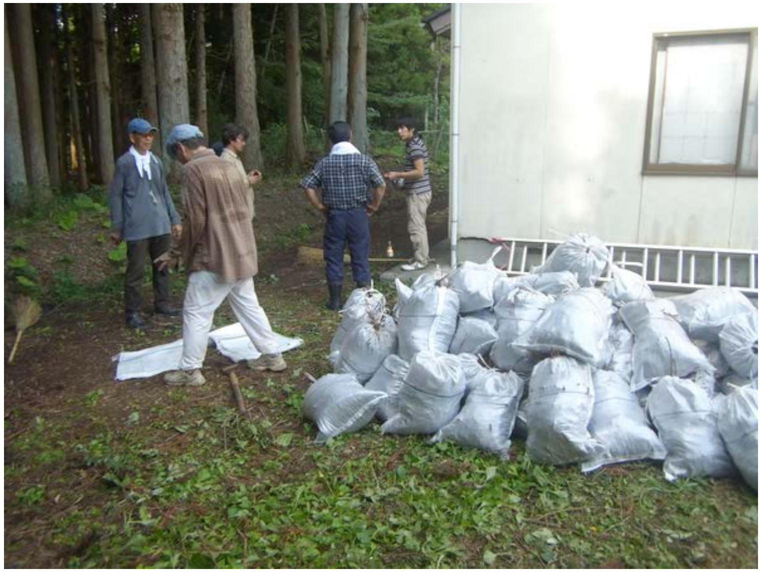

除染前
地面
落ち葉かき出し後
3000
1950
1910
1400
2090
15 m
15 m
700
640
950
1020
700

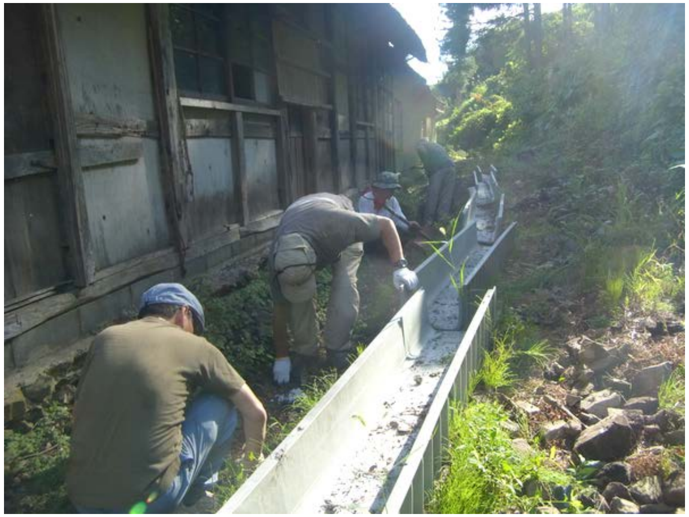
Experimental decontamination by raking the fallen leaves from broad leaved forest (November 2011).

Left: 100cm from the ground（μSv/h） Right: Ground level（count/min）

Decontamination of Residences







Left Top: The backyard trees assumedly affect the radiation dose of the residences.
Right Top: Pruning the backyard trees.
Right Bottom: Maintaining drainage of the backyard.

Experimental Radiation Shielding

Left Top: Shielding experiments by water tank.
Right Top: Shielding experiments by cement walls.
Right Bottom: Shielding Experiment by filling water into rice paddies.

Experimental Cropping of Rice

Left Top: Rice planting.
Right Top: Traditional celebration of rice planting, “Sanaburi”
Right Bottom: Samples for detecting the amount of Cesium transition.

Despite of only experiments, rice planting after one year absence was an event which lead the farmers to the hope.

Application of Information Communication Technologies

Left: Health consultation of evacuees by using Skype (trial)
Right: Dialogues with foreign students through Skype. The dialogues were distributed by Ustream.