Experience of D-shuttle in Miyakoji and Suetsugi district

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As one resident

- I was born and raised in Koriyama located in center of Fukushima Pref.
- I live together with wife and twins born in September 2011.
- My original work is “Diagnostic Radiologist”.
- I am a clinician.
- I am not…
  - a researcher.
  - professional of radiation protection.

“D-shuttle” developed by AIST, distributed by CHIYODA TECHNOL Co., Japan

- Since Apr 2013
- Personal integral dosimeter
- Gamma detector
- Set of simple body and display unit
- Plug the body on display unit

  ↓

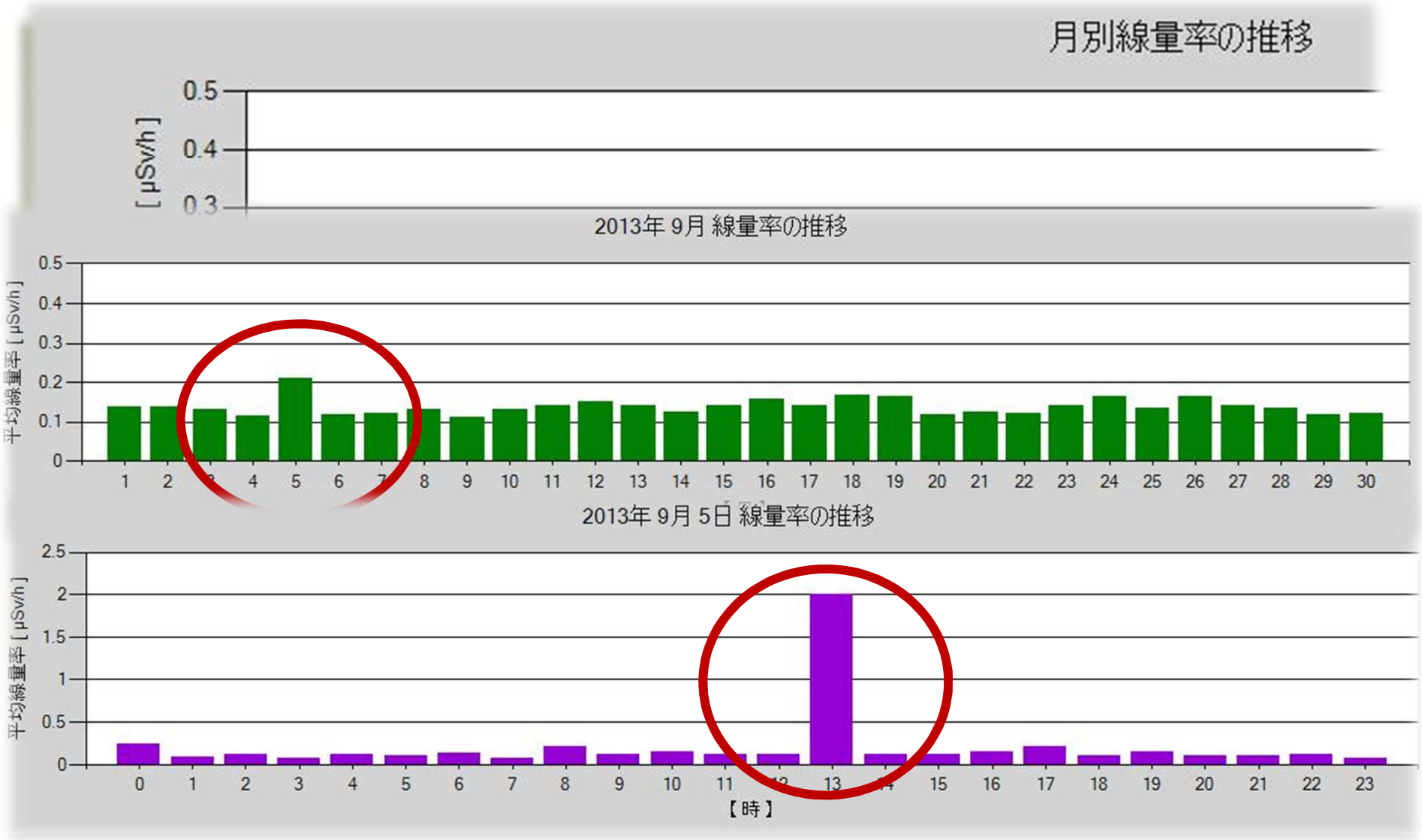
  Display shows total dose of
  entire period and previous day
  (24 hours from 0:00)

AIST:
National Institute of
Advanced Industrial
Science and technology

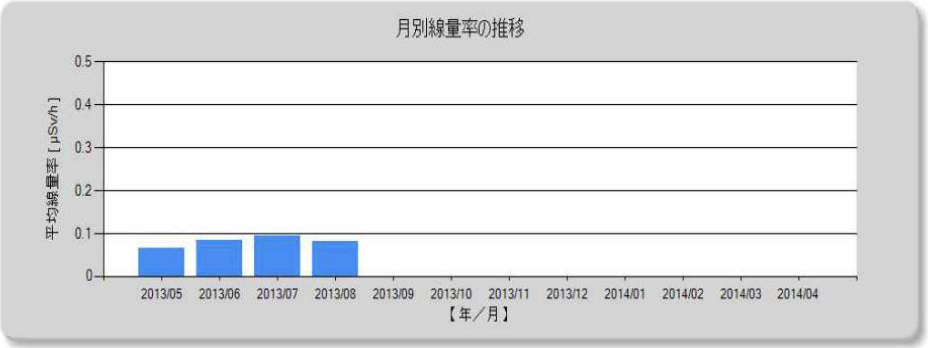
D-shuttle records the detailed data

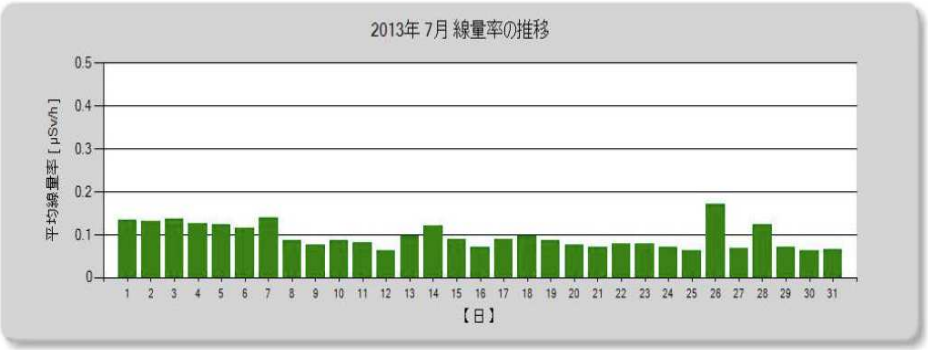
- CSV data can be read by using management unit
  - The data includes hourly dose within the entire period
  - **It is important to be explained by experts**

How to use


月別線量率の推移
[μSv/h]
0.5
0.4
0.3
2013年 9月 線量率の推移
平均線量率 [μSv/h]
0.5
0.4
0.3
0.2
0.1
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
2013年 9月 5日 線量率の推移
平均線量率 [μSv/h]
2.5
2
1.5
1
0.5
0
0 1 2 3 4 5 6 7 8 9 10 11 13 15 16 17 18 19 20 21 22 23
【時】

登録者名　：　登録情報なし
ID番号　：
総被ばく線量　：　0.153 mSv
積算日数　：　71 日
平均線量率　：　0.09 μSv/h





ID number　3B0 …

Total dose　0.153 mSv

Possession period　71 day

Average dose per hour　0.09 μSv/h

0.153 mSv / 71 days

Annual Dose per year

= 0.153 ÷ 71 × 365（day）

= 0.787 mSv/year

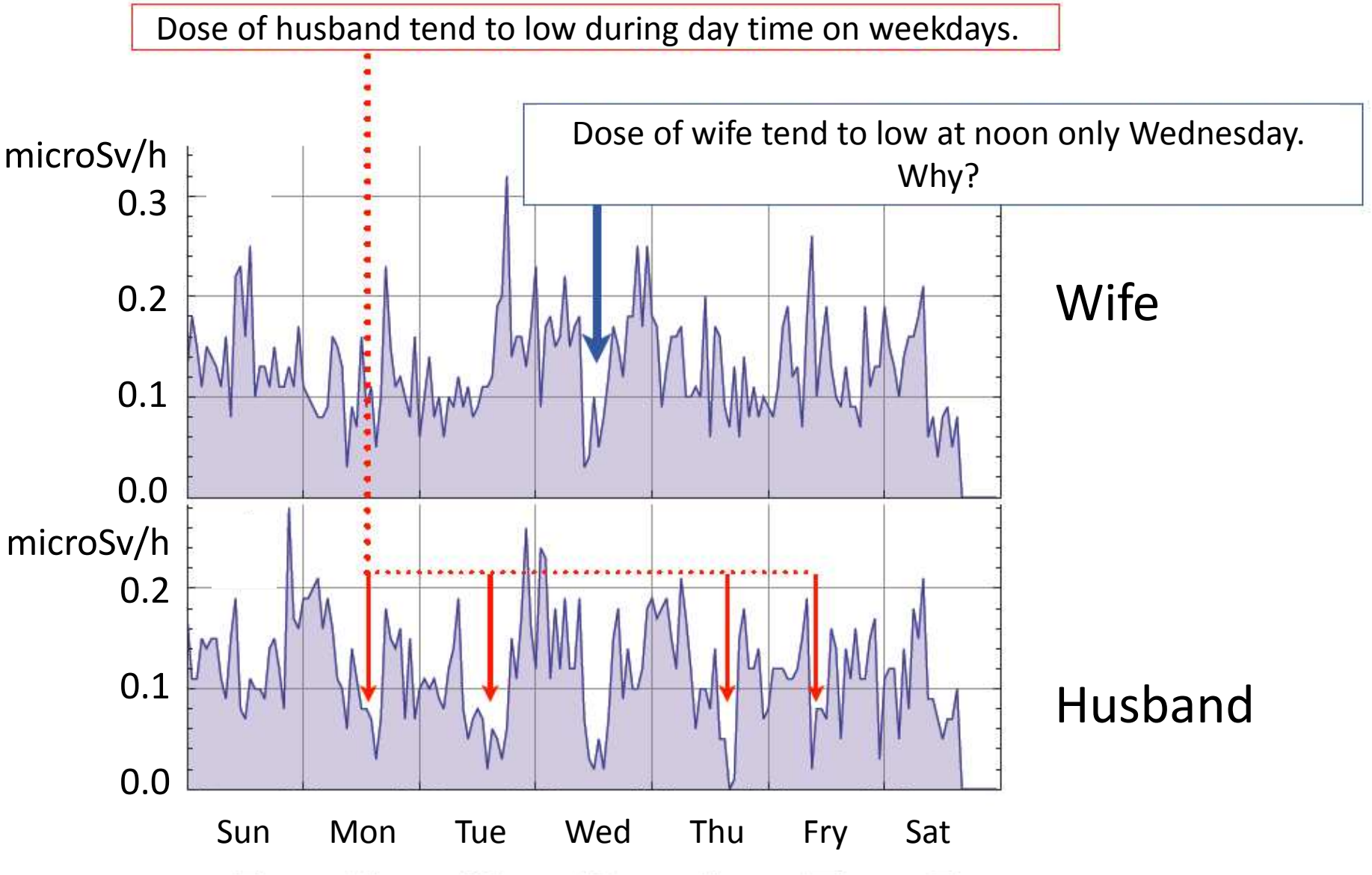
Additional Dose per year

= 0.787 − 0.540

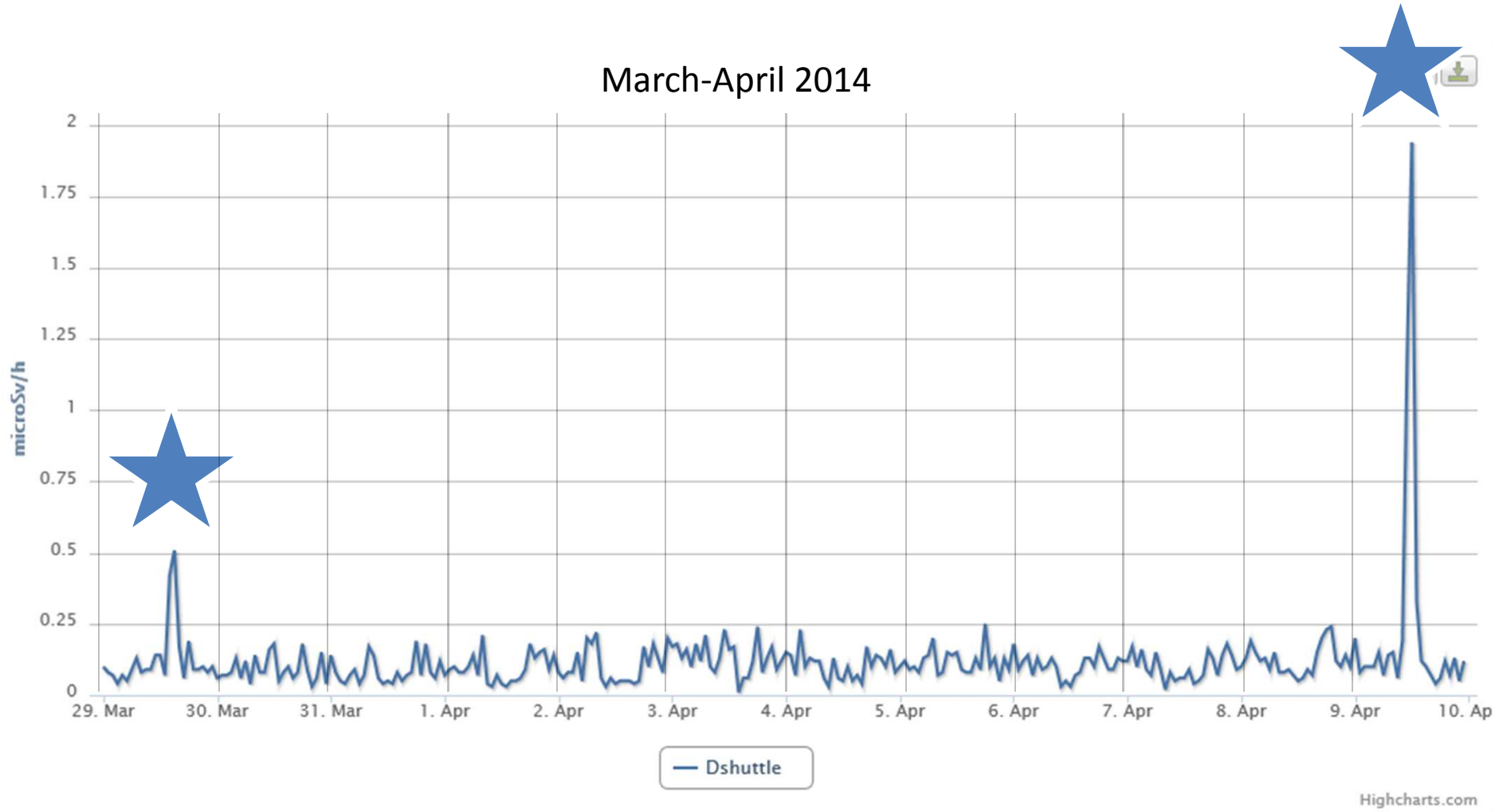
= 0.247 mSv/year

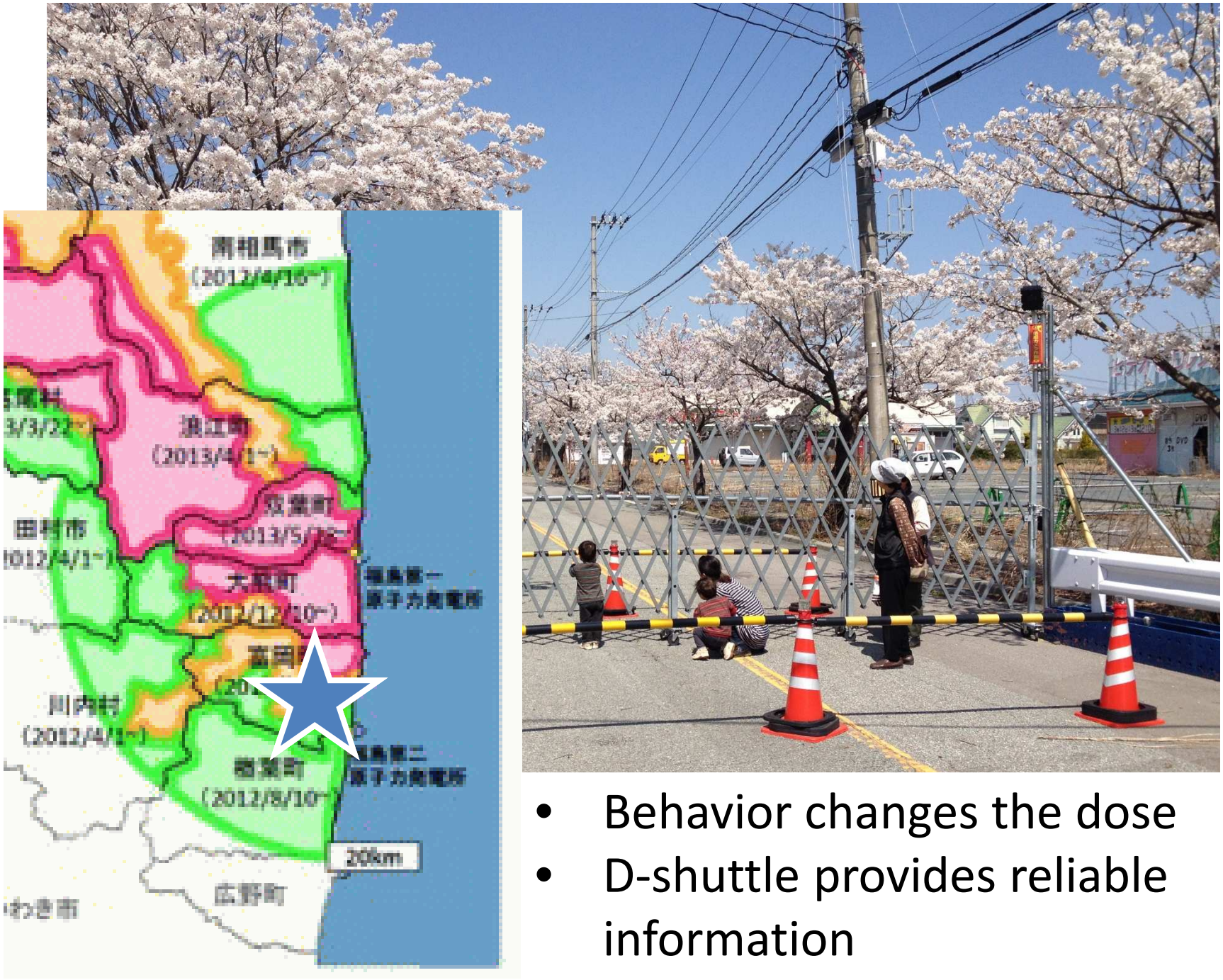
*0.54 mSv/y =
Japanese average natural individual external dose

For example: data of the certain couple



Importance of having own data

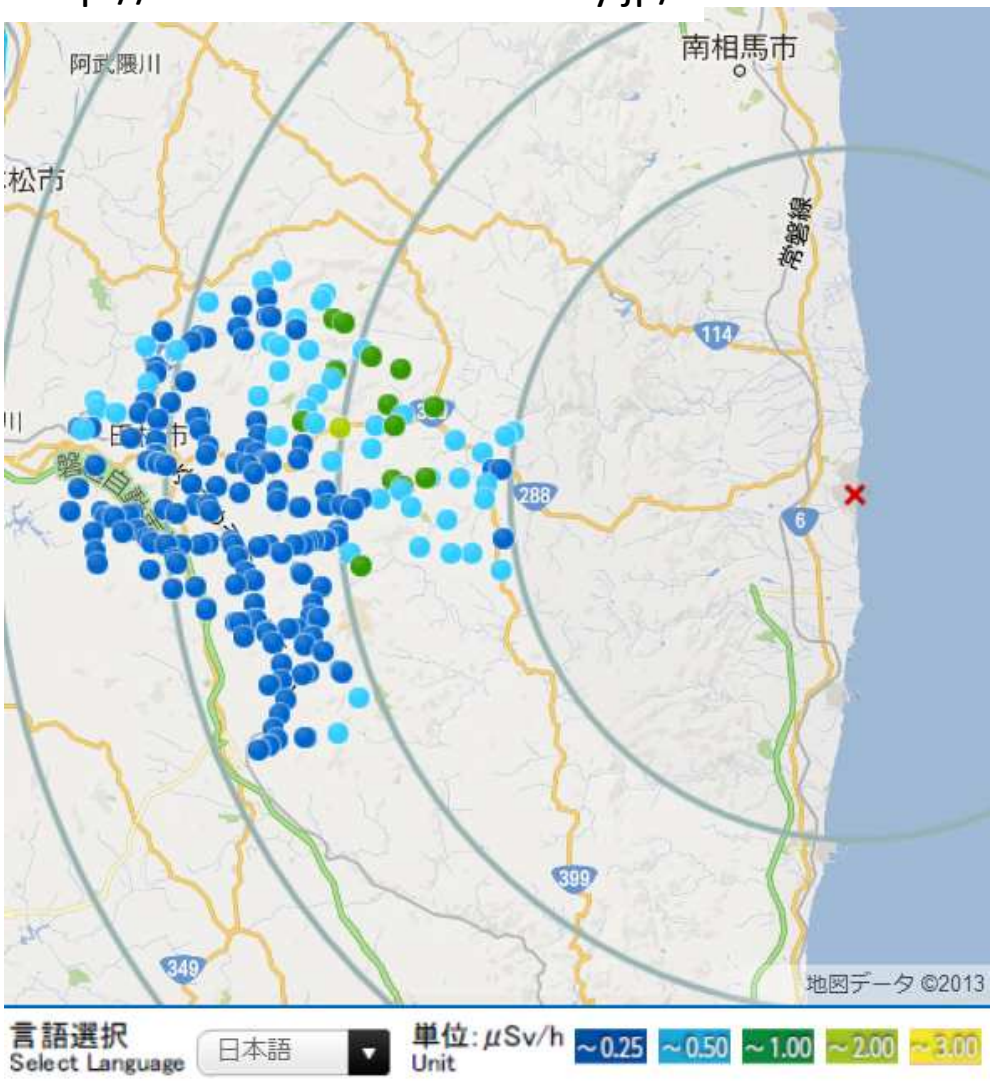


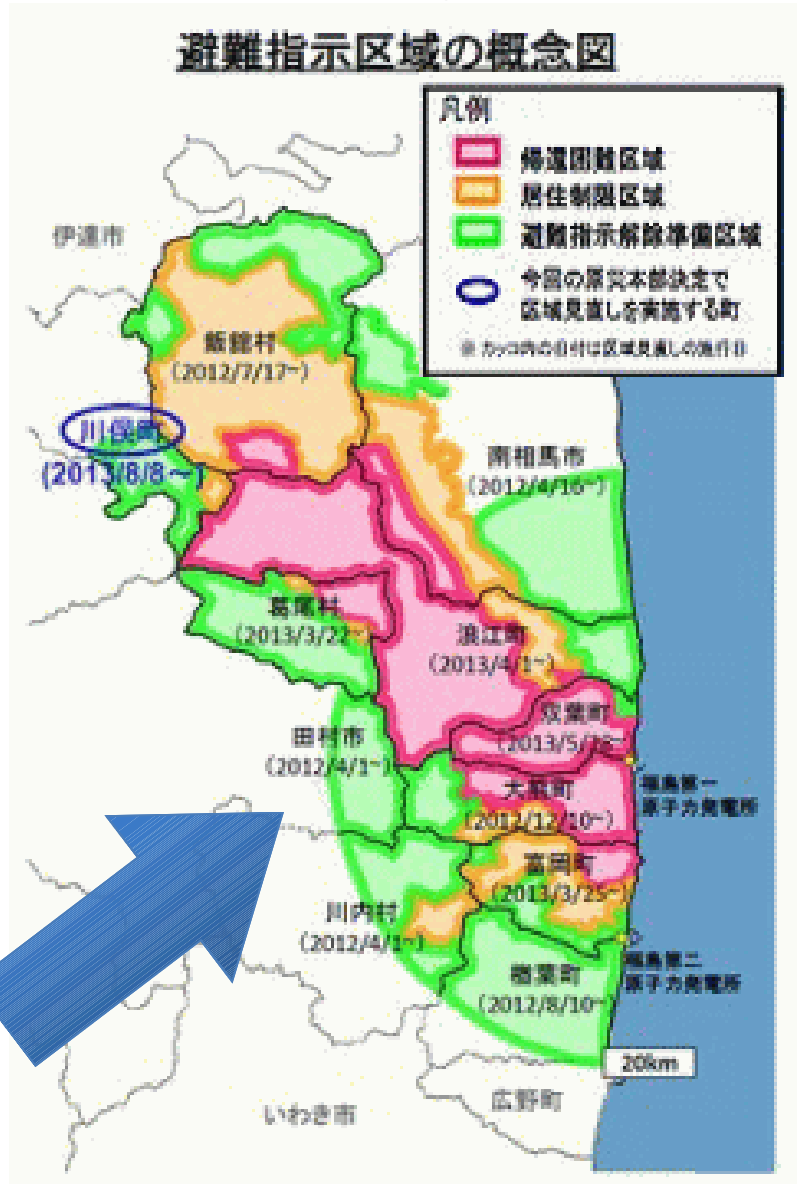


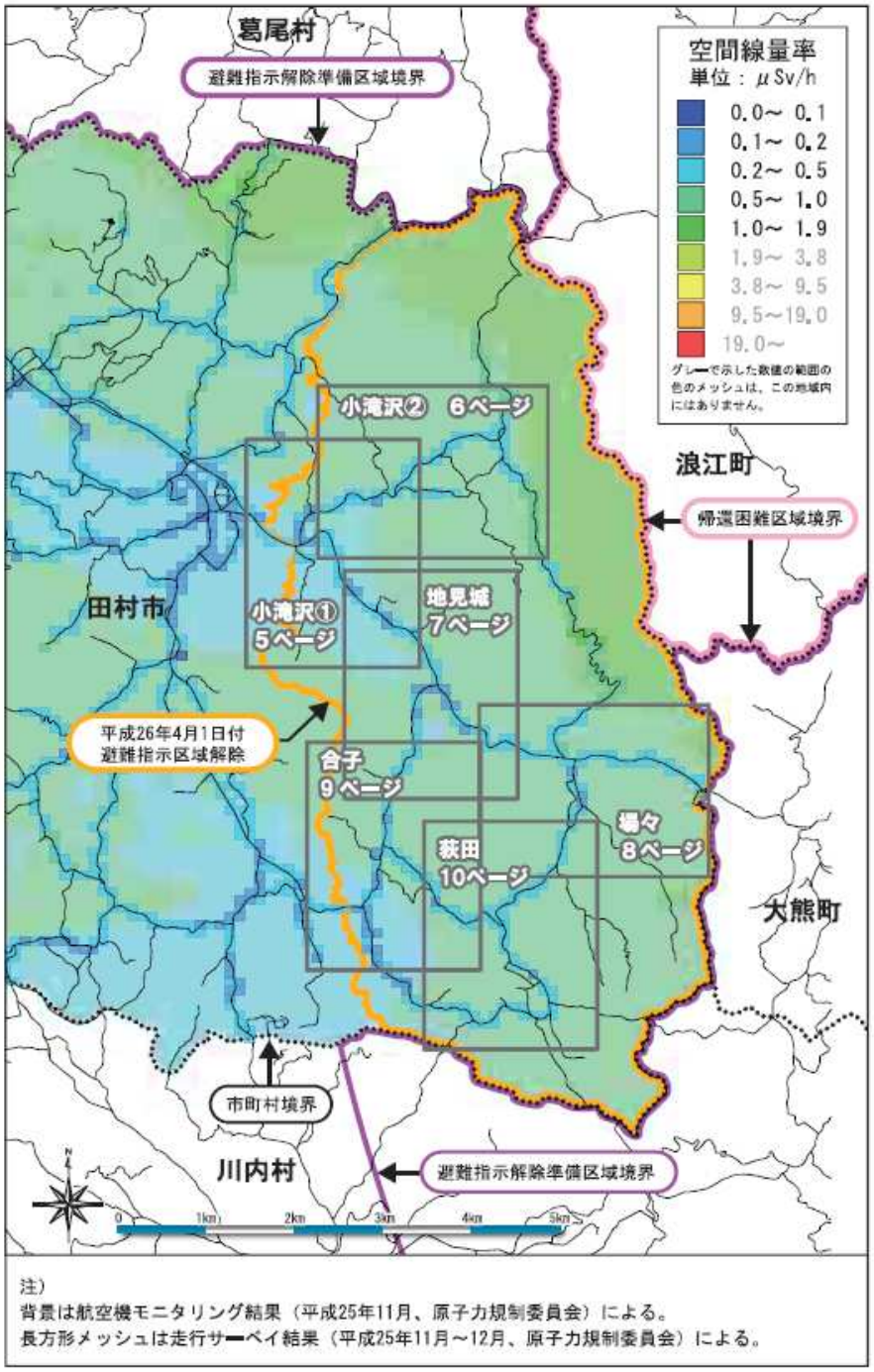
- Behavior changes the dose
- D-shuttle provides reliable information

Miyakoji district, Tamura city

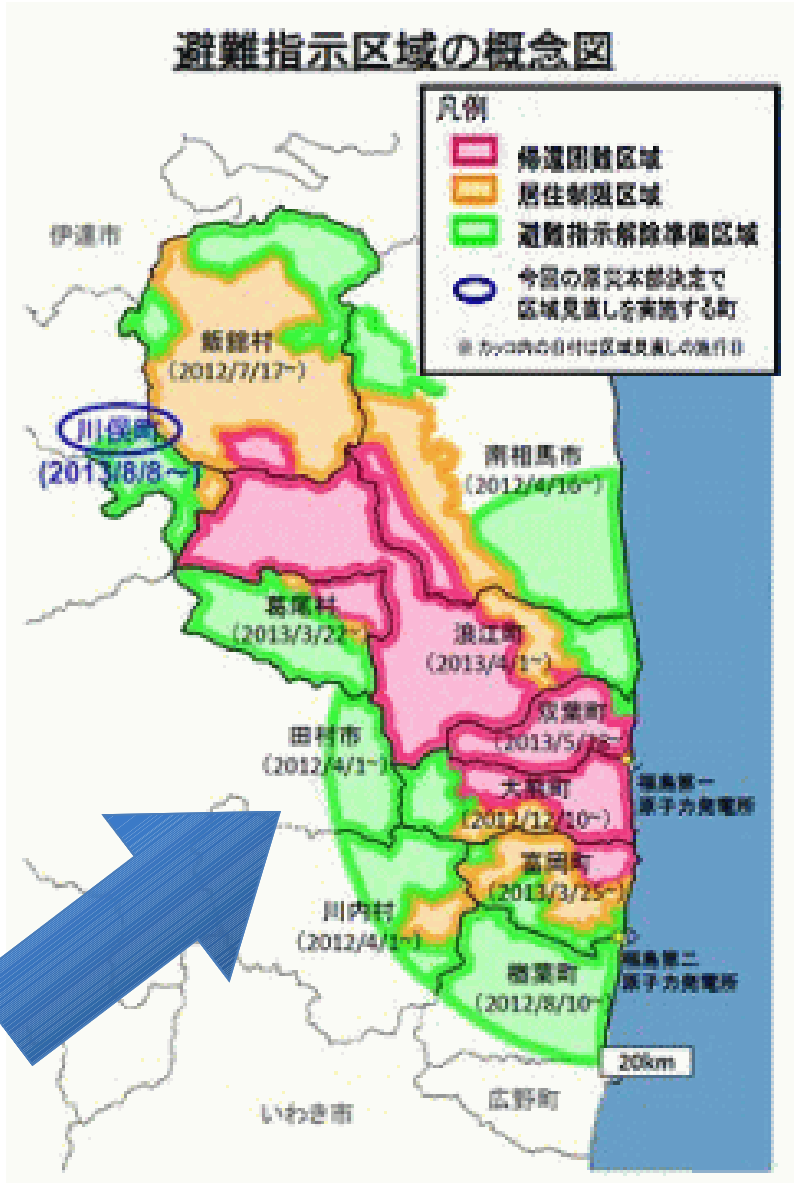
http://fukushima-radioactivity.jp/



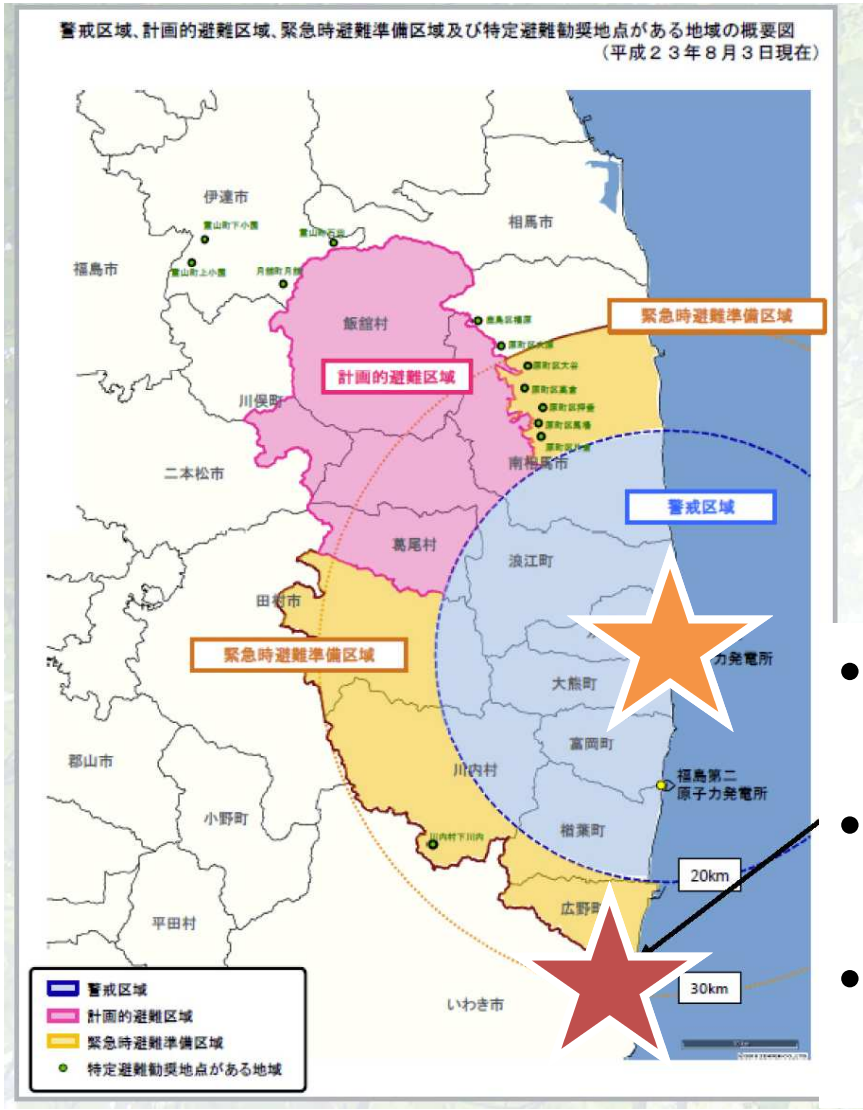


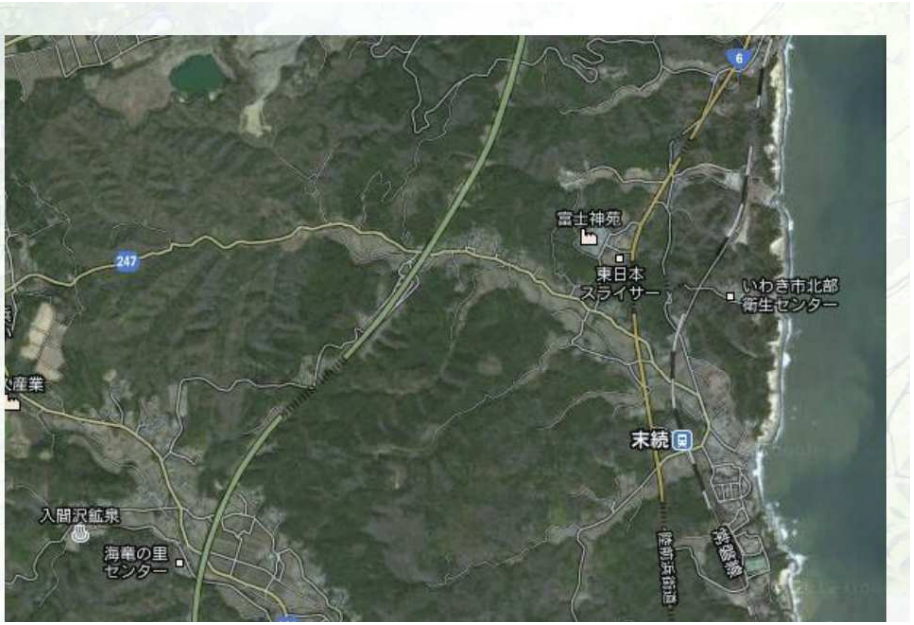


http://radioactivity.nsr.go.jp/ja/contents/10000/9853/view.html



Suetsugi district, Iwaki city





- Located in the northernmost part of Iwaki city
- 27 – 28 km south of Fukushima Dai-ichi NPP
- 130 household, 500 people (before earthquake)

Quote from the presentation slides of Shinya Endo in 5th ICRP dialogue seminar

From my experience

- Residents received more than 1 mSv of additional annual dose was very limited in actual measurement at Miyakoji and Suetsugi.
  - 測定に関与した2地域では、年間追加線量として実測で 1 mSvを超える住民はごく少数であった。
- The cause of high daily dose can be explained by hourly dose data in most cases. Dialogue between resident and expert is very important to understand the reason of high dose.
  - 線量が高めになる原因は多くの場合1時間データから明らかである。住民と専門家の対話は原因をお互いに納得するために重要である。
- There are potentially many people exceeding 1 mSv/a in another district. In these cases, administration should be prepared for dose reduction in addition to dialogue.
  - 他の地域では年間追加線量が1 mSvを超える方が多いかもしれない。その場合行政は対話のみでなく、個人線量低減のための具体的な対策を準備する必要がある。

Two crucial roles of D-shuttle

- For experts, D-shuttle enhances communication with residents.
  - 専門家にとっては、住民と対話するきっかけを作るコミュニケーションツールとなる。
- For residents, D-shuttle provides reliable information to clarify the radiation situation in their daily life.
  - 住民にとっては、自分の生活範囲がどのような放射線状況であるかがわかり、よりよく生きるための情報を与えてくれるツールとなる。