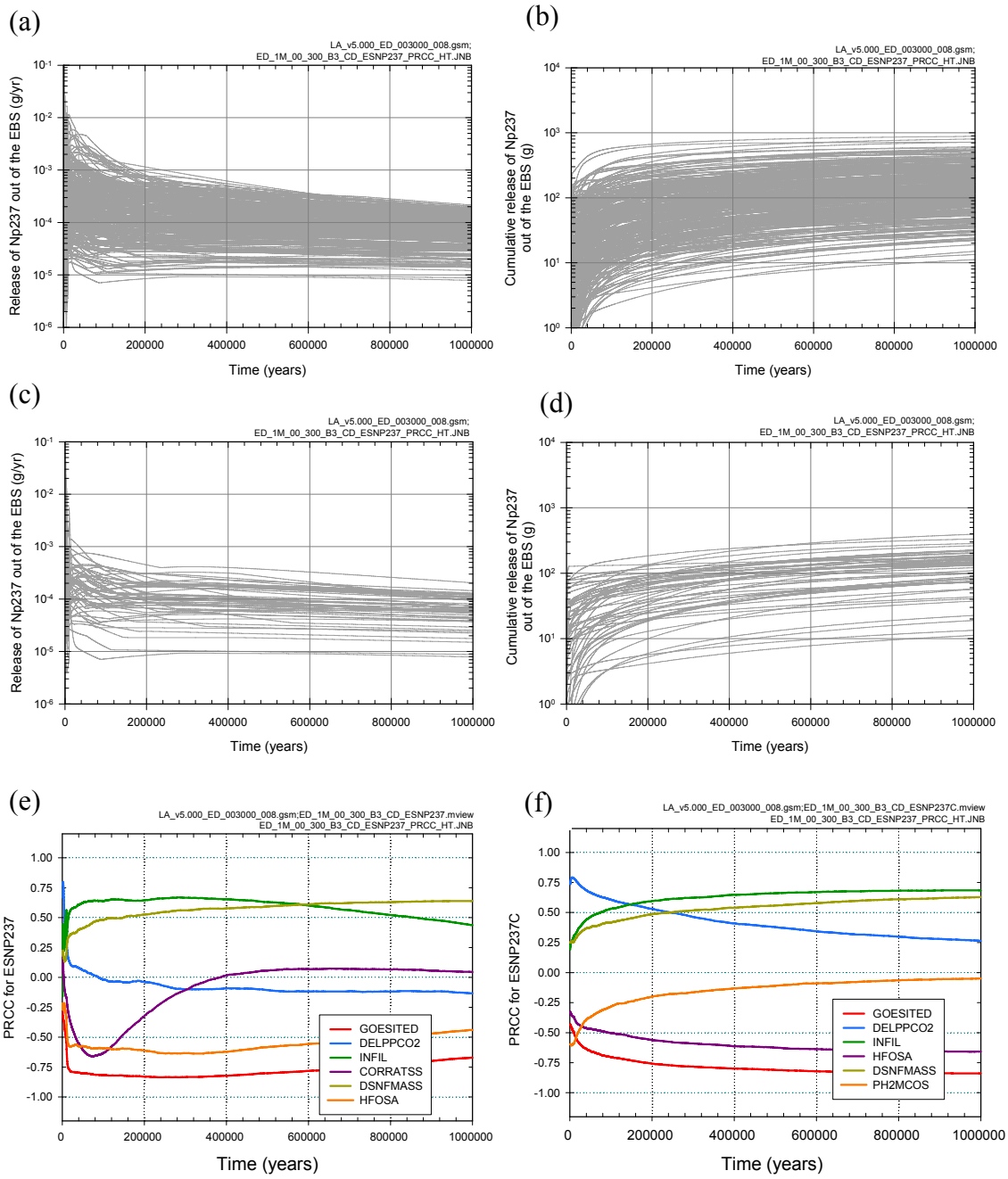
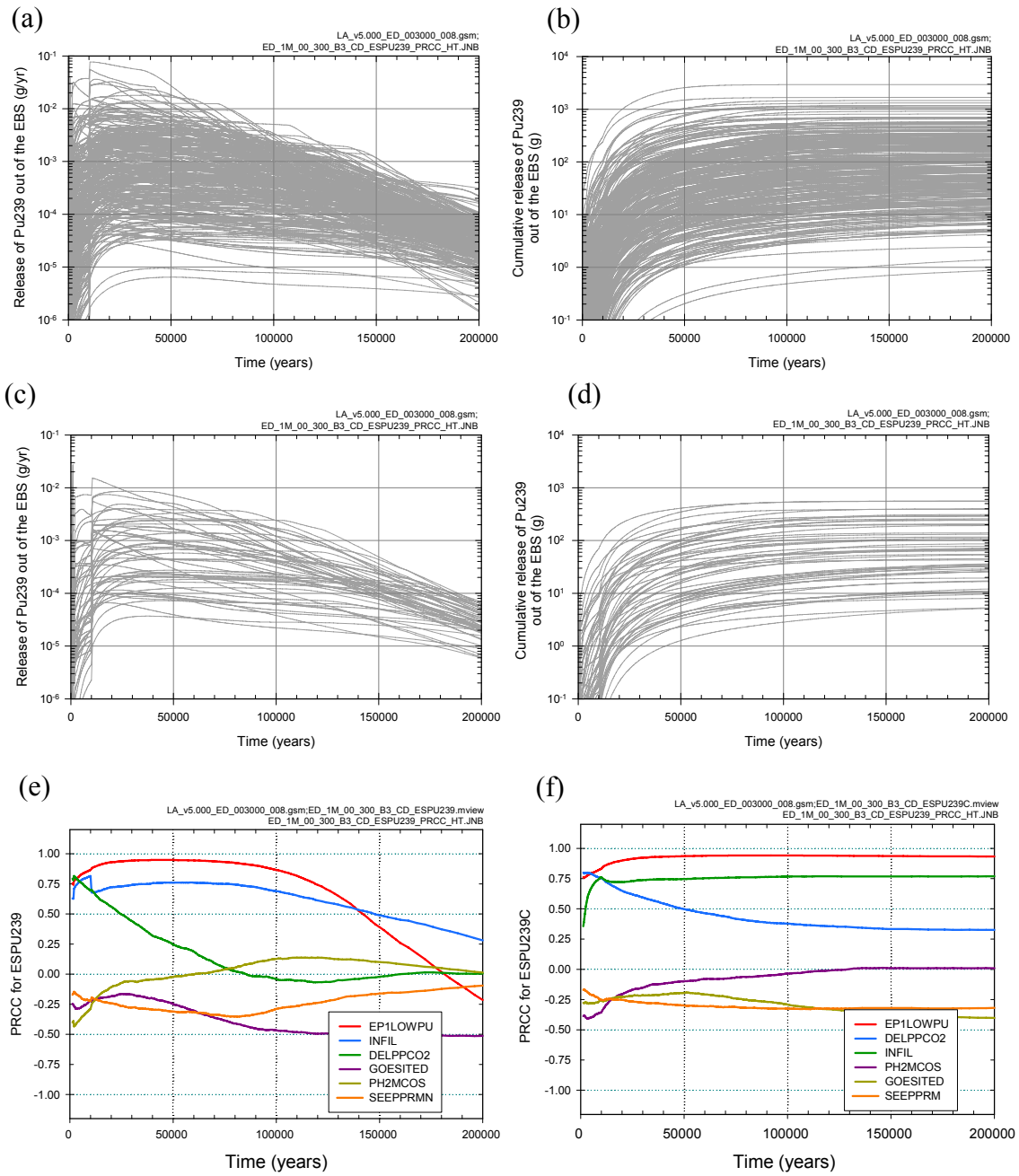


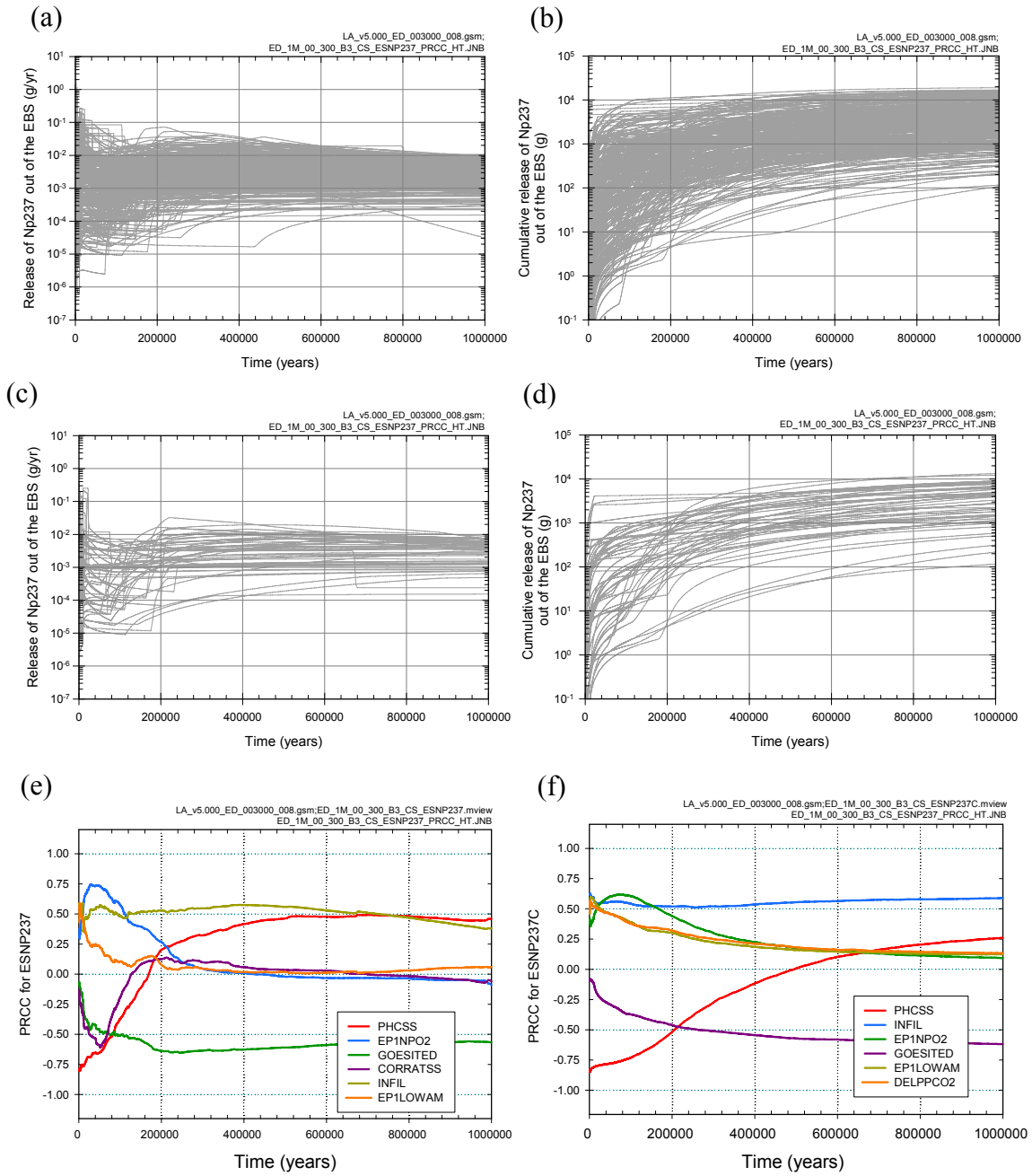
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.7-1. Time-dependent release rates (*ESNP237*, g/yr) and cumulative (i.e., integrated) releases (*ESNP237C*, g) over 1,000,000 years for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *ESNP237* and *ESNP237C* for all (i.e., 300) sample elements, (c, d) *ESNP237* and *ESNP237C* for first 50 sample elements, and (e, f) PRCCs for *ESNP237* and *ESNP237C*



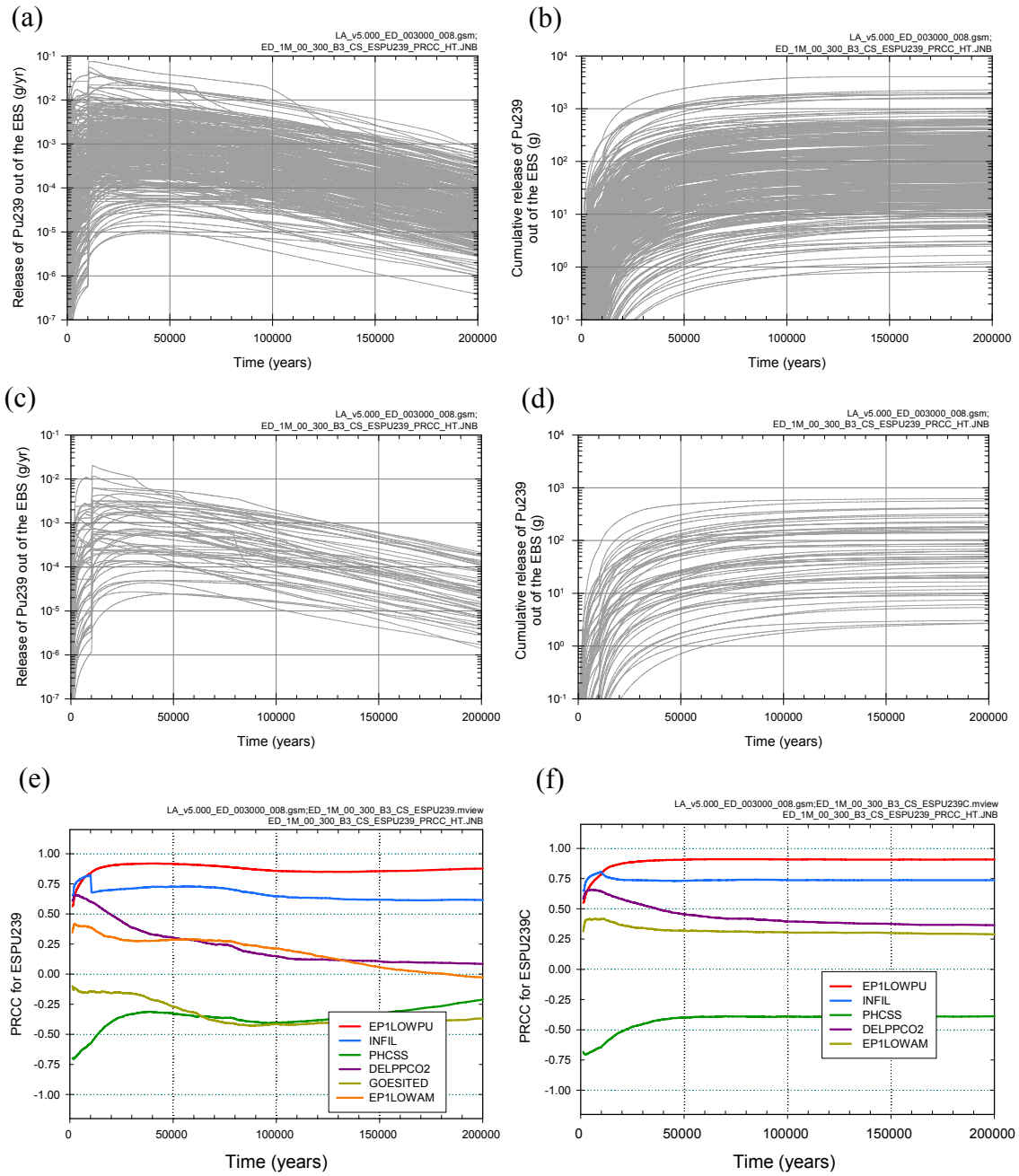
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.7-2. Time-dependent release rates (*ESPU239*, g/yr) and cumulative (i.e., integrated) releases (*ESPU239C*, g) over 200,000 years for the movement of dissolved ^{239}Pu from the EBS to the UZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *ESPU239* and *ESPU239C* for all (i.e., 300) sample elements, (c, d) *ESPU239* and *ESPU239C* for first 50 sample elements, and (e, f) PRCCs for *ESPU239* and *ESPU239C*.



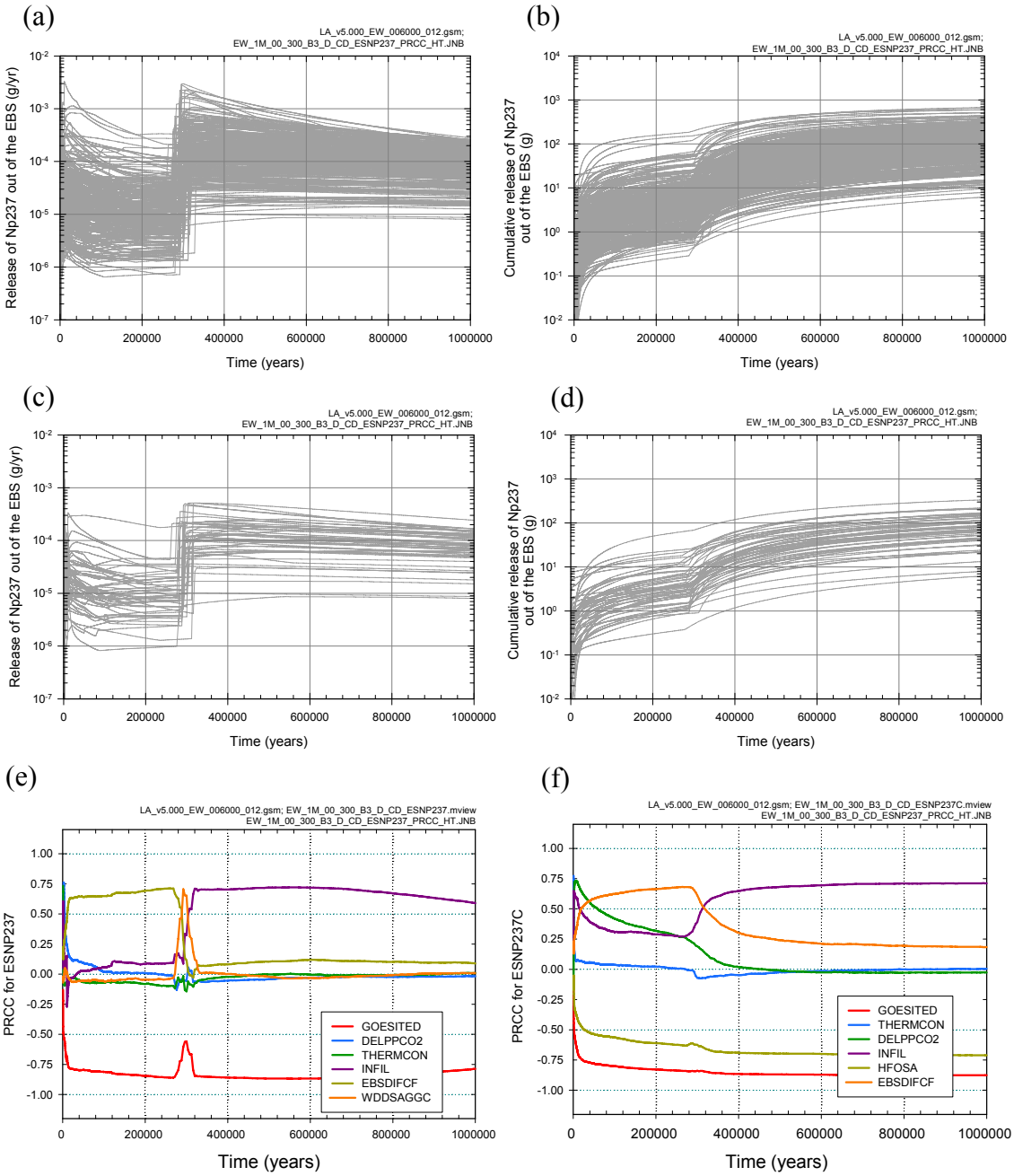
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.8-1. Time-dependent release rates (*ESNP237*, g/yr) and cumulative (i.e., integrated) releases (*ESNP237C*, g) over 1,000,000 years for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from a single early DS failure above a CSNF WP in percolation bin 3 under dripping conditions: (a, b) *ESNP237* and *ESNP237C* for all (i.e., 300) sample elements, (c, d) *ESNP237* and *ESNP237C* for first 50 sample elements, and (e, f) PRCCs for *ESNP237* and *ESNP237C.*



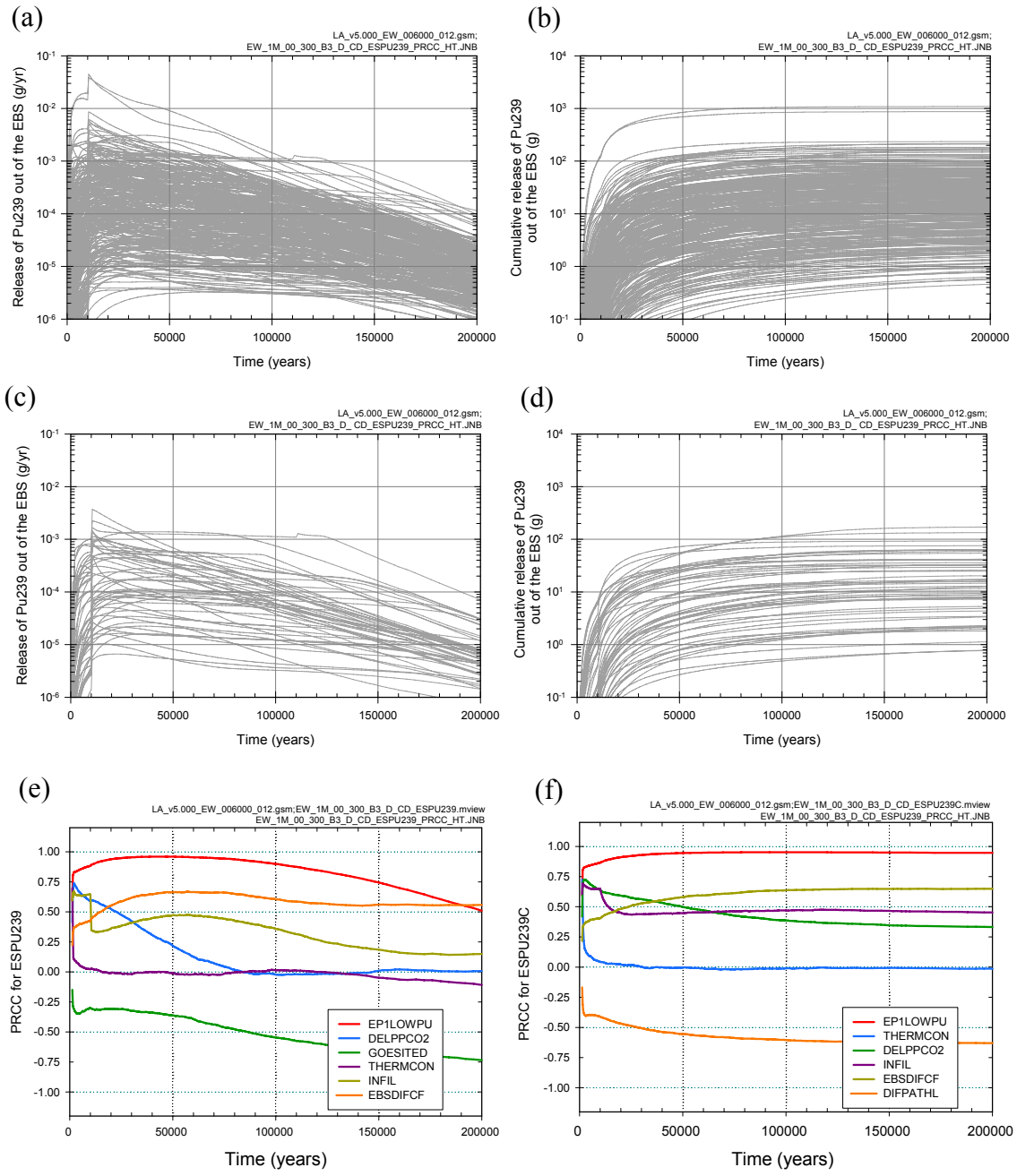
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.8-2. Time-dependent release rates (*ESPU239*, g/yr) and cumulative (i.e., integrated) releases (*ESPU239C*, g) over 200,000 years for the movement of dissolved ^{239}Pu from the EBS to the UZ resulting from a single early DS failure above a CSNF WP in percolation bin 3 under dripping conditions: (a, b) *ESPU239* and *ESPU239C* for all (i.e., 300) sample elements, (c, d) *ESPU239* and *ESPU239C* for first 50 sample elements, and (e, f) PRCCs for *ESPU239* and *ESPU239C*.



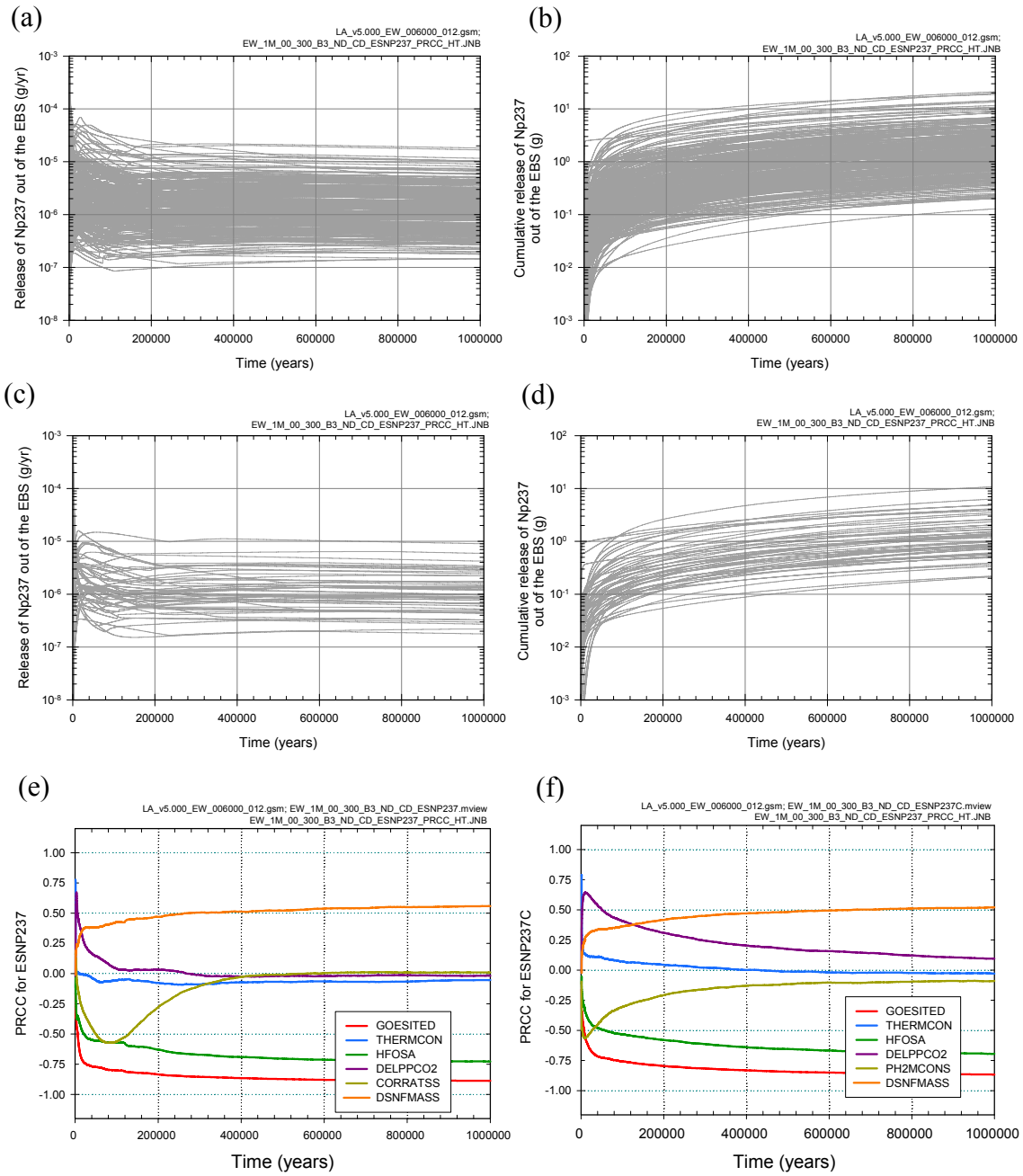
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.9-1. Time-dependent release rates (*ESNP237*, g/yr) and cumulative (i.e., integrated) releases (*ESNP237C*, g) over 1,000,000 years for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from the early failure of a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *ESNP237* and *ESNP237C* for all (i.e., 300) sample elements, (c, d) *ESNP237* and *ESNP237C* for first 50 sample elements, and (e, f) PRCCs for *ESNP237* and *ESNP237C.*



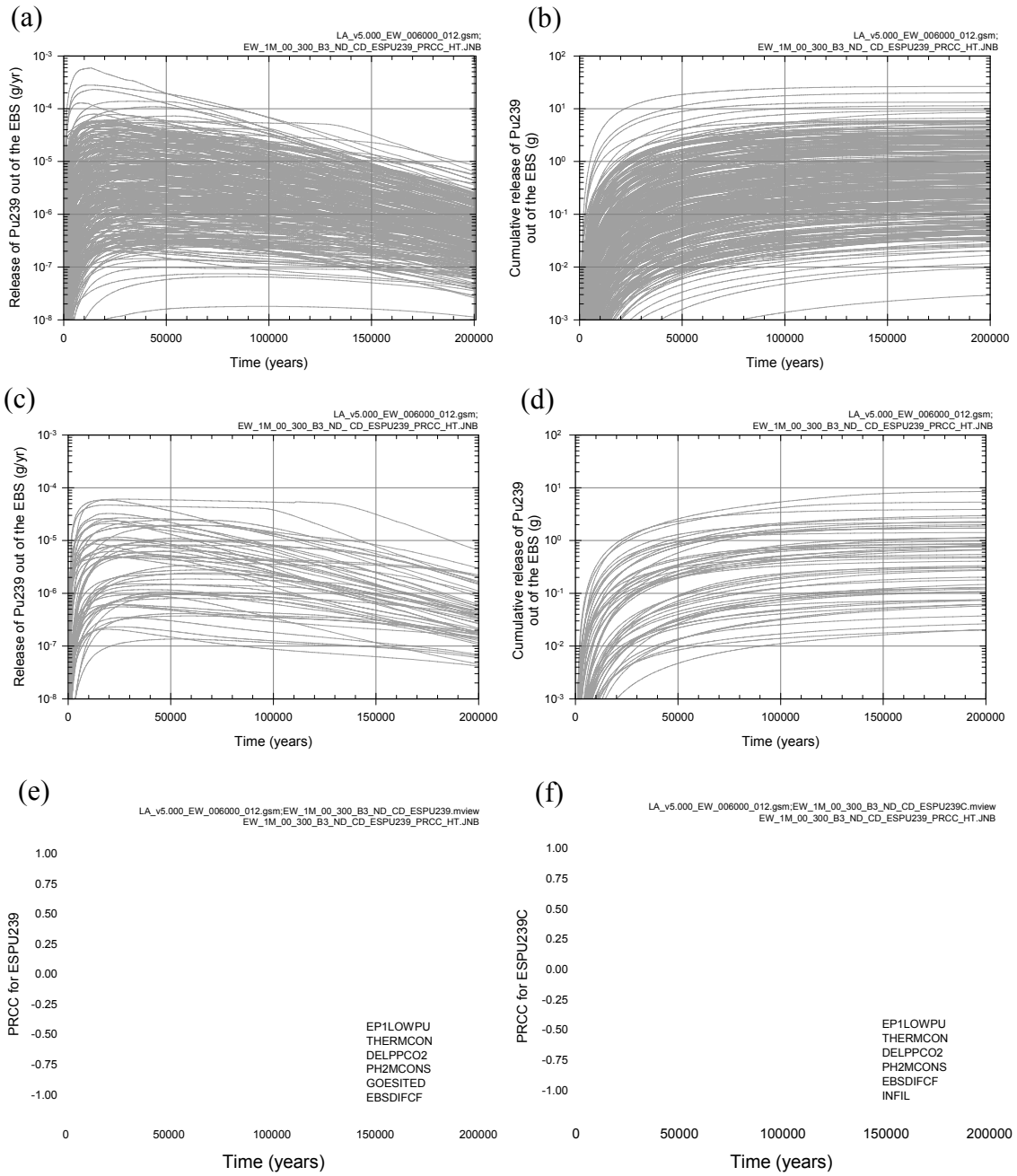
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.9-2. Time-dependent release rates (*ESPU239*, g/yr) and cumulative (i.e., integrated) releases (*ESPU239C*, g) over 200,000 years for the movement of dissolved ^{239}Pu from the EBS to the UZ resulting from the early failure of a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *ESPU239* and *ESPU239C* for all (i.e., 300) sample elements, (c, d) *ESPU239* and *ESPU239C* for first 50 sample elements, and (e, f) PRCCs for *ESPU239* and *ESPU239C*.



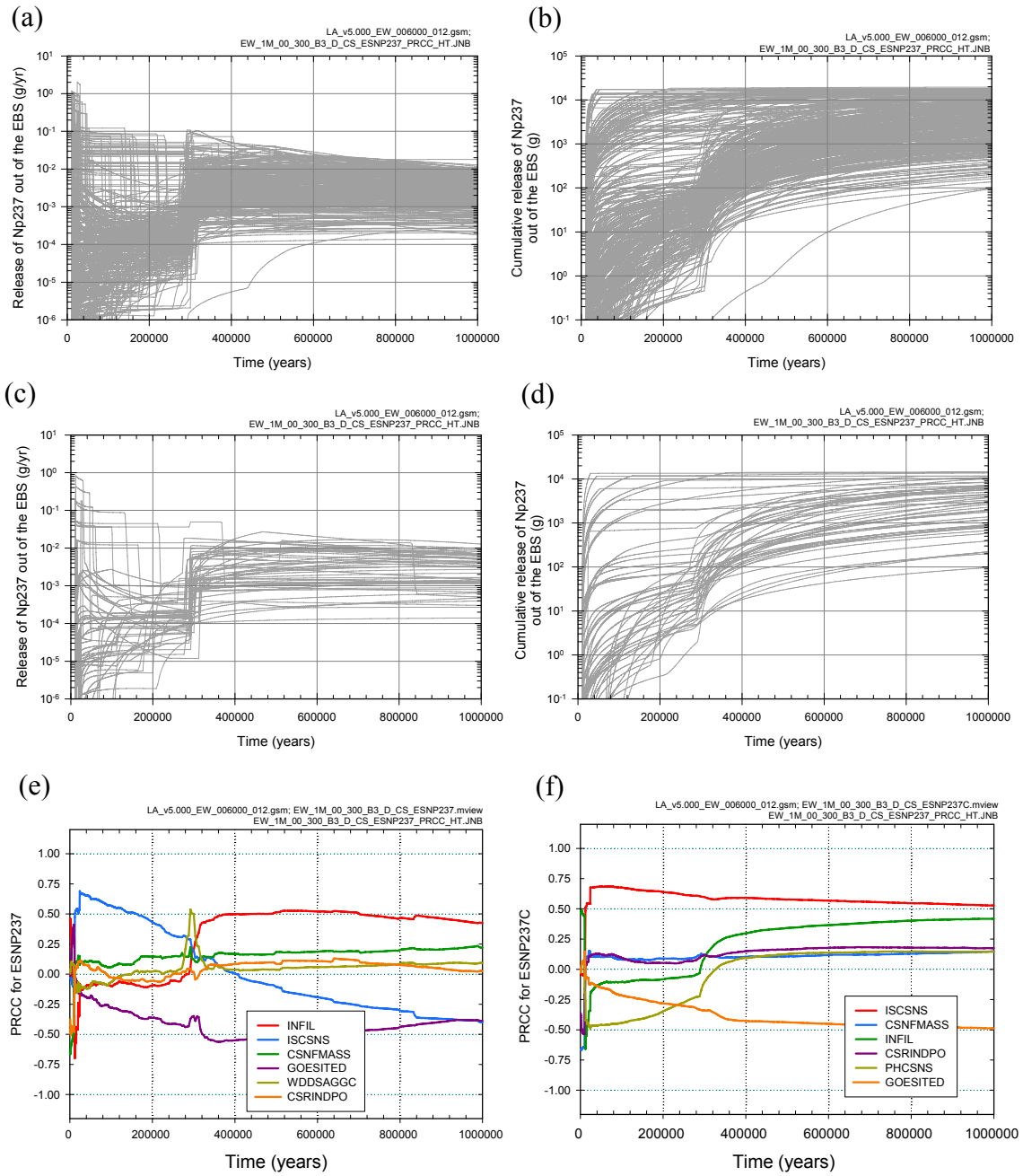
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.10-1. Time-dependent release rates (*ESNP237*, g/yr) and cumulative (i.e., integrated) releases (*ESNP237C*, g) over 1,000,000 years for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from the early failure of a CDSP WP in percolation bin 3 under nondripping conditions: (a, b) *ESNP237* and *ESNP237C* for all (i.e., 300) sample elements, (c, d) *ESNP237* and *ESNP237C* for first 50 sample elements, and (e, f) PRCCs for *ESNP237* and *ESNP237C*.



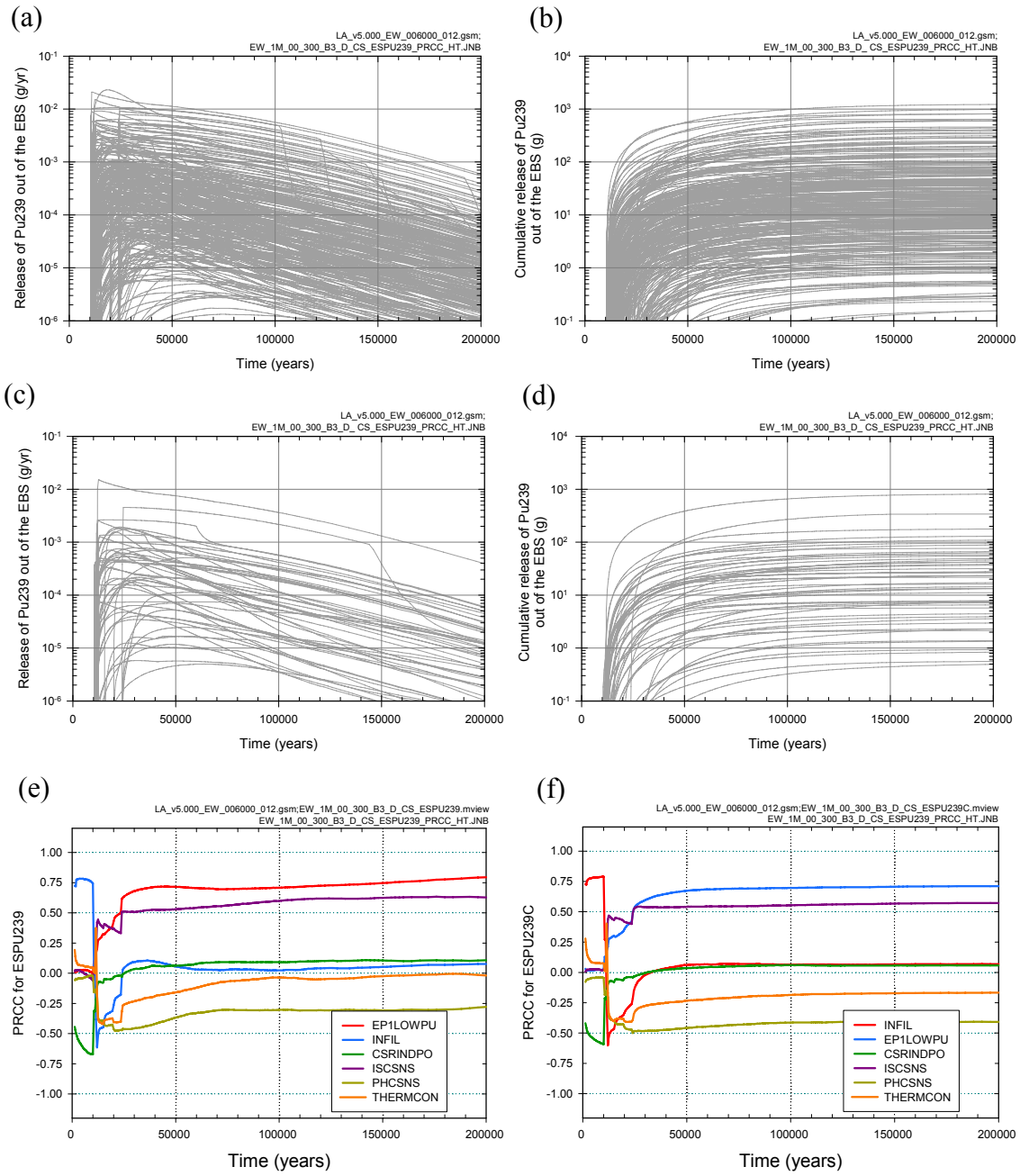
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.10-2. Time-dependent release rates (*ESPU239*, g/yr) and cumulative (i.e., integrated) releases (*ESPU239C*, g) over 200,000 years for the movement of dissolved ^{239}Pu from the EBS to the UZ resulting from the early failure of a CDSP WP in percolation bin 3 under nondripping conditions: (a, b) *ESPU239* and *ESPU239C* for all (i.e., 300) sample elements, (c, d) *ESPU239* and *ESPU239C* for first 50 sample elements, and (e, f) PRCCs for *ESPU239* and *ESPU239C*.



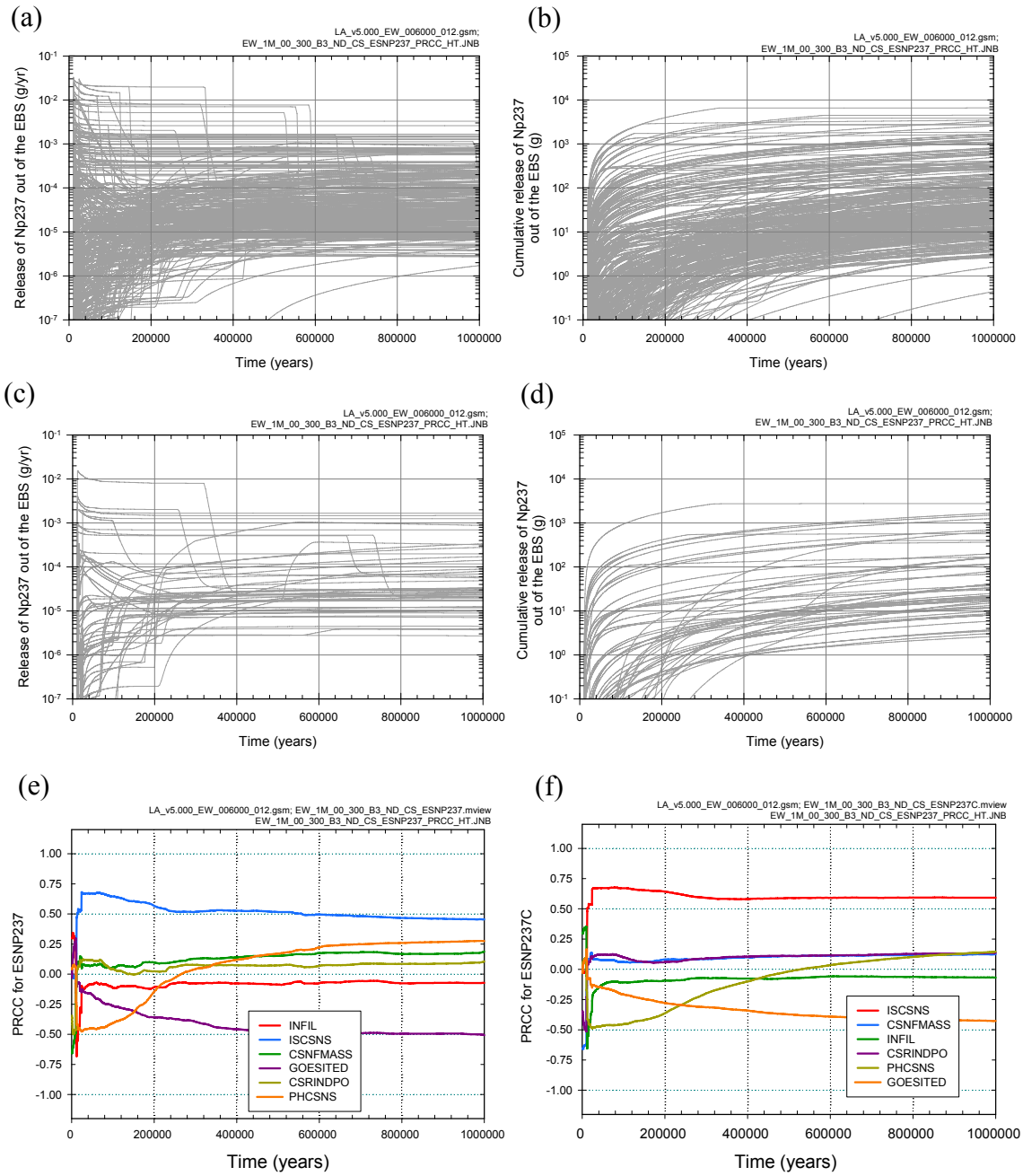
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.11-1. Time-dependent release rates (*ESNP237*, g/yr) and cumulative (i.e., integrated) releases (*ESNP237C*, g) over 1,000,000 years for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from the early failure of a CSNF WP in percolation bin 3 under dripping conditions: (a, b) *ESNP237* and *ESNP237C* for all (i.e., 300) sample elements, (c, d) *ESNP237* and *ESNP237C* for first 50 sample elements, and (e, f) PRCCs for *ESNP237* and *ESNP237C*.



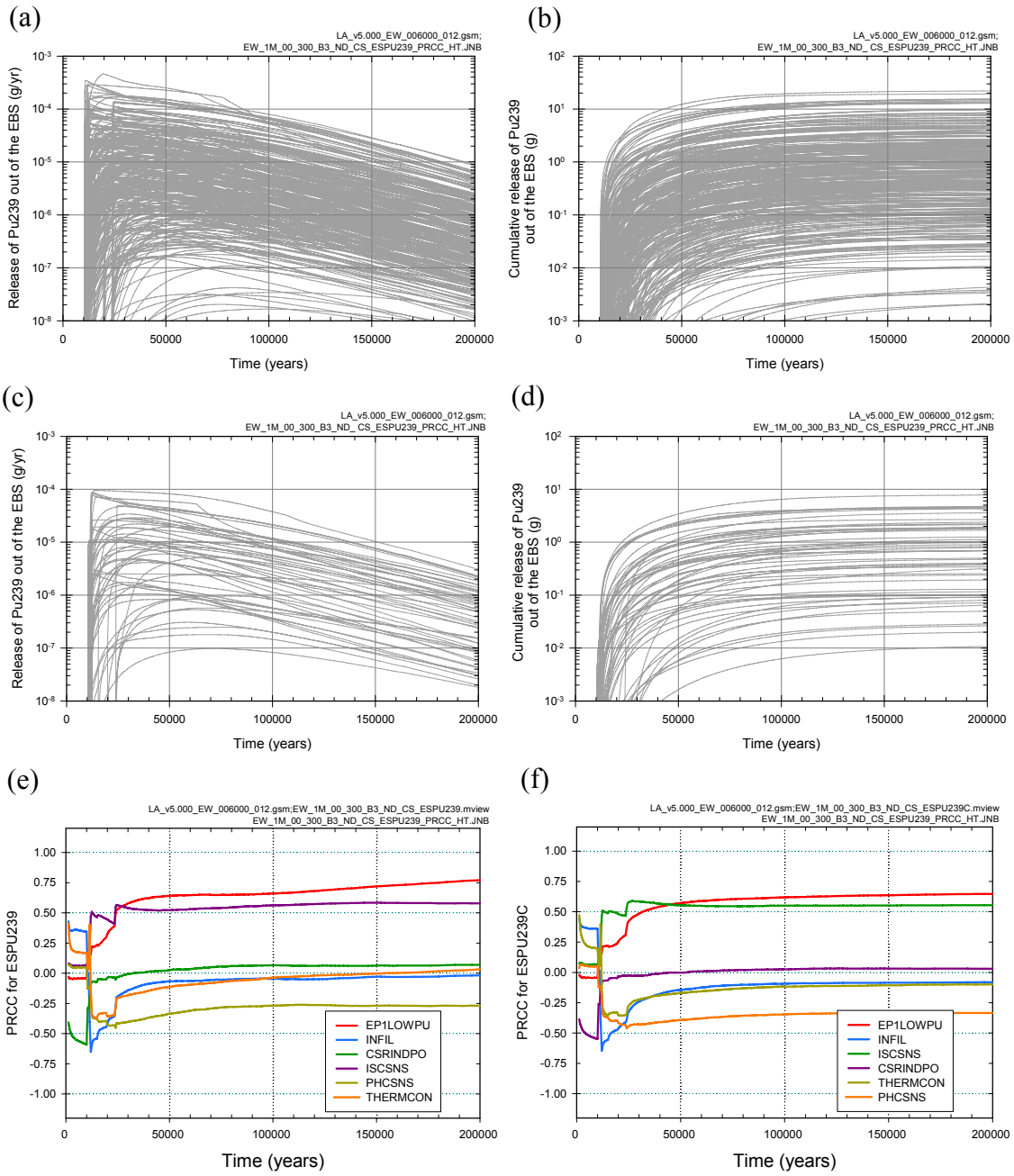
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.11-2. Time-dependent release rates (*ESPU239*, g/yr) and cumulative (i.e., integrated) releases (*ESPU239C*, g) over 200,000 years for the movement of dissolved ^{239}Pu from the EBS to the UZ resulting from the early failure of a CSNF WP in percolation bin 3 under dripping conditions: (a, b) *ESPU239* and *ESPU239C* for all (i.e., 300) sample elements, (c, d) *ESPU239* and *ESPU239C* for first 50 sample elements, and (e, f) PRCCs for *ESPU239* and *ESPU239C*



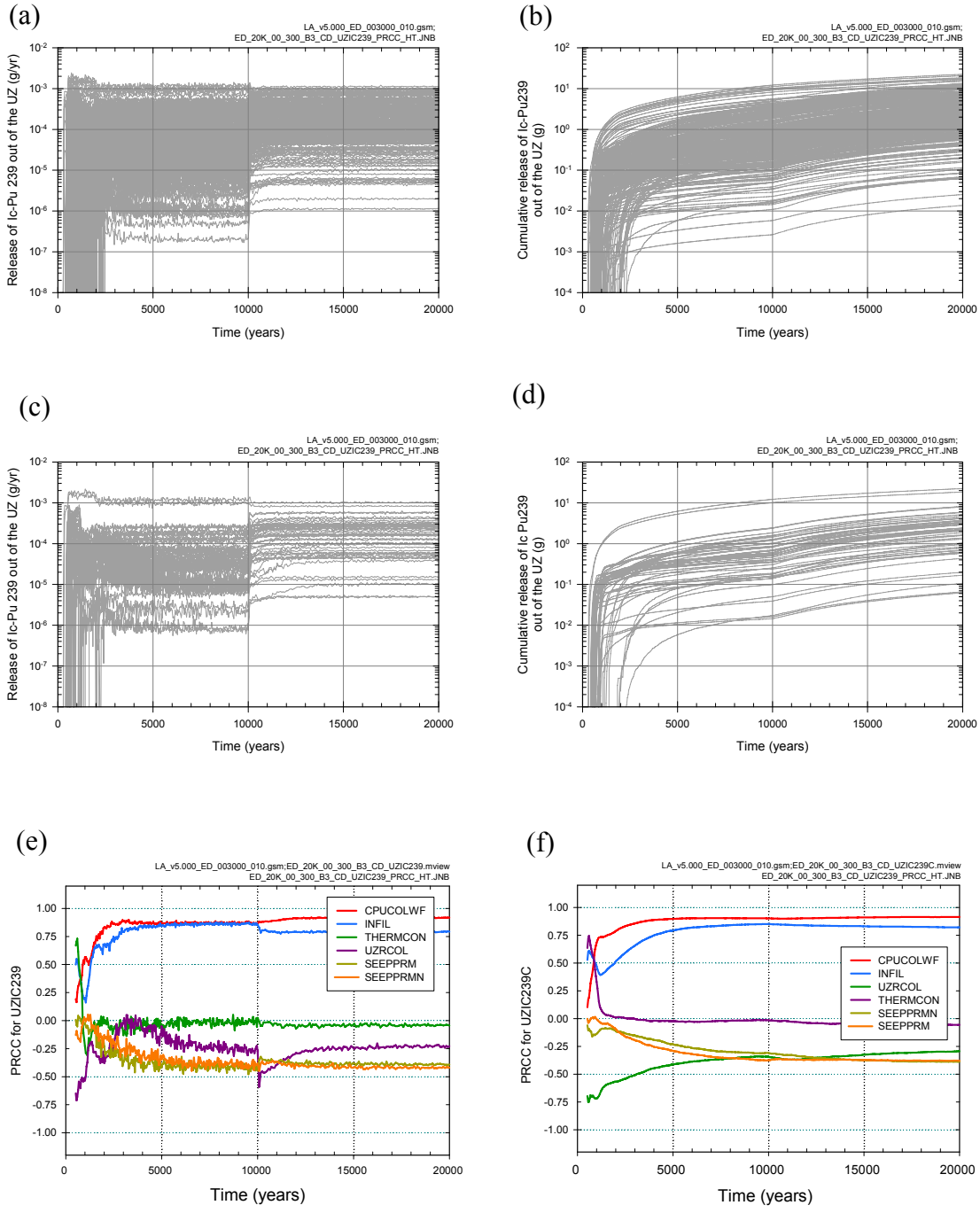
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.12-1. Time-dependent release rates (*ESNP237*, g/yr) and cumulative (i.e., integrated) releases (*ESNP237C*, g) over 1,000,000 years for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from the early failure of a CSNF WP in percolation bin 3 under nondripping conditions: (a, b) *ESNP237* and *ESNP237C* for all (i.e., 300) sample elements, (c, d) *ESNP237* and *ESNP237C* for first 50 sample elements, and (e, f) PRCCs for *ESNP237* and *ESNP237C*.



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.3.12-2. Time-dependent release rates (*ESPU239*, g/yr) and cumulative (i.e., integrated) releases (*ESPU239C*, g) over 200,000 years for the movement of dissolved ^{239}Pu from the EBS to the UZ resulting from the early failure of a CSNF WP in percolation bin 3 under nondripping conditions: (a, b) *ESPU239* and *ESPU239C* for all (i.e., 300) sample elements, (c, d) *ESPU239* and *ESPU239C* for first 50 sample elements, and (e, f) PRCCs for *ESPU239* and *ESPU239C*.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.4.1-1. Time-dependent release rates (*UZIC239*, g/yr) and cumulative (i.e., integrated) releases (*UZIC239C*, g) over 20,000 years for the movement of ^{239}Pu irreversibly attached to slow colloids from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *UZIC239* and *UZIC239C* for all (i.e., 300) sample elements, (c, d) *UZIC239* and *UZIC239C* for first 50 sample elements, and (e, f) PRCCs for *UZIC239* and *UZIC239C*.

(a)

	UZIC239: 3000 yr			UZIC239: 5000 yr			UZIC239: 10,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	CPUCOLWF	0.48	0.64	INFIL	0.50	0.66	INFIL	0.51	0.68
2	INFIL	0.81	0.58	CPUCOLWF	0.82	0.58	CPUCOLWF	0.82	0.57
3	SEEPPRM	0.83	-0.15	SEEPPRM	0.85	-0.17	SEEPPRM	0.84	-0.18
4	ALPHAL	0.84	-0.11	SEEPPRMN	0.87	-0.14	SEEPPRMN	0.87	-0.15
5	SEEPPRMN	0.84	-0.09	ALPHAL	0.88	-0.11	ALPHAL	0.88	-0.12
6	SEEPUNC	0.85	0.07	SEEPUNC	0.88	0.07	SEEPUNC	0.89	0.08
7	CR2O3SA	0.85	-0.06	CORRATSS	0.89	-0.06	UZRCOL	0.89	-0.06
8	CORRATSS	0.86	-0.06	RUBMAXNL	0.89	-0.06	PHCSS	0.89	-0.06
9	CSNFMASS	0.86	0.06	PHCSS	0.89	-0.06	KDPASMEC	0.90	0.05

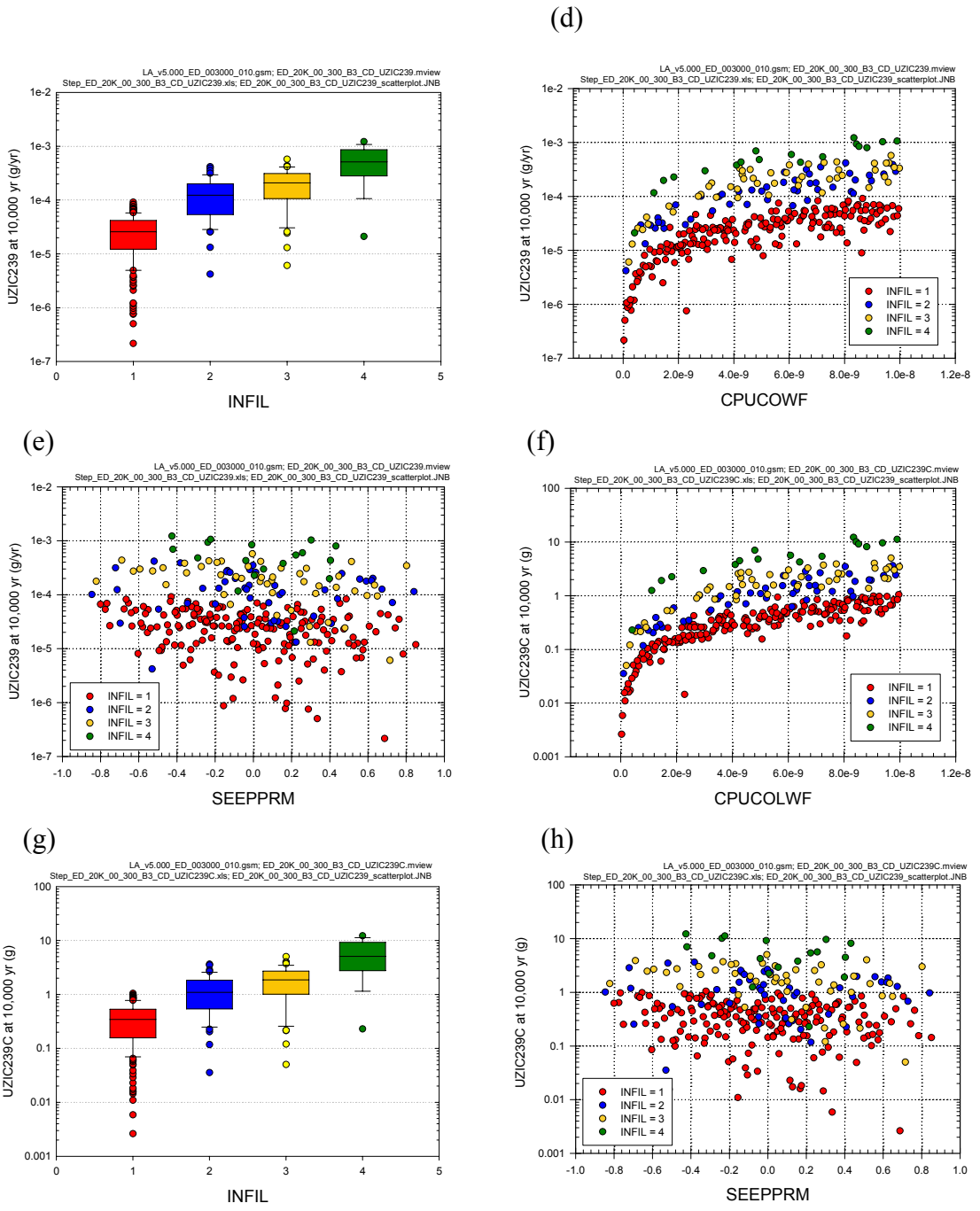
(b)

	UZIC239C: 3000 yr			UZIC239C: 5000 yr			UZIC239C: 10,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	CPUCOLWF	0.51	0.69	CPUCOLWF	0.53	0.70	CPUCOLWF	0.49	0.66
2	INFIL	0.73	0.48	INFIL	0.82	0.55	INFIL	0.85	0.60
3	UZRCOL	0.78	-0.22	UZRCOL	0.84	-0.13	SEEPPRM	0.86	-0.14
4	SEEPPRM	0.78	-0.09	SEEPPRM	0.85	-0.12	SEEPPRMN	0.88	-0.10
5	SEEPPRMN	0.79	-0.08	SEEPPRMN	0.86	-0.10	ALPHAL	0.89	-0.10
6	UZKDSRDT	0.79	0.07	ALPHAL	0.87	-0.08	UZRCOL	0.89	-0.08
7				KDPASMEC	0.87	0.06	SEEPUNC	0.90	0.06
8							KDPASMEC	0.90	0.06
9							CSNFMASS	0.90	0.05
10							KDAMCOL	0.90	-0.05

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

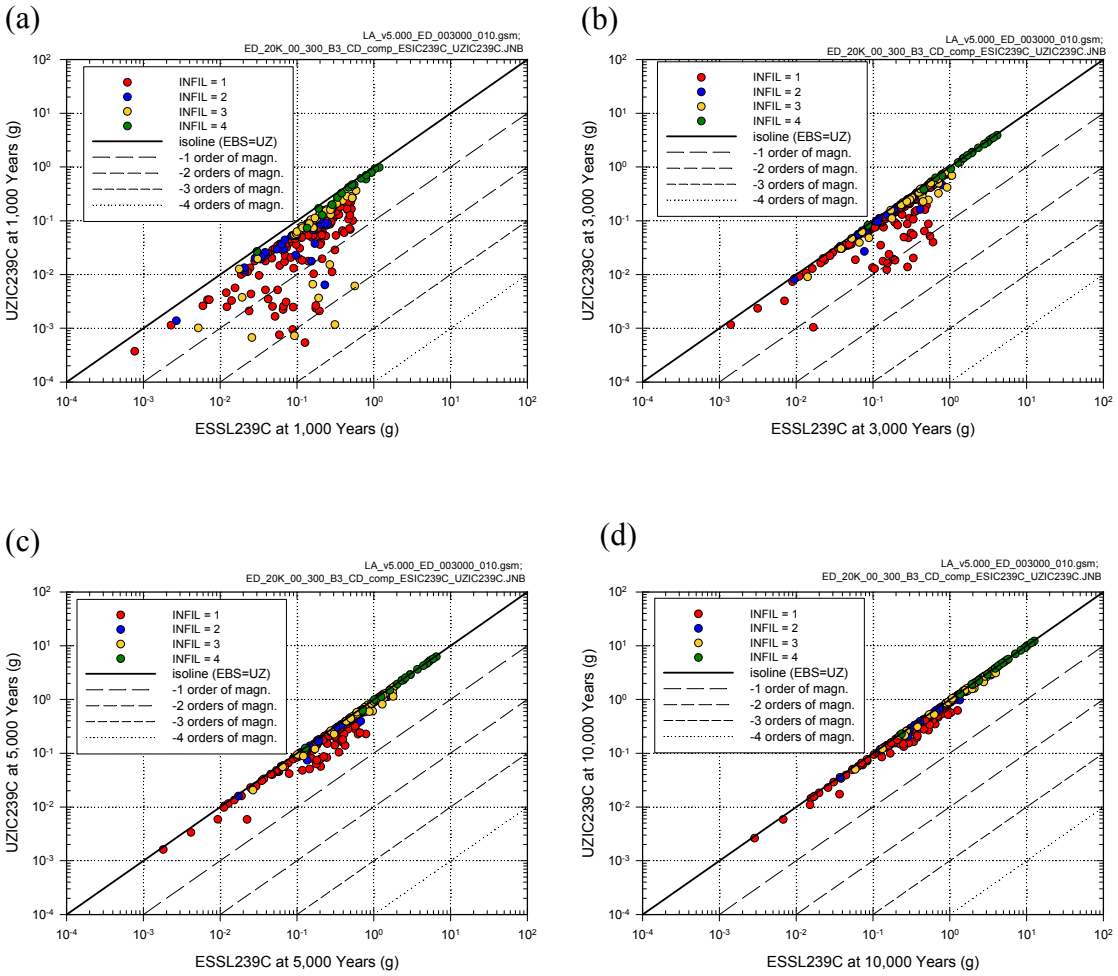
Figure K5.4.1-2. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZIC239*, g/yr) and cumulative (i.e., integrated) releases (*UZIC239C*, g) for the movement of ^{239}Pu irreversibly attached to slow colloids from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZIC239* and *UZIC239C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZIC239* and *UZIC239C* at 10,000 years.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

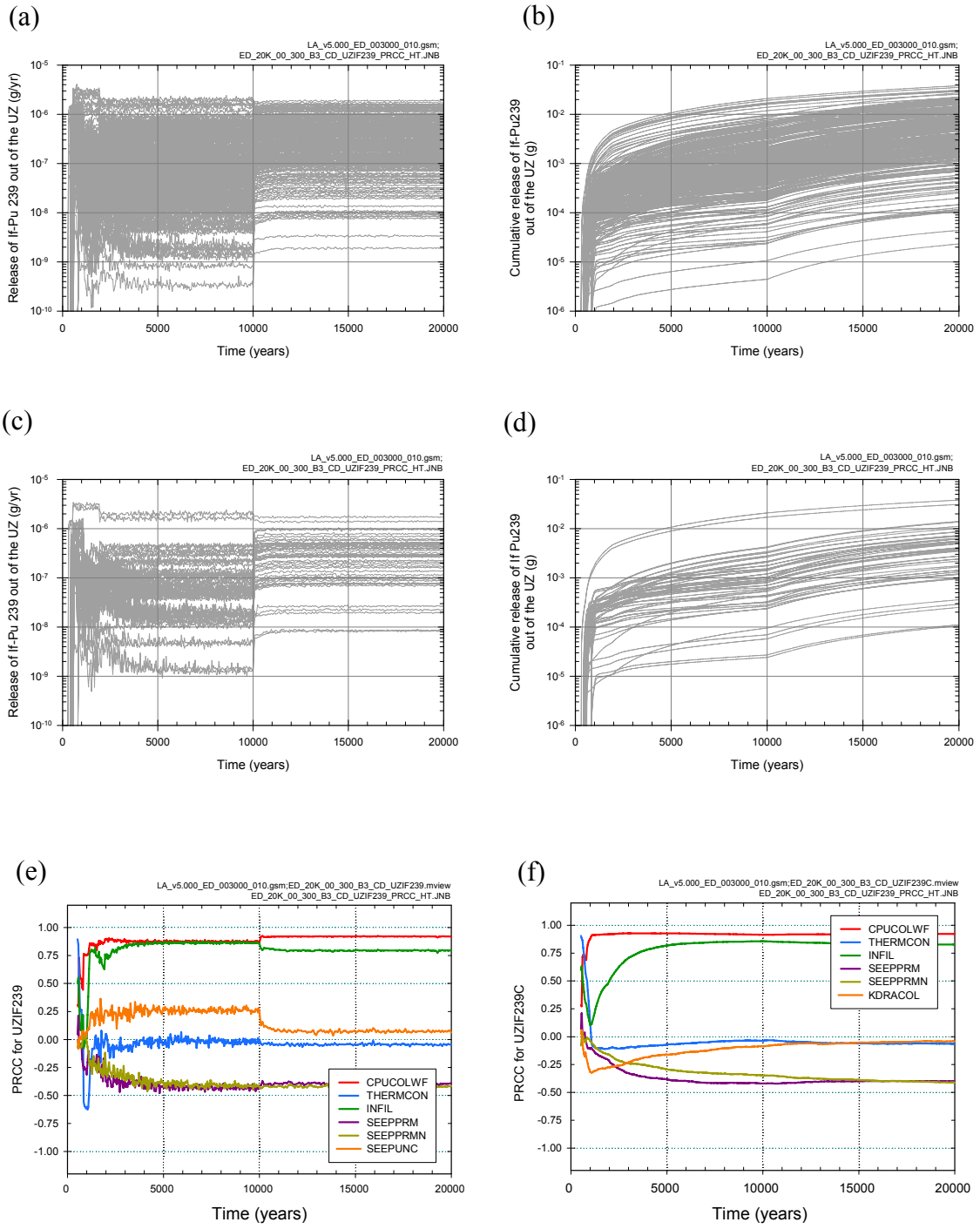
NOTE: In (c, g), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.4.1-2. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZIC239*, g/yr) and cumulative (i.e., integrated) releases (*UZIC239C*, g) for the movement of ^{239}Pu irreversibly attached to slow colloids from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZIC239* and *UZIC239C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZIC239* and *UZIC239C* at 10,000 years (continued).



Source: Output DTN MO0709TSPASENS.000 [DIRS 183982].

Figure K5.4.1-3. Comparison of cumulative releases of ^{239}Pu irreversibly attached to slow colloids into the UZ (*ESSL239C*, g) and out of the UZ (*UZIC239C*, g) at (a) 1000 years, (b) 3000 years, (c) 5000 years and (d) 10,000 years for a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.4.1-4. Time-dependent release rates (*UZIF239*, g/yr) and cumulative (i.e., integrated) releases (*UZIF239C*, g) over 20,000 years for the movement of ^{239}Pu irreversibly attached to fast colloids from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *UZIF239* and *UZIF239C* for all (i.e., 300) sample elements, (c, d) *UZIF239* and *UZIF239C* for first 50 sample elements, and (e, f) PRCCs for *UZIF239* and *UZIF239C*.

(a)

	UZIF239: 3000 yr			UZIF239: 5000 yr			UZIF239: 10,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	INFIL	0.46	0.63	INFIL	0.50	0.67	INFIL	0.50	0.67
2	CPUCOLWF	0.82	0.61	CPUCOLWF	0.83	0.58	CPUCOLWF	0.82	0.58
3	SEEPPRM	0.84	-0.16	SEEPPRM	0.85	-0.18	SEEPPRM	0.85	-0.18
4	SEEPPRMN	0.86	-0.14	SEEPPRMN	0.88	-0.14	SEEPPRMN	0.88	-0.16
5	ALPHAL	0.87	-0.10	ALPHAL	0.89	-0.11	ALPHAL	0.89	-0.13
6	SEEPUNC	0.87	0.07	SEEPUNC	0.89	0.07	SEEPUNC	0.90	0.07
7	KDPASMEC	0.88	0.06	PHCSS	0.89	-0.05			

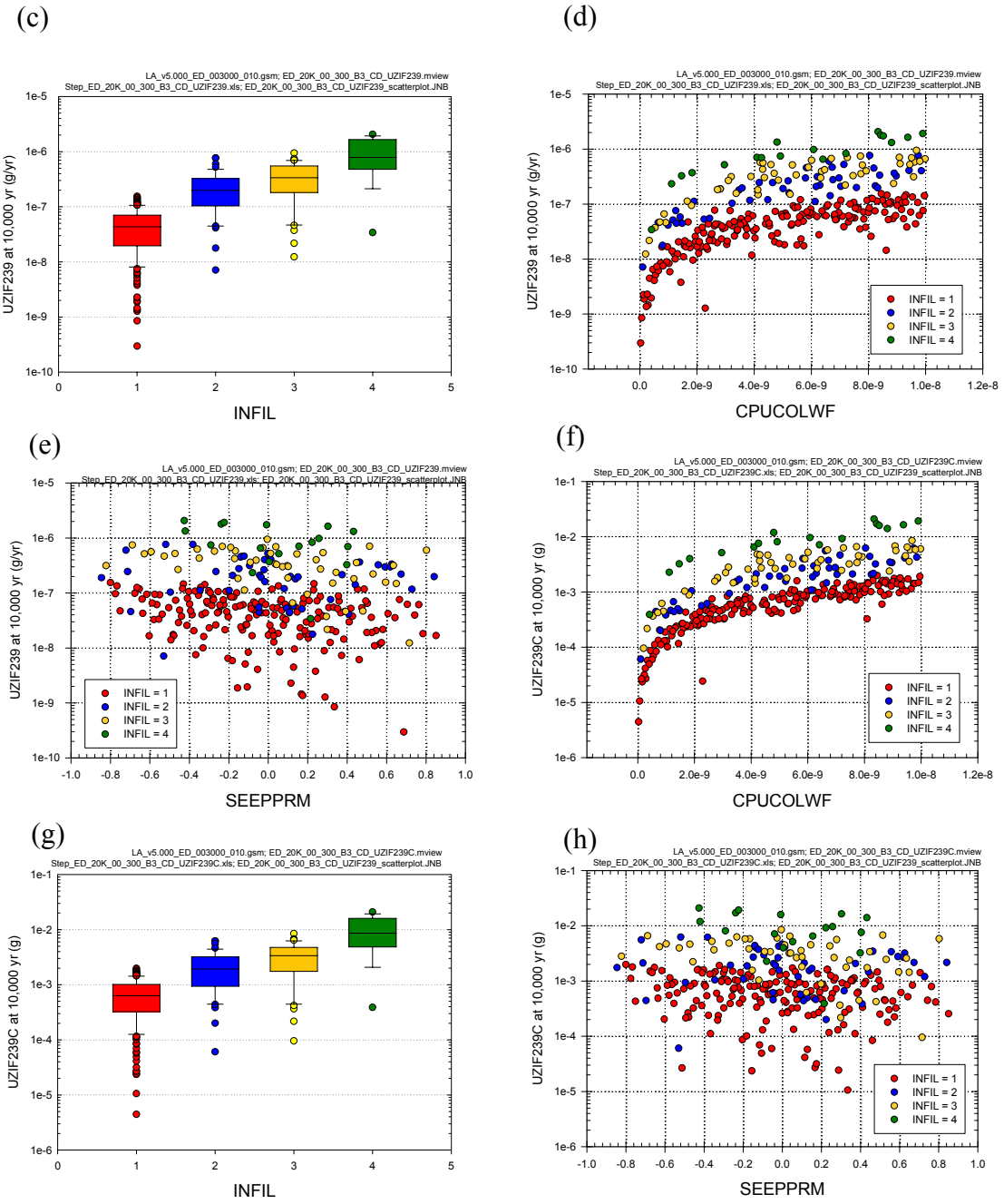
(b)

	UZIF239C: 3000 yr			UZIF239C: 5000 yr			UZIF239C: 10,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	CPUCOLWF	0.67	0.79	CPUCOLWF	0.59	0.73	CPUCOLWF	0.51	0.68
2	INFIL	0.84	0.43	INFIL	0.86	0.54	INFIL	0.86	0.59
3	SEEPPRM	0.85	-0.11	SEEPPRM	0.87	-0.13	SEEPPRM	0.88	-0.15
4	SEEPPRMN	0.86	-0.09	SEEPPRMN	0.88	-0.10	SEEPPRMN	0.89	-0.10
5	ALPHAL	0.87	-0.07	ALPHAL	0.89	-0.08	ALPHAL	0.90	-0.10
6							SEEPUNC	0.90	0.06
7							KDPASMEC	0.91	0.05
8							CSNFMASS	0.91	0.05
9							KDAMCOL	0.91	-0.06
10							RHMUNO20	0.91	-0.05

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

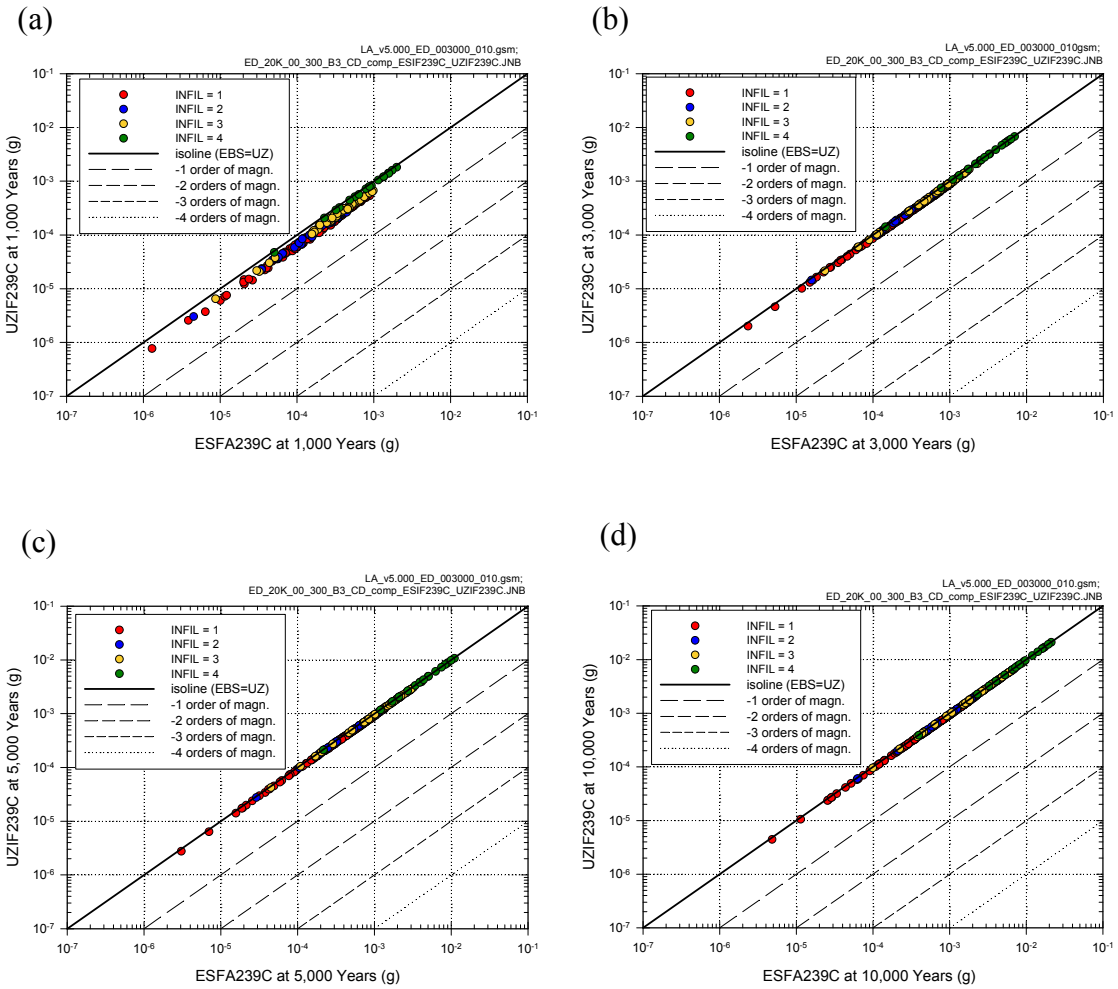
Figure K 5.4.1-5 Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZIF239*, g/yr) and cumulative (i.e., integrated) releases (*UZIF239C*, g) for the movement of ^{239}Pu irreversibly attached to fast colloids from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions : (a, b) Regressions for *UZIF239* and *UZIF239C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZIF239* and *UZIF239C* at 10,000 years.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

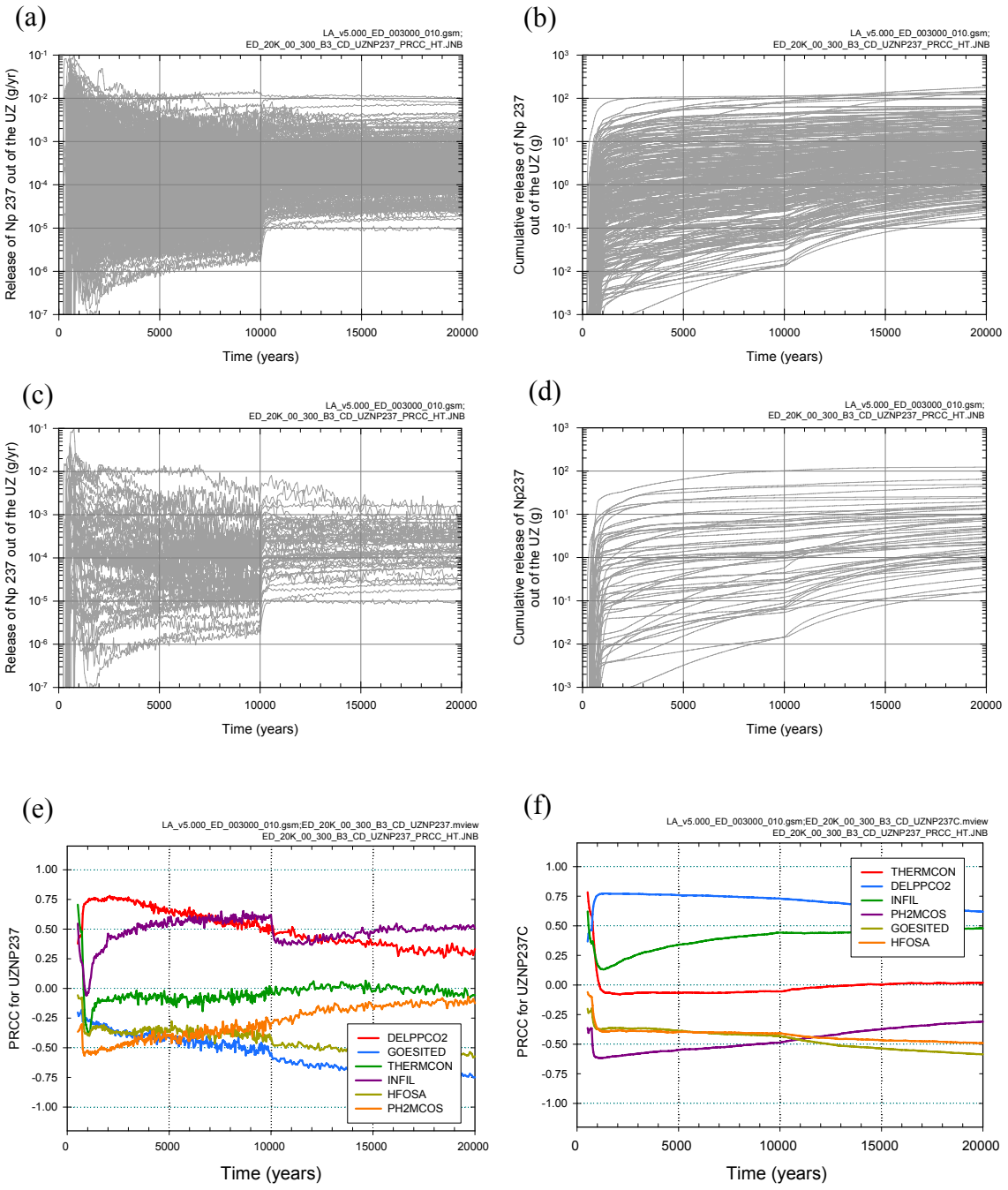
NOTE: In (c, g), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K 5.4.1-5. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZIF239*, g/yr) and cumulative (i.e., integrated) releases (*UZIF239C*, g) for the movement of ^{239}Pu irreversibly attached to fast colloids from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions : (a, b) Regressions for *UZIF239* and *UZIF239C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZIF239* and *UZIF239C* at 10,000 years (continued).



Source: Output DTN MO0709TSPASENS.000 [DIRS 183982].

Figure K5.4.1-6. Comparison of cumulative releases of ^{239}Pu irreversibly attached to fast colloids into the UZ (*ESFA239C*, g) and out of the UZ (*UZIF239C*, g) at (a) 1000 years, (b) 3000 years, (c) 5000 years and (d) 10,000 years for a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.4.1-7. Time-dependent release rates (*UZNP237*, g/yr) and cumulative (i.e., integrated) releases (*UZNP237C*, g) over 20,000 years for the movement of dissolved ^{237}Np from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *UZNP237* and *UZNP237C* for all (i.e., 300) sample elements, (c, d) *UZNP237* and *UZNP237C* for first 50 sample elements, and (e, f) PRCCs for *UZNP237* and *UZNP237C*.

(a)

	UZNP237: 3000 yr			UZNP237: 5000 yr			UZNP237: 10,000 yr		
Step[a]	Variable[b]	R^{2c}	SRRC[d]	Variable	R^2	SRRC	Variable	R^2	SRRC
1	DELPPCO2	0.28	0.55	INFIL	0.20	0.43	INFIL	0.28	0.52
2	INFIL	0.42	0.33	DELPPCO2	0.38	0.43	GOESITED	0.36	-0.31
3	PH2MCOS	0.53	-0.33	PH2MCOS	0.45	-0.28	DELPPCO2	0.44	0.30
4	EP1LOWAM	0.57	0.19	GOESITED	0.49	-0.22	DSNFMASS	0.48	0.17
5	COLGW	0.60	0.18	KDAMSMEC	0.53	0.18	HFOSA	0.51	-0.22
6	KDAMSMEC	0.63	0.17	EP1LOWAM	0.55	0.17	KDAMSMEC	0.55	0.15
7	GOESITED	0.66	-0.18	DSNFMASS	0.57	0.14	PH2MCOS	0.57	-0.21
8	DSNFMASS	0.67	0.13	HFOSA	0.59	-0.17	IS2MCOS	0.59	0.14
9	HFOSA	0.69	-0.14	GOESA	0.61	-0.15	COLGW	0.60	0.14
10	GOESA	0.70	-0.13	COLGW	0.63	0.12	EP1LOWNU	0.62	0.12
11	WDCRCDEN	0.71	0.11	GOERELAB	0.64	0.11	GOESA	0.63	-0.13
12	IS2MCOS	0.72	0.09	HFOSITED	0.65	-0.10	GOERELAB	0.64	0.12
13	RHPH75	0.73	-0.08	IS2MCOS	0.66	0.11	EP1LOWAM	0.65	0.11
14	GOERELAB	0.73	0.08	EP1LOWNU	0.68	0.11	UZKDNPDT	0.67	-0.12
15				RHPH75	0.69	-0.10	CPUPERCS	0.67	-0.10
16							DWCSTERD	0.68	0.10

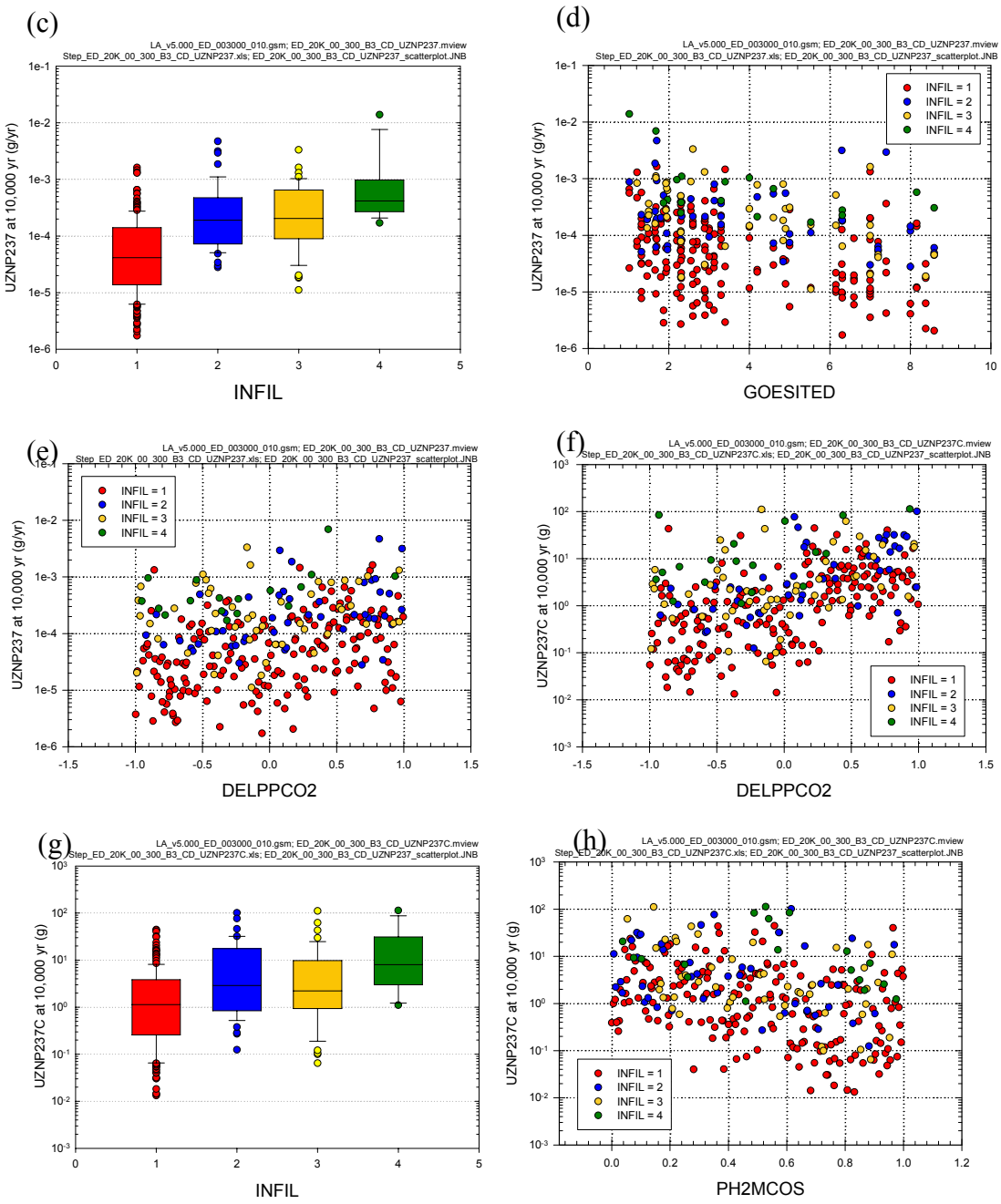
(b)

	UZNP237C: 3000 yr			UZNP237C: 5000 yr			UZNP237C: 10,000 yr		
Step[a]	Variable[b]	R^{2c}	SRRC[d]	Variable	R^2	SRRC	Variable	R^2	SRRC
1	DELPPCO2	0.30	0.58	DELPPCO2	0.29	0.57	DELPPCO2	0.25	0.53
2	PH2MCOS	0.46	-0.39	PH2MCOS	0.43	-0.38	INFIL	0.37	0.31
3	EP1LOWAM	0.53	0.21	INFIL	0.51	0.23	PH2MCOS	0.48	-0.33
4	COLGW	0.59	0.23	COLGW	0.55	0.22	GOESITED	0.52	-0.21
5	INFIL	0.61	0.17	EP1LOWAM	0.60	0.20	KDAMSMEC	0.56	0.17
6	GOESITED	0.64	-0.18	GOESITED	0.63	-0.18	COLGW	0.59	0.20
7	KDAMSMEC	0.67	0.16	KDAMSMEC	0.66	0.17	EP1LOWAM	0.62	0.18
8	GOESA	0.68	-0.13	GOESA	0.67	-0.14	DSNFMASS	0.64	0.14
9	UZKDNPDT	0.70	-0.11	UZKDNPDT	0.68	-0.11	GOESA	0.66	-0.15
10	HFOSA	0.71	-0.11	HFOSA	0.69	-0.13	HFOSA	0.67	-0.14
11	EP1NPO2	0.71	0.10	DSNFMASS	0.70	0.11	WDCRCDEN	0.68	0.12
12	WDCRCDEN	0.72	0.12	WDCRCDEN	0.72	0.13	UZKDNPDT	0.70	-0.12
13	DSNFMASS	0.73	0.10	EP1NPO2	0.72	0.09	IS2MCOS	0.71	0.10
14				IS2MCOS	0.73	0.09			

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

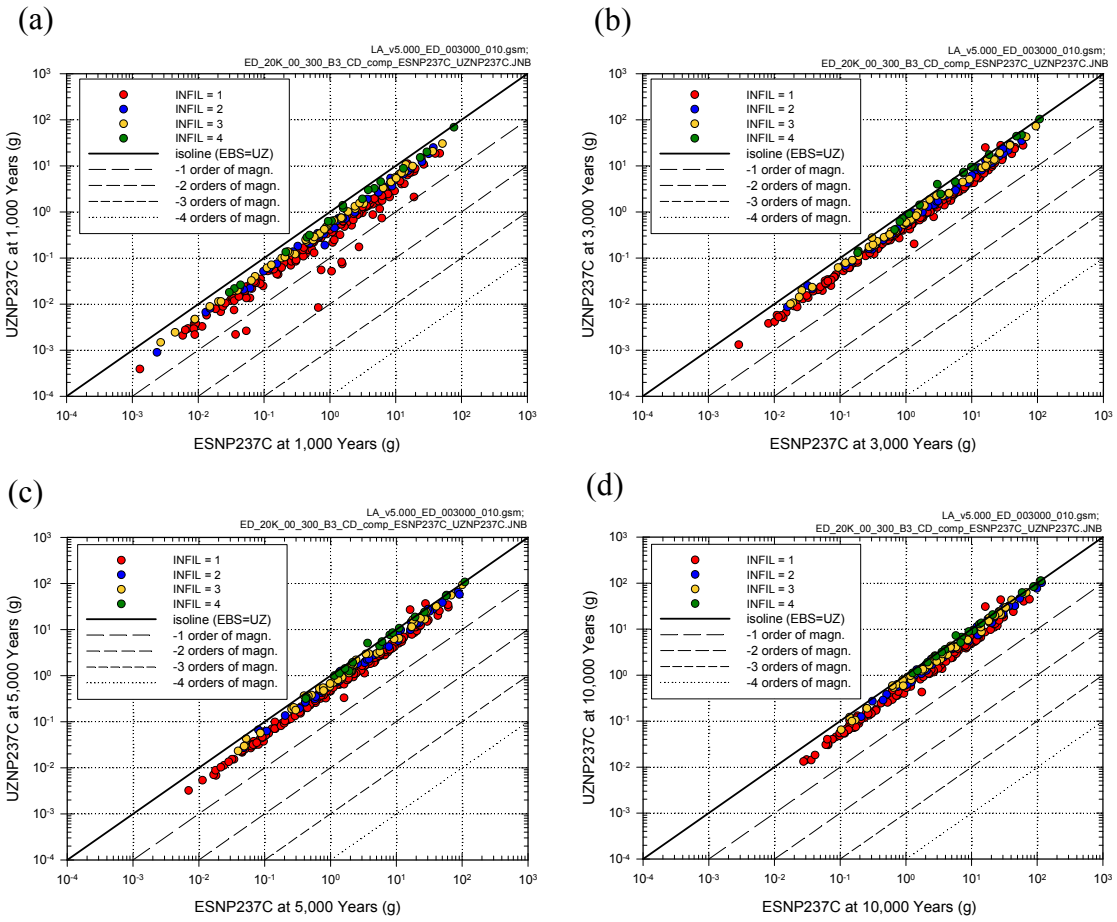
Figure K 5.4.1-8. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZNP237*, g/yr) and cumulative (i.e., integrated) releases (*UZNP237C*, g) for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZNP237* and *UZNP237C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZNP237* and *UZNP237C* at 10,000 years.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

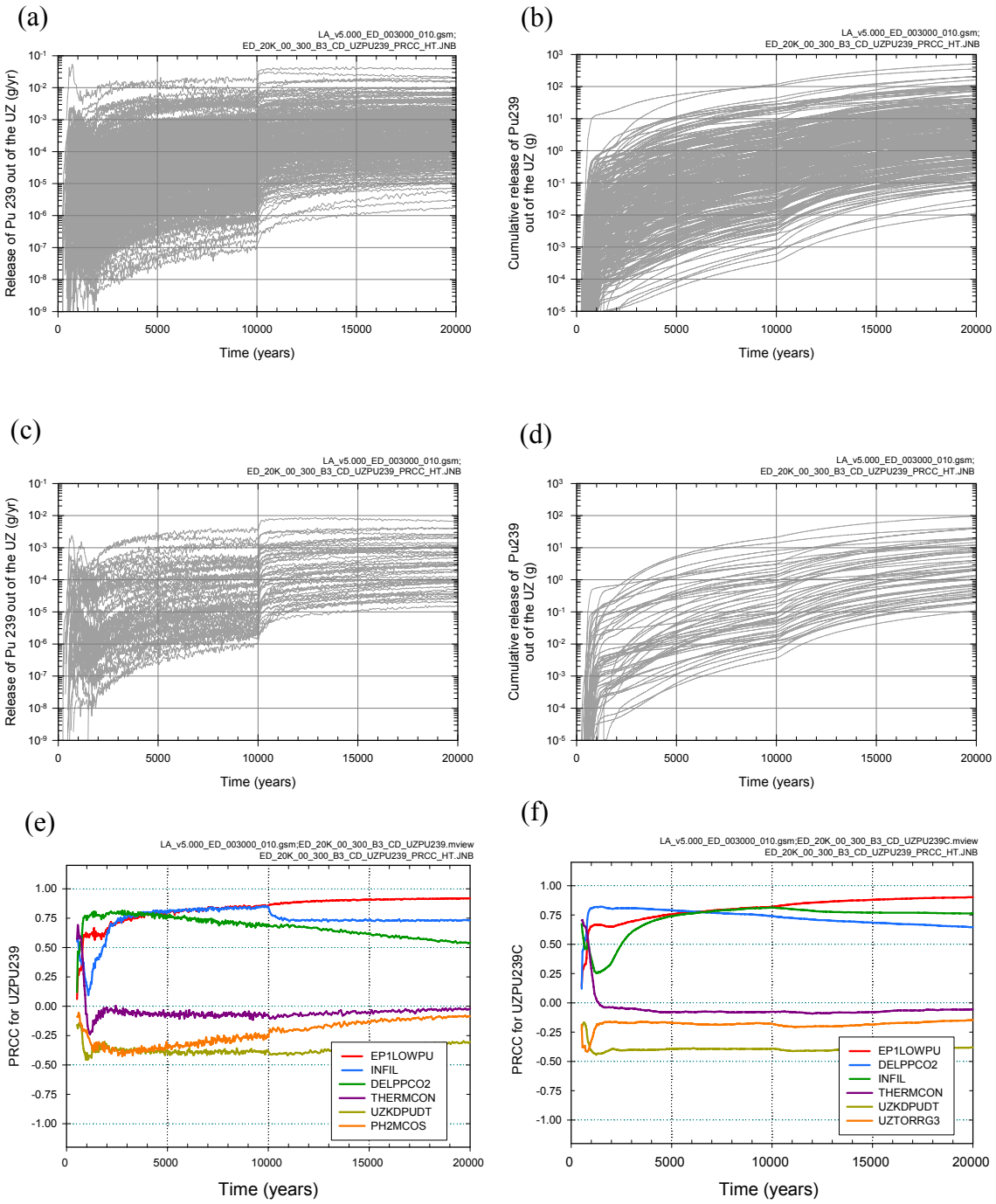
NOTE: In (c, g), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.4.1-8. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZNP237*, g/yr) and cumulative (i.e., integrated) releases (*UZNP237C*, g) for the movement of dissolved ^{237}Np from the EBS to the UZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZNP237* and *UZNP237C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZNP237* and *UZNP237C* at 10,000 years (continued).



Source: Output DTN MO0709TSPASENS.000 [DIRS 183982].

Figure K5.4.1-9. Comparison of cumulative releases of dissolved ^{237}Np into the UZ (*ESNP237C*, g) and out of the UZ (*UZNP237C*, g) at (a) 1000 years, (b) 3000 years, (c) 5000 years and (d) 10,000 years for a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.4.1-10. Time-dependent release rates (*UZPU239*, g/yr) and cumulative (i.e., integrated) releases (*UZPU239C*, g) over 20,000 years for the movement of dissolved ^{239}Pu from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *UZPU239* and *UZPU239C* for all (i.e., 300) sample elements, (c, d) *UZPU239* and *UZPU239C* for first 50 sample elements, and (e, f) PRCCs for *UZPU239* and *UZPU239C*.

(a)

	UZPU239: 3000 yr			UZPU239: 5000 yr			UZPU239: 10,000 yr		
Step[a]	Variable[b]	R^{2c}	SRRC[c]	Variable	R^2	SRRC	Variable	R^2	SRRC
1	INFIL	0.25	0.49	INFIL	0.30	0.56	EP1LOWPU	0.35	0.59
2	EP1LOWPU	0.46	0.47	EP1LOWPU	0.56	0.54	INFIL	0.68	0.59
3	DELPPCO2	0.68	0.50	DELPPCO2	0.73	0.43	DELPPCO2	0.78	0.32
4	UZKDPUDT	0.75	-0.31	UZKDPUDT	0.80	-0.25	UZKDPUDT	0.83	-0.21
5	PH2MCOS	0.78	-0.17	PH2MCOS	0.81	-0.12	PH2MCOS	0.84	-0.08
6	GOESITED	0.79	-0.12	GOESITED	0.83	-0.12	SEEPPRM	0.85	-0.11
7	GOESA	0.80	-0.10	EBSDIFCF	0.83	0.09	EBSDIFCF	0.85	0.08
8	SCHOBOLT	0.81	0.09	HFOSA	0.84	-0.09	ALPHAL	0.86	-0.08
9	HFOSA	0.81	-0.10	SCHOBOLT	0.84	0.07	GOESITED	0.87	-0.08
10	EBSDIFCF	0.82	0.08	GOESA	0.85	-0.07	EP1LOWNU	0.87	0.08
11	IS2MCOS	0.82	0.08	IS2MCOS	0.85	0.07	SCHOBOLT	0.87	0.07
12	EP1LOWNU	0.83	0.09	DIFPATHL	0.86	-0.07	HFOSA	0.88	-0.07
13	EP1LOWAM	0.83	0.08	EP1LOWNU	0.86	0.08	IS2MCOS	0.88	0.06
14	SEEPPRM	0.84	-0.09	SEEPPRM	0.87	-0.08	DIFPATHL	0.89	-0.07
15	FWDRAT	0.84	0.07	ALPHAL	0.87	-0.08	WDGCUA22	0.89	-0.06
16	COLGW	0.85	0.07	CPUCOLCS	0.87	-0.06	SEEPPRMN	0.89	-0.07

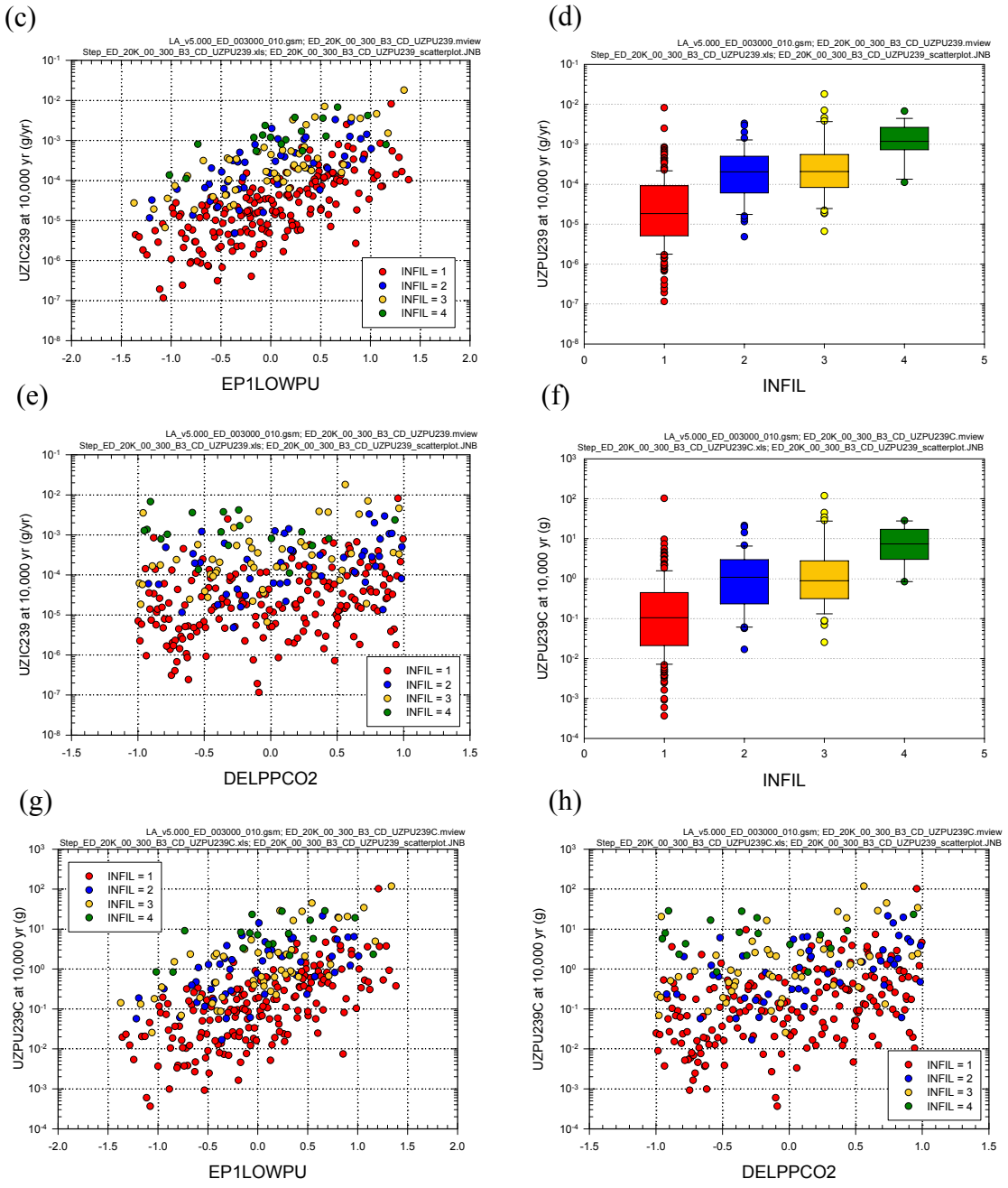
(b)

	UZPU239C: 3000 yr			UZPU239C: 5000 yr			UZPU239C: 10,000 yr		
Step[a]	Variable[b]	R^{2c}	SRRC[d]	Variable	R^2	SRRC	Variable	R^2	SRRC
1	DELPPCO2	0.25	0.58	EP1LOWPU	0.24	0.50	INFIL	0.31	0.55
2	EP1LOWPU	0.48	0.47	INFIL	0.46	0.48	EP1LOWPU	0.59	0.56
3	INFIL	0.64	0.37	DELPPCO2	0.68	0.51	DELPPCO2	0.73	0.40
4	UZKDPUDT	0.73	-0.28	UZKDPUDT	0.76	-0.26	UZKDPUDT	0.80	-0.24
5	PH2MCOS	0.75	-0.16	PH2MCOS	0.78	-0.15	PH2MCOS	0.81	-0.11
6	GOESITED	0.77	-0.14	GOESITED	0.80	-0.13	GOESITED	0.82	-0.11
7	GOESA	0.78	-0.10	GOESA	0.81	-0.09	SEEPPRM	0.83	-0.09
8	SCHOBOLT	0.79	0.09	SCHOBOLT	0.81	0.09	GOESA	0.84	-0.07
9	HFOSA	0.79	-0.09	HFOSA	0.82	-0.10	SCHOBOLT	0.84	0.08
10	EP1LOWNU	0.80	0.07	EP1LOWNU	0.82	0.08	EBSDIFCF	0.85	0.08
11	COLGW	0.80	0.07	EBSDIFCF	0.83	0.08	EP1LOWNU	0.85	0.09
12				IS2MCOS	0.83	0.07	HFOSA	0.86	-0.08
13							ALPHAL	0.86	-0.07
14							IS2MCOS	0.87	0.07
15							DIFPATHL	0.87	-0.07
16							WDGCUA22	0.87	-0.06

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

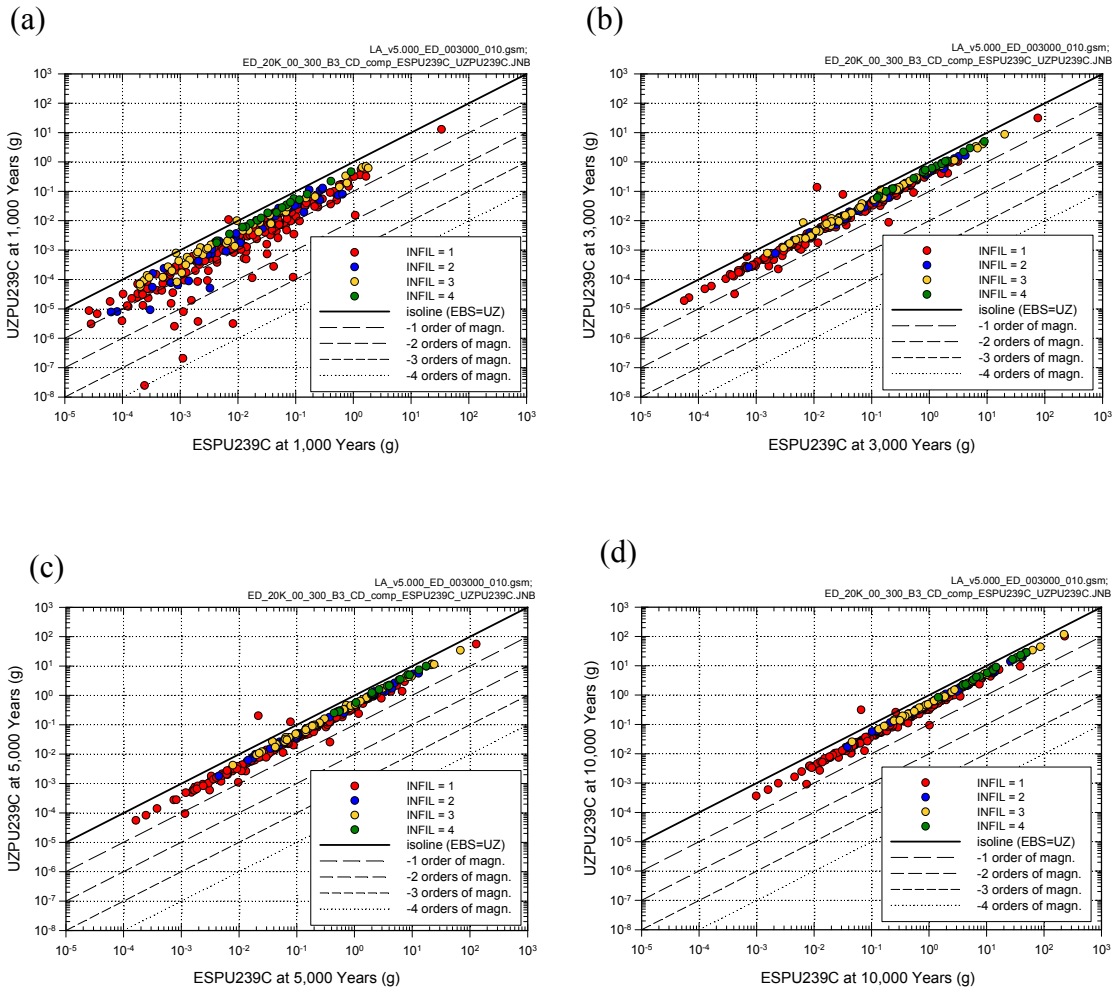
Figure K5.4.1-11. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZPU239*, g/yr) and cumulative (i.e., integrated) releases (*UZPU239*, g) for the movement of dissolved ^{239}Pu from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZPU239* and *UZPU239C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZPU239* and *UZPU239C* at 10,000 years.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

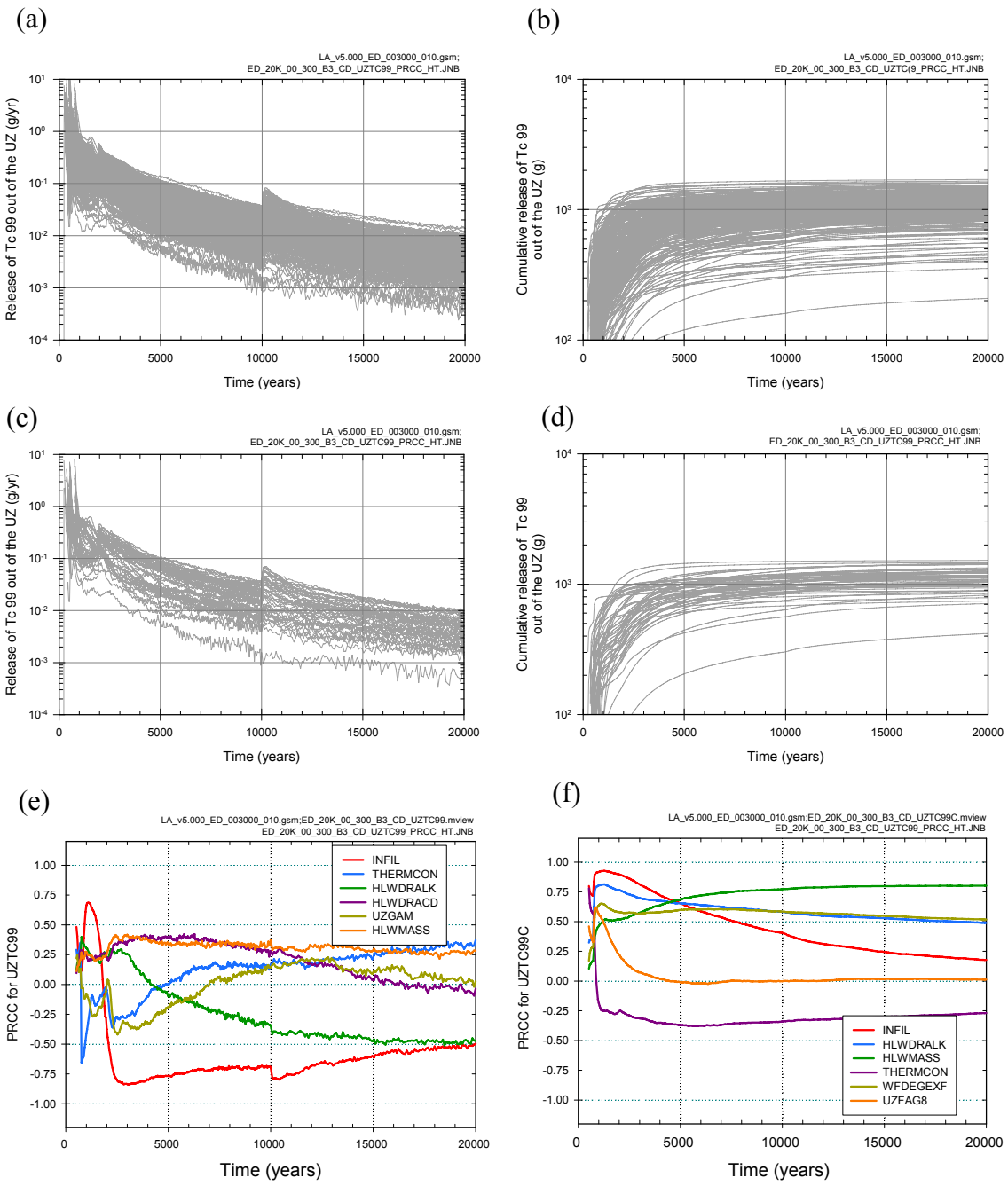
NOTE: In (d, f), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.4.1-11 Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZPU239*, g/yr) and cumulative (i.e., integrated) releases (*UZPU239*, g) for the movement of dissolved ^{239}Pu from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZPU239* and *UZPU239C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZPU239* and *UZPU239C* at 10,000 years (continued).



Source: Output DTN MO0709TSPASENS.000 [DIRS 183982].

Figure K5.4.1-12. Comparison of cumulative releases of dissolved ^{239}Pu into the UZ (*ESPU239C*, g) and out of the UZ (*UZPU239C*, g) at (a) 1000 years, (b) 3000 years, (c) 5000 years and (d) 10,000 years for a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.4.1-13. Time-dependent release rates (*UZTC99*, g/yr) and cumulative (i.e., integrated) releases (*UZTC99C*, g) over 20,000 years for the movement of dissolved ^{99}Tc from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *UZTC99* and *UZTC99C* for all (i.e., 300) sample elements, (c, d) *UZTC99* and *UZTC99C* for first 50 sample elements, and (e, f) PRCCs for *UZTC99* and *UZTC99C*.

(a)

	UZTC99: 3000 yr			UZTC99: 5000 yr			UZTC99: 10,000 yr		
Step[a]	Variable[b]	R^{2c}	SRRC[d]	Variable	R^2	SRRC	Variable	R^2	SRRC
1	INFIL	0.59	-0.79	INFIL	0.58	-0.76	INFIL	0.46	-0.64
2	HLWMASS	0.64	0.22	HLWDRACD	0.62	0.21	HLWDRALK	0.51	-0.25
3	HLWDRACD	0.69	0.19	HLWMASS	0.66	0.19	HLWMASS	0.55	0.20
4	UZTORRG3	0.71	0.15	PH2DHLS	0.67	-0.12	HLWDRACD	0.57	0.16
5	PH2DHLS	0.73	-0.18	UZFAG1	0.68	0.09	UZTORRG3	0.58	-0.11
6	HLWDRALK	0.75	0.11				GP4NO3	0.60	-0.13
7	UZFAG8	0.76	-0.12				UZGAM	0.61	0.12
8	DSNFMASS	0.77	0.10				UZFAG8	0.62	0.11
9	WFDEGEXF	0.78	0.10						
10	UZGAM	0.79	-0.11						
11	THERMCON	0.80	-0.09						
12	UZFAG3	0.80	0.10						
13	RUBMAXNL	0.81	0.07						

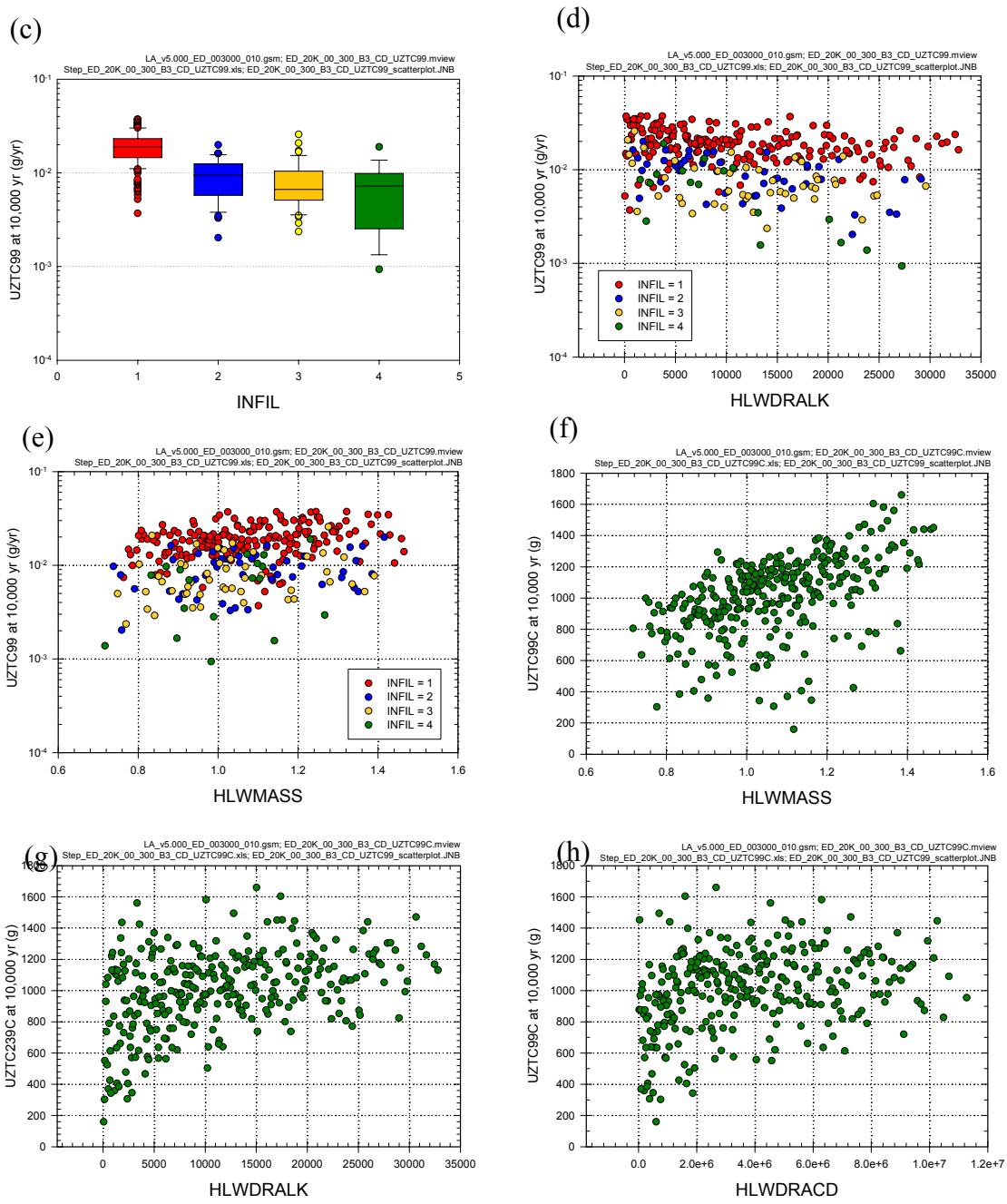
(b)

	UZTC99C: 3000 yr			UZTC99C: 5000 yr			UZTC99C: 10,000 yr		
Step[a]	Variable[b]	R^{2c}	SRRC[d]	Variable	R^2	SRRC	Variable	R^2	SRRC
1	INFIL	0.33	0.58	HLWDRALK	0.20	0.41	HLWMASS	0.30	0.57
2	HLWDRALK	0.52	0.42	HLWMASS	0.36	0.47	HLWDRALK	0.43	0.34
3	HLWMASS	0.63	0.34	INFIL	0.53	0.38	HLWDRACD	0.53	0.33
4	WFDEGEXF	0.69	0.24	WFDEGEXF	0.61	0.28	DSNFMASS	0.63	0.31
5	HLWDRACD	0.74	0.22	HLWDRACD	0.69	0.28	WFDEGEXF	0.71	0.26
6	DSNFMASS	0.79	0.23	DSNFMASS	0.76	0.27	PH2DHLS	0.77	-0.23
7	PH2DHLS	0.81	-0.15	PH2DHLS	0.79	-0.19	INFIL	0.79	0.17
8	THERMCON	0.82	-0.11	THERMCON	0.81	-0.13	THERMCON	0.81	-0.11
9	IPCNDMVF	0.83	0.07	IPCNDMVF	0.82	0.09	IPCNDMVF	0.81	0.10
10				DELPPCO2	0.82	0.07	CSRINDPO	0.82	0.09
11							CORRATSS	0.82	-0.08
12							UZFAG4	0.83	0.07

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

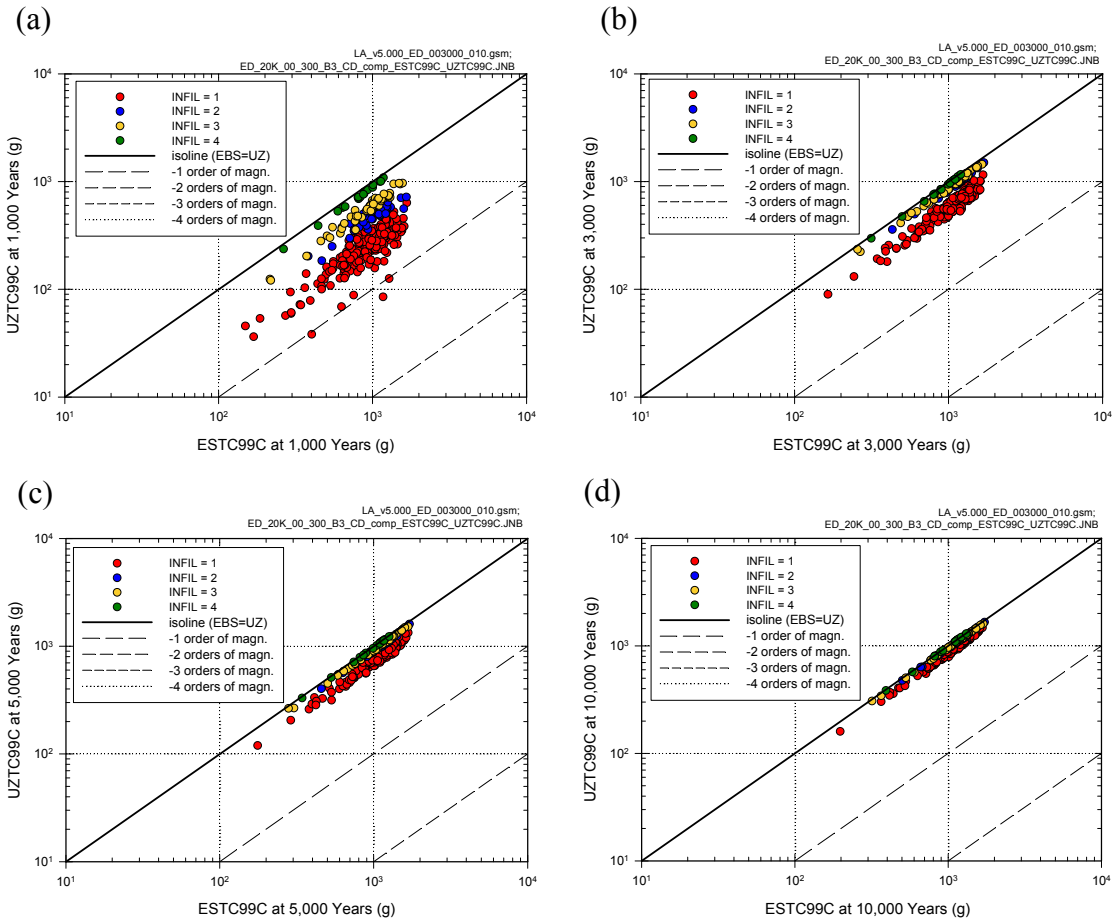
Figure K5.4.1-14. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZTC99*, g/yr) and cumulative (i.e., integrated) releases (*UZTC99*, g) for the movement of dissolved ^{99}Tc from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZTC99* and *UZTC99C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZTC99* and *UZTC99C* at 10,000 years.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

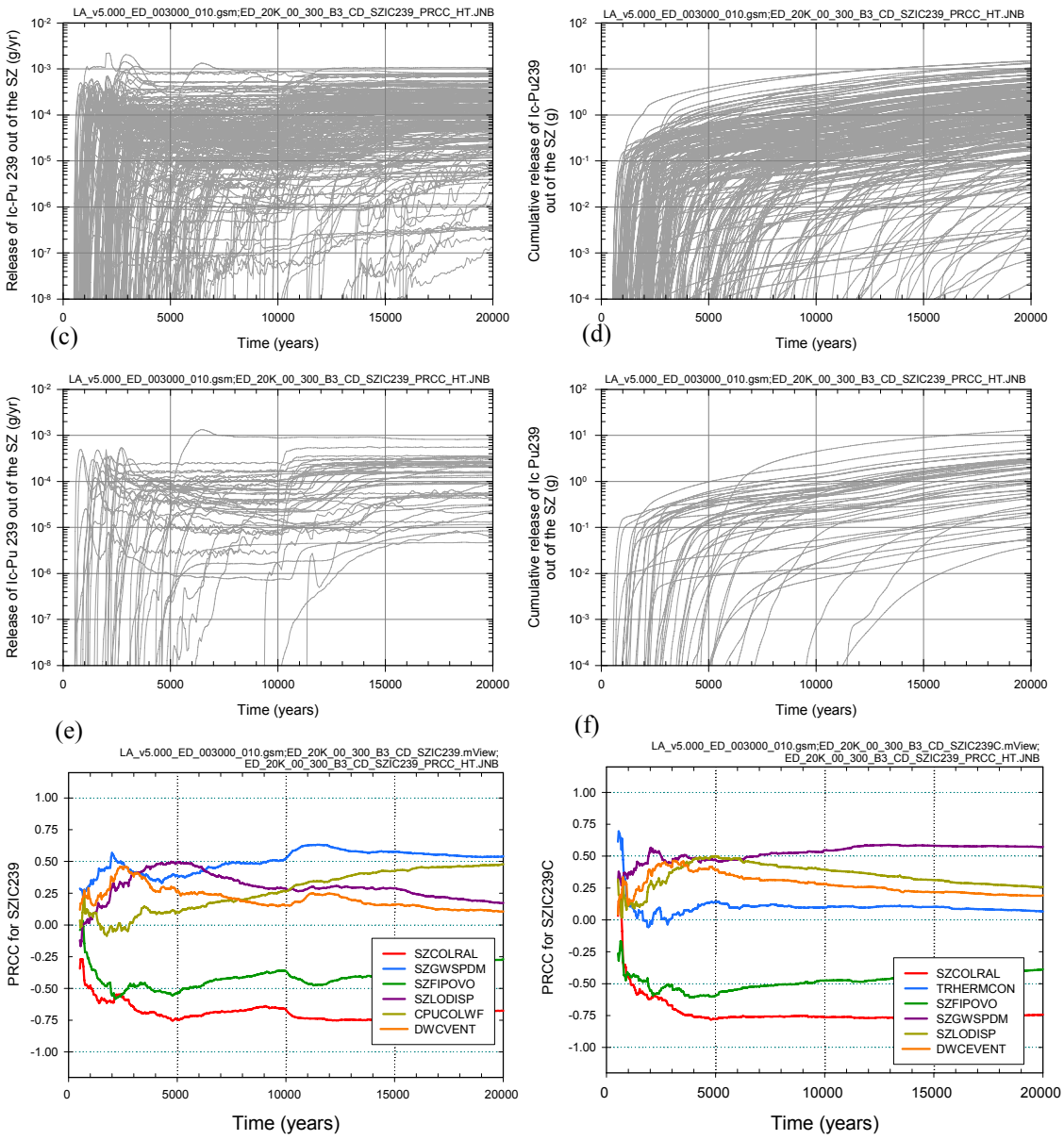
NOTE: In (c), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.4.1-14. Stepwise rank regression analyses and selected scatterplots for time-dependent release rates (*UZTC99*, g/yr) and cumulative (i.e., integrated) releases (*UZTC99*, g) for the movement of dissolved ^{99}Tc from the UZ to the SZ resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) Regressions for *UZTC99* and *UZTC99C* at 3000, 5000 and 10,000 years, and (c-h) Scatterplots for *UZTC99* and *UZTC99C* at 10,000 years (continued).



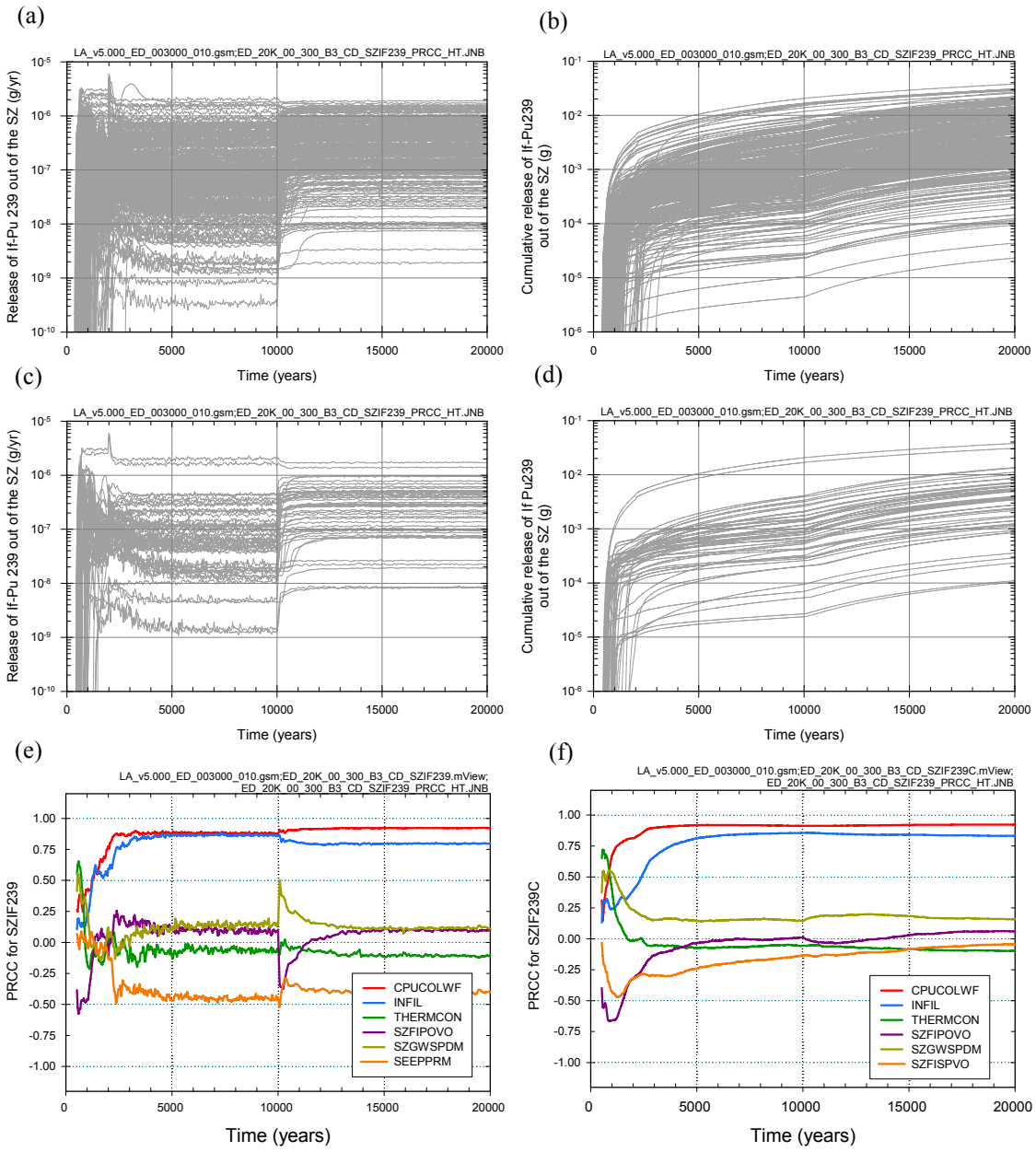
Source: Output DTN MO0709TSPASENS.000 [DIRS 183982].

Figure K5.4.1-15. Comparison of cumulative releases of dissolved ^{99}Tc into the UZ (*ESTC99C*, g) and out of the UZ (*UZTC99C*, g) at (a) 1000 years, (b) 3000 years, (c) 5000 years and (d) 10,000 years for a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions.



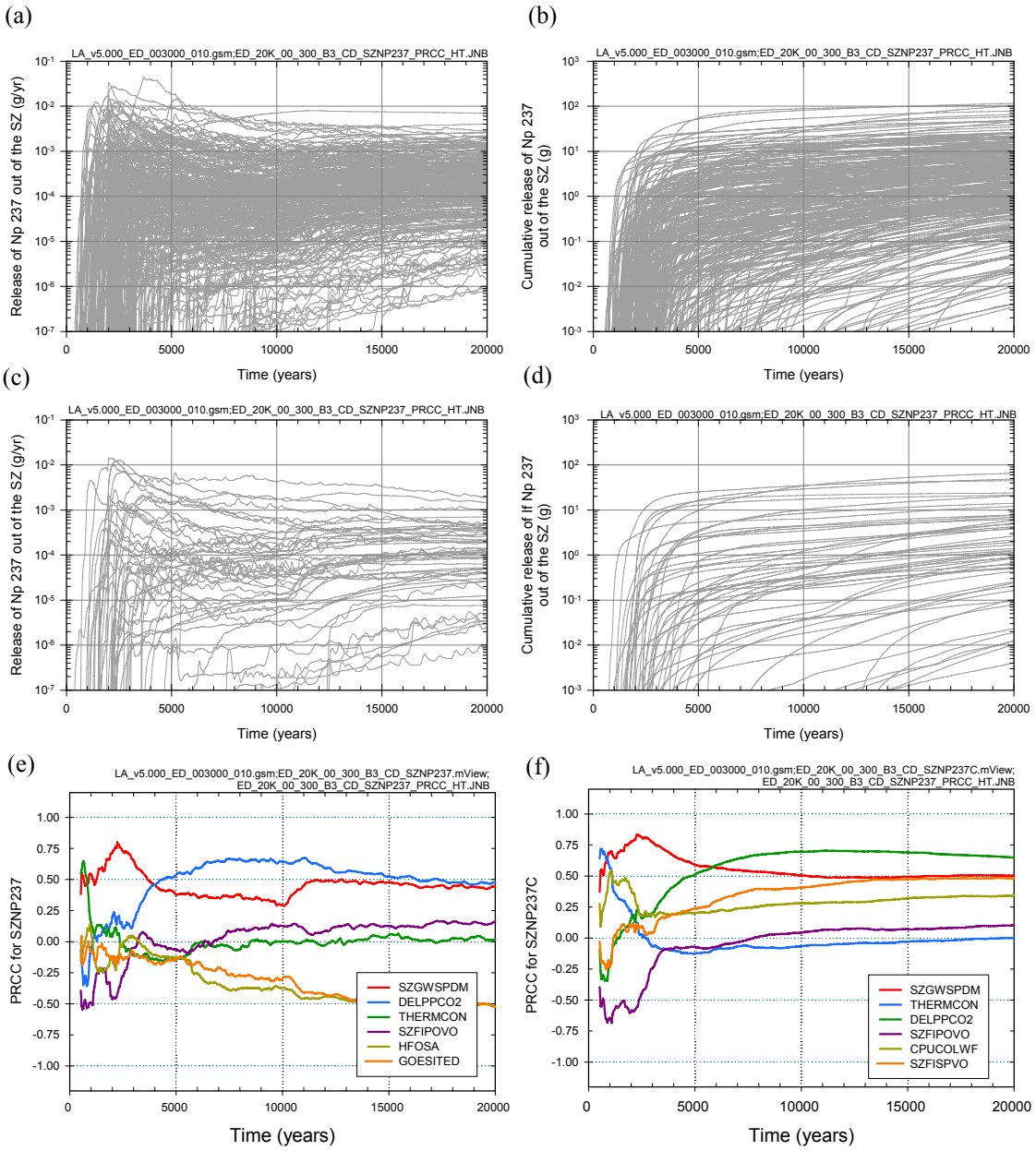
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.5.1-1. Time-dependent release rates (*SZIC239*, g/yr) and cumulative (i.e., integrated) releases (*SZIC239C*, g) over 20,000 years for the movement of ^{239}Pu irreversibly attached to slow colloids across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *SZIC239* and *SZIC239C* for all (i.e., 300) sample elements, (c, d) *SZIC239* and *SZIC239C* for first 50 sample elements, and (e, f) PRCCs for *SZIC239* and *SZIC239C*.



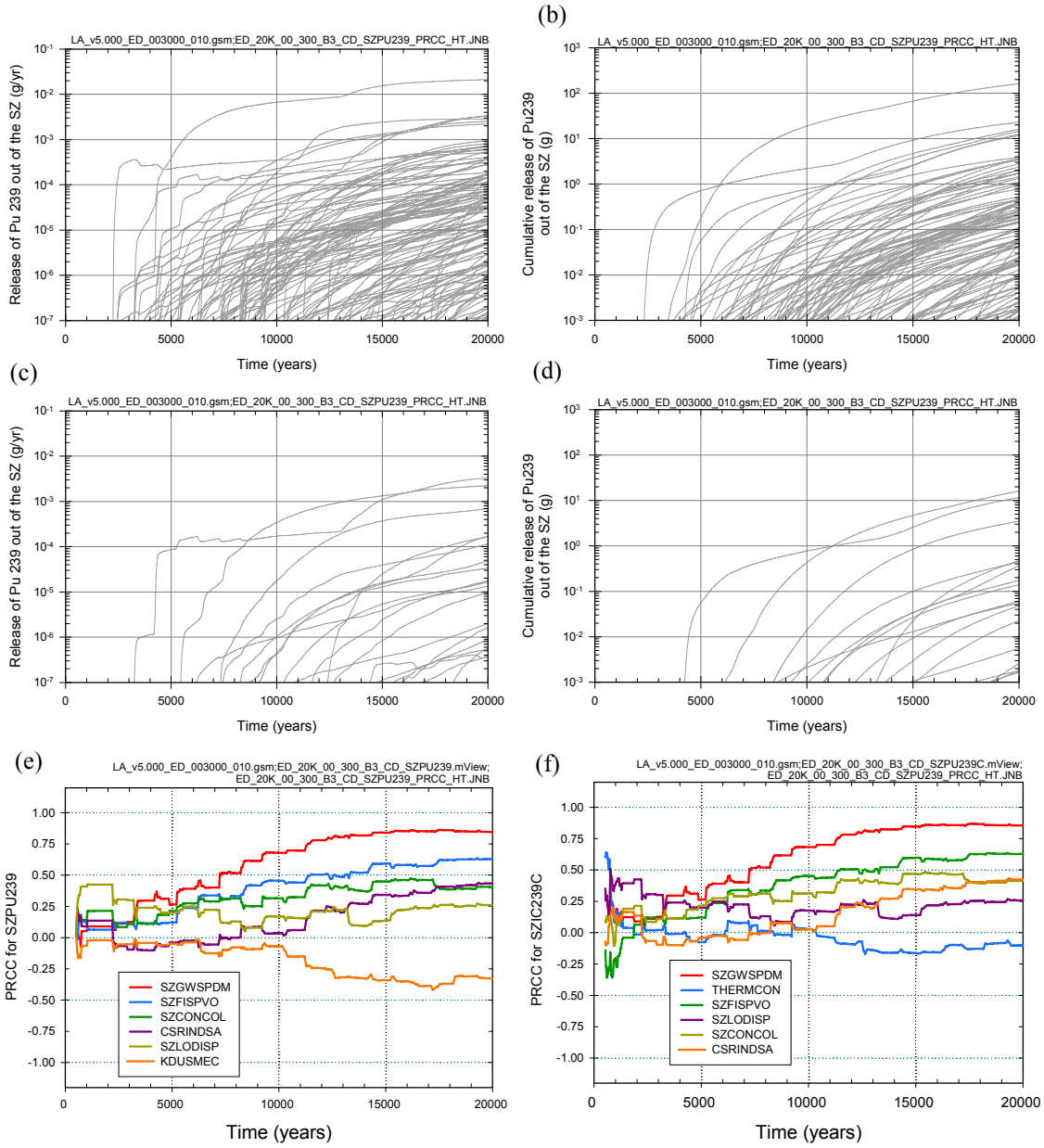
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.5.1-2. Time-dependent release rates (*SZIF239*, g/yr) and cumulative (i.e., integrated) releases (*SZIF239C*, g) over 20,000 years for the movement of ^{239}Pu irreversibly attached to fast colloids across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *SZIF239* and *SZIF239C* for all (i.e., 300) sample elements, (c, d) *SZIF239* and *SZIF239C* for first 50 sample elements, and (e, f) PRCCs for *SZIF239* and *SZIF239C*.



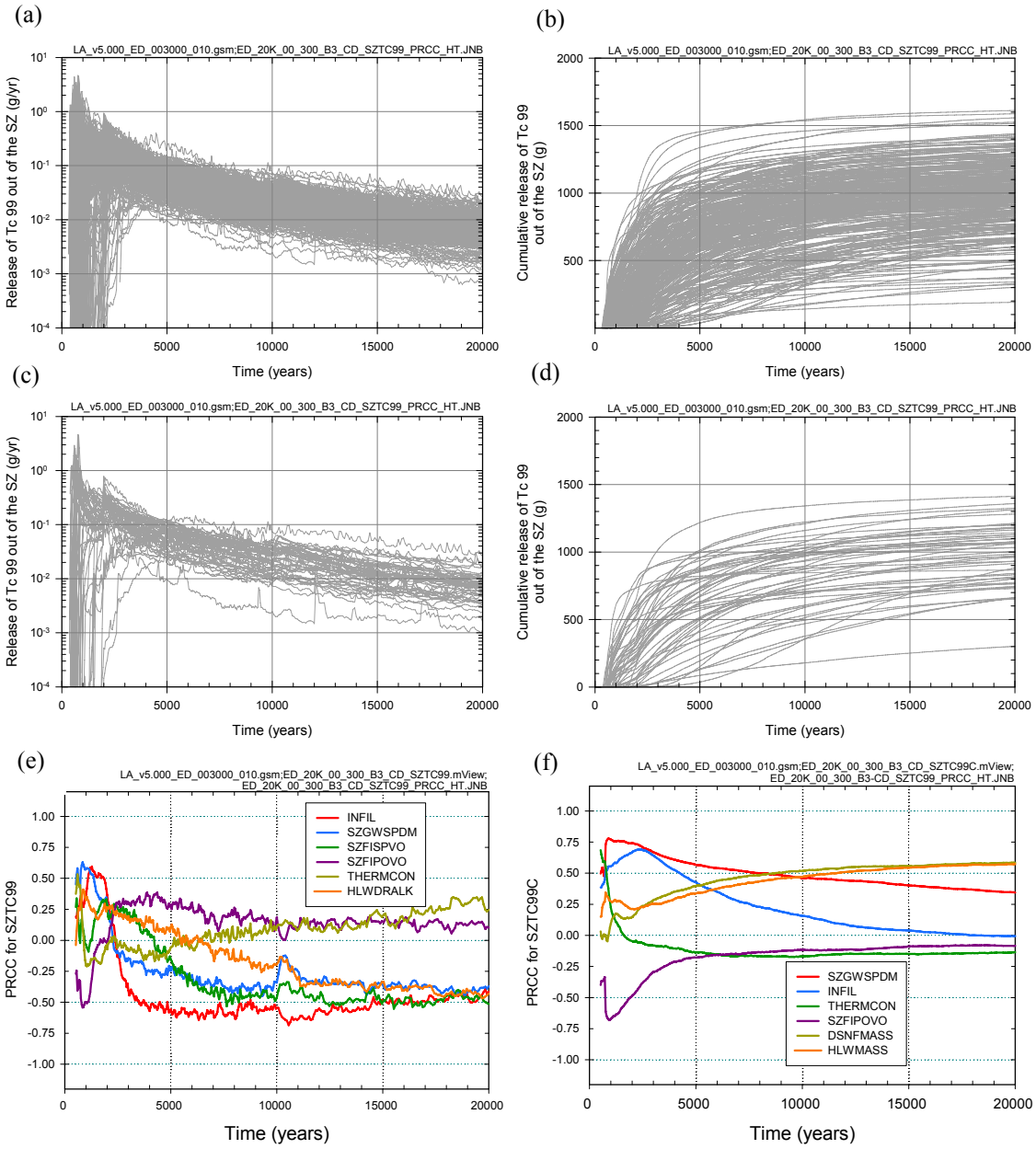
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.5.1-3. Time-dependent release rates (*SZNP237*, g/yr) and cumulative (i.e., integrated) releases (*SZNP237C*, g) over 20,000 years for the movement of dissolved ^{237}Np across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *SZNP237* and *SZNP237C* for all (i.e., 300) sample elements, (c, d) *SZNP237* and *SZNP237C* for first 50 sample elements, and (e, f) PRCCs for *SZNP237* and *SZNP237C*.



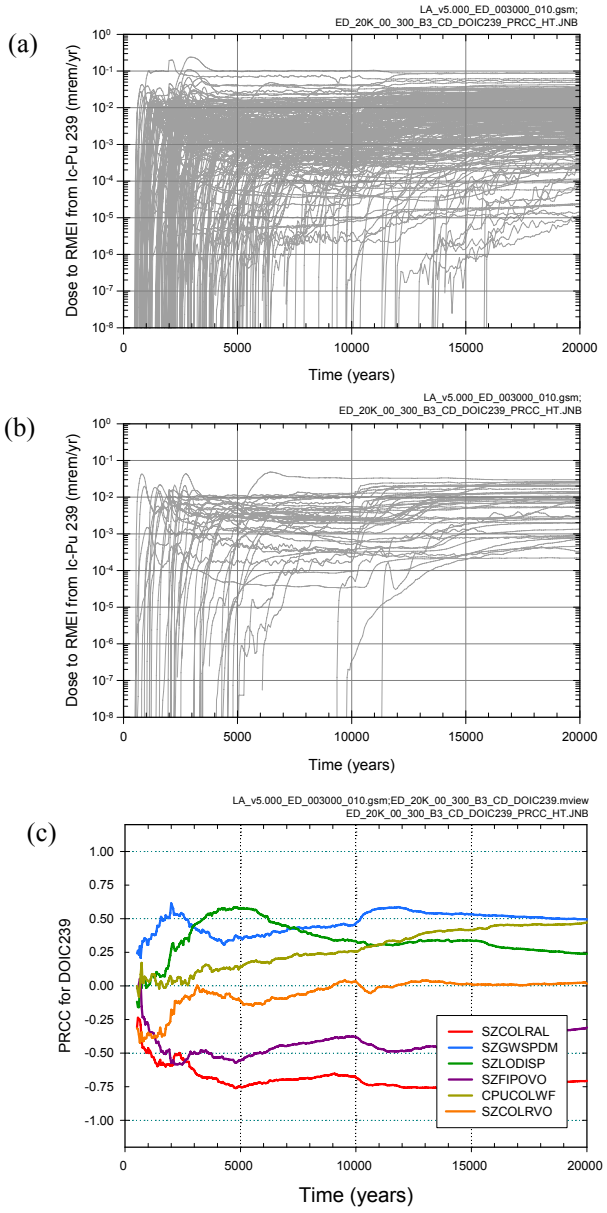
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.5.1-4. Time-dependent release rates (*SZPU239*, g/yr) and cumulative (i.e., integrated) releases (*SZPU239C*, g) over 20,000 years for the movement of dissolved ^{239}Pu across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *SZPU239* and *SZPU239C* for all (i.e., 300) sample elements, (c, d) *SZPU239* and *SZPU239C* for first 50 sample elements, and (e, f) PRCCs for *SZPU239* and *SZPU239C*.



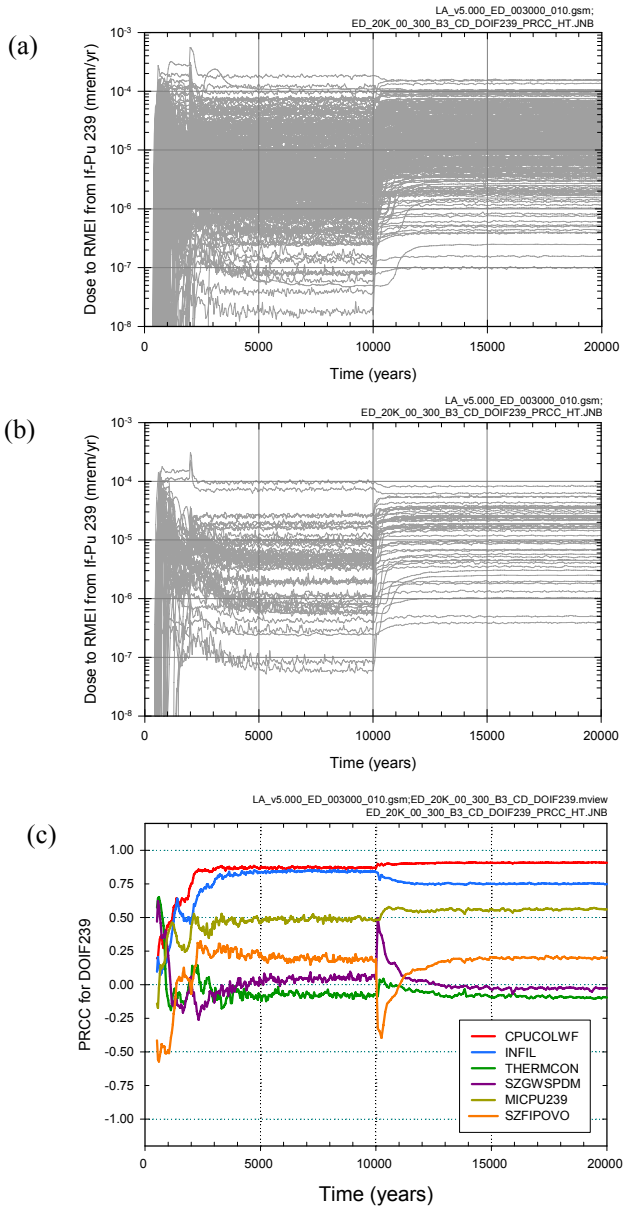
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.5.1-5. Time-dependent release rates (*SZTC99*, g/yr) and cumulative (i.e., integrated) releases (*SZTC99C*, g) over 20,000 years for the movement of dissolved ^{99}Tc across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a, b) *SZTC99* and *SZTC99C* for all (i.e., 300) sample elements, (c, d) *SZTC99* and *SZTC99C* for first 50 sample elements, and (e, f) PRCCs for *SZTC99* and *SZTC99C*.



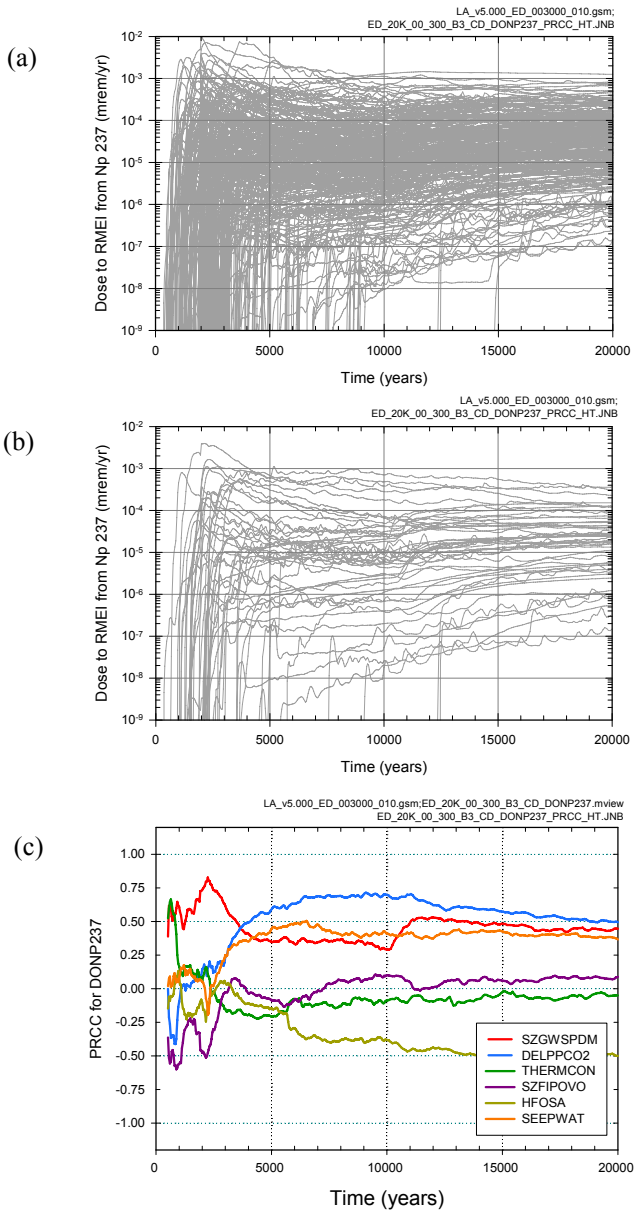
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.6.1-1. Time-dependent dose to the RMEI (*DOIC239*, mrem/yr) over 20,000 years for the movement of ^{239}Pu irreversibly attached to slow colloids across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a) *DOIC239* for all (i.e., 300) sample elements, (b) *DOIC239* for first 50 sample elements, and (c) PRCCs for *DOIC239*.



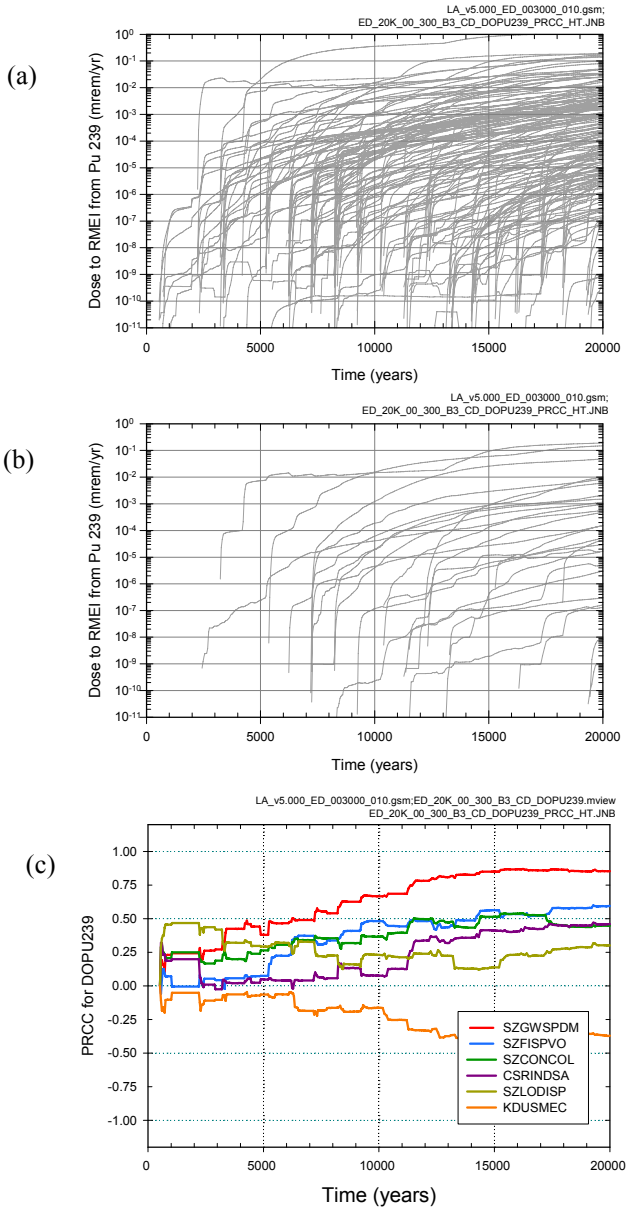
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.6.1-2. Time-dependent dose to the RMEI (*DOIF239*, mrem/yr) over 20,000 years for the movement of ^{239}Pu irreversibly attached to fast colloids across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a) *DOIF239* for all (i.e., 300) sample elements, (b) *DOIF239* for first 50 sample elements, and (c) PRCCs for *DOIF239*.



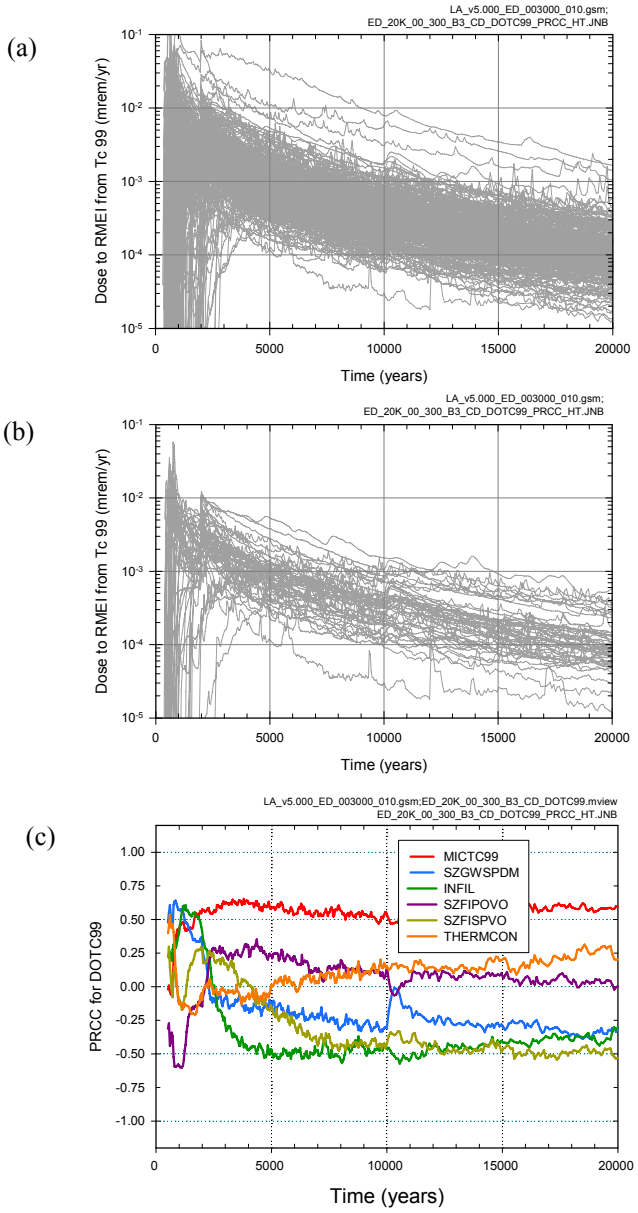
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.6.1-3. Time-dependent dose to the RMEI (*DONP237*, mrem/yr) over 20,000 years for the movement of dissolved ^{237}Np across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a) *DONP237*for all (i.e., 300) sample elements, (b) *DONP237*for first 50 sample elements, and (c) PRCCs for *DONP237*.



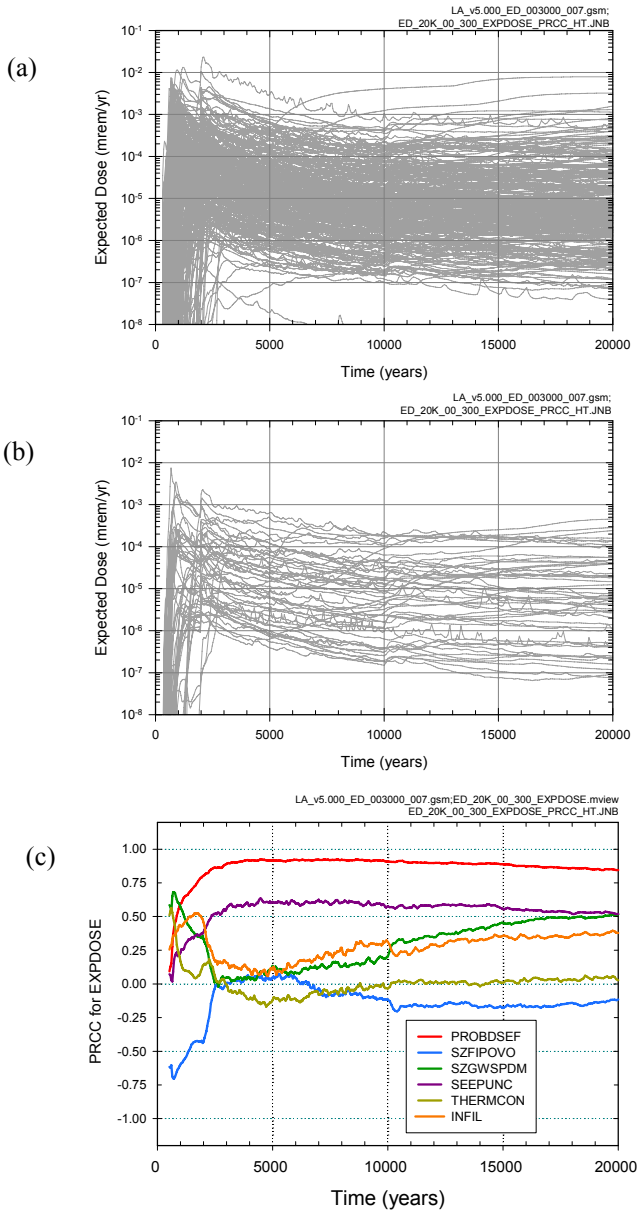
Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.6.1-4. Time-dependent dose to the RMEI (*DOPU239*, mrem/yr) over 20,000 years for the movement of dissolved ^{239}Pu across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a) *DOPU239* for all (i.e., 300) sample elements, (b) *DOPU239* for first 50 sample elements, and (c) PRCCs for *DOPU239*.



Source: Output DTNs: MO0709TSPASENS.000 [DIRS 183982]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.6.1-5. Time-dependent dose to the RMEI (*DOTC99*, mrem/yr) over 20,000 years for the movement of dissolved ^{99}Tc across a subsurface plane at the location of the RMEI resulting from a single early DS failure above a CDSP WP in percolation bin 3 under dripping conditions: (a) *DOTC99* for all (i.e., 300) sample elements, (b) *DOTC99* for first 50 sample elements, and (c) PRCCs for *DOTC99*.



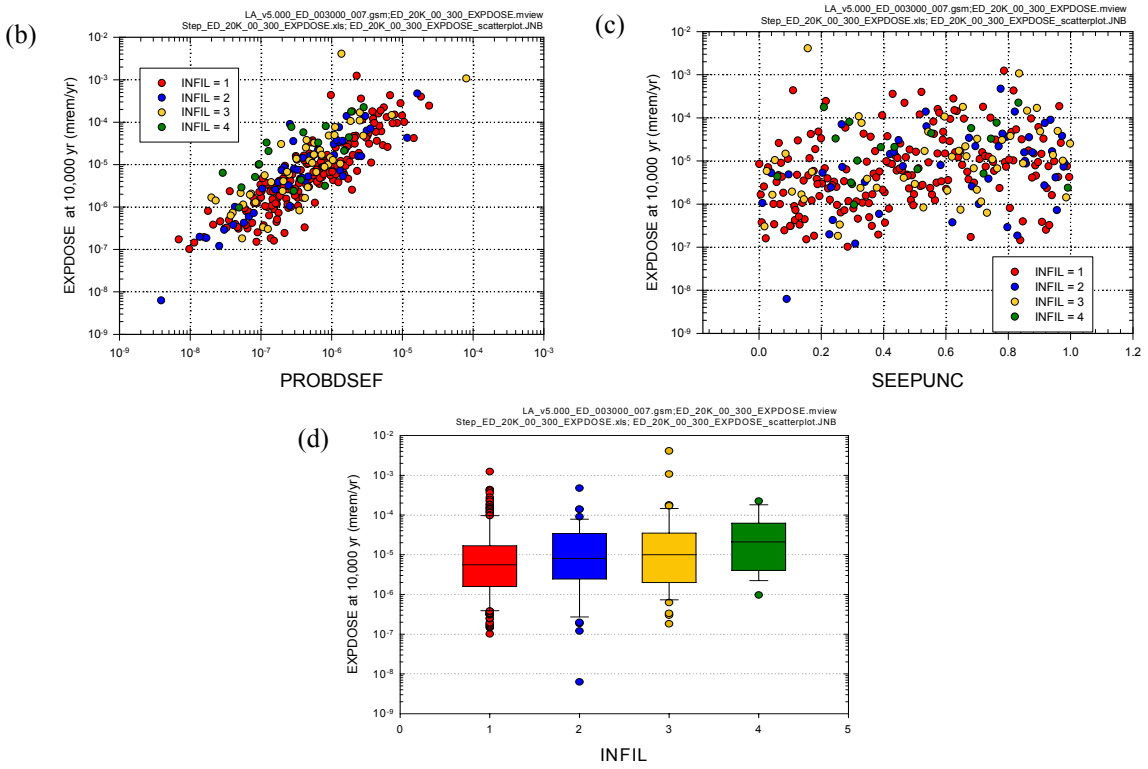
Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.7.1-1. Expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 20,000 yr] for all radioactive species resulting from early DS failure: (a) *EXPDOSE* for all (i.e., 300) sample elements, (b) *EXPDOSE* for first 50 sample elements, and (c) PRCCs for *EXPDOSE*.

(a)

	EXPDOSE: 3000 yr			EXPDOSE: 5000 yr			EXPDOSE: 10,000 yr		
Step[a]	Variable[b]	R^{2c}	SRRC[d]	Variable	R^2	SRRC	Variable	R^2	SRRC
1	PROBDSEF	0.74	0.83	PROBDSEF	0.76	0.84	PROBDSEF	0.69	0.81
2	SEEPUNC	0.79	0.22	SEEPUNC	0.82	0.23	SEEPUNC	0.75	0.22
3	SEEPPRM	0.82	-0.20	SEEPPRM	0.84	-0.18	INFIL	0.77	0.17
4	MICTC99	0.85	0.16	MICTC99	0.86	0.13	SEEPPRM	0.80	-0.19
5	ALPHAL	0.86	-0.06	ALPHAL	0.87	-0.09	ALPHAL	0.82	-0.11
6	INFIL	0.87	0.07	MICAM243	0.88	0.09	MICTC99	0.83	0.10
7	UZFAG8	0.87	-0.06	INFIL	0.88	0.06	MICPU239	0.84	0.09
8	CSNFMASS	0.87	0.07	COLGW	0.88	0.06	PHCSS	0.85	-0.07
9	GP4NO3	0.88	0.06	CSRINDPO	0.89	-0.06	CPUCOLWF	0.85	0.07
10	MICNP237	0.88	0.06	KDRASMEC	0.89	0.05	SZCOLRAL	0.86	-0.07
11							RHMU0	0.86	0.06
12							DSFLUX	0.86	-0.06

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

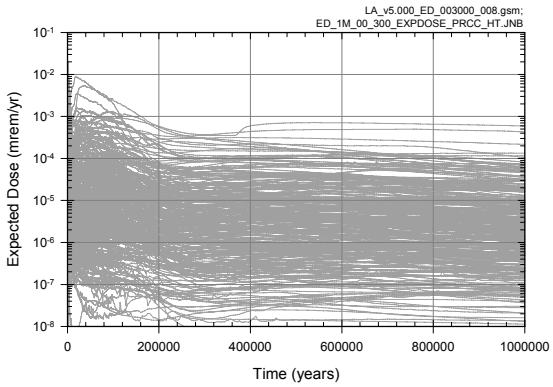


Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

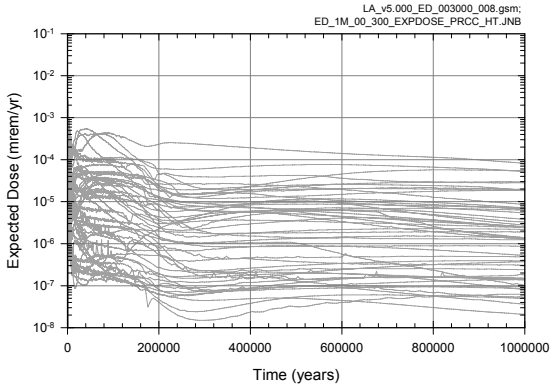
NOTE: In (d), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.7.1-2. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 20,000 yr] for all radioactive species resulting from early DS failure: (a) Regressions for *EXPDOSE* at 3000, 5000 and 10,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 10,000 years.

(a)



(b)



(c)

Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.7.1-3. Expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early DS failure: (a) *EXPDOSE* for all (i.e., 300) sample elements, (b) *EXPDOSE* for first 50 sample elements, and (c) PRCCs for *EXPDOSE*.

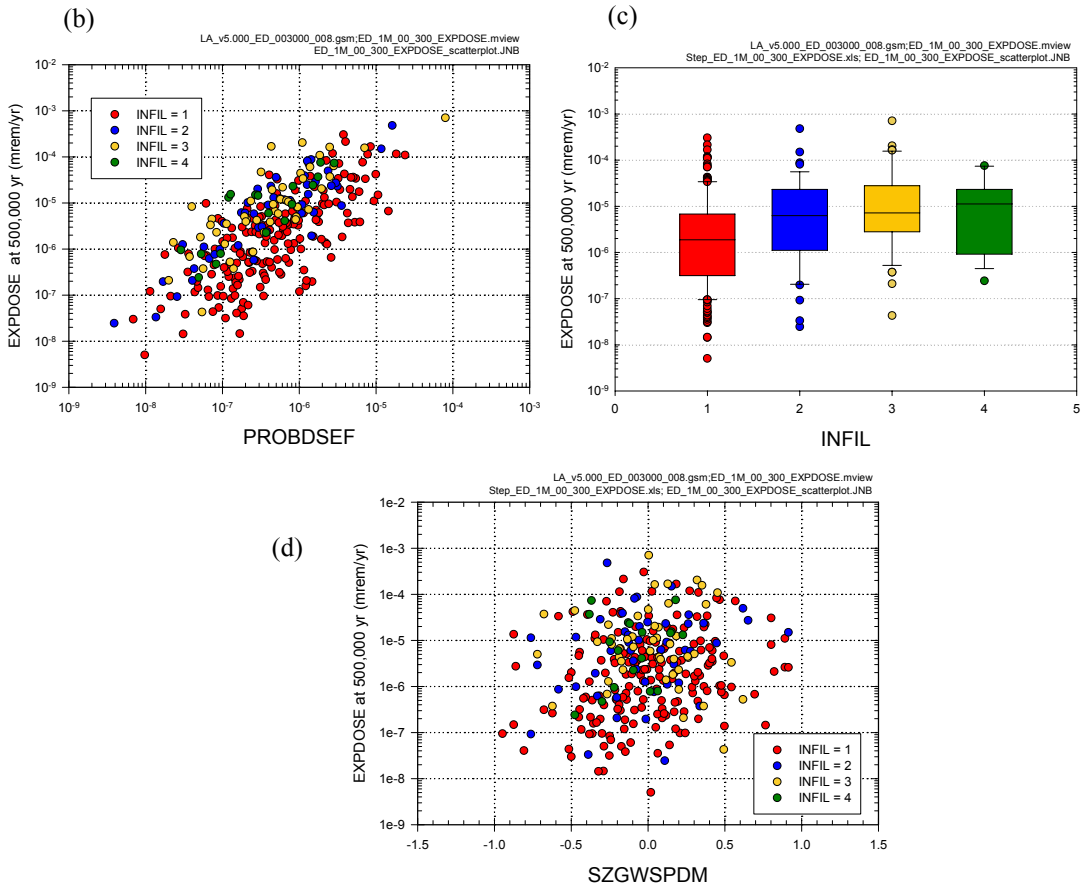
(a)

	EXPDOSE: 50,000 yr			EXPDOSE: 200,000 yr			EXPDOSE: 500,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	PROBDSEF	0.44	0.68	PROBDSEF	0.51	0.73	PROBDSEF	0.48	0.70
2	INFIL	0.55	0.30	INFIL	0.60	0.27	INFIL	0.61	0.31
3	SZGWSPDM	0.65	0.32	SZGWSPDM	0.66	0.23	SZGWSPDM	0.65	0.19
4	SEEPPRM	0.70	-0.24	SEEPUNC	0.71	0.24	SEEPUNC	0.69	0.20
5	SEEPUNC	0.74	0.21	SEEPPRM	0.75	-0.21	SEEPPRM	0.73	-0.20
6	EP1LOWPU	0.77	0.17	MICPU239	0.77	0.14	EP1LOWPU	0.76	0.16
7	MICPU239	0.79	0.14	EP1LOWPU	0.78	0.14	GOESITED	0.77	-0.12
8	PHCSS	0.80	-0.08	GOESITED	0.79	-0.10	MICPU239	0.79	0.12
9	ALPHAL	0.80	-0.10	ALPHAL	0.80	-0.13	ALPHAL	0.80	-0.13
10	SZFISPVO	0.81	0.12	SZCONCOL	0.81	0.10	SZFISPVO	0.81	0.13
11	SZDIFCVO	0.82	-0.09	SZFISPVO	0.82	0.11	PHCSS	0.82	0.10
12	SZCOLRAL	0.82	-0.08	HFOSA	0.83	-0.09	EP1LOWNU	0.83	0.12
13	CPUCOLWF	0.83	0.09	SZDIFCVO	0.84	-0.10	SZDIFCVO	0.84	-0.08
14	HFOSA	0.83	-0.07	EP1LOWNU	0.85	0.08	HFOSA	0.85	-0.09
15	SEEPPRMN	0.84	-0.07	SZKDAMCO	0.85	0.07	MICSN126	0.85	0.07
16							SZCONCOL	0.86	0.07

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

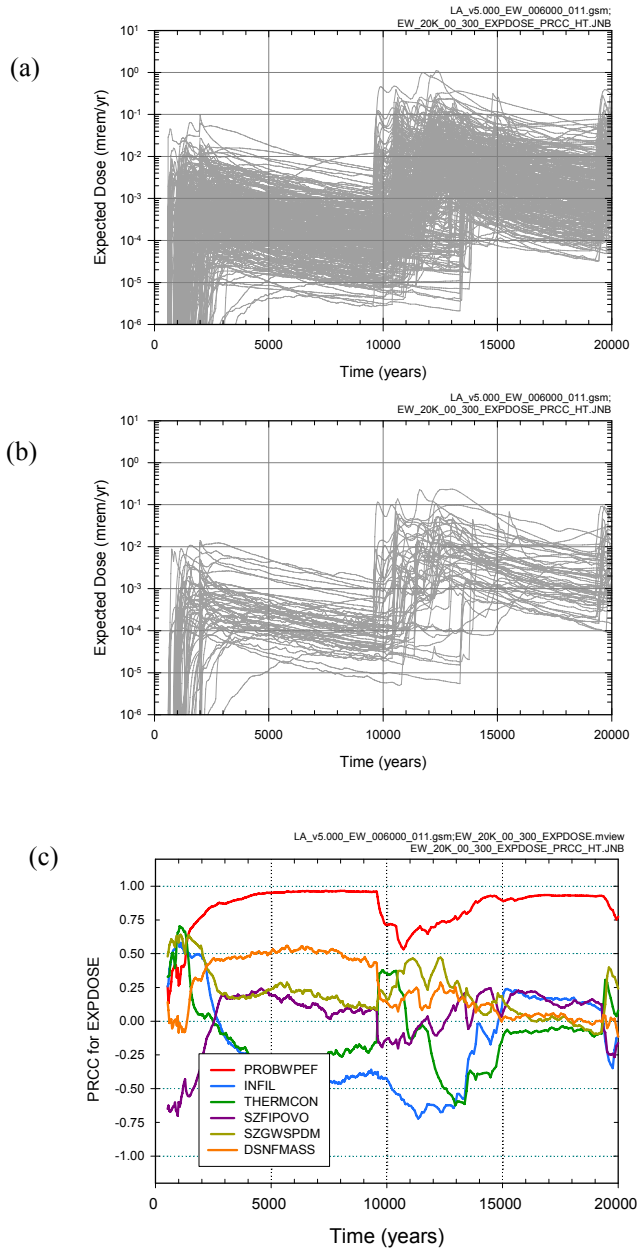
Figure K5.7.1-4. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early DS failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years.



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

NOTE: In (c), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.7.1-4. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early DS failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years (continued).



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

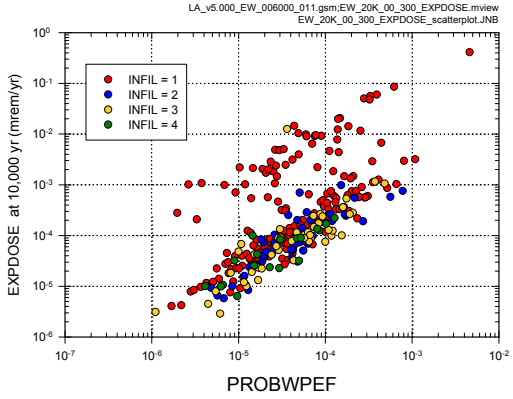
Figure K5.7.2-1. Expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 20,000 yr] for all radioactive species resulting from early WP failure: (a) *EXPDOSE* for all (i.e., 300) sample elements, (b) *EXPDOSE* for first 50 sample elements, and (c) PRCCs for *EXPDOSE*.

(a)

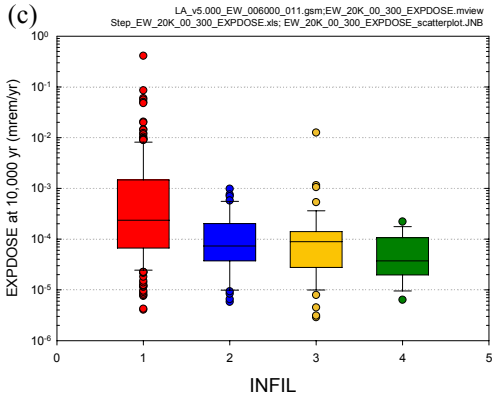
	EXPDOSE: 3000 yr			EXPDOSE: 5000 yr			EXPDOSE: 10,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	PROBWPEF	0.62	0.76	PROBWPEF	0.79	0.87	PROBWPEF	0.47	0.68
2	MICTC99	0.68	0.23	MICTC99	0.82	0.19	INFIL	0.56	-0.31
3	MICC14	0.71	0.17	MICC14	0.84	0.14	THERMCON	0.64	0.28
4	DSNFMASS	0.73	0.17	DSNFMASS	0.87	0.16	MICTC99	0.66	0.15
5	UZFAG8	0.75	-0.13	UZFAG8	0.87	-0.10	EP1LOWPU	0.67	0.10
6	SZFISPVO	0.76	0.12	HLWDRACD	0.88	0.08			
7	HLWDRACD	0.77	0.08	INFIL	0.89	-0.09			
8	UZTORRG3	0.78	0.10	HLWDRALK	0.89	0.07			
9	SZGWSPDM	0.79	0.09	PH2DHLNS	0.90	-0.07			
10	SZDIFCVO	0.79	-0.08	THERMCON	0.90	-0.06			
11	UZGAM	0.80	-0.07	UZGAM	0.90	-0.06			

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

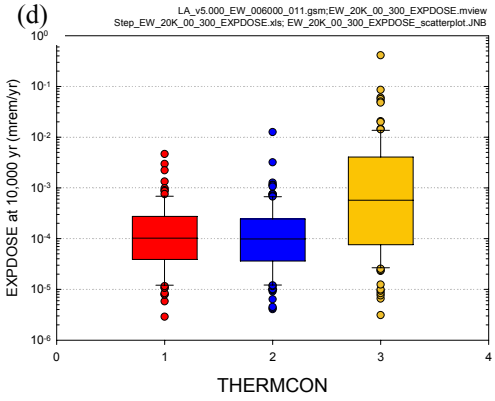
(b)



(c)



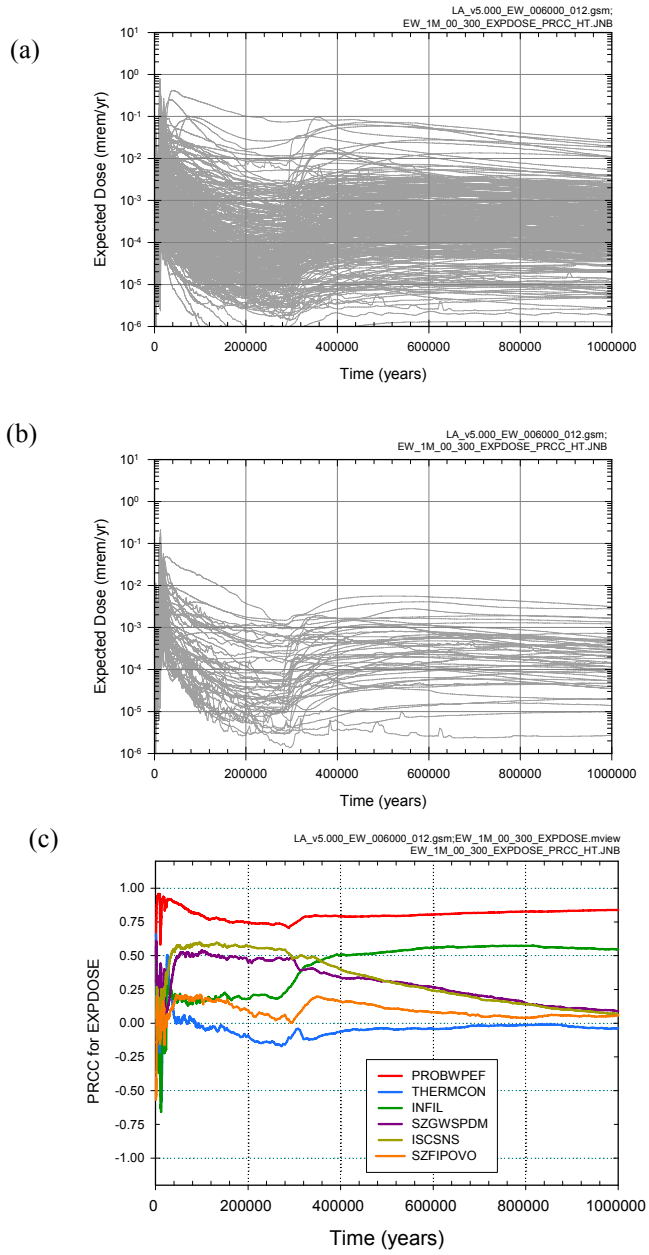
(d)



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

NOTE: In (c,d), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.7.2-2. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 20,000 yr] for all radioactive species resulting from early WP failure: (a) Regressions for *EXPDOSE* at 3000, 5000 and 10,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 10,000 years.



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.7.2-3. Expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early WP failure: (a) *EXPDOSE* for all (i.e., 300) sample elements, (b) *EXPDOSE* for first 50 sample elements, and (c) PRCCs for *EXPDOSE*.

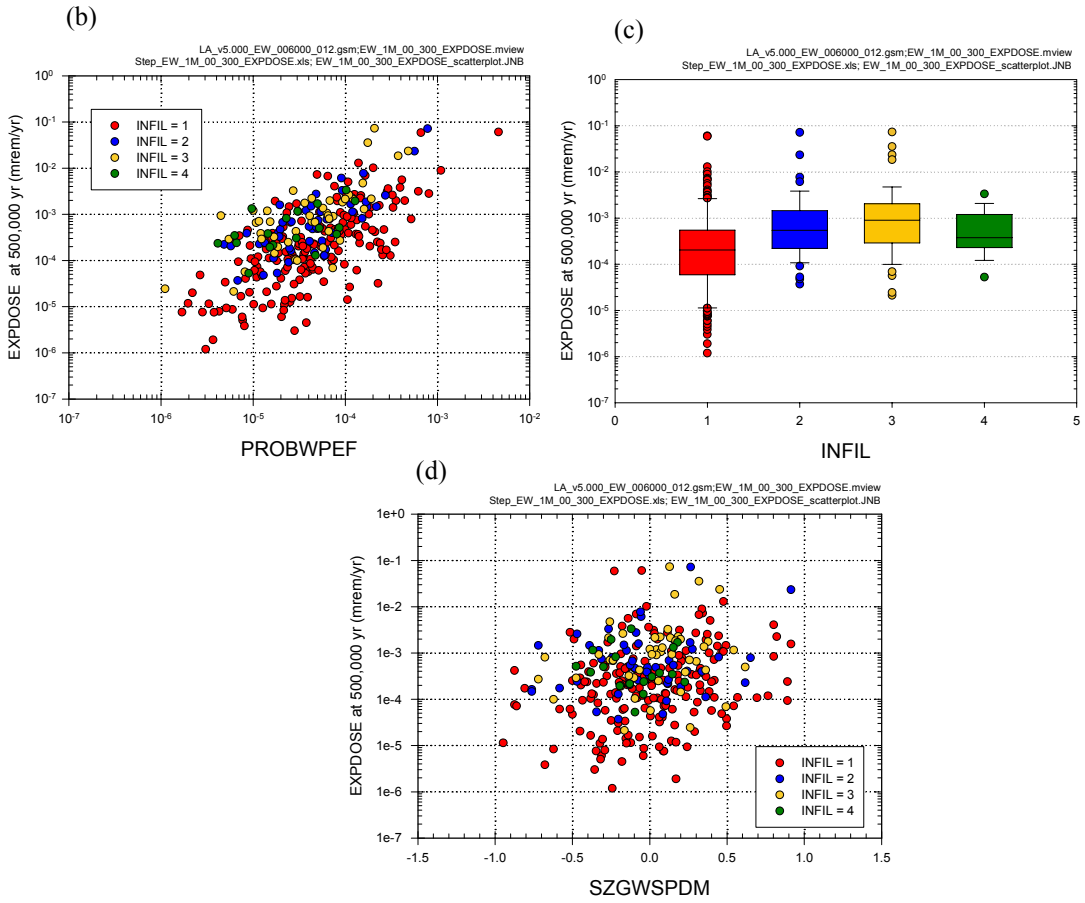
(a)

	EXPDOSE: 50,000 yr			EXPDOSE: 200,000 yr			EXPDOSE: 500,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	PROBWPEF	0.58	0.78	PROBWPEF	0.35	0.60	PROBWPEF	0.35	0.66
2	ISCSNS	0.65	0.26	ISCSNS	0.48	0.37	INFIL	0.48	0.31
3	SZGWSPDM	0.71	0.22	SZGWSPDM	0.55	0.24	SZGWSPDM	0.53	0.21
4	EP1LOWPU	0.73	0.14	EP1LOWPU	0.57	0.15	SEEPPRM	0.57	-0.21
5	MICTC99	0.74	0.09	SZFISPVO	0.59	0.17	SEEPUNC	0.60	0.18
6	COLU	0.75	0.10	SZDIFCVO	0.61	-0.15	EP1LOWPU	0.62	0.17
7	SZFISPVO	0.76	0.11	IGRATE	0.62	0.12	ALPHAL	0.65	-0.20
8	SZDIFCVO	0.76	-0.10	SEEPUNC	0.63	0.10	EP1LOWNU	0.68	0.18
9	IGRATE	0.77	0.09	DIFPATHL	0.64	-0.11	SZFISPVO	0.70	0.17
10	MICPU239	0.78	0.09	GOESITED	0.65	-0.10	MICNP237	0.71	0.13
11				RHMU40	0.66	-0.10	SZDIFCVO	0.73	-0.11
12							GOESITED	0.74	-0.11
13							HFOSA	0.75	-0.10
14							SZCONCOL	0.75	0.10
15							ISCSNS	0.76	0.10
16							COLGW	0.77	0.09

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

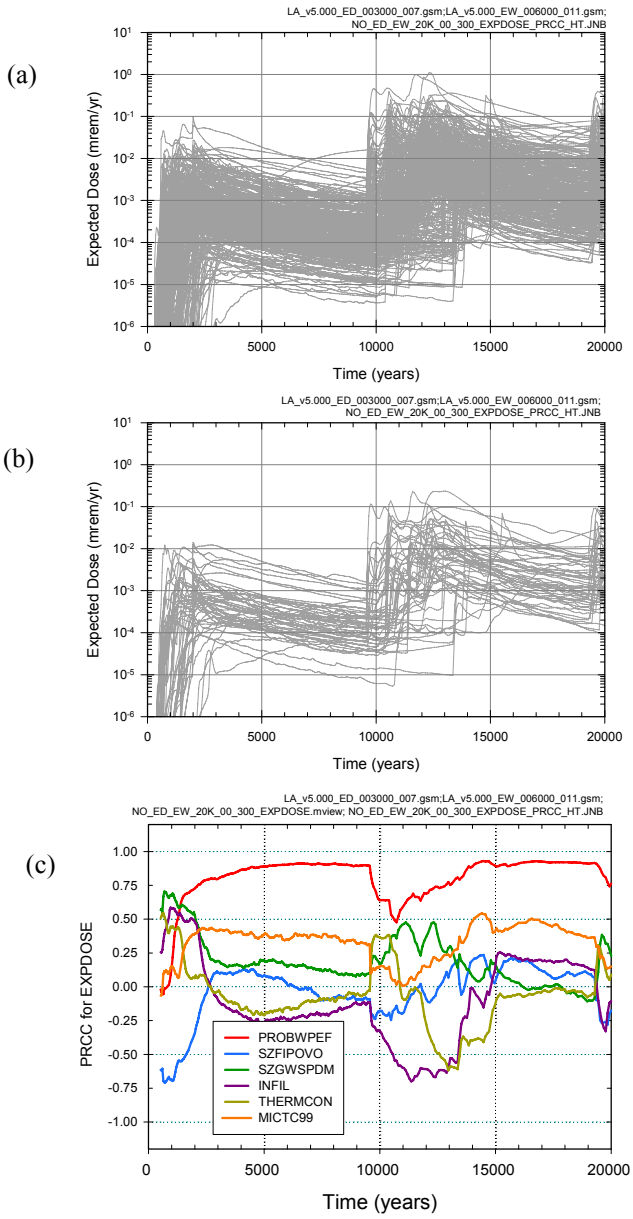
Figure K5.7.2-4. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early WP failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years.



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

NOTE: In (c), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.7.2-4. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early WP failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years (continued).



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.7.3-1. Expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 20,000 yr] for all radioactive species resulting from both early DS failure and early WP failure: (a) *EXPDOSE* for all (i.e., 300) sample elements, (b) *EXPDOSE* for first 50 sample elements, and (c) PRCCs for *EXPDOSE*.

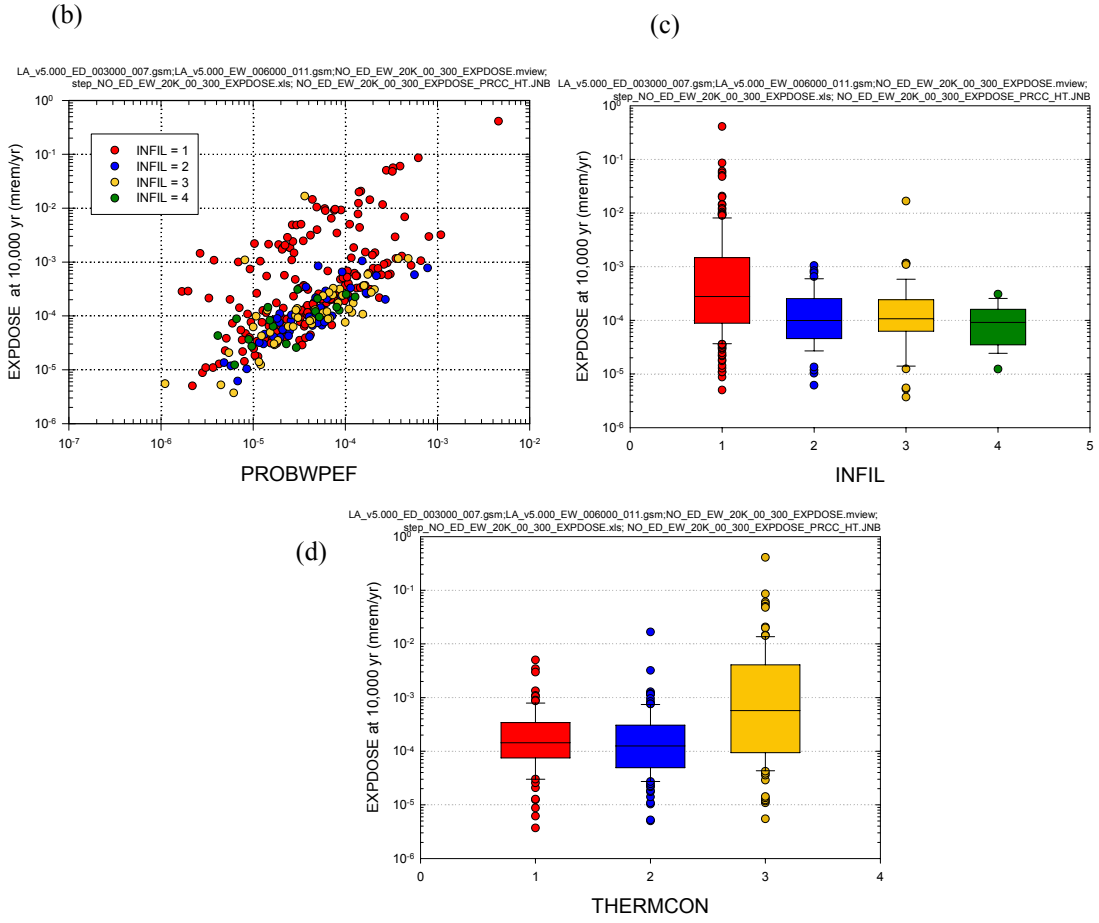
(a)

	EXPDOSE: 3000 yr			EXPDOSE: 5000 yr			EXPDOSE: 10,000 yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	PROBWPEF	0.49	0.69	PROBWPEF	0.64	0.78	PROBWPEF	0.39	0.62
2	MICTC99	0.57	0.23	MICTC99	0.70	0.22	INFIL	0.48	-0.26
3	PROBDSEF	0.61	0.20	PROBDSEF	0.74	0.20	THERMCON	0.55	0.28
4	UZFAG8	0.63	-0.15	DSNFMASS	0.76	0.15	PROBDSEF	0.59	0.20
5	DSNFMASS	0.65	0.15	MICC14	0.78	0.12	MICTC99	0.61	0.14
6	MICC14	0.67	0.16	UZFAG8	0.79	-0.09			
7	HLWDRACD	0.68	0.09	HLWDRACD	0.79	0.08			
8	UZGAM	0.69	-0.09	CSRINDDN	0.80	-0.08			
9	SZGWSPDM	0.70	0.11	INFIL	0.80	-0.08			
10	SEEPUNC	0.71	0.11	THERMCON	0.81	-0.09			
11	IS2DHLNS	0.72	-0.09	UZGAM	0.81	-0.08			
12				HLWMASS	0.82	0.07			
13				RHMUNO0	0.82	0.08			
14				KDAMCOL	0.83	-0.07			
15				UZFAG9	0.83	0.07			

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

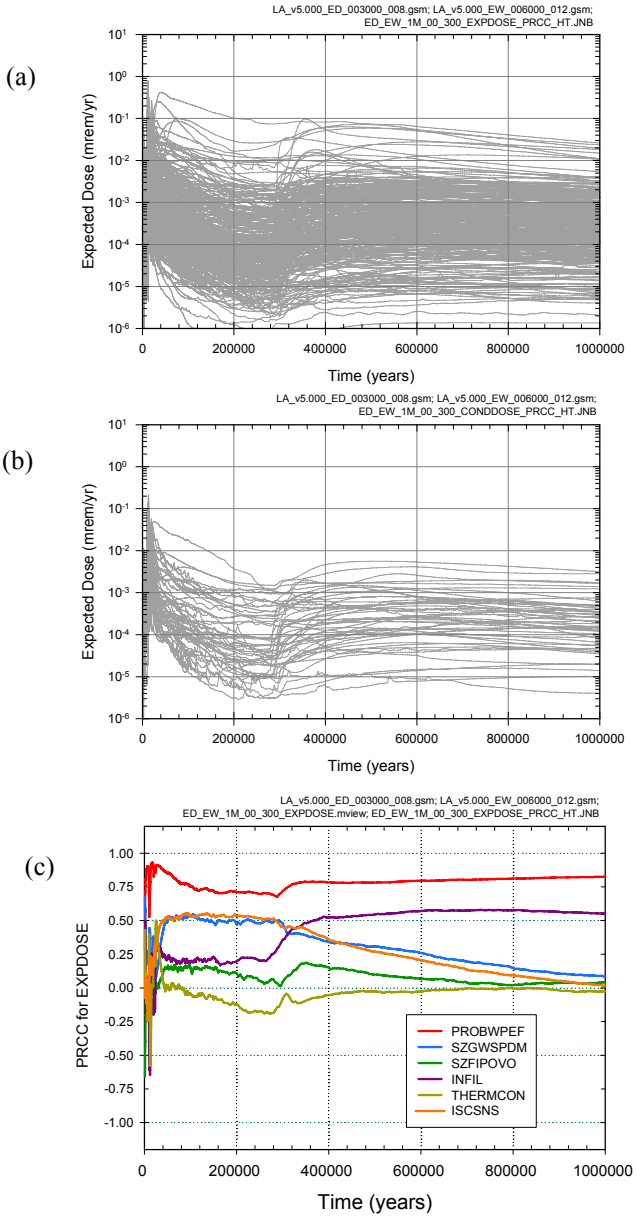
Figure K5.7.3-2. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 20,000 yr] for all radioactive species resulting from both early DS failure and early WP failure: (a) Regressions for *EXPDOSE* at 3000, 5000 and 10,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 10,000 years.



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Notes: In (c,d), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line

Figure K5.7.3-2. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 20,000 yr] for all radioactive species resulting from both early DS failure and early WP failure: (a) Regressions for *EXPDOSE* at 3000, 5000 and 10,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 10,000 years (continued).



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.7.3-3. Expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from both early DS failure and early WP failure: (a) *EXPDOSE* for all (i.e., 300) sample elements, (b) *EXPDOSE* for first 50 sample elements, and (c) PRCCs for *EXPDOSE*.

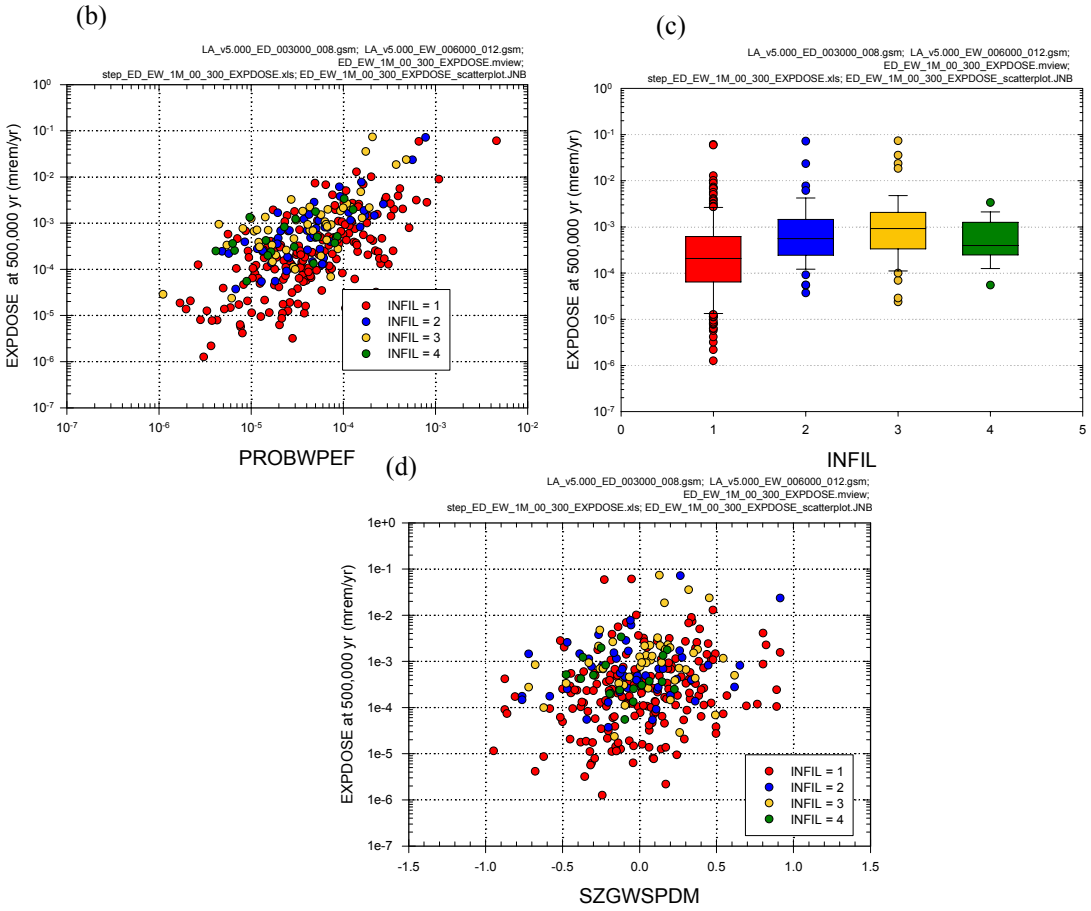
(a)

	EXPDOSE: 50K yr			EXPDOSE: 200K yr			EXPDOSE: 500K yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	PROBWPEF	0.51	0.73	PROBWPEF	0.27	0.56	PROBWPEF	0.32	0.64
2	SZGWSPDM	0.59	0.27	ISCSNS	0.39	0.37	INFIL	0.46	0.32
3	ISCSNS	0.66	0.26	SZGWSPDM	0.47	0.26	SZGWSPDM	0.51	0.22
4	EP1LOWPU	0.68	0.12	SEEPUNC	0.50	0.17	SEEPUNC	0.55	0.20
5	SEEPUNC	0.69	0.11	PROBDSEF	0.52	0.16	SEEPPRM	0.58	-0.22
6	MICNP237	0.70	0.12	EP1LOWPU	0.54	0.15	ALPHAL	0.61	-0.20
7	SZKDSRAL	0.72	0.12	SEEPPRM	0.56	-0.13	EP1LOWPU	0.64	0.17
8	DTDRHUNC	0.73	0.11	SZFISPVO	0.58	0.17	EP1LOWNU	0.67	0.18
9	HFOSA	0.73	-0.10	SZDIFCVO	0.60	-0.16	SZFISPVO	0.69	0.16
10				EP1LOWNU	0.61	0.11	MICNP237	0.70	0.13
11				ALPHAL	0.62	-0.11	SZDIFCVO	0.71	-0.11
12				HFOSA	0.63	-0.11	ISCSNS	0.72	0.10
13				IGRATE	0.63	0.11	GOESITED	0.73	-0.11
14				MICPU239	0.64	0.10	HFOSA	0.74	-0.11
15							SZCONCOL	0.75	0.09
16							COLGW	0.76	0.09

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

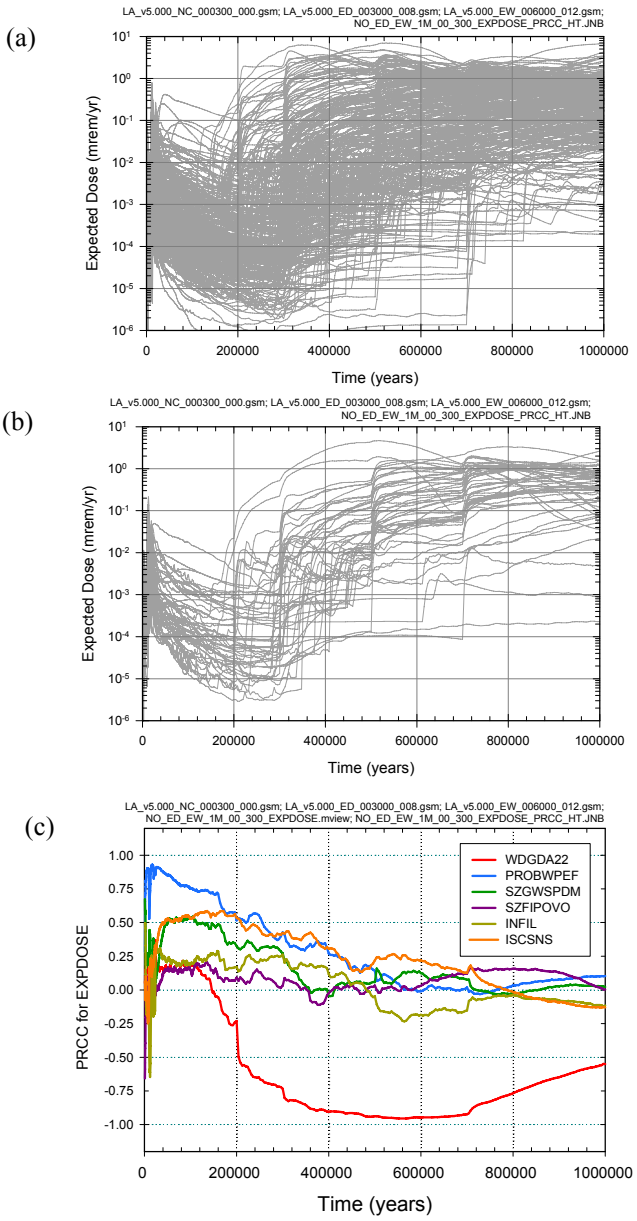
Figure K5.7.3-4. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from both early DS failure and early WP failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years.



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

NOTE: In (c), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.7.3-4. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from both early DS failure and early WP failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years (continued).



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.7.4-1. Expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early DS failure, early WP failure and nominal process WP failure: (a) *EXPDOSE* for all (i.e., 300) sample elements, (b) *EXPDOSE* for first 50 sample elements, and (c) PRCCs for *EXPDOSE*

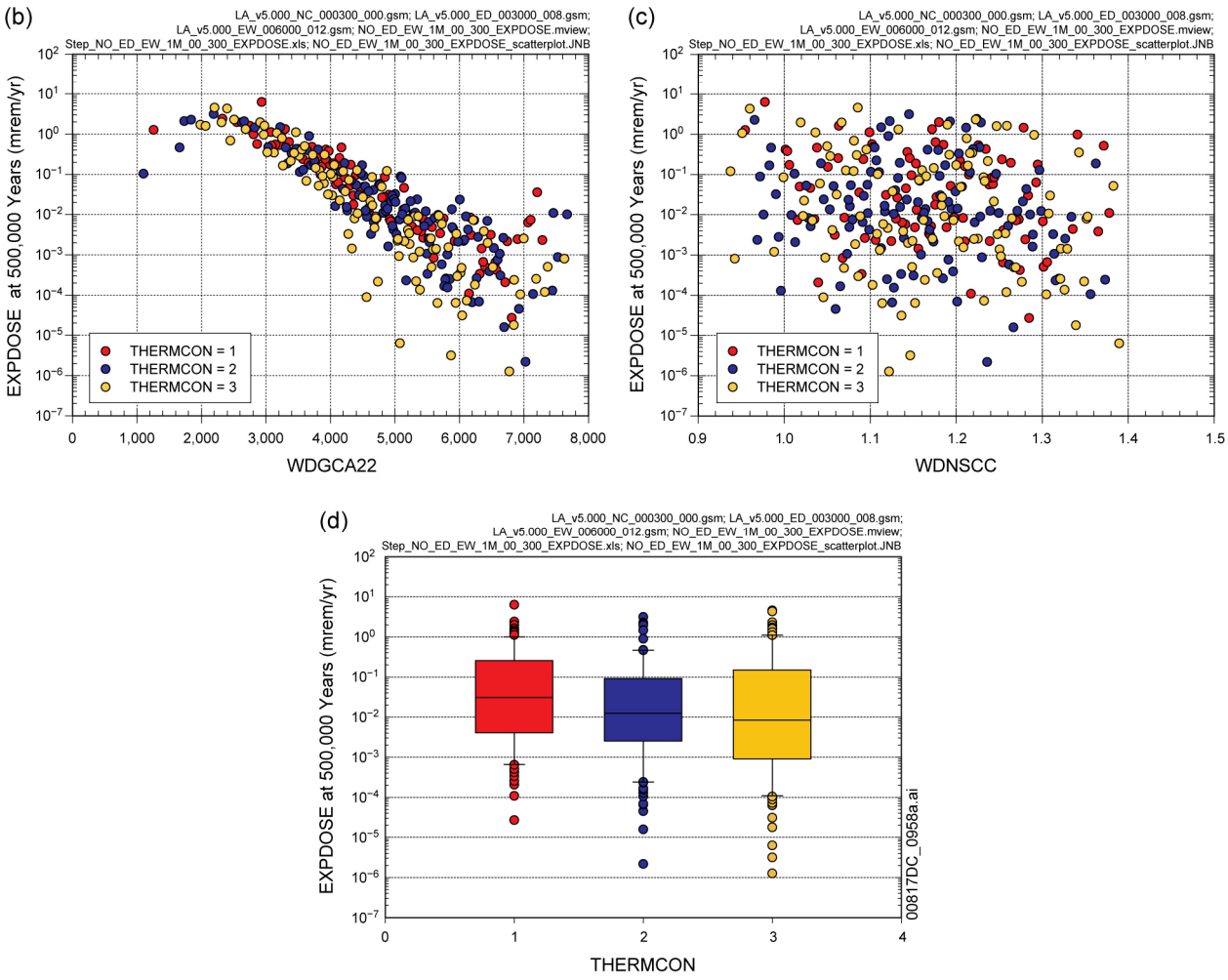
(a)

	EXPDOSE: 50K yr			EXPDOSE: 200K yr			EXPDOSE: 500K yr		
Step[a]	**Variable[b]**	**R^{2c}**	**SRRC[d]**	**Variable**	**R^2**	**SRRC**	**Variable**	**R^2**	**SRRC**
1	PROBWPEF	0.51	0.73	PROBWPEF	0.19	0.46	WDGCA22	0.78	-0.89
2	SZGWSPDM	0.59	0.27	ISCSNS	0.31	0.32	WDNSCC	0.81	-0.18
3	ISCSNS	0.66	0.26	SZGWSPDM	0.37	0.26	THERMCON	0.83	-0.14
4	EP1LOWPU	0.68	0.12	WDGCA22	0.42	-0.22	PROBWPEF	0.84	0.10
5	SEEPUNC	0.69	0.11	PROBDSEF	0.44	0.13	WDGCUA22	0.85	0.10
6	MICNP237	0.70	0.12	INRFRCTC	0.46	0.13	WDZOLID	0.86	0.08
7	SZKDSRAL	0.72	0.12	SZSREG3Y	0.48	-0.16	MICNP237	0.86	0.06
8	DTDRHUNC	0.73	0.11	INRFRCSR	0.49	-0.14	CORRATSS	0.87	-0.07
9	HFOSA	0.73	-0.10	SEEPUNC	0.51	0.12	MICI129	0.87	0.07
10							KDRACOL	0.88	-0.06
11							CSNFMASS	0.88	0.06
12							CPUPERCS	0.88	-0.06
13							SZGWSPDM	0.88	0.06

a: Steps in stepwise rank regression analysis
b: Variables listed in order of selection in stepwise regression
c: Cumulative R^2 value with entry of each variable into regression model
d: Standardized rank regression coefficients (SRRCs) in final regression model

Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

Figure K5.7.4-2. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early DS failure, early WP failure and nominal process WP failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years.



Source: Output DTNs: MO0709TSPAREGS.000 [DIRS 182976]; and MO0709TSPAPLOT.000 [DIRS 183010].

NOTE: In (d), the box extends from 0.25 to 0.75 quantile; lower and upper bar and whisker extend to 0.1 and 0.9 quantile, respectively; dots represent values outside 0.1 to 0.9 quantile range; median indicated by light horizontal line.

Figure K5.7.4-2. Stepwise rank regression analyses and selected scatterplots for expected dose to RMEI (*EXPDOSE*, mrem/yr) over [0, 1,000,000 yr] for all radioactive species resulting from early DS failure, early WP failure and nominal process WP failure: (a) Regressions for *EXPDOSE* at 50,000, 200,000 and 500,000 years, and (b,c,d) Scatterplots for *EXPDOSE* at 500,000 years (continued).

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