

Environmental effect caused by the nuclear power accident at Fukushima Daiichi nuclear power station: As of June 10

| Environmental effect                | Area within 30 km radius                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Area in Fukushima Pref beyond 30 km                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Other prefectures in east Japan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| Air Dose Rate                       | <b>&lt;Trend and Pattern of air dose rate distribution&gt;</b><br>Trend : Air dose rate has been decreasing gradually since it reached its peak just after the accident occurred. ｡ Pattern: Relatively high level of radiation has been monitored in the area north east of the power station.<br>NSC evaluates the Environmental Monitoring Results published by MEXT almost every day.(Japanese)→ <a href="http://www.nsc.go.jp/NSCenglish/mnt/index.htm">http://www.nsc.go.jp/NSCenglish/mnt/index.htm</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Radiation Level of dust             | <b>&lt;Result of monitoring published by MEXT on6/5 ( μ Sv/hr) &gt;</b><br>•Tamura (0.3–1.4), Katsurao(1.3–2.4), Kawauchi(0.2–1.1), Naimie (5.2–41.3) Hirono(0.2), Minamisoma(0.1–2.5), Naraha(0.5)<br><b>&lt;Establishing Evacuation area and other special area &gt;</b><br>•Evacuation area :Area within 20km radius (R)<br>•Deliberate Evacuation Area :High radiation area within 30km R beyond 20 km R<br>•Emergency Evacuation Preparation Areas :Other area within 30km R<br><b>&lt;School&gt;</b> All preschools and schools close within 30km R                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>&lt;Result of monitoring published by MEXT on6/5 ( μ Sv/hr) &gt;</b><br>•Iwaki(0.1–2.6)、Koriyama(0.7–0.8)、Soma(0.4–0.6)、Iitate(1.2–16.3)、Date(0.7–3.6)、Kawamata(0.8–3.3)、Nihonmatsu(0.7–1.2)、Fukushima(0.1–1.9)、Ono(0.2)<br><b>&lt;School&gt;</b><br>•Countermeasures for Reducing Dose Rate in Schoolyards such as top/bottom soil subscription conducting<br>•MEXT has implemented and strengthened various radiation monitoring surveys at schools in Fukushima pref, especially 52 schools, in which relatively high radiation was monitored | <b>&lt;Result of broad area monitoring published by the cabinet on 6/6&gt;</b><br>•Maximum value in area beyond Fukushima Pref<br>0.097 μ Sv/h observed at Mito city in Ibaragi Pref at 08:00 on June 5                                                                                                                                                                                                                                                                                                                                                                                    |
| Radioactivity in the Soil           | <b>&lt;Cesium:Cs &gt;</b><br>•Cs has been detected in soil at many spots in Fukushima Pref. Places in which high level of Cs was detected are Iitate, Namie, Kawamata, and Katsurao<br><b>&lt;Strontium:Sr&gt;</b><br>•Sr was detected in all 11 locations where MEXT conducted soil monitoring. NSC said that the amount detected in every 11 locations is so small that there is no immediate health effect to the residents. MEXT considers strengthening monitoring Sr in soil.<br><b>&lt;Restriction of farming&gt;</b> Rice planting has been restricted in the area where relatively high amount of Cs was detected.<br><b>&lt;R&amp;D for decontaminating soil in farmland&gt;</b> MAFF is conducting experiments aimed at removing radioactive material from farmland.                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>&lt;Survey of soil contamination&gt;</b><br>•MEXT began taking soil samples for the purpose of making regional soil contamination map. (6/6)                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Agricultural and livestock products | <b>&lt;Shipment/intake restraint, voluntary restraint of shipment&gt;</b><br>•Radioactive substance in excess of provisional standard was found in some products from some areas. Instruction of shipment/intake restraint has been imposed on appropriate products.<br>Products subject to request of shipment/intake restraint and voluntary restraint of shipment→ <a href="http://www.maff.go.jp/e/quake/press_110602a-1.html">http://www.maff.go.jp/e/quake/press_110602a-1.html</a><br><b>&lt;Tea leaves&gt;</b><br>•Radioactive substance in excess of 500Bq/kg was found in Tea leaves grown in Fukushima Pref. Shipment has been voluntarily restrained.<br>National government is preparing instruction of shipment/intake restraint for this product.(6/2)<br><b>&lt;Pasture grass →milk cow and beef cattle&gt;</b><br>•Radioactive substance in excess of provisional standard was found in pasture grass growing in some area. Shipment of milk cow and beef cattle has been voluntarily restrained. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>&lt;Shipment/intake restraint, voluntary restraint of shipment&gt;</b><br>•Products subject to request of shipment/intake restraint lifted except tea leaves. (As of 6/6)<br><b>&lt;Tea leaves&gt;</b><br>•Cs in excess of 500Bq/kg was found in tea leaves grown outside Fukushima Pref. Shipment has been voluntarily restrained. .(6/2)<br><b>&lt;Pasture grass →milk cow and beef cattle&gt;</b><br>•Radioactive substance in excess of provisional standard was found in pasture grass growing in some area. Shipment of milk cow and beef cattle has been voluntarily restrained. |
| River (Drinking water)              | <b>&lt;Tap water&gt;</b><br>•The survey has been continuously conducted by the Government on radioactive materials in tap water. No result exceeding the “Index values for infants (radioactive iodine)” was found in the latest survey. (as of 6/8)<br><b>&lt;River fish&gt;</b><br>•Cs in excess of 500Bq/kiu was found in river fish caught in Fukushima Pref. Instruction of shipment/intake restraint is being imposed on appropriate products.<br>Products subject to request of shipment/intake restrainand voluntary restraint of shipment→ <a href="http://www.maff.go.jp/e/quake/press_110602a-1.html">http://www.maff.go.jp/e/quake/press_110602a-1.html</a>                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>&lt;Tap water&gt;</b><br>•No results exceeding the “Index values for infants (radioactive iodine)” was found in in the latest survey. (as of 6/8)                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Other                               | <b>&lt;Sludge at sewerage processing plant, Debris created after Earthquake and Tunami&gt;</b><br>•Radioactive substance was found in sludge from sewerage processing plant and debris in many areas. NSC established guideline for dealing with contaminated waste (6/3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                     | <b>&lt;Ditch&gt;</b><br>•High radiation levels have been detected above roadside drainage ditches in Fukushima Pref. NSC has noted the need to remove highly radioactive mud and leaves from ditches along busy streets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

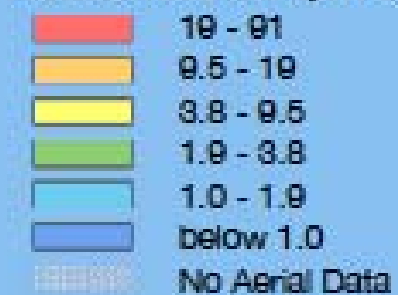
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| Sea                                             | <p>&lt;Sea water&gt;</p> <ul style="list-style-type: none"> <li>•Radioactive substance has been detected near the water intake of the power station. No radioactive substance was detected in all seawater samples taken from some locations beyond 30 km off-island in the latest survey.</li> </ul> <p>&lt;Soil on seabed&gt; Radioactive substance was found in the soil samples taken from the seabed 15–20km off the coast of the power station. (5/4)</p> <p>&lt;Marine Product&gt; Radioactive substance in excess of provisional standard was found in some marine products off the coast of Fukushima pref. All fishing activity has been voluntarily stopped.</p> <p>Products subject to request of shipment/intake restrainand voluntary restraint of shipment→<a href="http://www.maff.go.jp/e/quake/press_110602a-1.html">http://www.maff.go.jp/e/quake/press_110602a-1.html</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>&lt;Seawater&gt;</p> <ul style="list-style-type: none"> <li>•Radioactive substance is not detected in seawater samples taken from the sea off the coast of Ibaraki Pref in the latest survey.</li> </ul> <p>&lt;Soil on seabed&gt;</p> <ul style="list-style-type: none"> <li>•Radioactive substance was found in the soil samples taken from the seabed off the coast of Miyagi Pref and Ibaraki Pref ,10–30km far away from the power station . (5/4)</li> </ul> <p>&lt;Marine Product&gt;</p> <ul style="list-style-type: none"> <li>•Radioactive substance in excess of provisional standard was found in sand lane fish caught off the coast of Ibaraki Pref. Season for sand lane fish fishing in this area was over this year. .</li> </ul> |
| Monitoring plan and activities                  | <p>Various kinds of radiation monitoring and survey have been conducted on a regional scale under the cooperation of national government, local government and civil agency in line with plan made by national government.</p> <p>→Monitoring plan in the area→<a href="http://www.mext.go.jp/english/incident/1304079.htm">http://www.mext.go.jp/english/incident/1304079.htm</a></p> <ul style="list-style-type: none"> <li>•Radiation is to be created based on the result of land area monitoring, airborne monitoring and sea area monitoring.</li> </ul> <p>→“Strengthening of Monitoring in Response to the “Enforced Plan on Environmental Monitoring”<a href="http://www.mext.go.jp/component/english/_icsFiles/afieldfile/2011/06/03/1304084_0511.pdf">http://www.mext.go.jp/component/english/_icsFiles/afieldfile/2011/06/03/1304084_0511.pdf</a></p> <ul style="list-style-type: none"> <li>•Monitoring and survey of food and tap water have been conducted by local government。</li> </ul> <p>→Guideline on provisional standard for radioactive substance contained in food published by Ministry of Health, Labor and Welfare on April.4.(Japanese) <a href="http://www.wic-net.com/downloads/pdf/1513_12_1.pdf">http://www.wic-net.com/downloads/pdf/1513_12_1.pdf</a></p> <ul style="list-style-type: none"> <li>•Intensive radiation monitoring such as soil sampling, dust sampling and survey with integrating dosimeter has been conducted at schools in Fukushima Pref.</li> <li>•Result of various kind of environmental radiation monitoring and survey has been shown at MEXT’ s HP.→<a href="http://www.mext.go.jp/english/incident/1303962.htm">http://www.mext.go.jp/english/incident/1303962.htm</a></li> <li>•Result of survey on tap water and foods has been shown at the HP of ministry of health, labor and welfare→<a href="http://www.mhlw.go.jp/english/topics/2011eq/index.html">http://www.mhlw.go.jp/english/topics/2011eq/index.html</a></li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Standard and guideline                          | <ul style="list-style-type: none"> <li>•Establishment of provisional standard for radioactive substance contained foods based on food sanitation act.(Japanese)→<a href="http://www.nsc.go.jp/info/20100823.pdf">http://www.nsc.go.jp/info/20100823.pdf</a></li> <li>•Provisional guideline on utilization of school buildings and school yard in Fukushima Pref established by MEXT on April 19.(Japanese)→<a href="http://www.mext.go.jp/a_menu/saigaijohou/syousai/1305173.htm">http://www.mext.go.jp/a_menu/saigaijohou/syousai/1305173.htm</a></li> <li>•Roadmap for Immediate Actions for the Assistance of Nuclear Sufferers (5/17:Nuclear Emergency Response Headquarters)→<a href="http://www.meti.go.jp/english/earthquake/nuclear/roadmap/pdf/110517roadmap_assistance.pdf">http://www.meti.go.jp/english/earthquake/nuclear/roadmap/pdf/110517roadmap_assistance.pdf</a></li> <li>•Guideline on process waste affected by the nuclear accident of Fukushima Daiichi nuclear power station owned by Tokyo Electric Power Company (Japanese)→<a href="http://www.nsc.go.jp/anzen/shidai/genan2011/genan039/siryo2.pdf">http://www.nsc.go.jp/anzen/shidai/genan2011/genan039/siryo2.pdf</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Radioactive material release to the environment | <p>NSC estimated total amount radioactive substance released between March 11 and April 5 : I–131 150000 tela Bq, Cs–137 12000 tela Bq</p> <p>It is 1/10 of radioactive substance released at Chernobyl nuclear accident</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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| <p><b>Abbreviation</b></p> <p>NSC: Nuclear Safety Commission</p> <p>MEXT: Ministry of Education, Culture, Sports, Science and Technology</p> <p>MAFF: Ministry of Agriculture, Forestry and Fisheries</p> |
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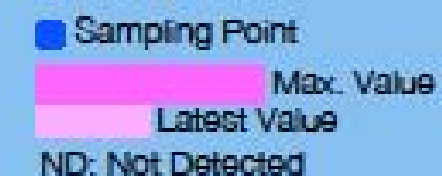
# Radiation in the Environment around Fukushima Daiichi NPS

Source: MEXT, U.S.DOE, and others

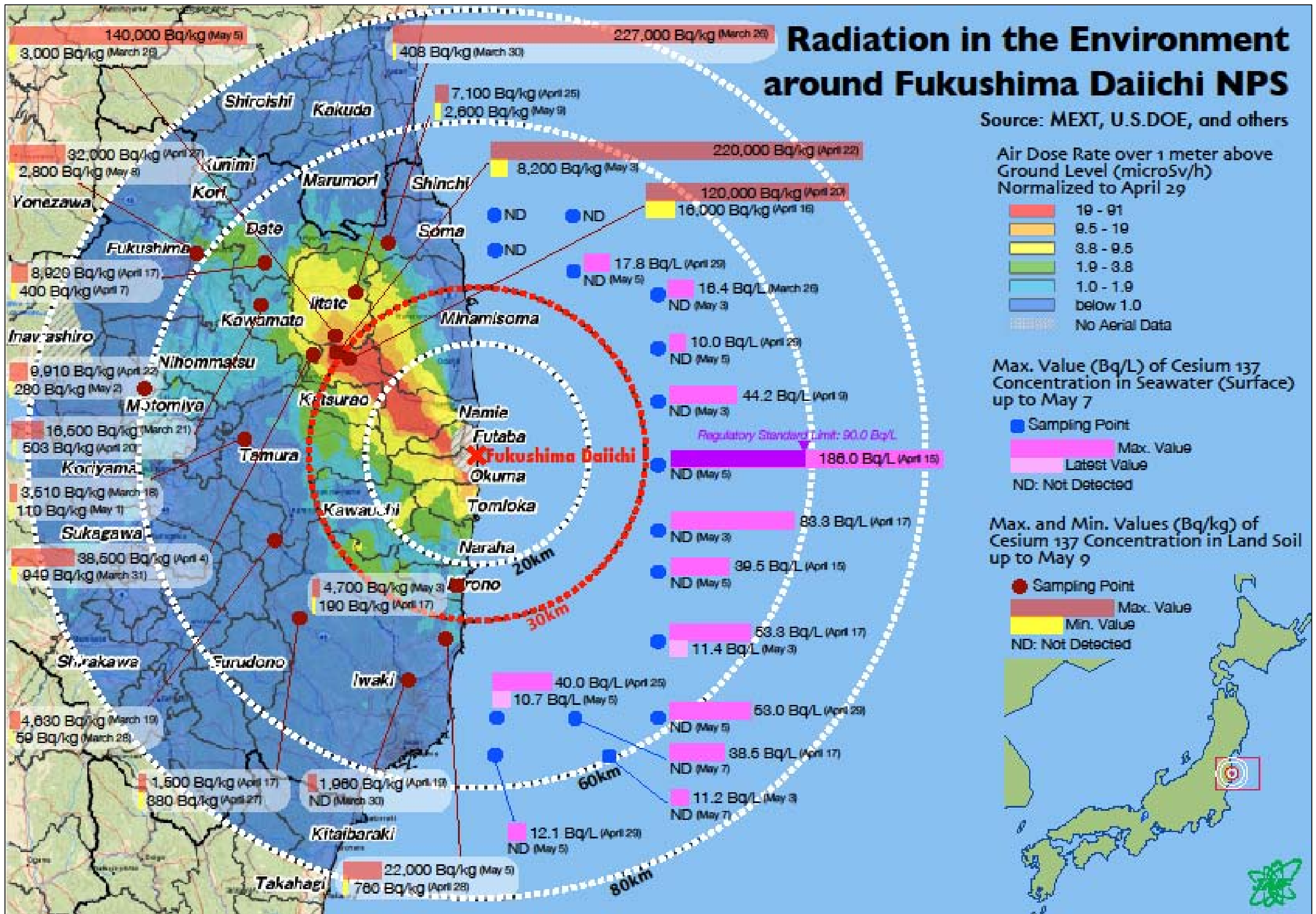
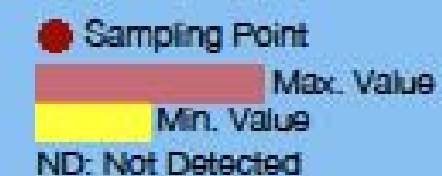
Air Dose Rate over 1 meter above Ground Level (microSv/h)  
Normalized to April 29



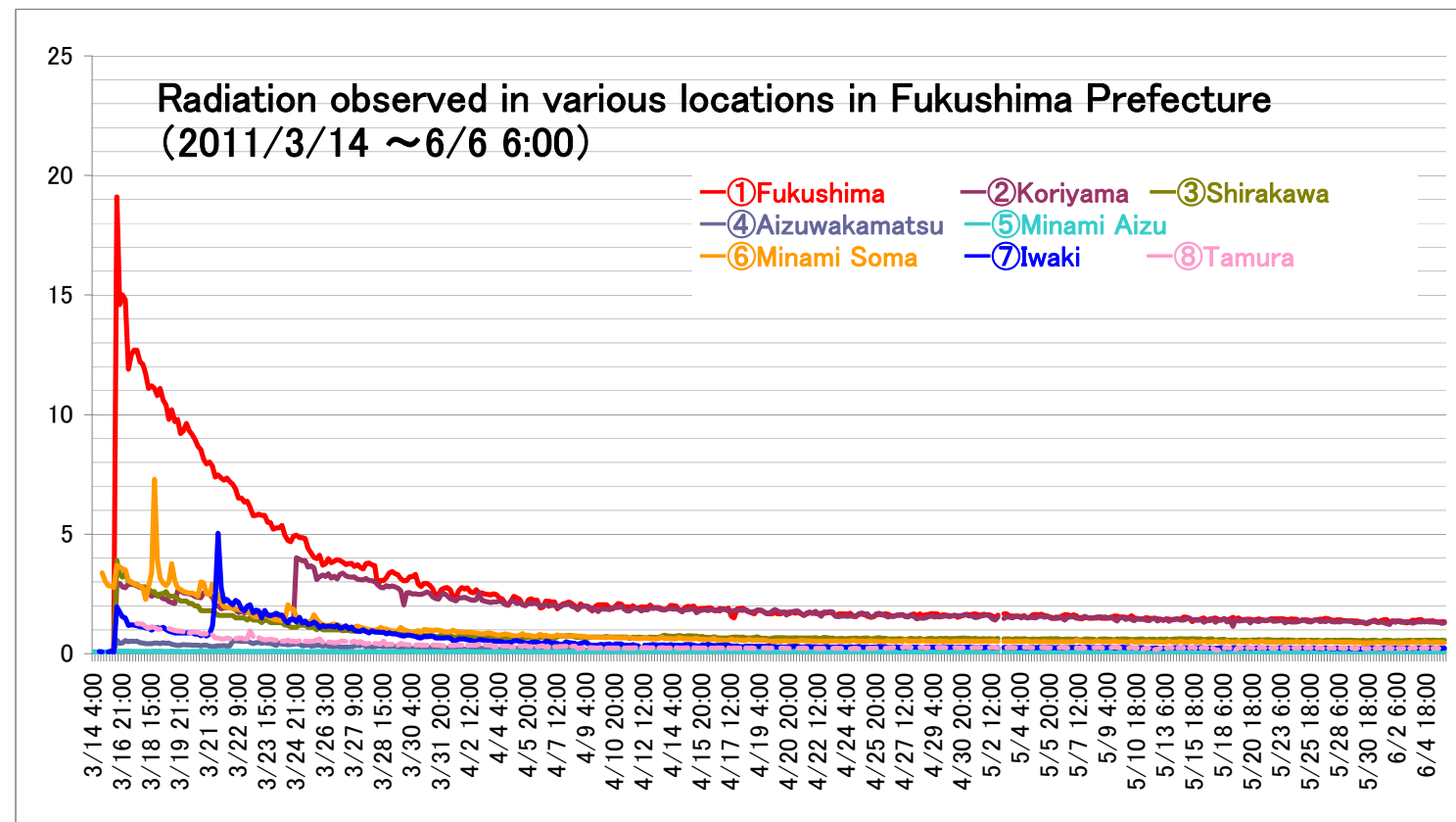
Max. Value (Bq/L) of Cesium 137  
Concentration in Seawater (Surface)  
up to May 7



Max. and Min. Values (Bq/kg) of  
Cesium 137 Concentration in Land Soil  
up to May 9



## Trend of radiation in the environment in various locations



### Locations for monitoring

