Supporting information

Spanish experience on modeling of environmental radioactive contamination due to Fukushima Daiichi NPP accident using JRODOS.

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Summary:

9 pages; 4 tables and 6 figures.

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Table S1. ^{137}Cs and ^{131}I estimated release

	Total discharge estimated in FNPP			Chernobyl (Bq)
	NISA (Bq)	NSC (Bq)	Re-estimation: NISA, JNES	
^{131}I … (a)	1.3×10^{17}	1.5×10^{17}	1.6×10^{17}	1.8×10^{18}
^{137}Cs	6.1×10^{15}	1.2×10^{16}	1.5×10^{16}	8.5×10^{16}
^{131}I equivalent (^{137}Cs) … (b)	2.4×10^{17}	4.8×10^{17}		3.4×10^{18}
Total ^{131}I … (a)+(b)	3.7×10^{17}	6.3×10^{17}		5.2×10^{18}

Table S2. Summary of the analyzed data (from 11/3/11 08:00 to 27/3/11 06:00).

Monitoring point	Period (UTC)	Gamma dose rate (μSv/h)		Amount of measurements
		Min	Max	
MP-1	12–13/3/11		150	88
MP-2	13/3/11		820	60
MP-3	13-14/3/11		518	35
MP-4	12-15/3/11		1557	1283
MP-5	14/3/11		<10	6
MP-7	14/3/11		1292	4
MP-8	11-12/3/11		80	195
Main gate	11-27/3/11	334	1932	331
Near the main gate	11-16/3/11	0.041	11930	620
Admin building North side	17- 21/3/11	2011	5055	419
Admin building South side	23-27/3/11	3100	3990	306
Side of Gym	16-17/3/11	372	752	18
West gate	15-27/3/11	91	2434	535
TOTAL				**3913**

Table S3. Framework for the operational and reconstructive modeling.

Parameter	Operational modeling	Reconstructive modeling
Meteorological data (forecast)	data of ECMFW in the one point	3-D data from WRF
Atmospheric dispersion model	ATSTEP of JRODOS	DIPCOT of JRODOS
Period of modeling	48 h (14/3/11 21:10 – 16/3/11 21:10 UTC)	12d 17h 12.3.11 06:15 - 24.3.11 23:15 UTC)
Duration of release	7.75 h (14.3.11 21:10- 15.3.11 4:55)	12d 7h 12.3.11 06:15 - 24.3.11 13:00
Radio of modeling (domain)	160 km	160 km
Resolution:		
Smallest grid	2 km	2 km;
Biggest grid	16 km	16 km
Time step	1 h	1 h
Radionuclides	25 radionuclides	^{131}I; ^{137}Cs
Height of emission [a]	10m	100m
Deposition velocity [b]	0.5 mm/s	5 mm/s

[a] Normal release – 30m; explosion 30 – 200m[27].

[b] With precision in each grid according to meteorological and topographical data.

Table S4. Comparison of the ^{137}Cs cumulative fallout measurements (from 20th to 24th of March) with accumulated deposition modeling.

Location	Measurement Bq/m^2	Modeling (Bq/m^2)
Ibaraki (Hitachinaka)	25531	8140
Yamagata (Yamagata)	6510	954
Tochigi (Utsunomiya)	929	118

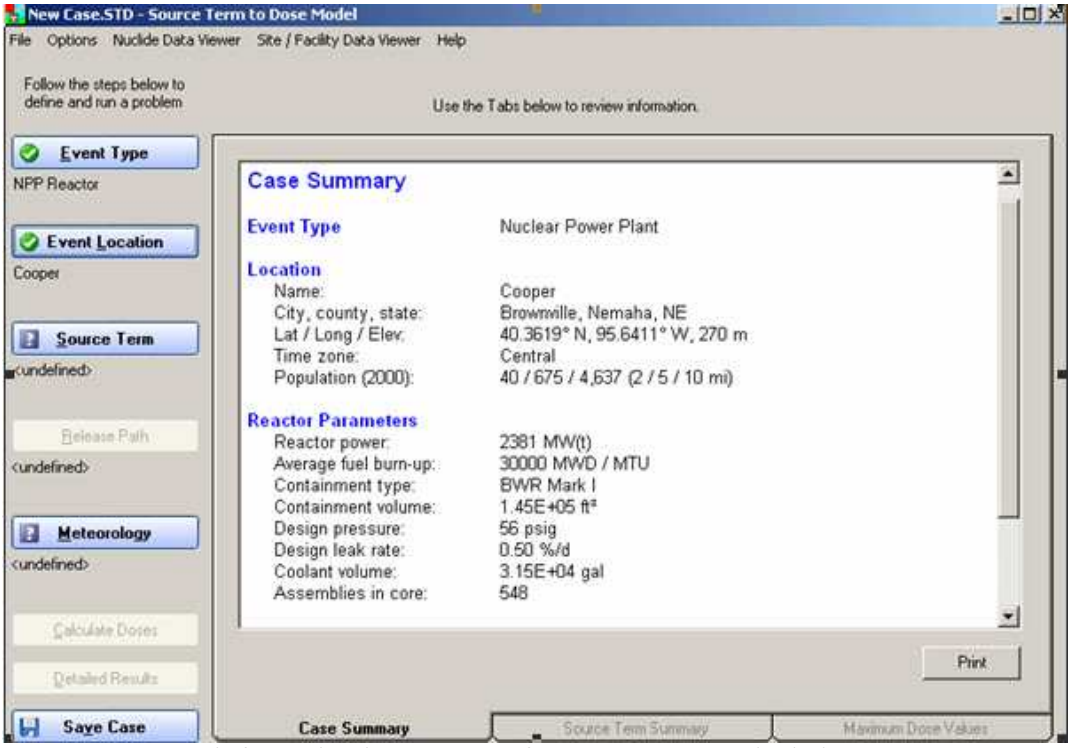

Figure S1. Input information in RASCAL for Source Term calculation.

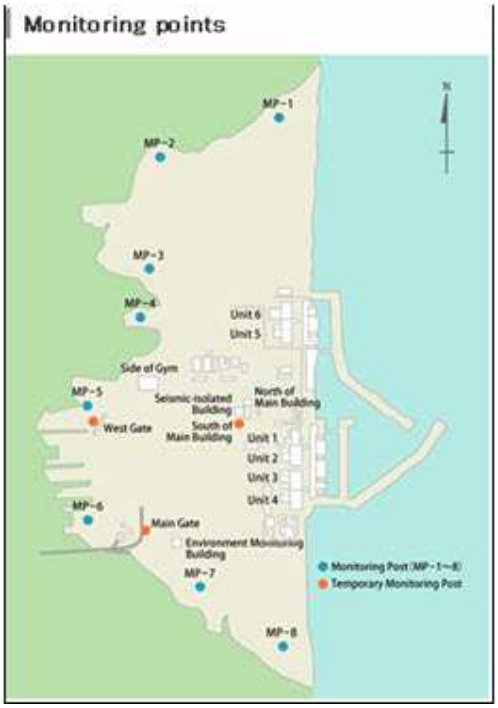

Figure S2. Monitoring points around FNPP (TEPCO, 2011b).

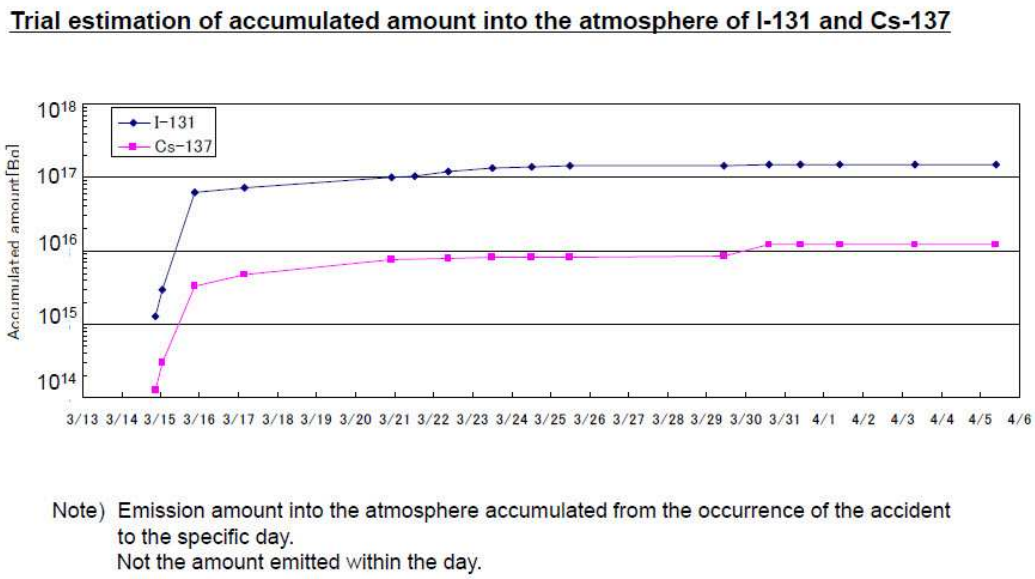

Figure S3. Estimation of ^{137}Cs and ^{131}I accumulated emission received by NSC (NSC, 2011).

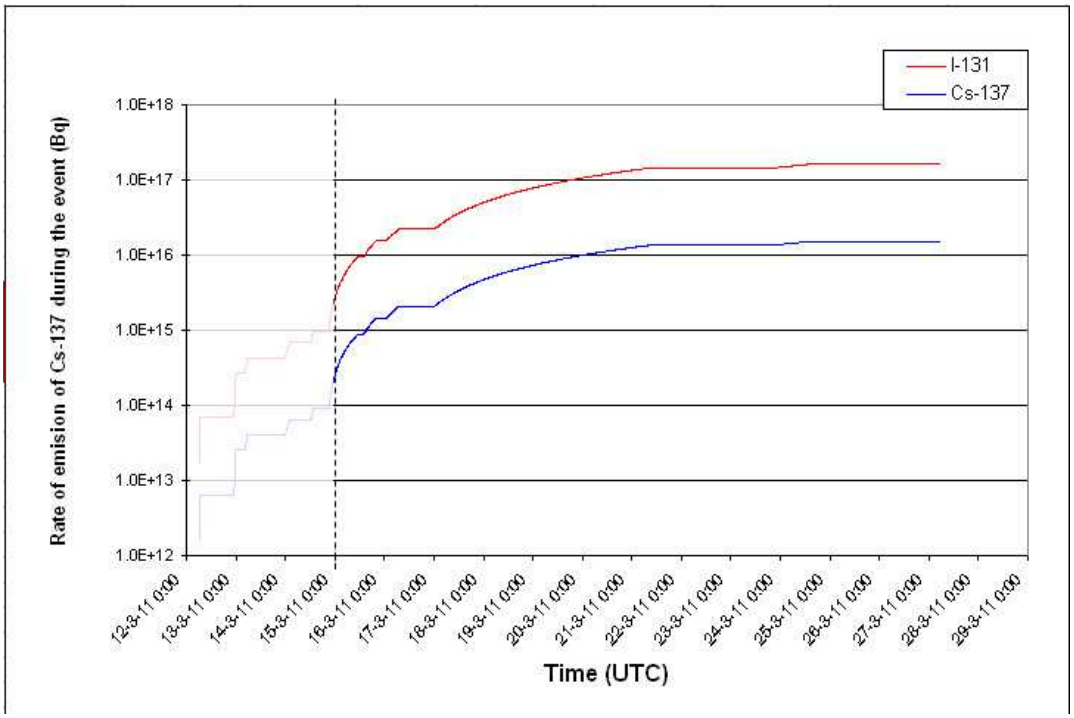

Figure S4. Estimation of ^{137}Cs and ^{131}I accumulated emission in this work. The estimation in this study was considered since the first release on 12th of March while NSC considered since 15th of March.

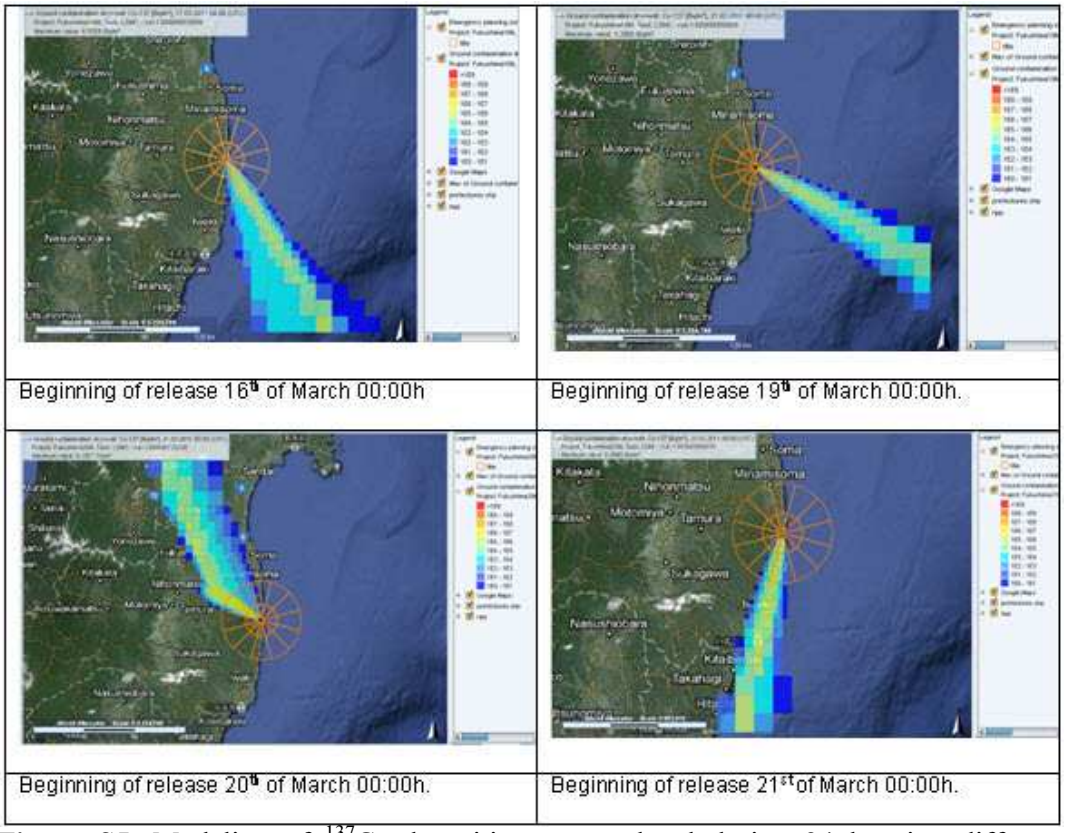

Figure S5. Modeling of ^{137}Cs deposition accumulated during 24 h using different weather conditions.

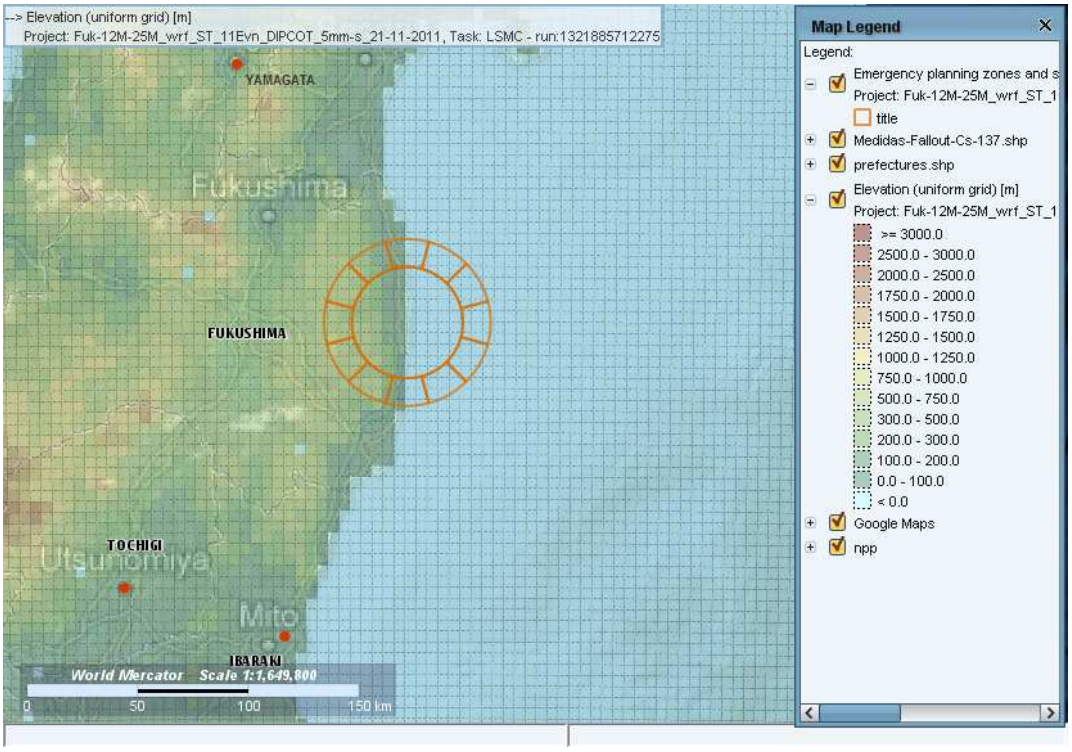

Figure S6. Topographical (elevation) map of calculated domain in JRODOS.