

# Sea Area Monitoring

September 25, 2017

Nuclear Regulation Authority (NRA), Japan

# Sea area within 2km from the NPS

| Sampling point | Sampling Date | Cs-134 | Cs-137 | Gross $\beta$ | H-3 | Sr-90 | Gross $\alpha$ | Pu-238 | Pu-239+Pu-240 |
|----------------|---------------|--------|--------|---------------|-----|-------|----------------|--------|---------------|
|----------------|---------------|--------|--------|---------------|-----|-------|----------------|--------|---------------|

Sea water radioactivity (Bq/L):

ND: Not detected; Numbers in parentheses: detection limits

\*1: Gross  $\beta$  including K-40 \*2: Gross  $\beta$  excluding K-40

|       |           |           |          |                    |          |            |         |                            |                                    |
|-------|-----------|-----------|----------|--------------------|----------|------------|---------|----------------------------|------------------------------------|
| T-1   | 2016/10/3 | ND(0.64)  | ND(0.53) | 13 <sup>*1</sup>   | ND(1.7)  | ND(0.0073) | ND(1.5) | ND( $5.6 \times 10^{-6}$ ) | ( $5.9 \pm 1.8$ ) $\times 10^{-6}$ |
|       | 2017/7/31 | ND(0.58)  | ND(0.73) | 9.1 <sup>*1</sup>  | ND(1.6)  |            |         |                            |                                    |
|       | 2017/8/7  | ND(0.70)  | ND(0.66) | 9.2 <sup>*1</sup>  | ND(1.6)  |            |         |                            |                                    |
|       | 2017/8/14 | ND(0.64)  | ND(0.45) | 13 <sup>*1</sup>   | ND(1.6)  |            |         |                            |                                    |
|       | 2017/8/21 | ND(0.70)  | ND(0.88) | 11 <sup>*1</sup>   | ND(1.6)  |            |         |                            |                                    |
| F-P02 | 2017/5/16 | 0.006     | 0.040    | 0.03 <sup>*2</sup> | ND(0.34) | 0.0027     |         | $12 \times 10^{-6}$        | ND( $7 \times 10^{-6}$ )           |
|       | 2017/6/13 | 0.004     | 0.021    | 0.02 <sup>*2</sup> | ND(0.33) | 0.0017     |         | ND( $7 \times 10^{-6}$ )   | ND( $7 \times 10^{-6}$ )           |
|       | 2017/7/10 | 0.008     | 0.057    | 0.02 <sup>*2</sup> | ND(0.34) | 0.0025     |         | ND( $6 \times 10^{-6}$ )   | ND( $6 \times 10^{-6}$ )           |
| M-101 | 2017/3/9  | 0.0047    | 0.038    |                    | 0.13     | 0.0014     |         |                            |                                    |
|       | 2017/4/26 | 0.012     | 0.084    |                    |          | 0.0045     |         |                            |                                    |
|       | 2017/5/30 | 0.00078   | 0.0065   |                    |          |            |         |                            |                                    |
|       | 2017/6/14 | 0.0030    | 0.022    |                    |          |            |         |                            |                                    |
| F-P03 | 2017/5/16 | 0.011     | 0.080    | 0.03 <sup>*2</sup> | ND(0.34) | 0.0067     |         | $9 \times 10^{-6}$         | ND( $6 \times 10^{-6}$ )           |
|       | 2017/6/13 | ND(0.002) | 0.006    | 0.02 <sup>*2</sup> | ND(0.33) | 0.0007     |         | ND( $6 \times 10^{-6}$ )   | ND( $6 \times 10^{-6}$ )           |
|       | 2017/7/10 | 0.016     | 0.12     | 0.05 <sup>*2</sup> | ND(0.34) | 0.0050     |         | ND( $6 \times 10^{-6}$ )   | ND( $6 \times 10^{-6}$ )           |
| F-P01 | 2017/5/16 | 0.010     | 0.063    | 0.04 <sup>*2</sup> | ND(0.34) | 0.0056     |         | $7 \times 10^{-6}$         | ND( $6 \times 10^{-6}$ )           |
|       | 2017/6/13 | ND(0.002) | 0.006    | 0.03 <sup>*2</sup> | ND(0.33) | 0.0010     |         | ND( $8 \times 10^{-6}$ )   | ND( $8 \times 10^{-6}$ )           |
|       | 2017/7/10 | 0.004     | 0.035    | 0.03 <sup>*2</sup> | ND(0.33) | 0.0020     |         | ND( $6 \times 10^{-6}$ )   | ND( $6 \times 10^{-6}$ )           |
| T-2   | 2016/10/3 | ND(0.77)  | ND(0.58) | 13 <sup>*1</sup>   | ND(1.8)  | 0.0092     | ND(1.9) | ND( $6.0 \times 10^{-6}$ ) | ND( $5.5 \times 10^{-6}$ )         |
|       | 2017/7/31 | ND(0.62)  | ND(0.58) | 10 <sup>*1</sup>   | ND(1.5)  |            |         |                            |                                    |
|       | 2017/8/7  | ND(0.74)  | ND(0.63) | 11 <sup>*1</sup>   | ND(1.6)  |            |         |                            |                                    |
|       | 2017/8/14 | ND(0.62)  | ND(0.53) | 13 <sup>*1</sup>   | ND(1.6)  |            |         |                            |                                    |
|       | 2017/8/21 | ND(0.67)  | ND(0.53) | 15 <sup>*1</sup>   | ND(1.6)  |            |         |                            |                                    |

Fukushima  
Daichi-NPS

0 0.5 1km

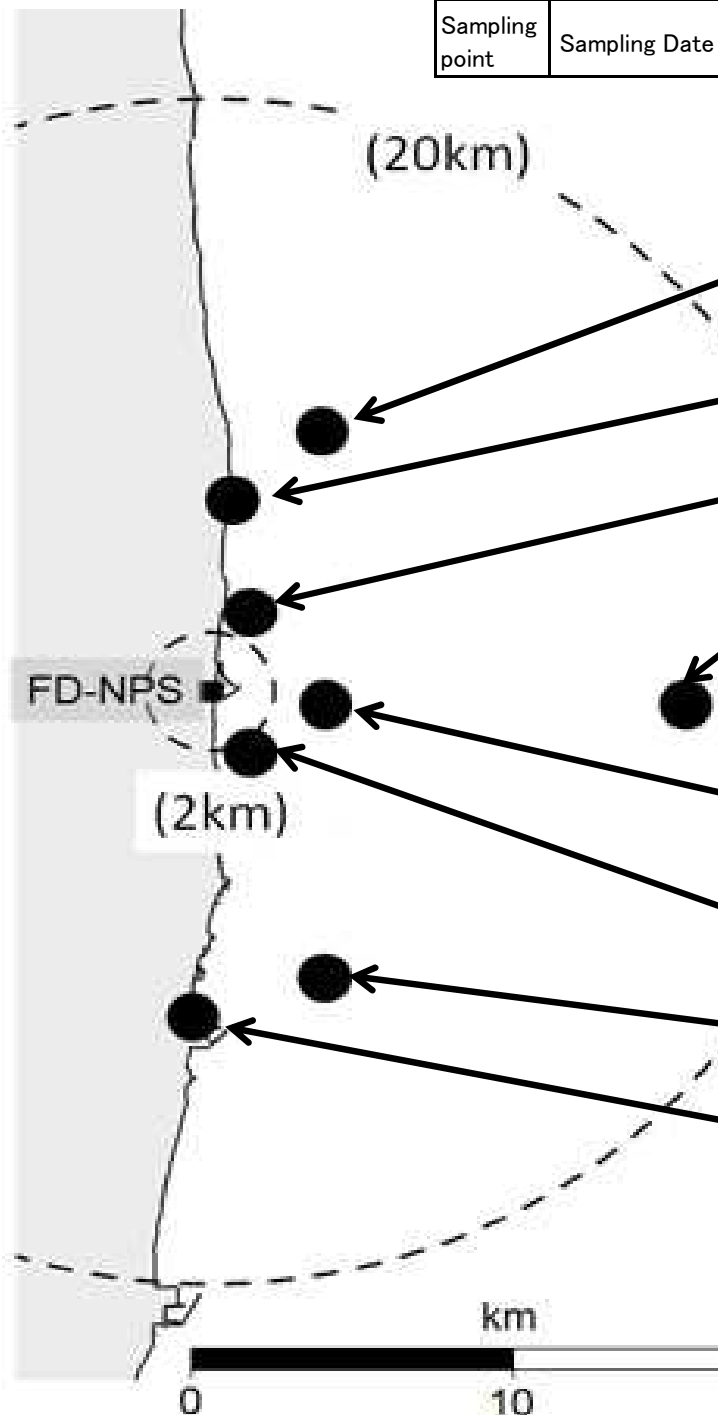
# Sea area between 2-20km from the NPS (1)

| Sampling point | Sampling Date | Cs-134 | Cs-137 | Gross $\beta$ | H-3 | Sr-90 | Gross $\alpha$ | Pu-238 | Pu-239+240 | S | S:2m below sea level |
|----------------|---------------|--------|--------|---------------|-----|-------|----------------|--------|------------|---|----------------------|
|----------------|---------------|--------|--------|---------------|-----|-------|----------------|--------|------------|---|----------------------|

Sea water radioactivity (Bq/L):

ND: Not detected; Numbers in parentheses: detection limits

\*1: Gross  $\beta$  including K-40 \*2: Gross  $\beta$  excluding K-40



|       |           |             |        |                      |          |            |         |                             |                             |      |
|-------|-----------|-------------|--------|----------------------|----------|------------|---------|-----------------------------|-----------------------------|------|
| T-D1  | 2016/10/3 | 0.0018      | 0.012  | ND(16) <sup>*1</sup> | ND(0.36) | ND(0.0068) | ND(1.6) | ND(5.5 × 10 <sup>-6</sup> ) | ND(5.2 × 10 <sup>-6</sup> ) | S    |
|       | 2017/7/4  | ND(0.0012)  | 0.0057 | ND(16) <sup>*1</sup> | ND(0.39) | 0.0017     | ND(1.9) |                             |                             | S    |
|       | 2017/7/18 | ND(0.00098) | 0.0040 | ND(17) <sup>*1</sup> | ND(0.35) |            |         |                             |                             | S    |
| T-6   | 2017/7/4  | 0.0031      | 0.019  | ND(16) <sup>*1</sup> | ND(0.32) |            |         |                             |                             | S    |
|       | 2017/7/18 | 0.0022      | 0.012  | ND(18) <sup>*1</sup> | ND(0.30) |            |         |                             |                             | S    |
| M-103 | 2017/3/9  | 0.0015      | 0.013  |                      | 0.073    | 0.0010     |         |                             |                             | 0.5m |
|       | 2017/4/26 | 0.0033      | 0.020  |                      |          | 0.0012     |         |                             |                             | 0.5m |
|       | 2017/5/30 | 0.00084     | 0.0063 |                      |          |            |         |                             |                             | 0.5m |
|       | 2017/6/14 | 0.0013      | 0.010  |                      |          |            |         |                             |                             | 0.5m |
| T-5   | 2016/10/4 | ND(0.0014)  | 0.0058 | ND(15) <sup>*1</sup> | ND(0.33) | ND(0.0078) | ND(1.6) | ND(5.3 × 10 <sup>-6</sup> ) | ND(5.2 × 10 <sup>-6</sup> ) | S    |
|       | 2017/7/3  | ND(0.0012)  | 0.0040 | ND(16) <sup>*1</sup> | ND(0.36) | 0.0012     | ND(2.5) |                             |                             | S    |
|       | 2017/7/18 | ND(0.0010)  | 0.0028 | ND(17) <sup>*1</sup> | ND(0.35) |            |         |                             |                             | S    |
| T-D5  | 2016/10/4 | ND(0.0013)  | 0.0091 | ND(16) <sup>*1</sup> | ND(0.36) | 0.0098     | ND(1.6) | ND(8.2 × 10 <sup>-6</sup> ) | ND(8.2 × 10 <sup>-6</sup> ) | S    |
|       | 2017/7/4  | ND(0.0014)  | 0.0064 | ND(16) <sup>*1</sup> | ND(0.39) | 0.0019     | ND(1.9) |                             |                             | S    |
|       | 2017/7/18 | ND(0.0014)  | 0.0046 | ND(17) <sup>*1</sup> | ND(0.35) |            |         |                             |                             | S    |
| M-104 | 2017/3/8  | 0.0015      | 0.011  |                      | 0.064    | 0.0011     |         |                             |                             | 0.5m |
|       | 2017/4/27 | 0.0015      | 0.011  |                      |          | 0.00091    |         |                             |                             | 0.5m |
|       | 2017/5/31 | 0.00086     | 0.0075 |                      |          |            |         |                             |                             | 0.5m |
|       | 2017/6/15 | 0.0016      | 0.014  |                      |          |            |         |                             |                             | 0.5m |
| T-D9  | 2016/10/4 | 0.0015      | 0.0085 | ND(15) <sup>*1</sup> | ND(0.33) | ND(0.0080) | ND(1.6) | ND(7.3 × 10 <sup>-6</sup> ) | ND(7.1 × 10 <sup>-6</sup> ) | S    |
|       | 2017/7/3  | ND(0.0012)  | 0.0057 | ND(16) <sup>*1</sup> | ND(0.36) | 0.0013     | ND(2.5) |                             |                             | S    |
|       | 2017/7/18 | ND(0.0014)  | 0.0059 | ND(17) <sup>*1</sup> | ND(0.35) |            |         |                             |                             | S    |
| T-3   | 2017/7/4  | 0.0037      | 0.029  | ND(17) <sup>*1</sup> | ND(0.32) |            |         |                             |                             | S    |
|       | 2017/7/18 | 0.0089      | 0.054  | ND(15) <sup>*1</sup> | ND(0.31) |            |         |                             |                             | S    |

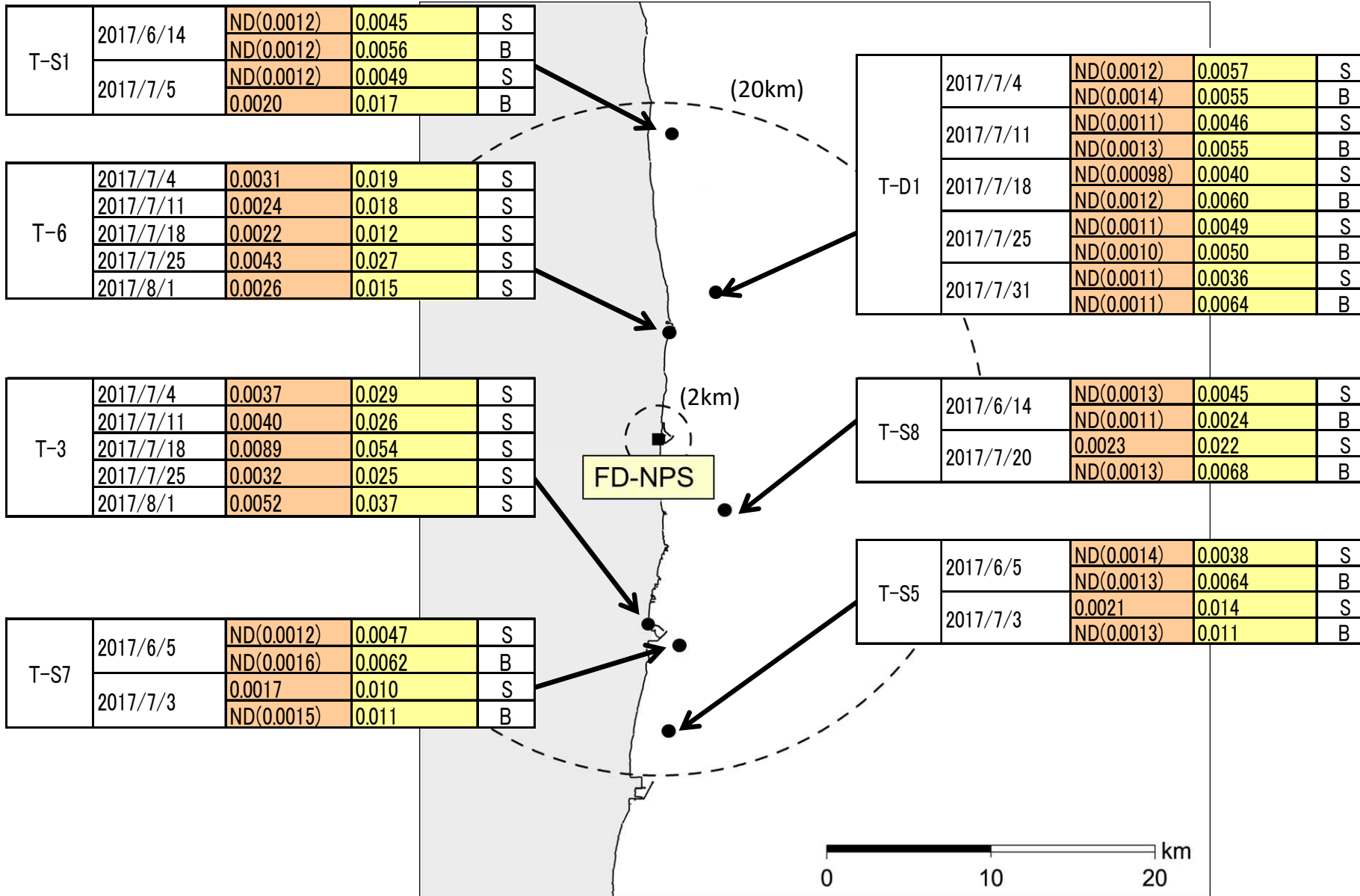
# Sea area between 2-20km from the NPS (2)

| Sampling point | Sampling Date | Cs-134 | Cs-137 | S/B |
|----------------|---------------|--------|--------|-----|
|----------------|---------------|--------|--------|-----|

S: 2m below sea level  
B: 2-3m above sea bottom

Sea water radioactivity (Bq/L):

ND: Not detected; Numbers in parentheses: detection limits



# Sea area between 20-100km from the NPS

| Sampling point | Sampling Date | Cs-134 | Cs-137 | Gross $\beta$ * | H-3 | Sr-90 | S/B                     | S: 2m below sea level B: 2-3m above sea bottom |  |
|----------------|---------------|--------|--------|-----------------|-----|-------|-------------------------|--|--|
|                |               |        |        |                 |     |       | Depth(m) from sea level |  |  |

Sea water radioactivity (Bq/L):

ND: Not detected; Numbers in parentheses: detection limits

\*Gross  $\beta$  excluding K-40

|      |           |              |        |       |       |  |      |
|------|-----------|--------------|--------|-------|-------|--|------|
| M-C3 | 2017/5/24 | 0.00011      | 0.0018 | 0.027 | 0.027 |  | 1m   |
|      |           | ND(0.000073) | 0.0016 |       |       |  | 52m  |
|      |           | ND(0.000071) | 0.0016 |       |       |  | 126m |

|      |           |            |        |  |  |  |   |
|------|-----------|------------|--------|--|--|--|---|
| T-22 | 2017/5/18 | ND(0.0015) | 0.0064 |  |  |  | S |
|      |           | ND(0.0016) | 0.0061 |  |  |  | B |
|      | 2017/6/7  | ND(0.0013) | 0.0057 |  |  |  | S |
|      |           | ND(0.0013) | 0.0064 |  |  |  | B |
|      | 2017/7/26 | ND(0.0013) | 0.0048 |  |  |  | S |
|      |           | ND(0.0013) | 0.0046 |  |  |  | B |

|      |           |              |        |       |       |  |      |
|------|-----------|--------------|--------|-------|-------|--|------|
| M-D3 | 2017/5/24 | ND(0.0013)   | 0.0020 | 0.029 | 0.074 |  | 1m   |
|      |           | ND(0.000073) | 0.0016 |       |       |  | 100m |
|      |           | ND(0.000073) | 0.0014 |       |       |  | 220m |

|      |           |            |        |  |  |  |   |
|------|-----------|------------|--------|--|--|--|---|
| T-18 | 2017/5/12 | ND(0.0013) | 0.0033 |  |  |  | S |
|      |           | ND(0.0013) | 0.0041 |  |  |  | B |
|      | 2017/6/13 | ND(0.0013) | 0.0032 |  |  |  | S |
|      |           | ND(0.0013) | 0.0030 |  |  |  | B |
|      | 2017/7/6  | ND(0.0012) | 0.0031 |  |  |  | S |
|      |           | ND(0.0012) | 0.0043 |  |  |  | B |

|       |           |            |        |  |  |  |   |
|-------|-----------|------------|--------|--|--|--|---|
| T-M10 | 2017/5/12 | ND(0.0013) | 0.0024 |  |  |  | S |
|       |           | ND(0.0013) | 0.0032 |  |  |  | B |
|       | 2017/6/13 | ND(0.0011) | 0.0034 |  |  |  | S |
|       |           | ND(0.0013) | 0.0020 |  |  |  | B |
|       | 2017/7/6  | ND(0.0013) | 0.0017 |  |  |  | S |
|       |           | ND(0.0011) | 0.0021 |  |  |  | B |

|      |           |          |        |       |       |  |      |
|------|-----------|----------|--------|-------|-------|--|------|
| M-E3 | 2017/5/24 | 0.00022  | 0.0025 | 0.025 | 0.067 |  | 1m   |
|      |           | 0.000085 | 0.0016 |       |       |  | 100m |
|      |           | 0.000093 | 0.0016 |       |       |  | 224m |

|      |           |              |          |       |       |  |      |
|------|-----------|--------------|----------|-------|-------|--|------|
| M-E5 | 2017/5/25 | ND(0.000097) | 0.0017   | 0.029 | 0.060 |  | 1m   |
|      |           | 0.000068     | 0.0016   |       |       |  | 100m |
|      |           | ND(0.000047) | 0.000065 |       |       |  | 523m |

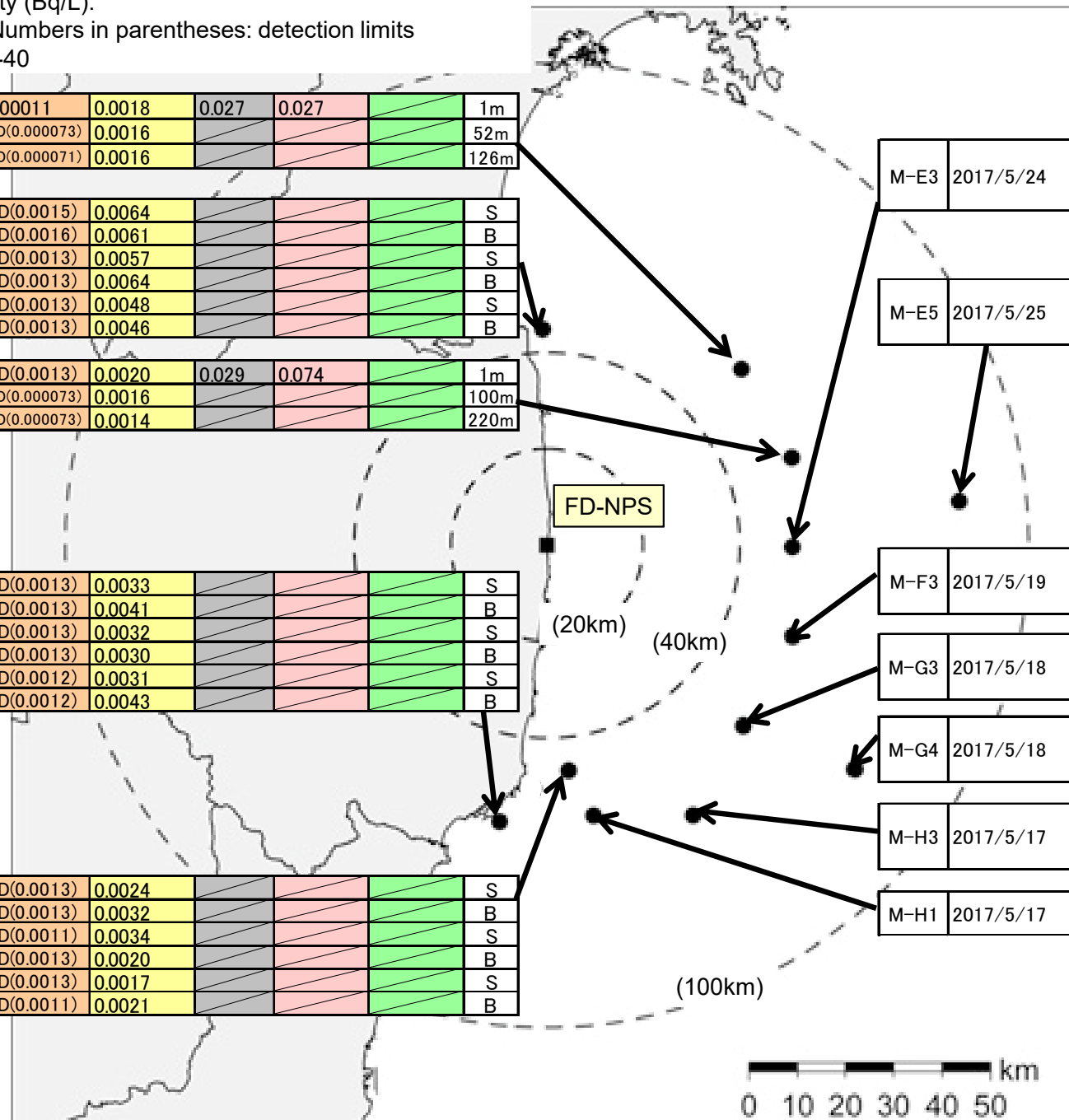
|      |           |              |        |       |       |  |      |
|------|-----------|--------------|--------|-------|-------|--|------|
| M-F3 | 2017/5/19 | 0.00013      | 0.0023 | 0.028 | 0.049 |  | 1m   |
|      |           | ND(0.000087) | 0.0018 |       |       |  | 100m |
|      |           | 0.000072     | 0.0017 |       |       |  | 221m |

|      |           |          |        |       |       |  |      |
|------|-----------|----------|--------|-------|-------|--|------|
| M-G3 | 2017/5/18 | 0.00028  | 0.0025 | 0.026 | 0.056 |  | 1m   |
|      |           | 0.00010  | 0.0019 |       |       |  | 100m |
|      |           | 0.000072 | 0.0017 |       |       |  | 213m |

|      |           |              |         |       |       |  |      |
|------|-----------|--------------|---------|-------|-------|--|------|
| M-G4 | 2017/5/18 | 0.00015      | 0.0024  | 0.027 | 0.050 |  | 1m   |
|      |           | 0.00018      | 0.0021  |       |       |  | 100m |
|      |           | ND(0.000041) | 0.00052 |       |       |  | 683m |

|      |           |          |        |       |       |  |      |
|------|-----------|----------|--------|-------|-------|--|------|
| M-H3 | 2017/5/17 | 0.00019  | 0.0028 | 0.030 | 0.068 |  | 1m   |
|      |           | 0.00011  | 0.0017 |       |       |  | 100m |
|      |           | 0.000072 | 0.0017 |       |       |  | 218m |

|      |           |         |        |  |  |  |      |
|------|-----------|---------|--------|--|--|--|------|
| M-H1 | 2017/5/17 | 0.00015 | 0.0024 |  |  |  | 1m   |
|      |           | 0.00015 | 0.0021 |  |  |  | 218m |

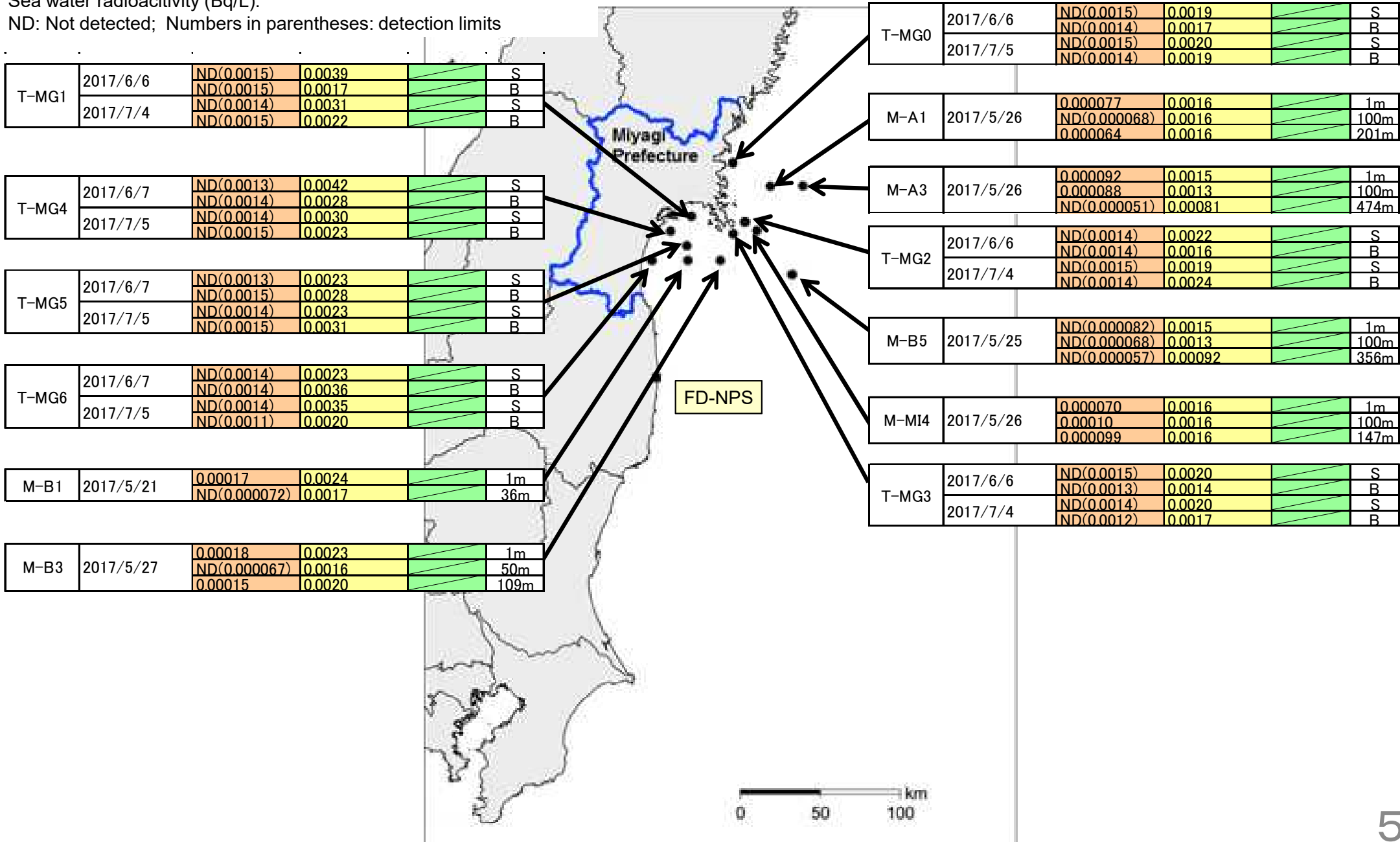


# Sea area along and off the coast of Miyagi Prefecture

| Sampling point | Sampling Date | Cs-134 | Cs-137 | Sr-90 | S/B                     | S:2m below sea level | B:2-3m above sea bottom |
|----------------|---------------|--------|--------|-------|-------------------------|----------------------|-------------------------|
|                |               |        |        |       | Depth(m) from sea level |                      |                         |

Sea water radioactivity (Bq/L):

ND: Not detected; Numbers in parentheses: detection limits

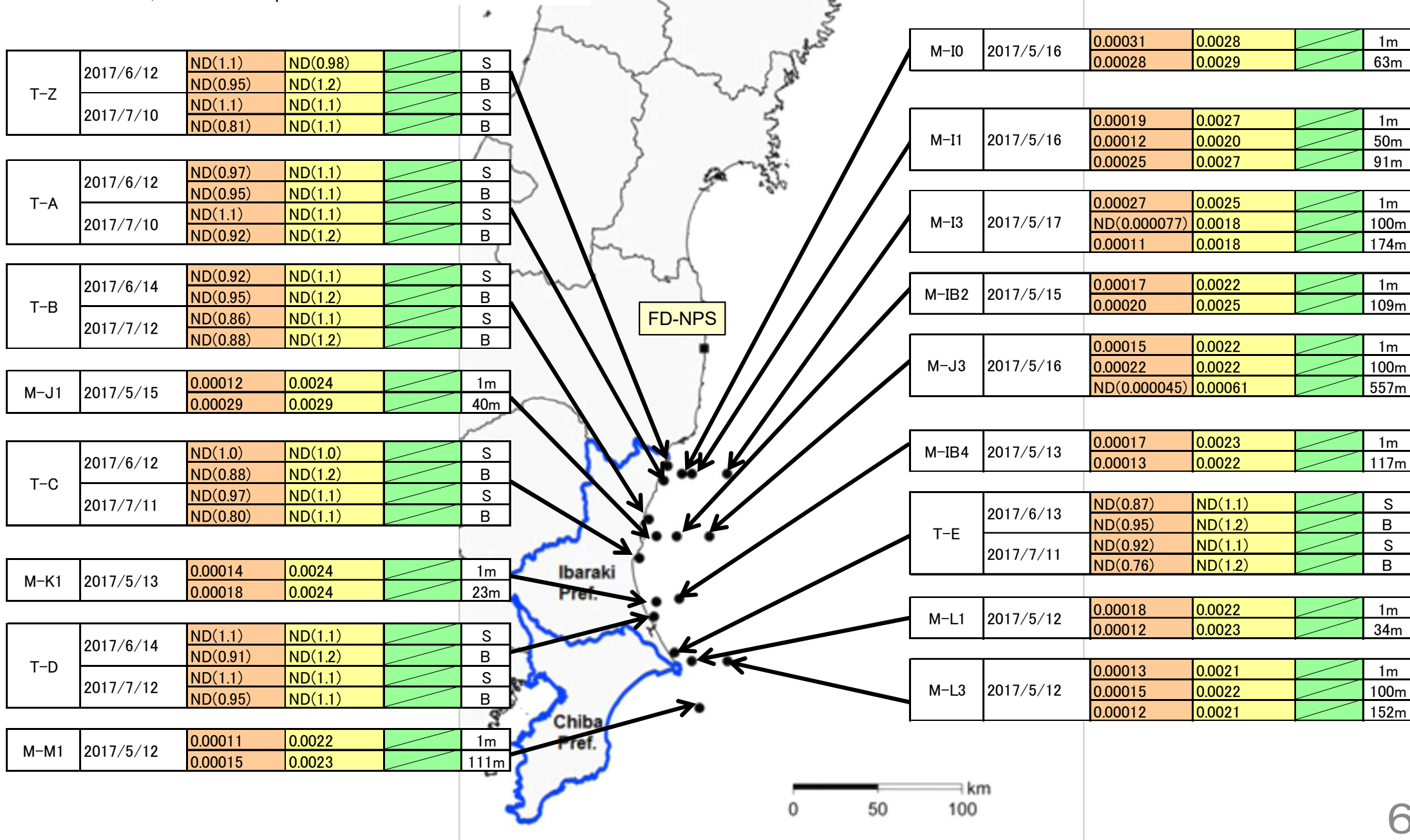


# Sea area along and off the coast of Ibaraki Pref. and Chiba Pref.

| Sampling point | Sampling Date | Cs-134 | Cs-137 | Sr-90 | S/B                     | S:2m below sea level | B:2-3m above sea bottom |
|----------------|---------------|--------|--------|-------|-------------------------|----------------------|-------------------------|
|                |               |        |        |       | Depth(m) from sea level |                      |                         |

Sea water radioactivity (Bq/L):

ND: Not detected; Numbers in parentheses: detection limits



# Open sea off the coast of Eastern Japan

| Sampling point | Sampling Date | Cs-134 | Cs-137 | Depth(m) from sea level |
|----------------|---------------|--------|--------|-------------------------|
|----------------|---------------|--------|--------|-------------------------|

Sea water radioactivity (Bq/L):

ND: Not detected; Numbers in parentheses: detection limits

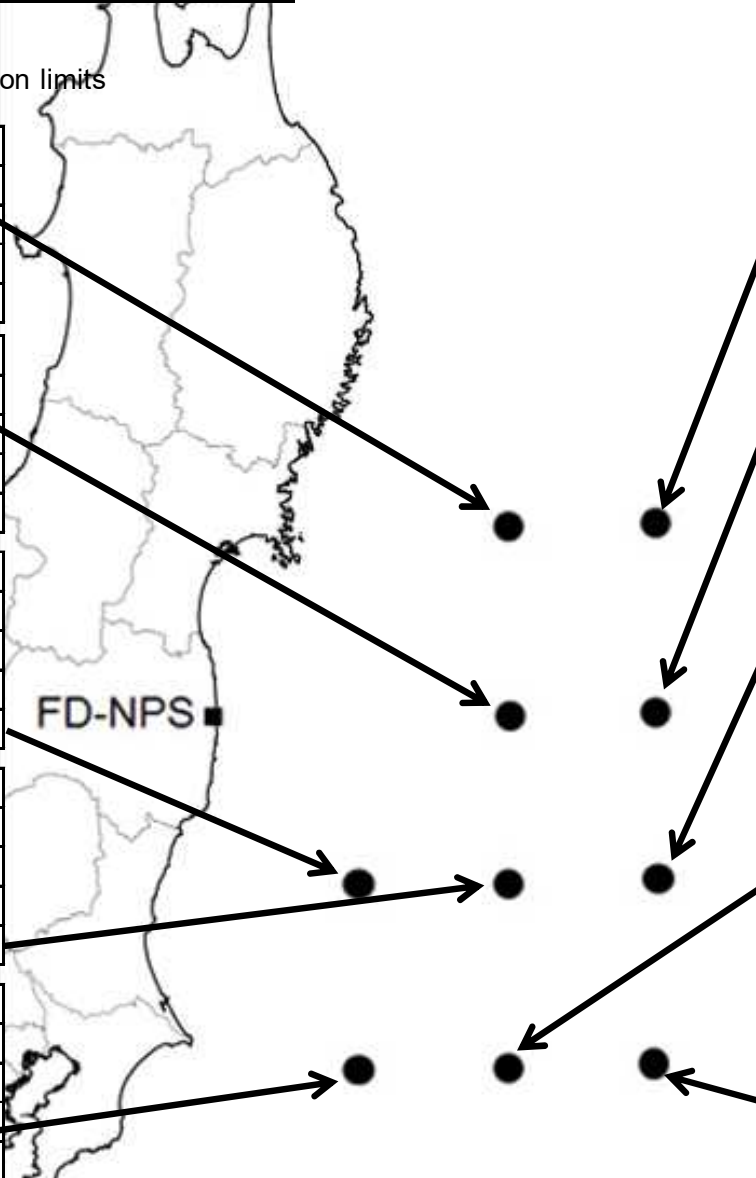
|      |           |             |         |      |
|------|-----------|-------------|---------|------|
| M-10 | 2017/5/27 | ND(0.00059) | 0.0011  | 1m   |
|      |           | ND(0.00058) | 0.0011  | 100m |
|      |           | ND(0.00062) | 0.00097 | 200m |
|      |           | ND(0.00057) | 0.00099 | 300m |
|      |           | ND(0.00055) | 0.00071 | 500m |

|      |           |             |         |      |
|------|-----------|-------------|---------|------|
| M-14 | 2017/5/28 | ND(0.00059) | 0.0027  | 1m   |
|      |           | ND(0.00062) | 0.0023  | 100m |
|      |           | ND(0.00051) | 0.0018  | 200m |
|      |           | ND(0.00055) | 0.0012  | 300m |
|      |           | ND(0.00054) | 0.00081 | 500m |

|      |           |             |         |      |
|------|-----------|-------------|---------|------|
| M-19 | 2017/5/31 | ND(0.00055) | 0.0025  | 1m   |
|      |           | ND(0.00062) | 0.0025  | 100m |
|      |           | ND(0.00061) | 0.0026  | 200m |
|      |           | ND(0.00064) | 0.0018  | 300m |
|      |           | ND(0.00063) | 0.00096 | 500m |

|      |           |             |        |      |
|------|-----------|-------------|--------|------|
| M-20 | 2017/5/29 | ND(0.00063) | 0.0018 | 1m   |
|      |           | ND(0.00059) | 0.0027 | 100m |
|      |           | ND(0.00059) | 0.0028 | 200m |
|      |           | ND(0.00062) | 0.0027 | 300m |
|      |           | ND(0.00062) | 0.0024 | 500m |

|      |           |             |        |      |
|------|-----------|-------------|--------|------|
| M-25 | 2017/5/31 | ND(0.00063) | 0.0016 | 1m   |
|      |           | ND(0.00062) | 0.0023 | 100m |
|      |           | ND(0.00062) | 0.0027 | 200m |
|      |           | ND(0.00062) | 0.0032 | 300m |
|      |           | ND(0.00061) | 0.0032 | 500m |



|      |           |             |         |      |
|------|-----------|-------------|---------|------|
| M-11 | 2017/5/27 | ND(0.00059) | 0.0024  | 1m   |
|      |           | ND(0.00052) | 0.0023  | 100m |
|      |           | ND(0.00060) | 0.0019  | 200m |
|      |           | ND(0.00059) | 0.0014  | 300m |
|      |           | ND(0.00061) | 0.00075 | 500m |

|      |           |             |        |      |
|------|-----------|-------------|--------|------|
| M-15 | 2017/5/28 | ND(0.00067) | 0.0018 | 1m   |
|      |           | ND(0.00061) | 0.0017 | 100m |
|      |           | ND(0.00070) | 0.0016 | 200m |
|      |           | ND(0.00061) | 0.0011 | 300m |
|      |           | ND(0.00063) | 0.0010 | 500m |

|      |           |             |        |      |
|------|-----------|-------------|--------|------|
| M-21 | 2017/5/29 | ND(0.00057) | 0.0016 | 1m   |
|      |           | ND(0.00064) | 0.0025 | 100m |
|      |           | ND(0.00058) | 0.0031 | 200m |
|      |           | ND(0.00057) | 0.0031 | 300m |
|      |           | ND(0.00060) | 0.0021 | 500m |

|      |           |             |        |      |
|------|-----------|-------------|--------|------|
| M-26 | 2017/5/30 | ND(0.00056) | 0.0018 | 1m   |
|      |           | ND(0.00054) | 0.0021 | 100m |
|      |           | ND(0.00057) | 0.0030 | 200m |
|      |           | ND(0.00056) | 0.0029 | 300m |
|      |           | ND(0.00057) | 0.0020 | 500m |

|      |           |             |        |      |
|------|-----------|-------------|--------|------|
| M-27 | 2017/5/30 | ND(0.00059) | 0.0016 | 1m   |
|      |           | ND(0.00064) | 0.0029 | 100m |
|      |           | ND(0.00061) | 0.0031 | 200m |
|      |           | ND(0.00061) | 0.0028 | 300m |
|      |           | ND(0.00062) | 0.0026 | 500m |

