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Effects of a Detailed Vegetation Database on Simulated Meteorological Fields, Biogenic VOC Emissions, and Ambient Pollutant Concentrations over Japan

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Supplementary Materials

Table S1. Default and newly developed EFs of isoprene, monoterpenes, and sesquiterpenes for major vegetation types. Average values and standard deviation are shown in μg/m²/hour.

(a) Isoprene

	Isoprene
Default	10000
Quercus serrata	8600±2500
Quercus dentata	7300
Quercus crispula	3700±2800
Fagus crenata	130
Quercus acutissima	26±26
Quercus glauca	3±3
Quercus myrsinifolia	2±2
Quercus variabilis	0
Quercus acuta	0
Quercus salicina	0
Quercus sessilifolia	0

(b) Monoterpenes

	α-Pinene	β-Pinene	3-Carene	Limo-nene	Myrcene	t-β-Ocimene	Sabinene	Other
Default	500	300	160	100	70	70	70	180
Cryptomeria japonica	49±70	3.8±3.4	8.8±4.4	11±17	26±34	40±55	110±140	100±220
Chamaecyparis obtusa	20±72	9.2±14	0	16±26	20±33	0	88±150	41±52
Pinus densiflora	87±140	14±24	0	24±32	40±44	0	0	56±31

(c) Sesquiterpenes

	α-Farnesene	β-Caryophyllene	Other
Default	40	80	120
Cryptomeria japonica	410±640	0	240±560
Pinus densiflora	21	0	0

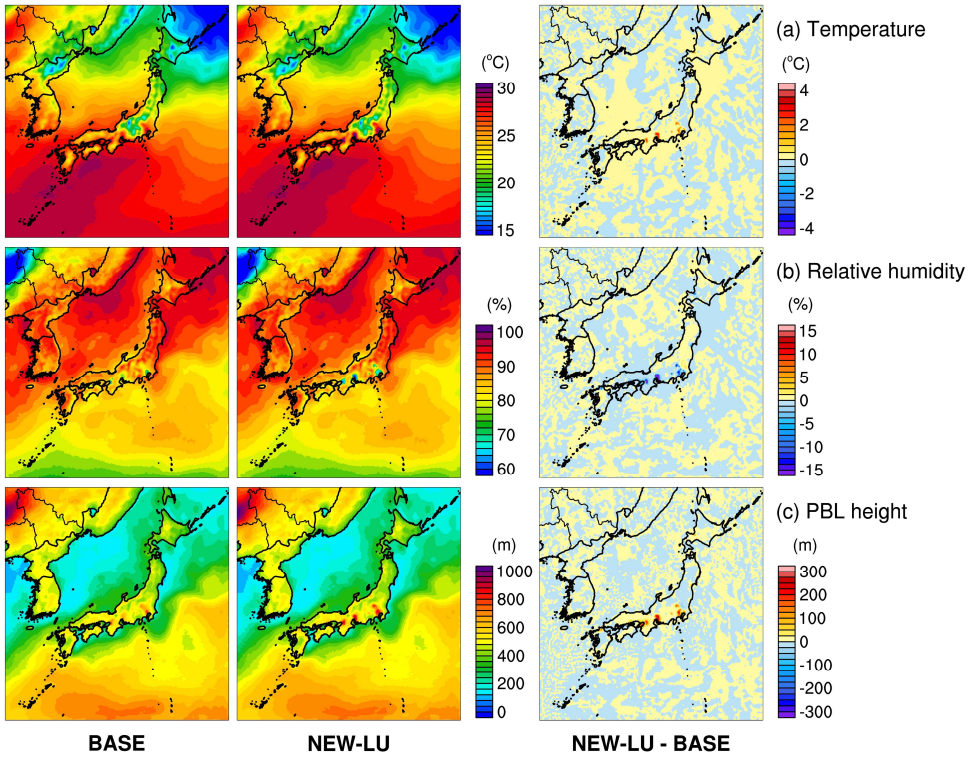

Figure S1. Horizontal distributions showing mean temperature at 2 m height, relative humidity at 2 m height, and PBL height simulated in BASE and NEW-LU cases during the target period in d02.

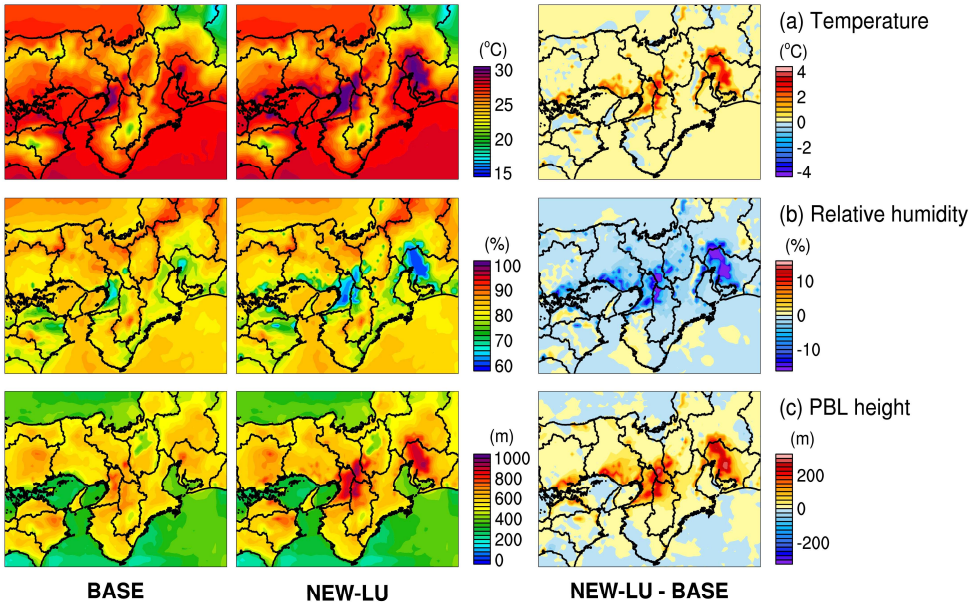

Figure S2. Horizontal distributions showing mean temperature at 2 m height, relative humidity at 2 m height, and PBL height simulated in BASE and NEW-LU cases during the target period in d03.

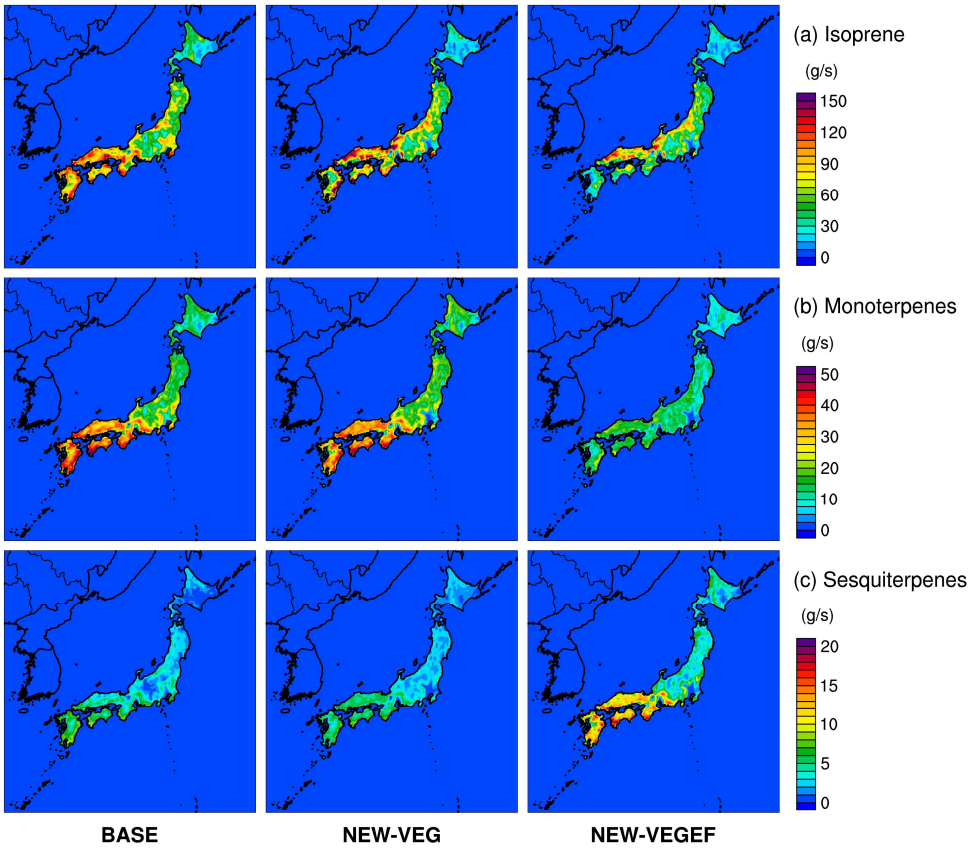

Figure S3. Horizontal distributions showing mean emission rates of isoprene, monoterpenes, and sesquiterpenes estimated in BASE, NEW-VEG, and NEW-VEGEF cases during the target period in d02.

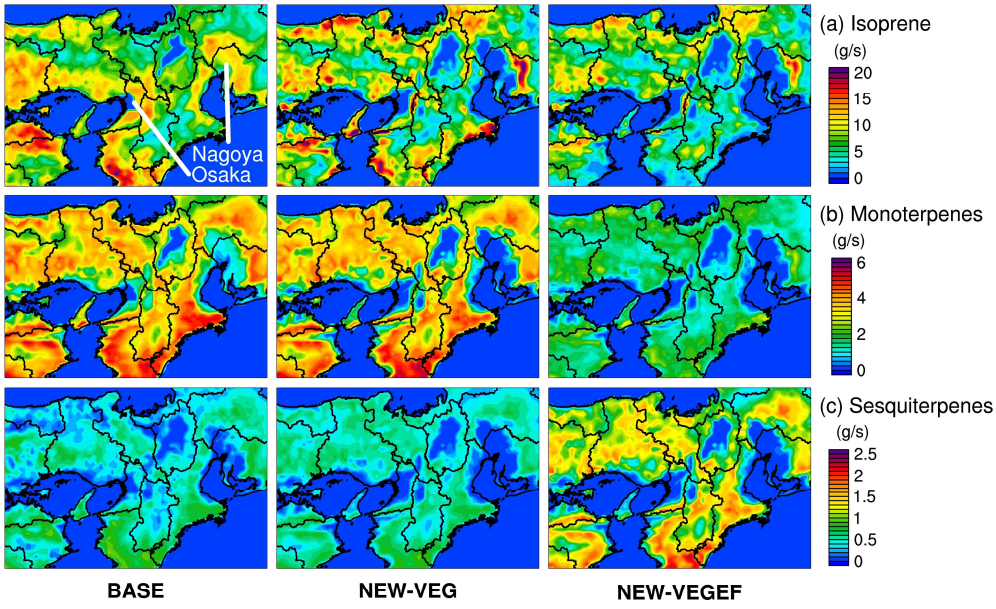

Figure S4. Horizontal distributions showing mean emission rates of isoprene, monoterpenes, and sesquiterpenes estimated in BASE, NEW-VEG, and NEW-VEGEF cases during the target period in d03.

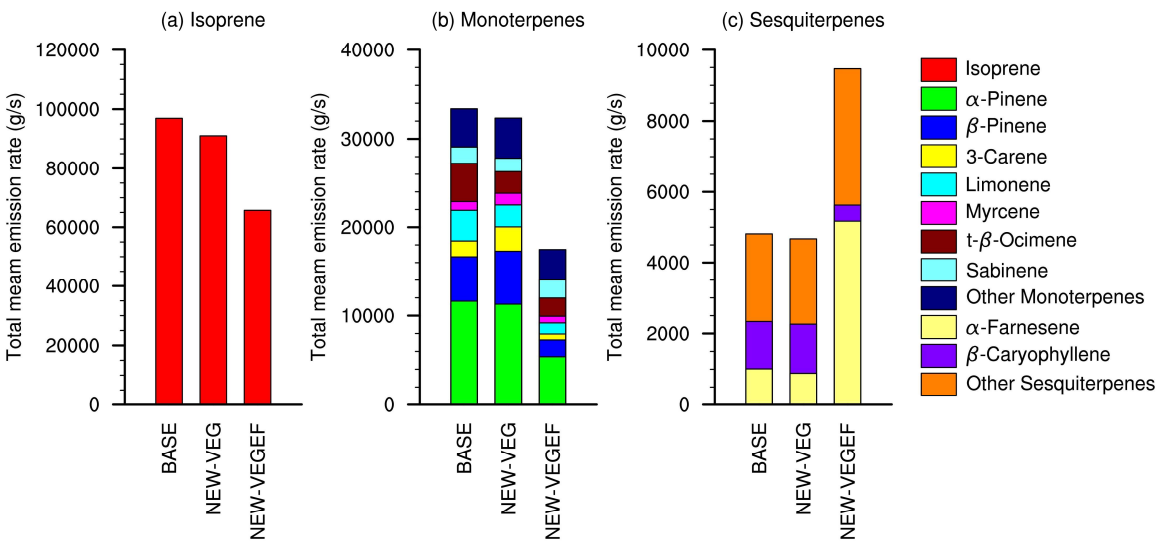

Figure S5. Total mean emission rates of isoprene, monoterpenes, and sesquiterpenes estimated in the BASE, NEW-VEG, and NEW-VEGEF cases during the target period, aggregated in d02.

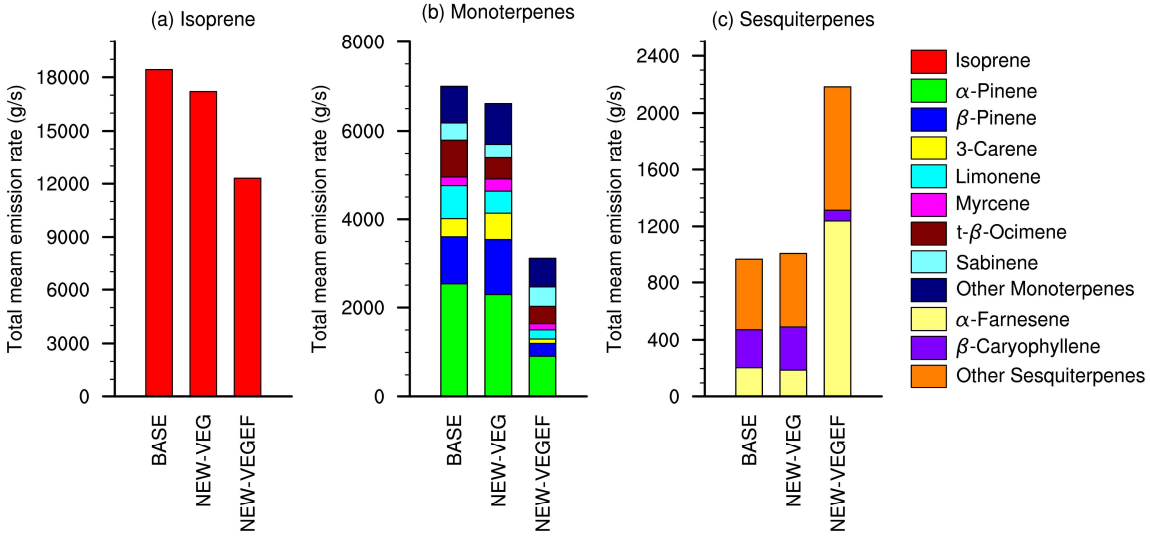

Figure S6. Total mean emission rates of isoprene, monoterpenes, and sesquiterpenes estimated in the BASE, NEW-VEG, and NEW-VEGEF cases during the target period, aggregated in d03.

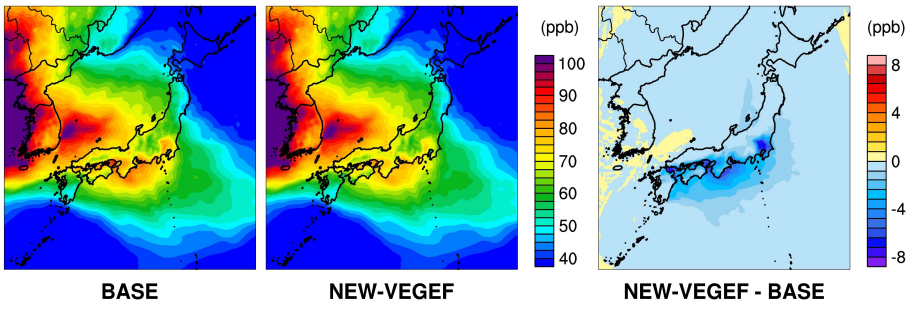

Figure S7. Horizontal distributions of mean surface MDA8O3 simulated in the BASE and NEW-VEGEF cases during the target period in d02. Differences between the two cases are also shown.

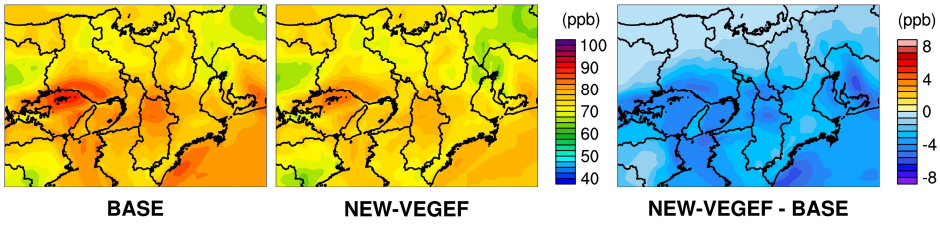

Figure S8. Horizontal distributions of mean surface MDA8O3 simulated in the BASE and NEW-VEGEF cases during the target period in d03. Differences between the two cases are also shown.

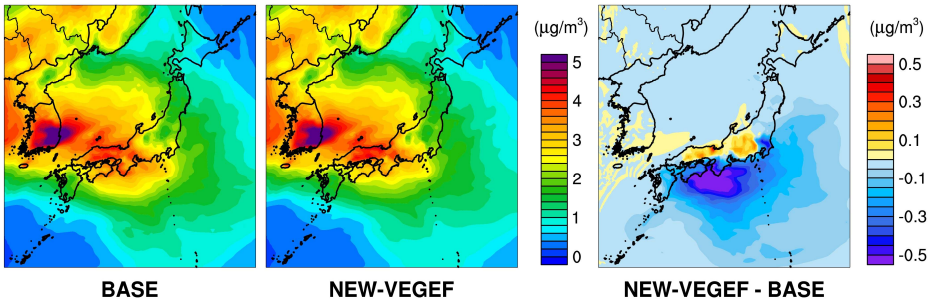

Figure S9. Horizontal distributions of mean surface SOA concentrations simulated in the BASE and NEW-VEGEF cases during the target period in d02. Differences between the two cases are also shown.

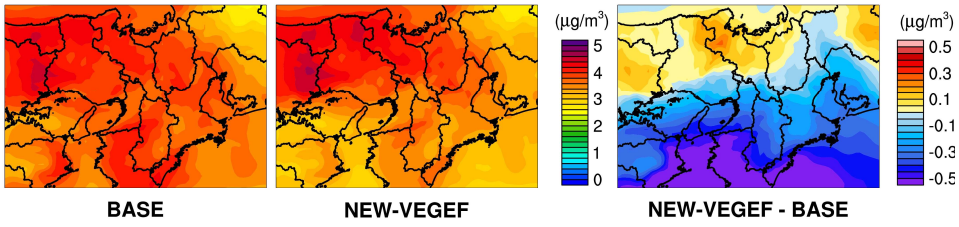

Figure S10. Horizontal distributions of mean surface SOA concentrations simulated in the BASE and NEW-VEGEF cases during the target period in d03. Differences between the two cases are also shown.

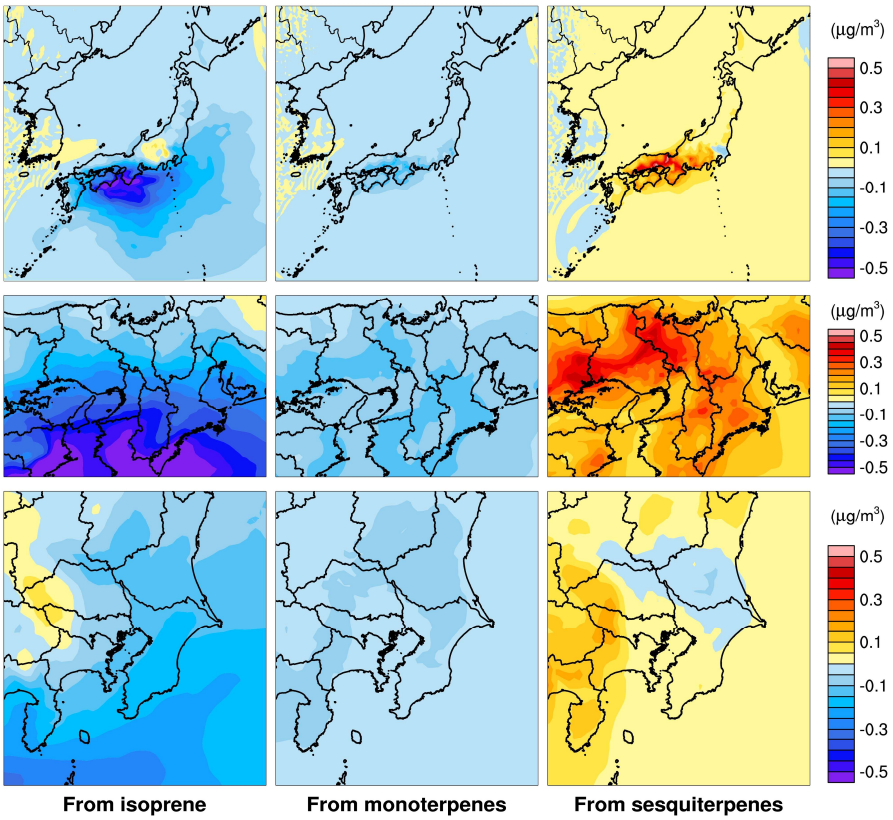

Figure S11. Horizontal distributions of differences of mean surface SOA concentrations originating from isoprene, monoterpenes, and sesquiterpenes simulated in the BASE and NEW-VEGEF cases from July 22nd to August 10th, 2013 in d02, d03, and d04.

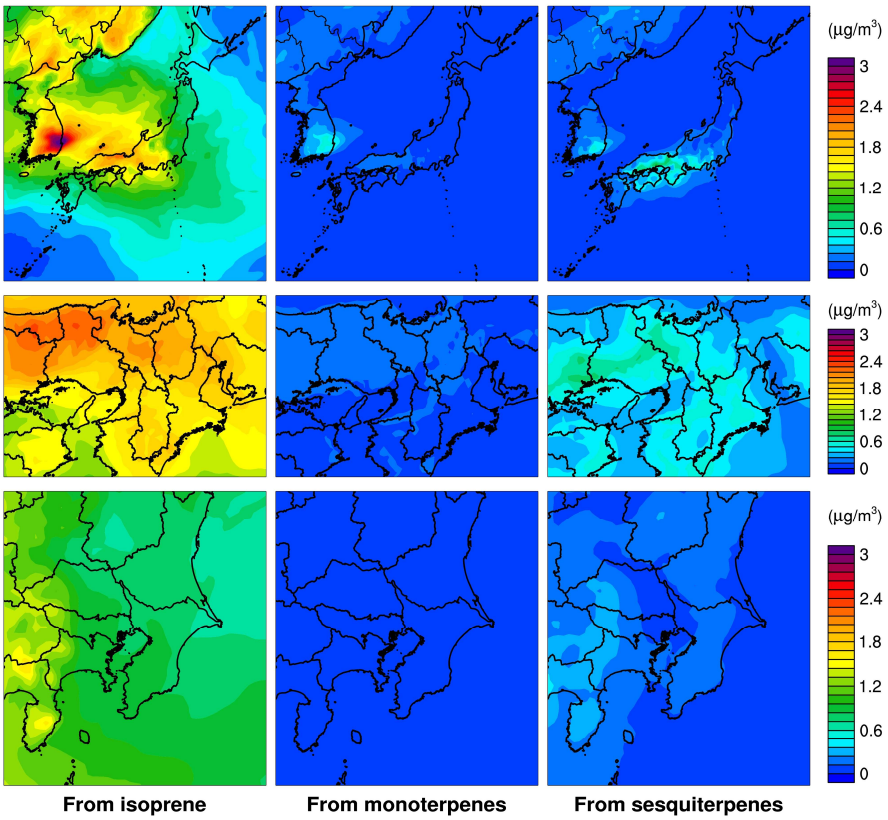

Figure S12. Horizontal distributions of mean surface SOA concentrations originating from isoprene, monoterpenes, and sesquiterpenes simulated in the NEW-VEGEF cases from July 22nd to August 10th, 2013 in d02, d03, and d04.