Table 2 – Timing results for the model run for small- and extreme-scale applications on FZJ JUKNIGHT (Intel Xeon Phi KNL test system) and LRZ SuperMUC. Times in the last three columns are listed in seconds. The total integration times and model time steps (i. e. the times referred to in column solver) differ between the experiments and systems, but identical within one experiment/system. Their absolute values are of no relevance for the results and conclusions drawn from them. The column t. p. n. denotes the number of MPI × OpenMP tasks per node.

HPC site	mesh	cells	nodes	t. p. n.	tasks	I/O format	hybrid code	init+read	solver	write
SuperMUC	3 km	65,536,002	2048	16 × 1	32,768	SIONlib	new	125	710	95
SuperMUC	3 km	65,536,002	2048	4 × 4	32,768	SIONlib	new	118	756	65
SuperMUC	3 km	65,536,002	2048	1 × 16	32,768	SIONlib	new	118	1426	62
JUKNIGHT	240 km	10,242	1	256 × 1	256	pnetCDF	original	23	427	149
JUKNIGHT	240 km	10,242	1	256 × 1	256	pnetCDF	new	22	418	144
JUKNIGHT	240 km	10,242	1	64 × 4	256	pnetCDF	original	10	604	96
JUKNIGHT	240 km	10,242	1	64 × 4	256	pnetCDF	new	10	545	92
JUKNIGHT	240 km	10,242	1	16 × 16	256	pnetCDF	original	7	710	92
JUKNIGHT	240 km	10,242	1	16 × 16	256	pnetCDF	new	7	569	93
JUKNIGHT	240 km	10,242	1	4 × 64	256	pnetCDF	original	7	1207	99
JUKNIGHT	240 km	10,242	1	4 × 64	256	pnetCDF	new	8	757	100
JUKNIGHT	240 km	10,242	1	1 × 256	256	pnetCDF	original	8	2966	18
JUKNIGHT	240 km	10,242	1	1 × 256	256	pnetCDF	new	8	1048	17
JUKNIGHT	120 km	40,962	4	128 × 2	1024	pnetCDF	new	282	2081	6004
JUKNIGHT	120 km	40,962	4	64 × 4	1024	pnetCDF	new	97	2423	3306
JUKNIGHT	120 km	40,962	4	32 × 8	1024	pnetCDF	new	41	1667	1837
JUKNIGHT	120 km	40,962	4	16 × 16	1024	pnetCDF	new	32	1449	1455
JUKNIGHT	120 km	40,962	4	8 × 32	1024	pnetCDF	new	24	1298	846
JUKNIGHT	120 km	40,962	4	4 × 64	1024	pnetCDF	new	23	1066	1235
JUKNIGHT	120 km	40,962	4	2 × 128	1024	pnetCDF	new	20	1212	982