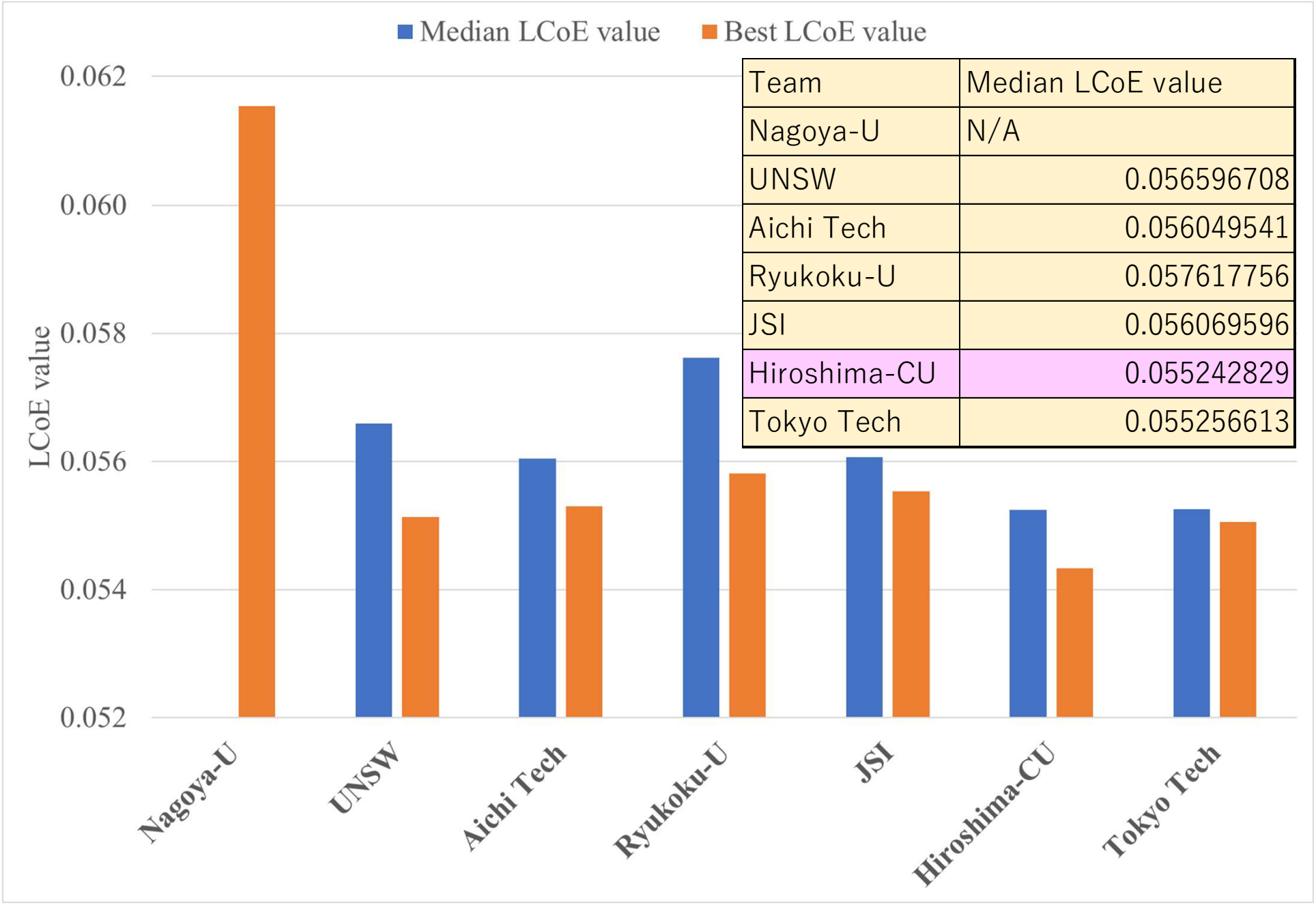
結果発表

Announcement of results

Category 1: Single-objective optimization

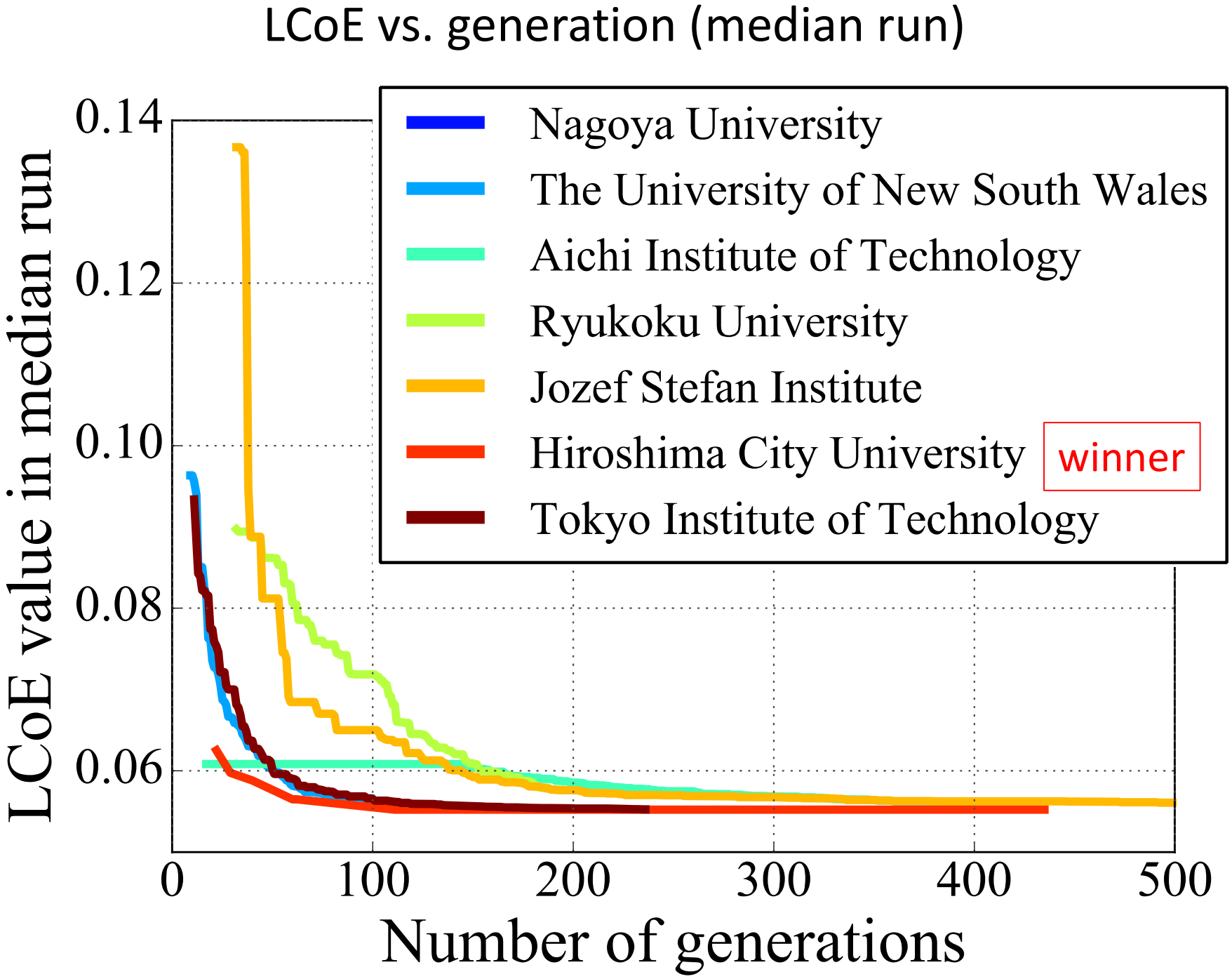


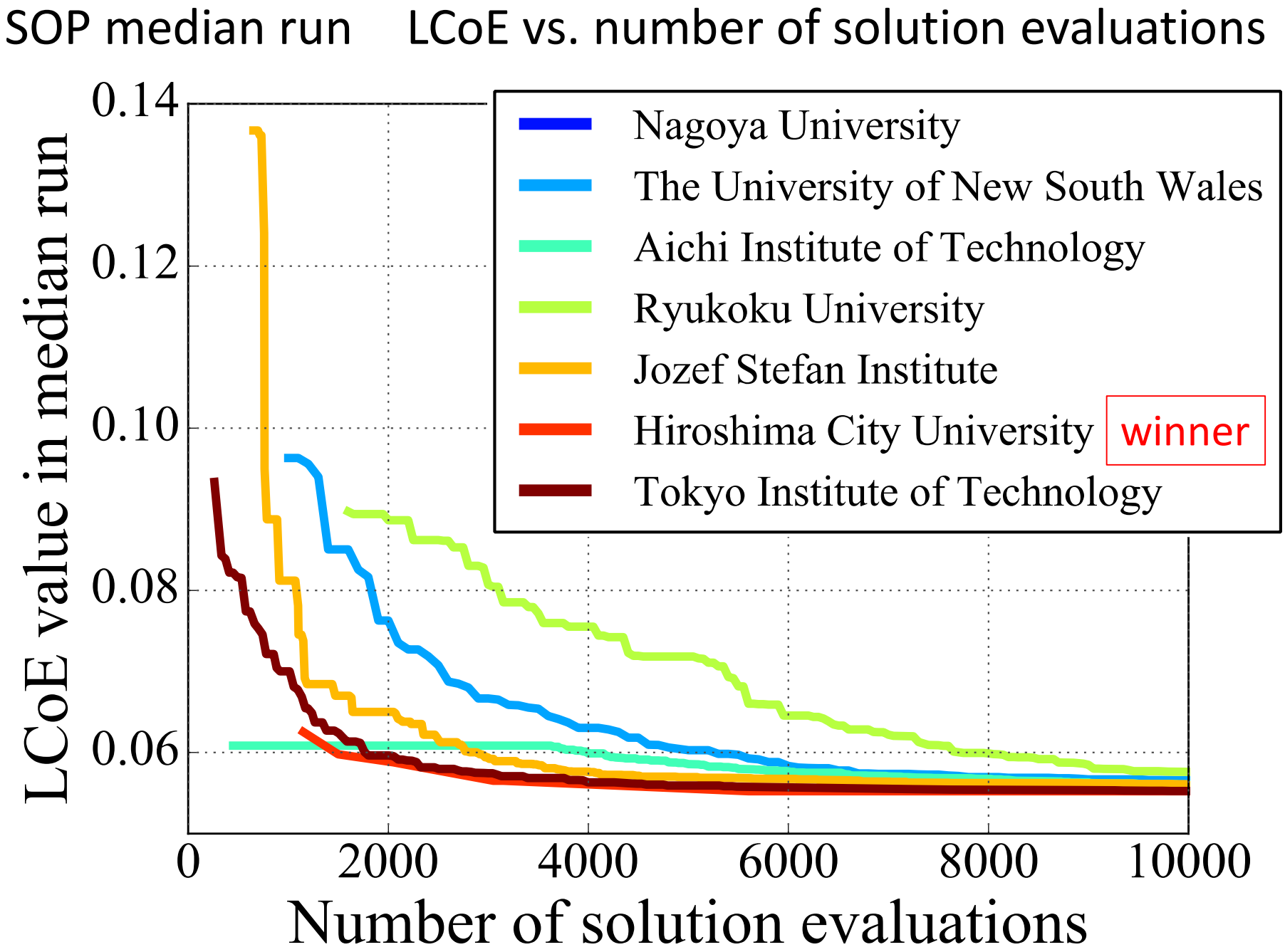
Team	Median LCoE value
Nagoya-U	N/A
UNSW	0.056596708
Aichi Tech	0.056049541
Ryukoku-U	0.057617756
JSI	0.056069596
Hiroshima-CU	0.055242829
Tokyo Tech	0.055256613

【単目的最適化部門】優勝者　串田　淳一　　広島市立大学

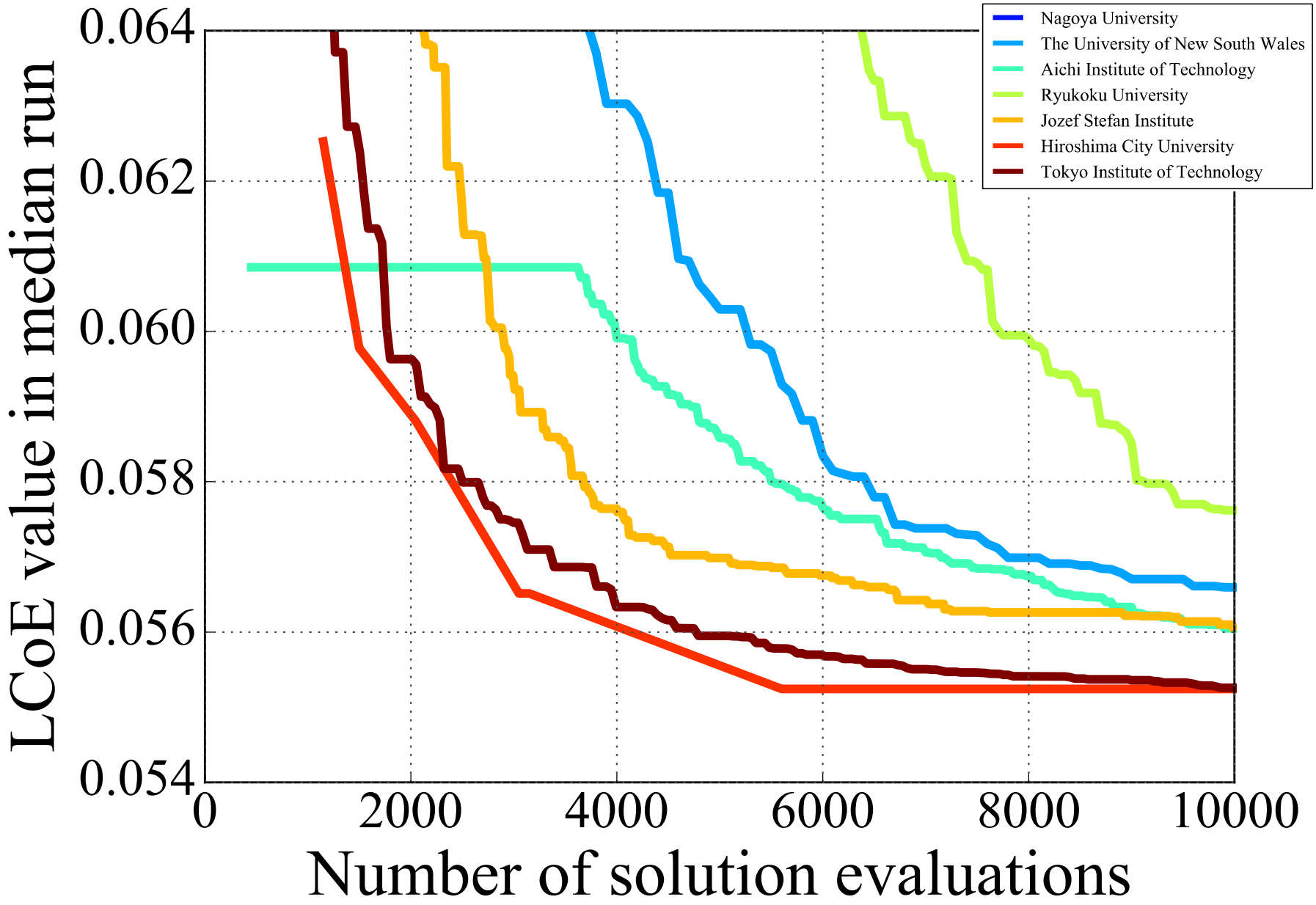
Single-objective optimization category

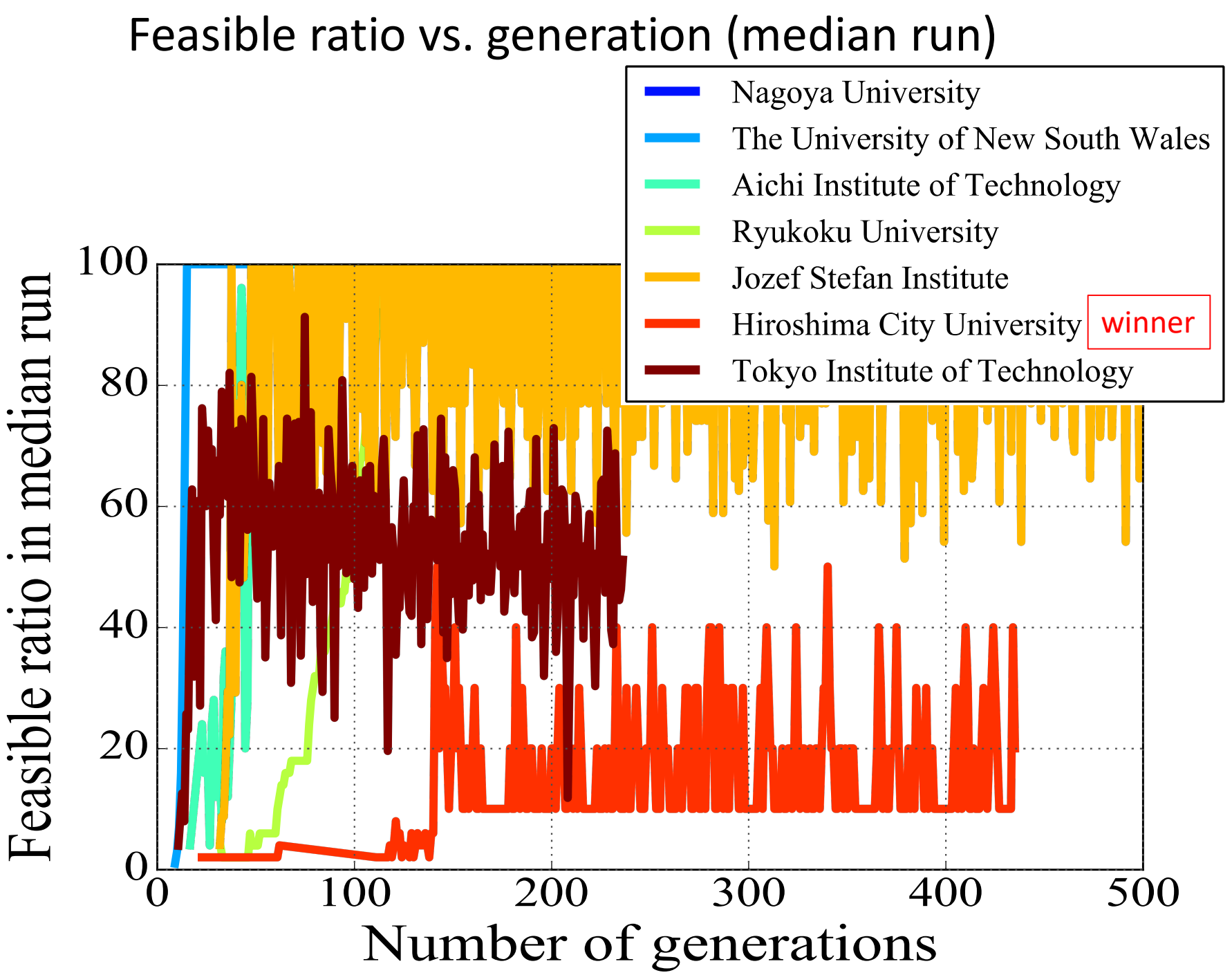
s01	名古屋大学	Evolutionary algorithm
s02	Univ. New South Wales	Infeasibility Driven EA
s03	愛知工業大学	Differential Evolution
s04	龍谷大学	Differential Evolution
s05	Jozef Stefan Institute	jDE
s07	広島市立大学	Differential Evolution
s08	東京工業大学	Evolutionary Strategy


LCoE vs. generation (median run)
LCoE value in median run
0.14
0.12
0.10
0.08
0.06
0
100
200
300
400
500
Number of generations
Nagoya University
The University of New South Wales
Aichi Institute of Technology
Ryukoku University
Jozef Stefan Institute
Hiroshima City University
winner
Tokyo Institute of Technology

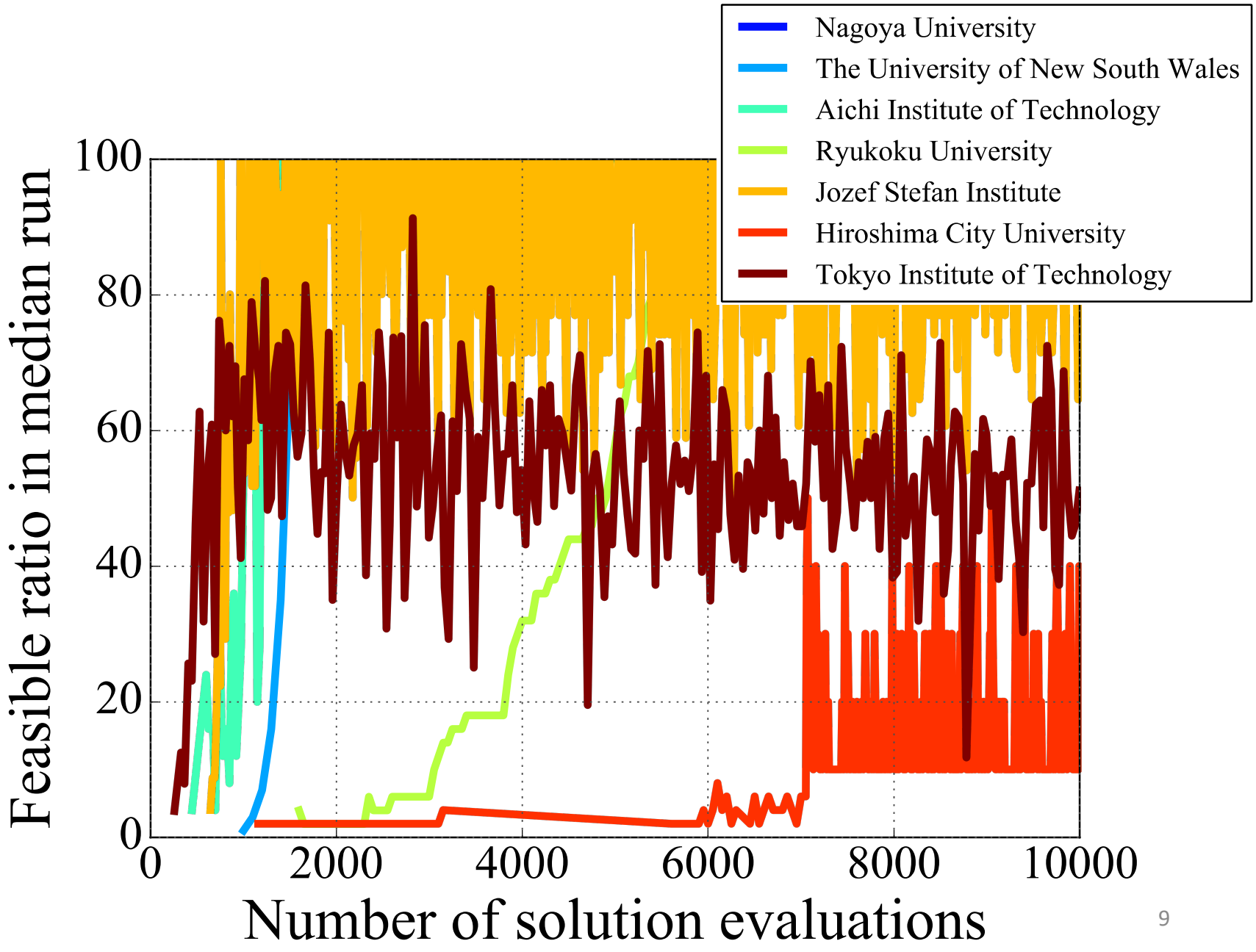

SOP median run LCoE vs. number of solution evaluations
LCoE value in median run
0.14
0.12
0.10
0.08
0.06
0
2000
4000
6000
8000
10000
Number of solution evaluations
Nagoya University
The University of New South Wales
Aichi Institute of Technology
Ryukoku University
Jozef Stefan Institute
Hiroshima City University
winner
Tokyo Institute of Technology

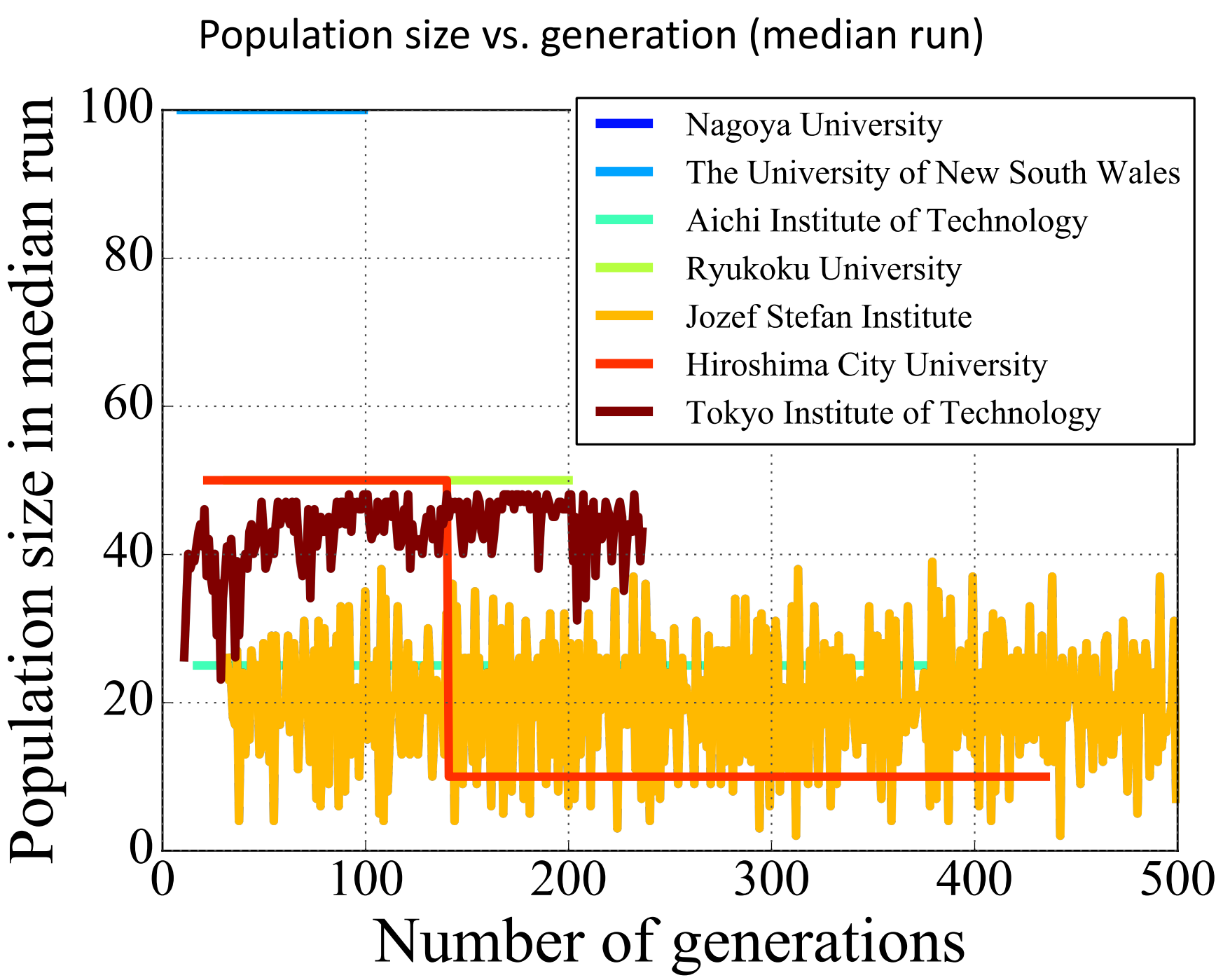
SOP median run LCoE vs. number of solution evaluations



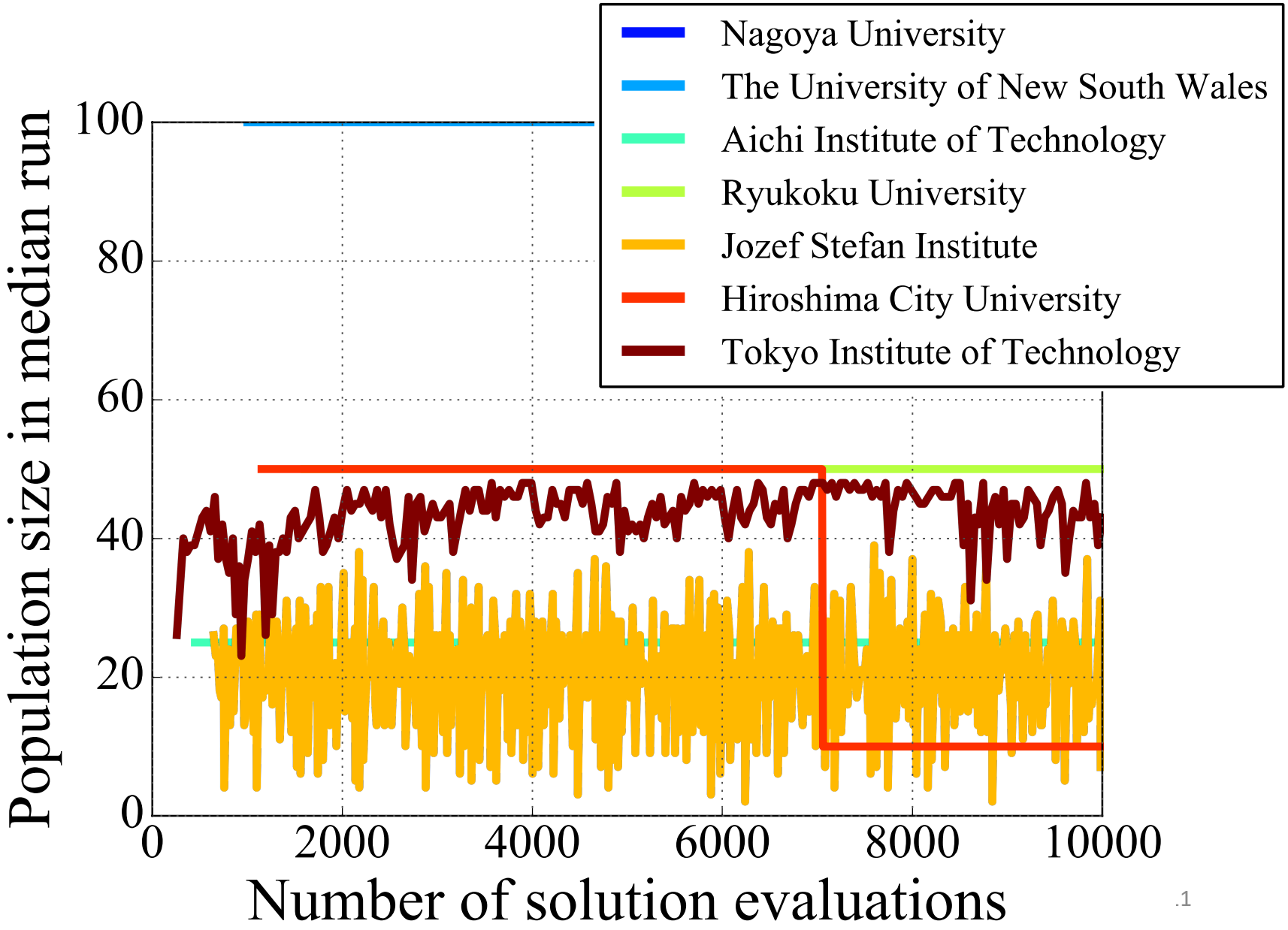

Feasible ratio vs. generation (median run)
Nagoya University
The University of New South Wales
Aichi Institute of Technology
Ryukoku University
Jozef Stefan Institute
Hiroshima City University
winner
Tokyo Institute of Technology
Feasible ratio in median run
100
80
60
40
20
0
0
100
200
300
400
500
Number of generations

SOP median run feasible ratio vs. number of solution evaluations




Population size vs. generation (median run)
Population size in median run
Number of generations
0
20
40
60
80
100
0
100
200
300
400
500
Nagoya University
The University of New South Wales
Aichi Institute of Technology
Ryukoku University
Jozef Stefan Institute
Hiroshima City University
Tokyo Institute of Technology

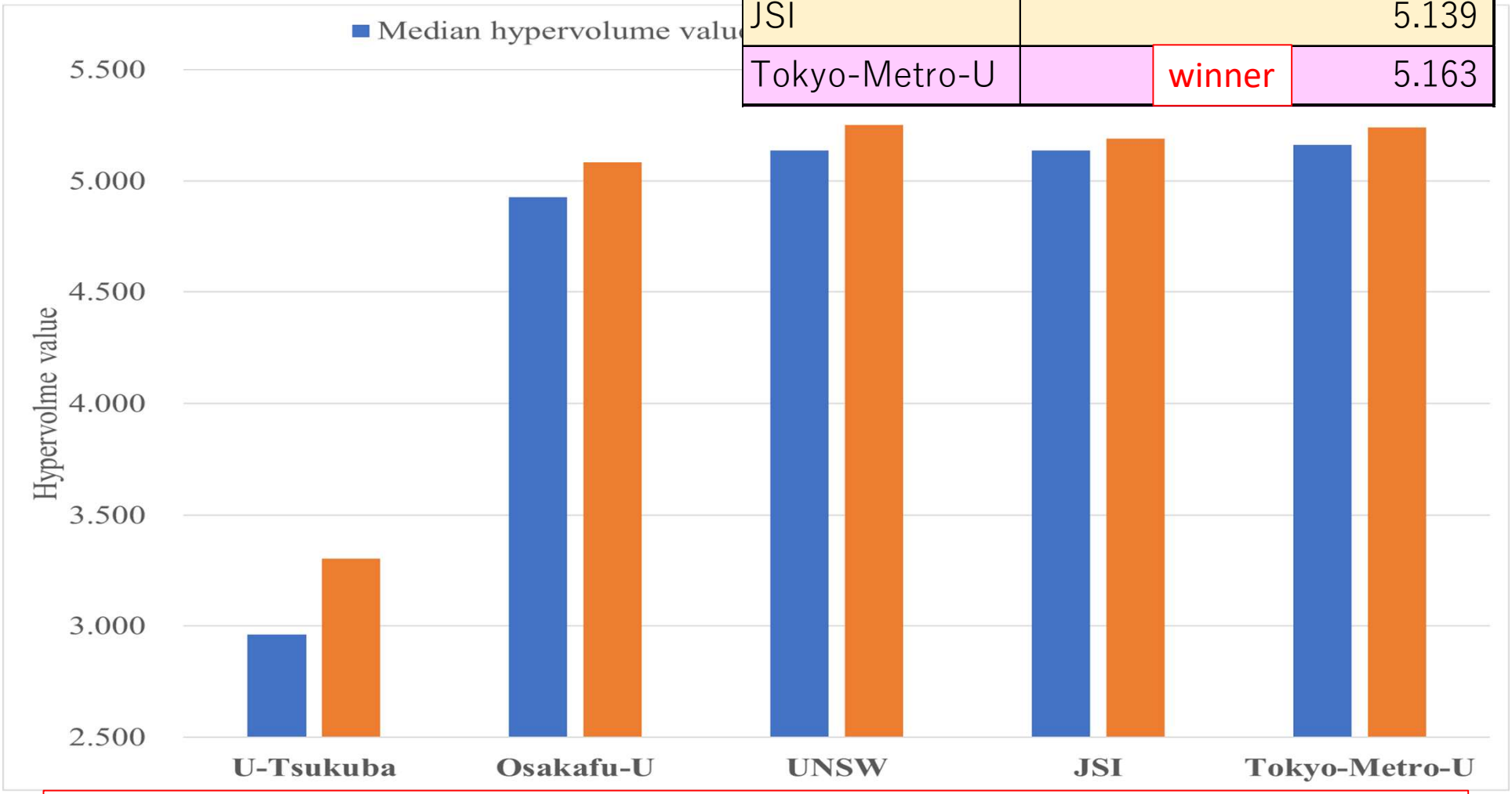
population size vs. number of solution evaluations (median run)



#teamID	S01	S02	S03	S04	S05	S07	S08
#Variable1	0.6239	0.5372	0.5915	0.5416	0.6229	0.7485	0.6752
#Variable2	0.7926	0.8209	0.8078	0.7836	0.7970	0.7777	0.7399
#Variable3	0.8577	0.3906	0.4191	0.4322	0.4426	0.3837	0.4487
#Variable4	0.3061	0.0585	0.0040	0.0134	0.0101	0.0125	0.0017
#Variable5	0.6276	0.6119	0.3848	0.2287	0.2796	0.6675	0.3229
#Variable6	0.9941	0.4191	0.5491	0.4974	0.4142	0.5191	0.6273
#Variable7	0.2205	0.2802	0.2830	0.2730	0.2858	0.2669	0.2446
#Variable8	0.3235	0.1195	0.1881	0.2137	0.1478	0.1744	0.1622
#Variable9	0.2873	0.1539	0.0350	0.0997	0.0605	0.0515	0.0366
#Variable10	1.0000	0.7272	0.3145	0.3688	0.4319	0.1818	0.4297
#Variable11	0.5828	0.2622	0.2597	0.3552	0.2807	0.3070	0.3316
#Variable12	0.4744	0.4362	0.2160	0.2489	0.2639	0.2611	0.2503
#Variable13	0.7291	0.1499	0.2158	0.2456	0.1718	0.2544	0.1622
#Variable14	0.0272	0.0738	0.0640	0.0796	0.0111	0.0023	0.0023
#Variable15	0.5644	0.4281	0.2132	0.1686	0.1131	0.1434	0.1187

Category 2: Multi-objective optimization

Team	Median hypervolume value		
U-Tsukuba			2.963
Osakafu-U			4.927
UNSW			5.138
JSI			5.139
Tokyo-Metro-U		winner	5.163

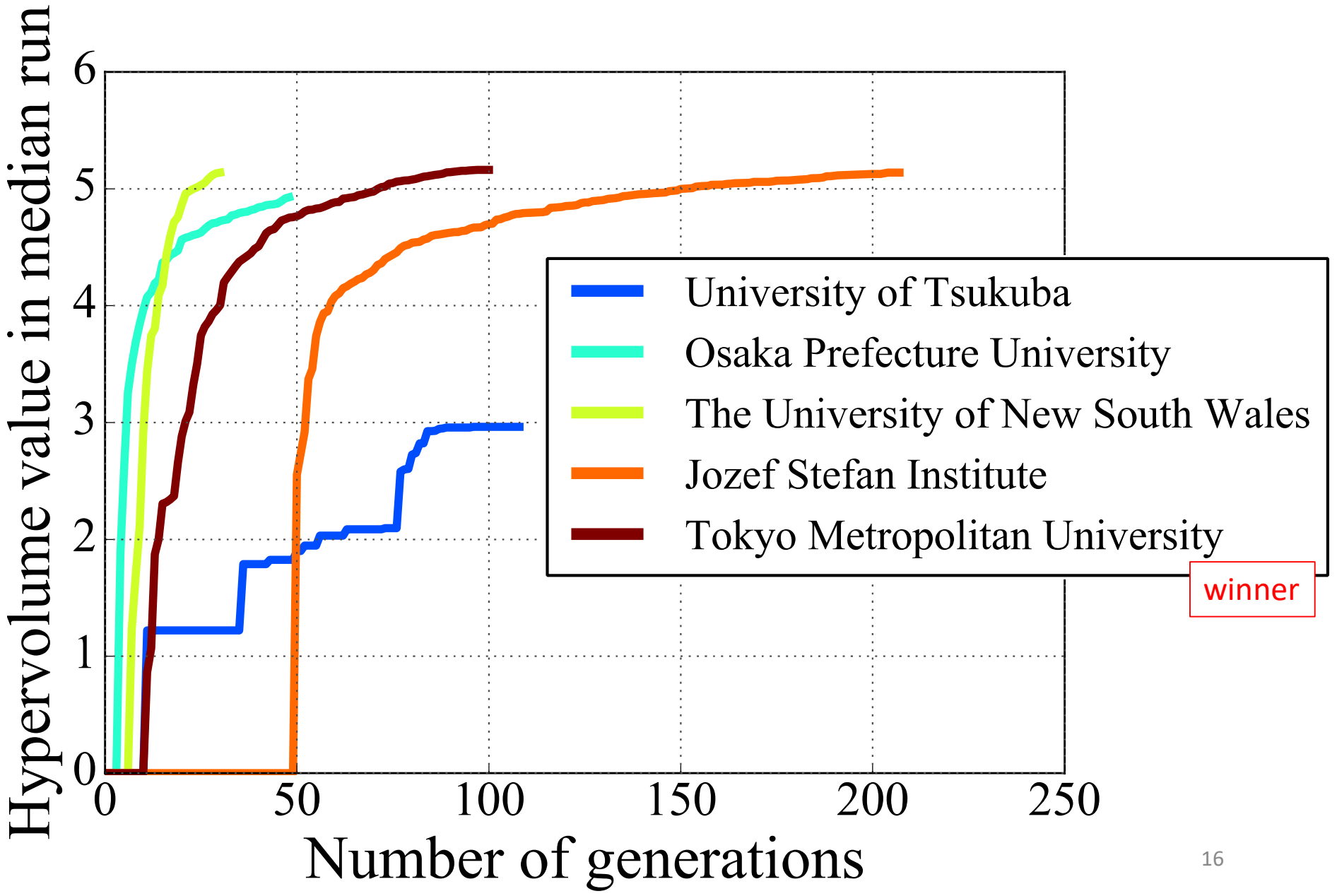


【多目的部門】優勝者 野口隼(立命館)， 原田智広(首都大)

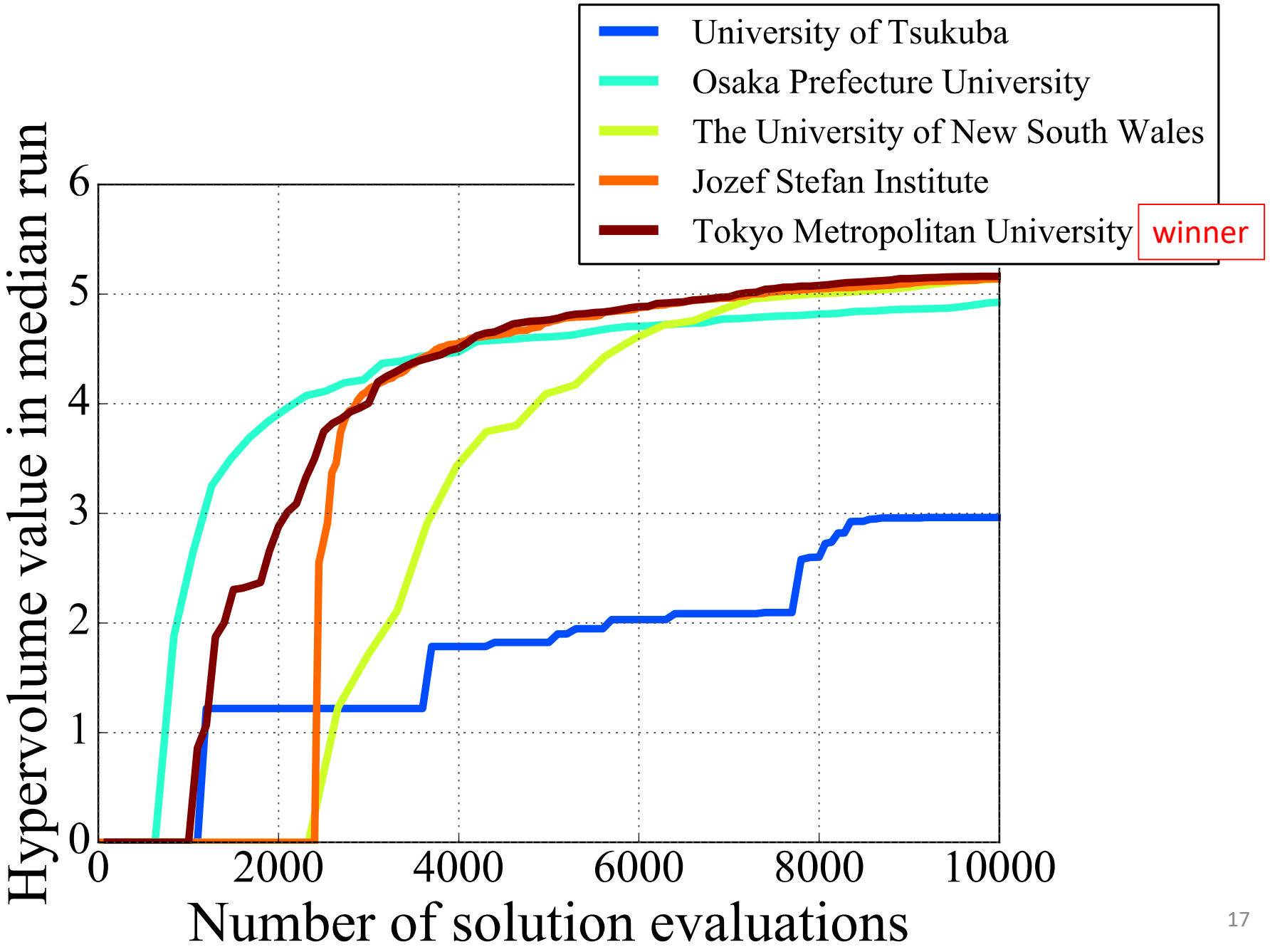
Multi-objective optimization category

m02	筑波大学	Differential Evolution
m03	大阪府立大学	MOEA
m04	Univ. New South Wales	MOEA/DE
m05	Jozef Stefan Institute	NSGA-II
m07	立命館大学 首都大学東京	MOEA/DE winner

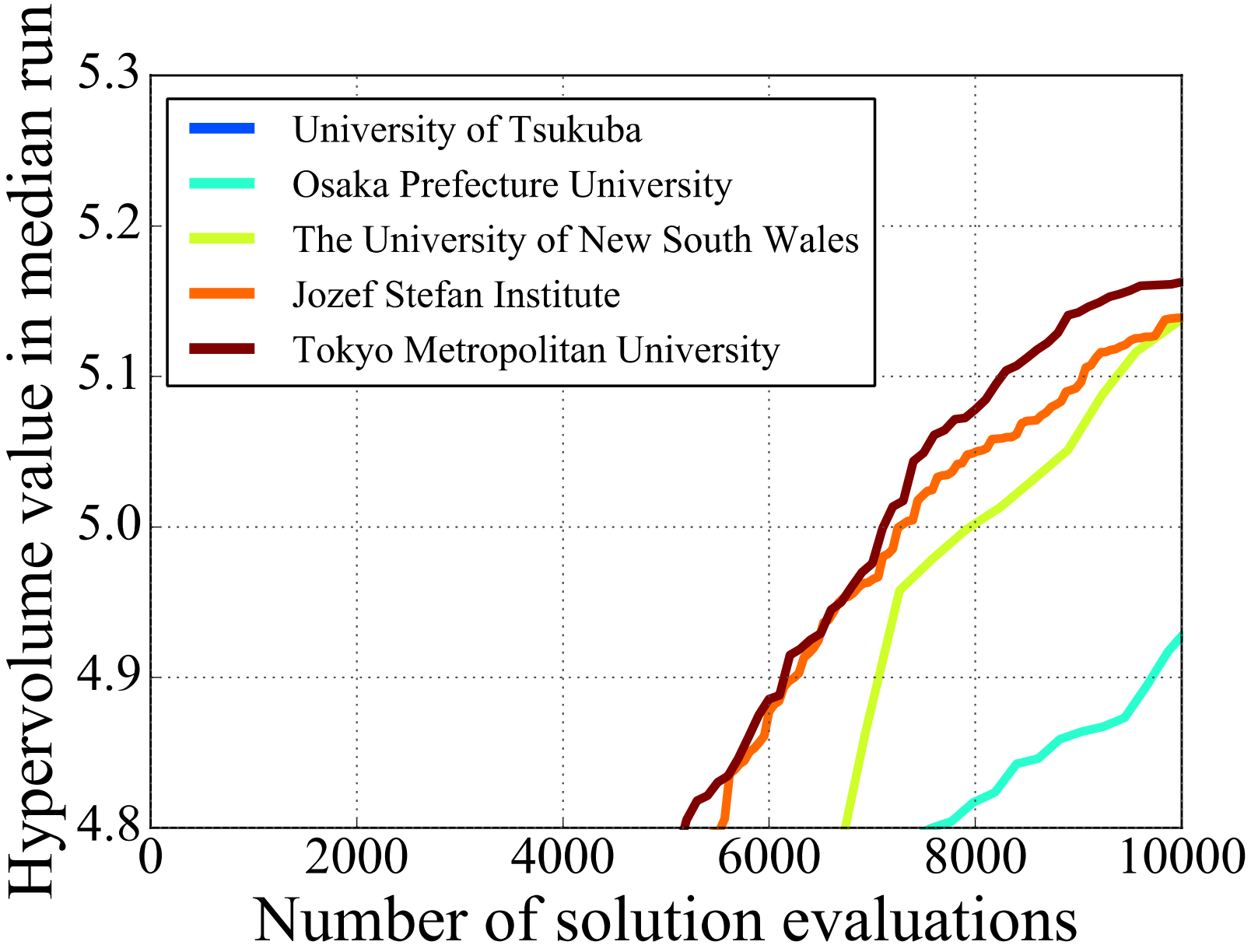
HV vs. generation (median run)

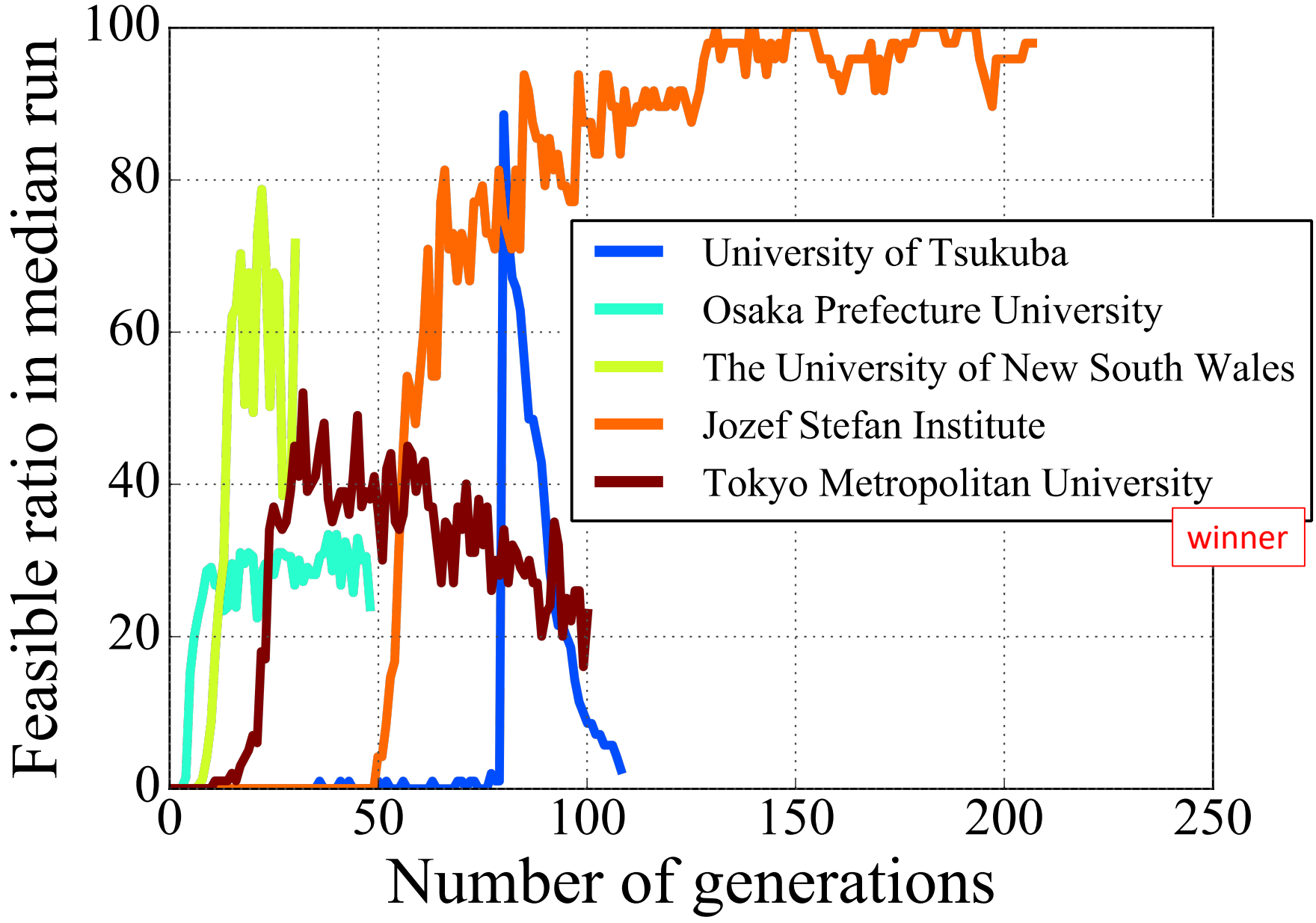


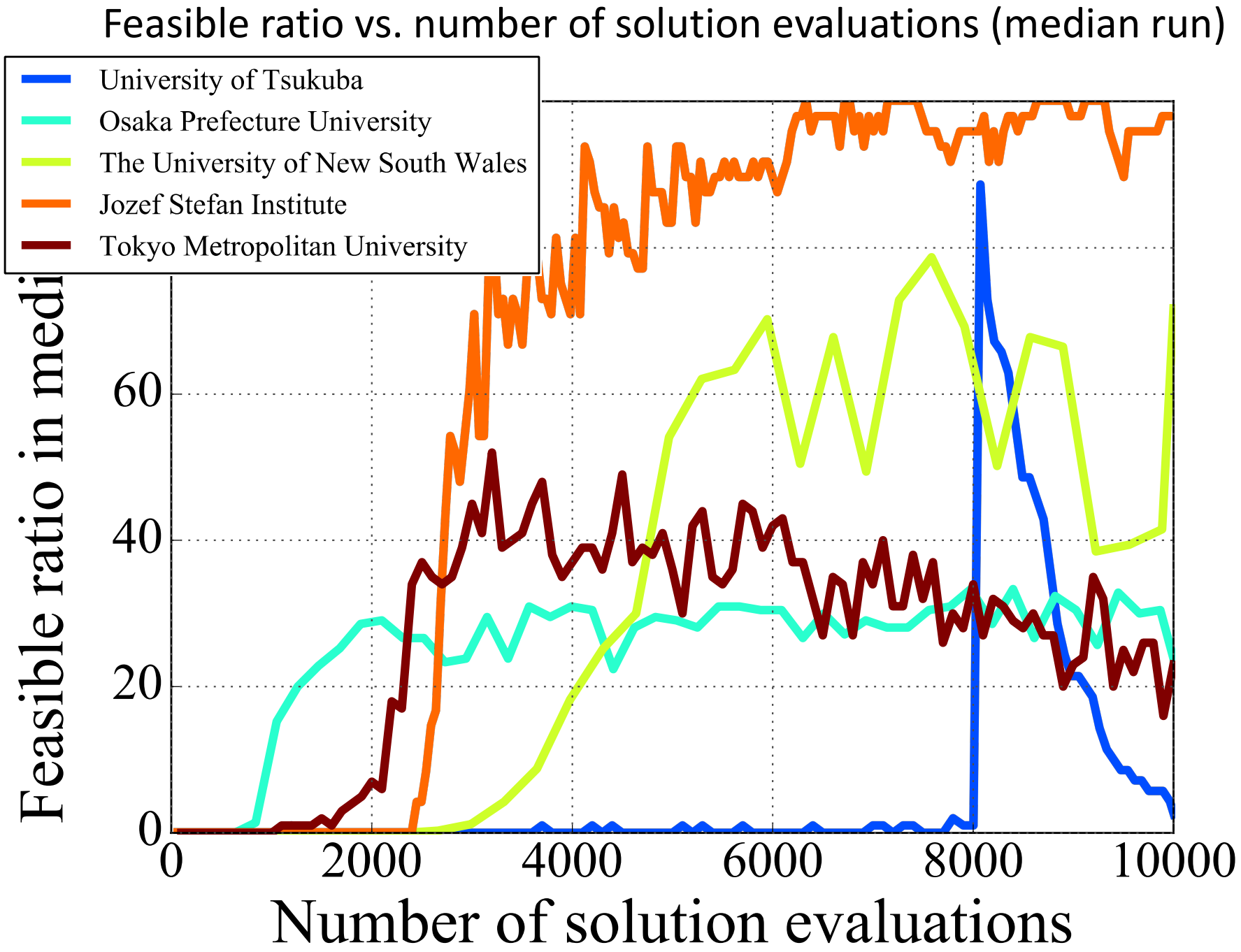
MOP median run HV vs. number of solution evaluations



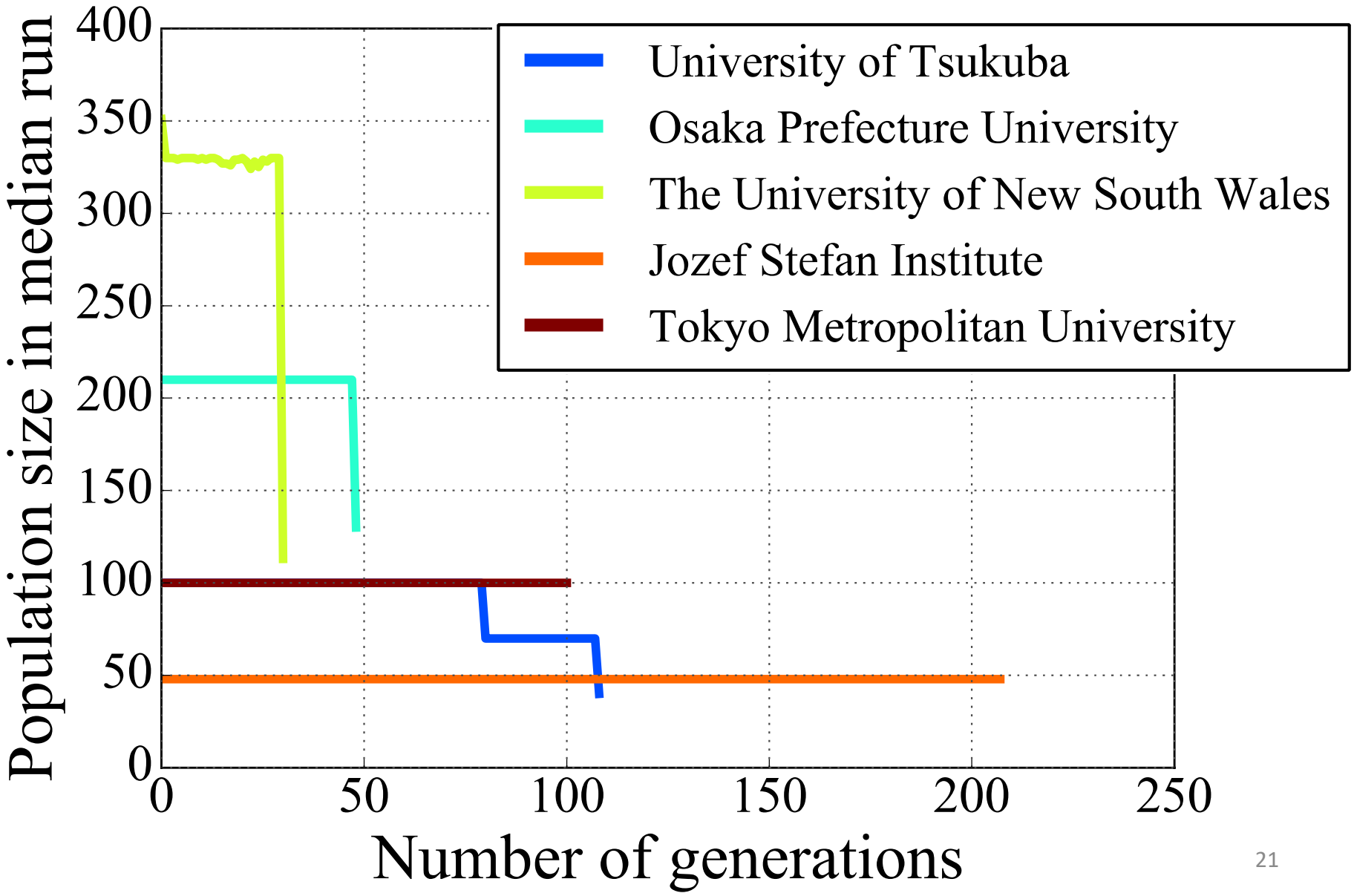
HV vs. number of solution evaluations (median run)



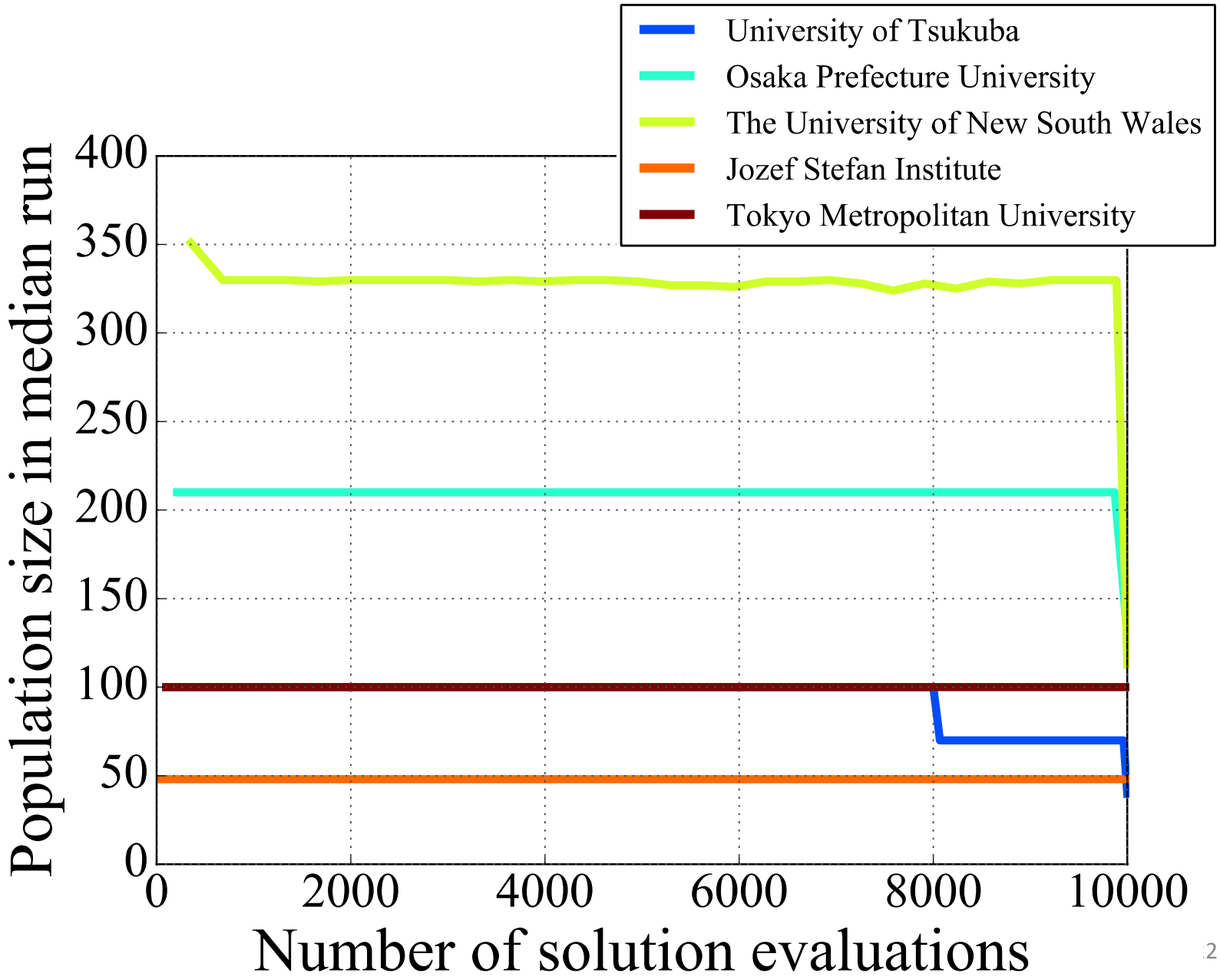

feasible ratio vs. generation (median run)
Feasible ratio in median run
Number of generations
0
20
40
60
80
100
0
50
100
150
200
250
University of Tsukuba
Osaka Prefecture University
The University of New South Wales
Jozef Stefan Institute
Tokyo Metropolitan University
winner

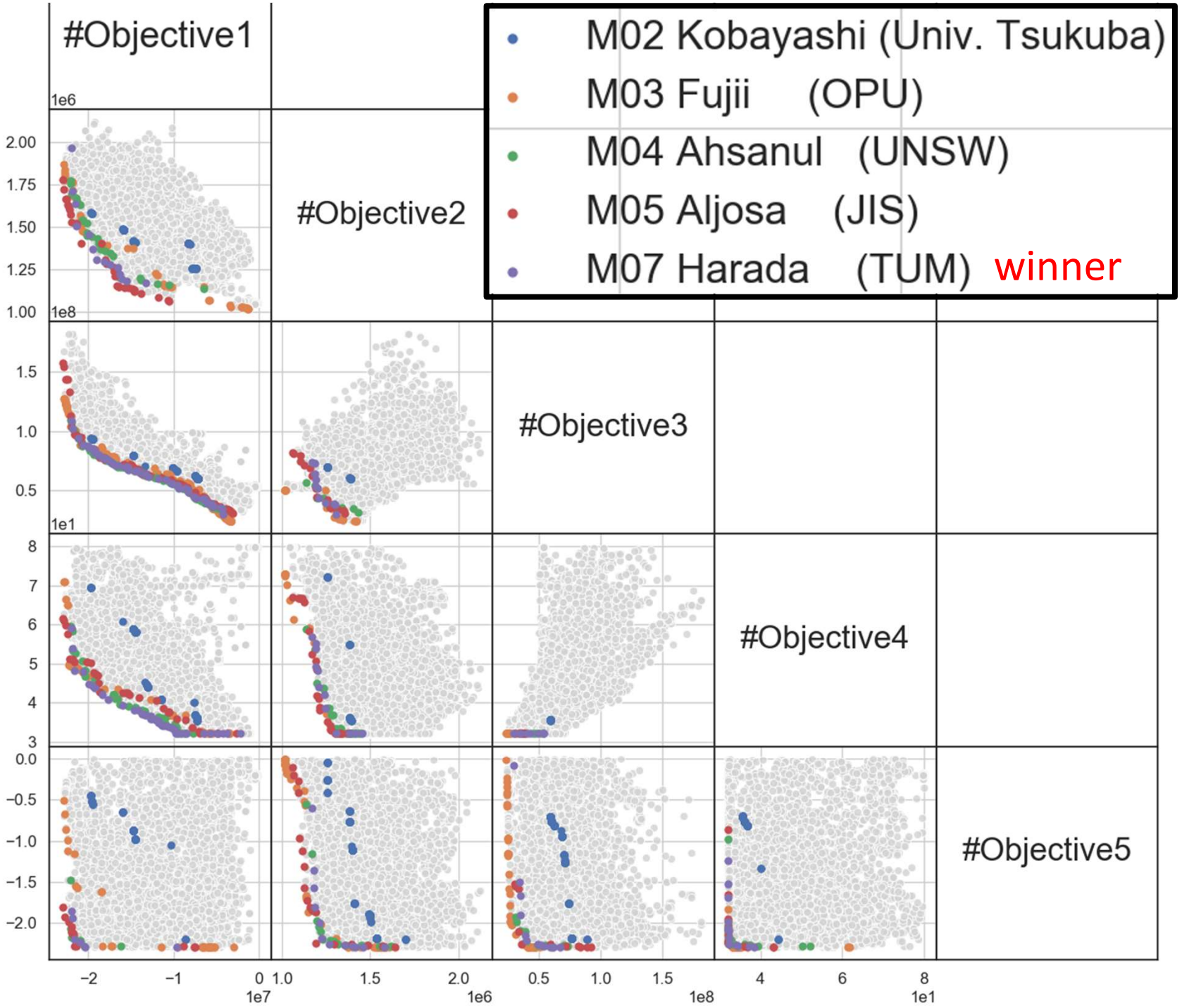

Feasible ratio vs. number of solution evaluations (median run)
University of Tsukuba
Osaka Prefecture University
The University of New South Wales
Jozef Stefan Institute
Tokyo Metropolitan University
Feasible ratio in medi
0
20
40
60
0
2000
4000
6000
8000
10000
Number of solution evaluations

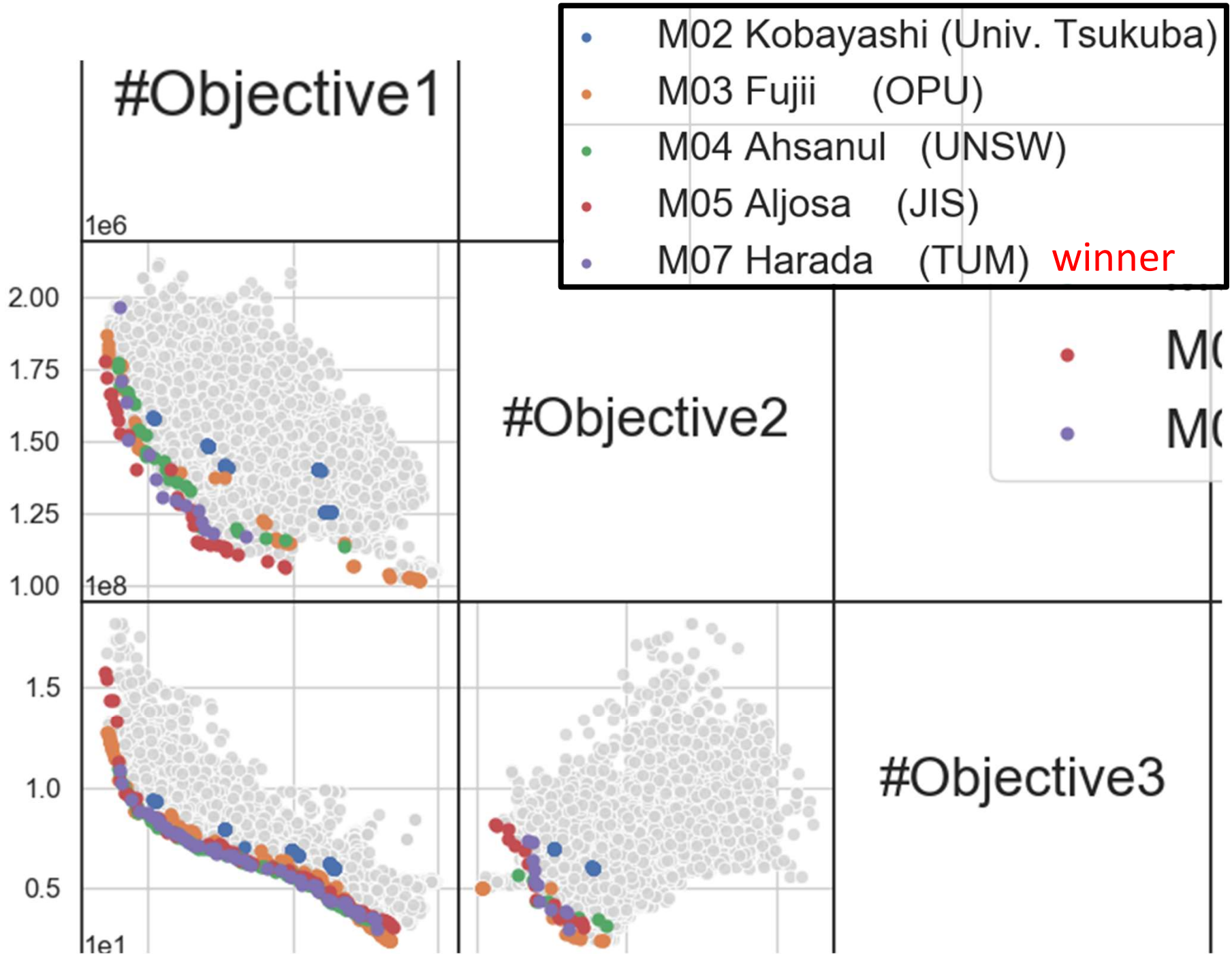
population size vs. generation (median run)

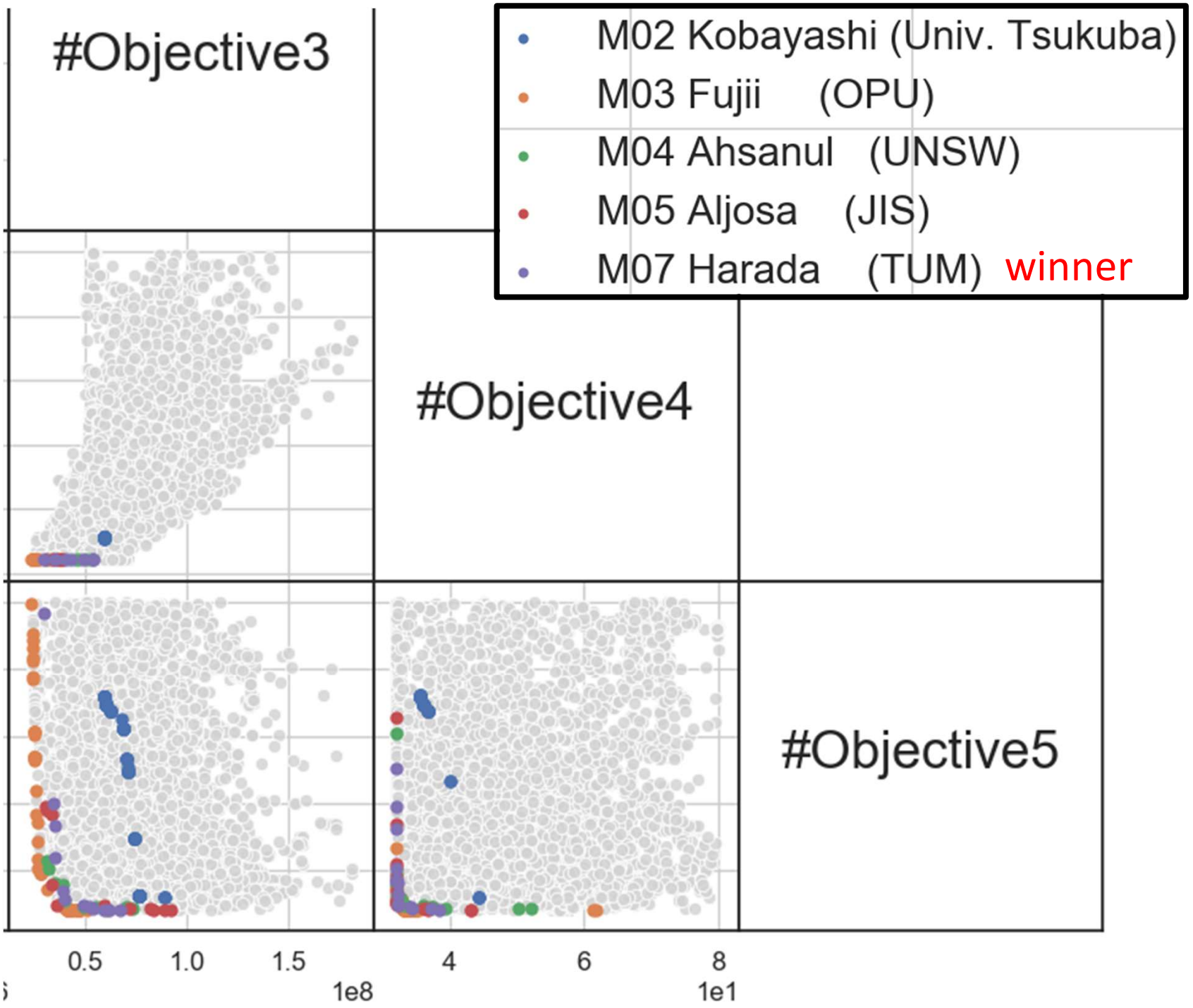


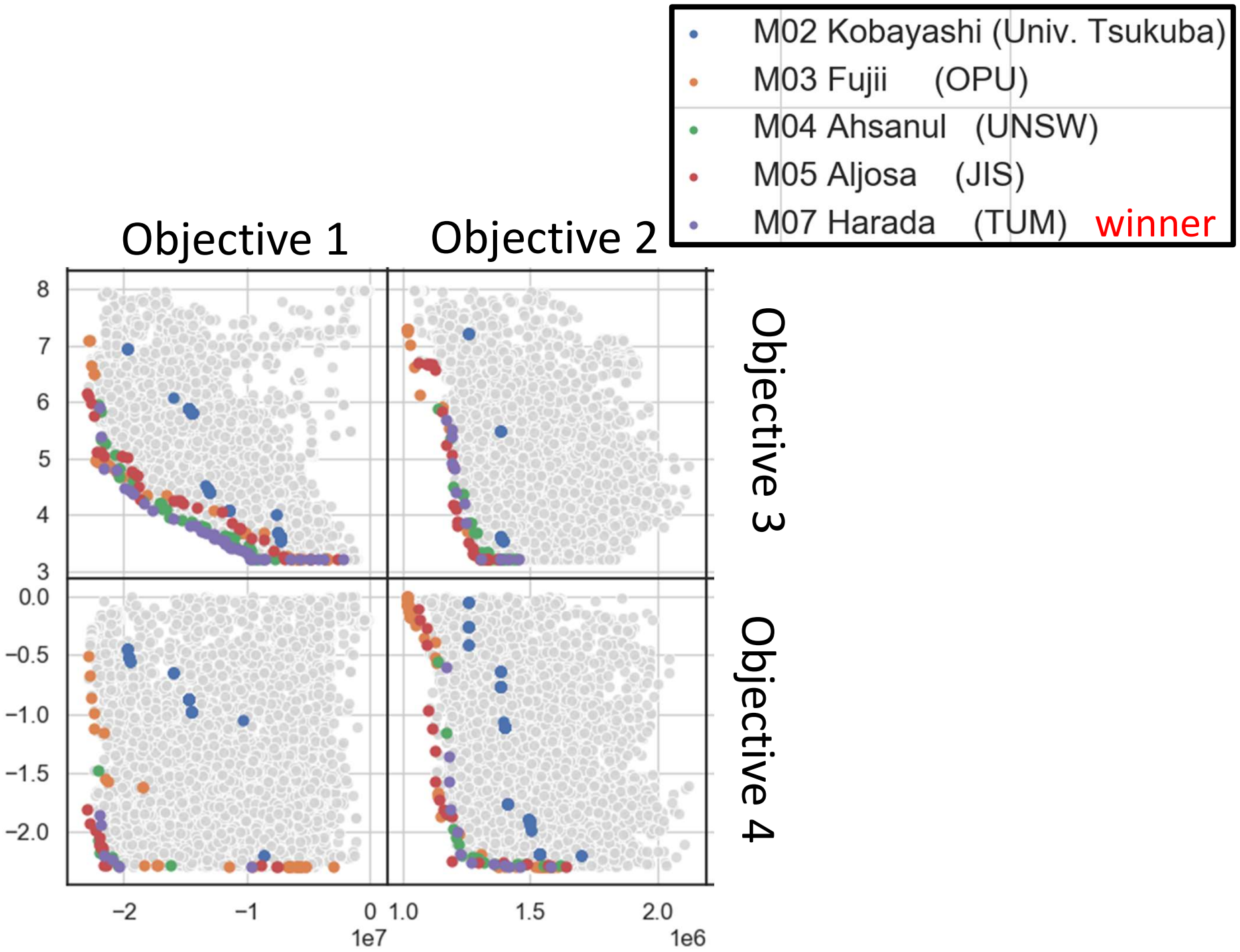
population size vs. number of solution evaluations (median run)




#Objective1
#Objective2
#Objective3
#Objective4
#Objective5
M02 Kobayashi (Univ. Tsukuba)
M03 Fujii (OPU)
M04 Ahsanul (UNSW)
M05 Aljosa (JIS)
M07 Harada (TUM) winner
1e6
2.00
1.75
1.50
1.25
1.00
1e8
1.5
1.0
0.5
1e1
8
7
6
5
4
3
0.0
−0.5
−1.0
−1.5
−2.0
−2
−1
0
1e7
1.0
1.5
2.0
1e6
0.5
1.0
1.5
1e8
4
6
8
1e1


M02 Kobayashi (Univ. Tsukuba)
M03 Fujii (OPU)
M04 Ahsanul (UNSW)
M05 Aljosa (JIS)
M07 Harada (TUM) winner
#Objective1
#Objective2
#Objective3
1e6
2.00
1.75
1.50
1.25
1.00
1e8
1.5
1.0
0.5
1e1

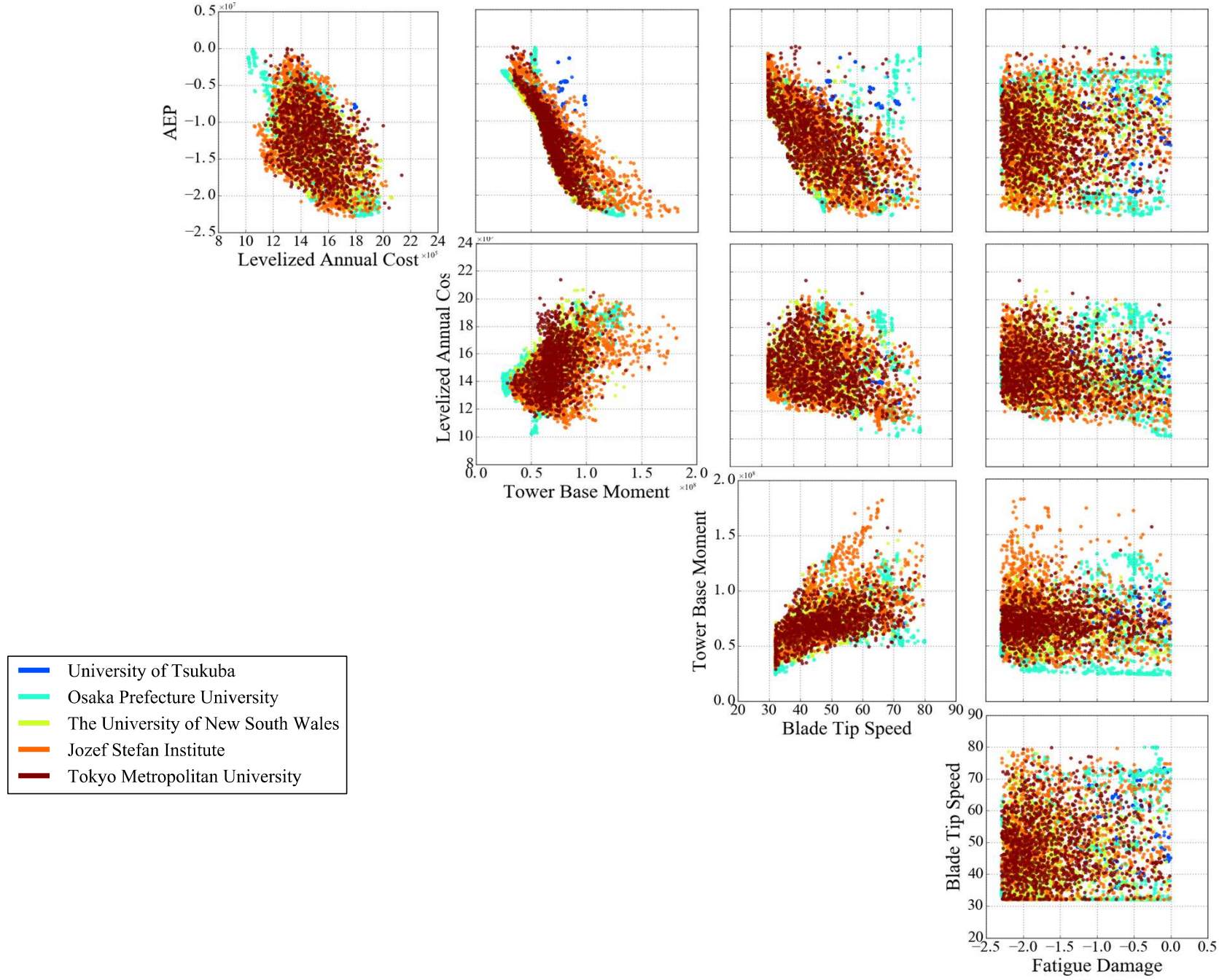

#Objective3
#Objective4
#Objective5
M02 Kobayashi (Univ. Tsukuba)
M03 Fujii (OPU)
M04 Ahsanul (UNSW)
M05 Aljosa (JIS)
M07 Harada (TUM) winner
0.5
1.0
1.5
1e8
4
6
8
1e1


M02 Kobayashi (Univ. Tsukuba)
M03 Fujii (OPU)
M04 Ahsanul (UNSW)
M05 Aljosa (JIS)
M07 Harada (TUM) winner
Objective 1
Objective 2
Objective 3
Objective 4
8
7
6
5
4
3
0.0
−0.5
−1.0
−1.5
−2.0
−2
−1
0
1e7
1.0
1.5
2.0
1e6

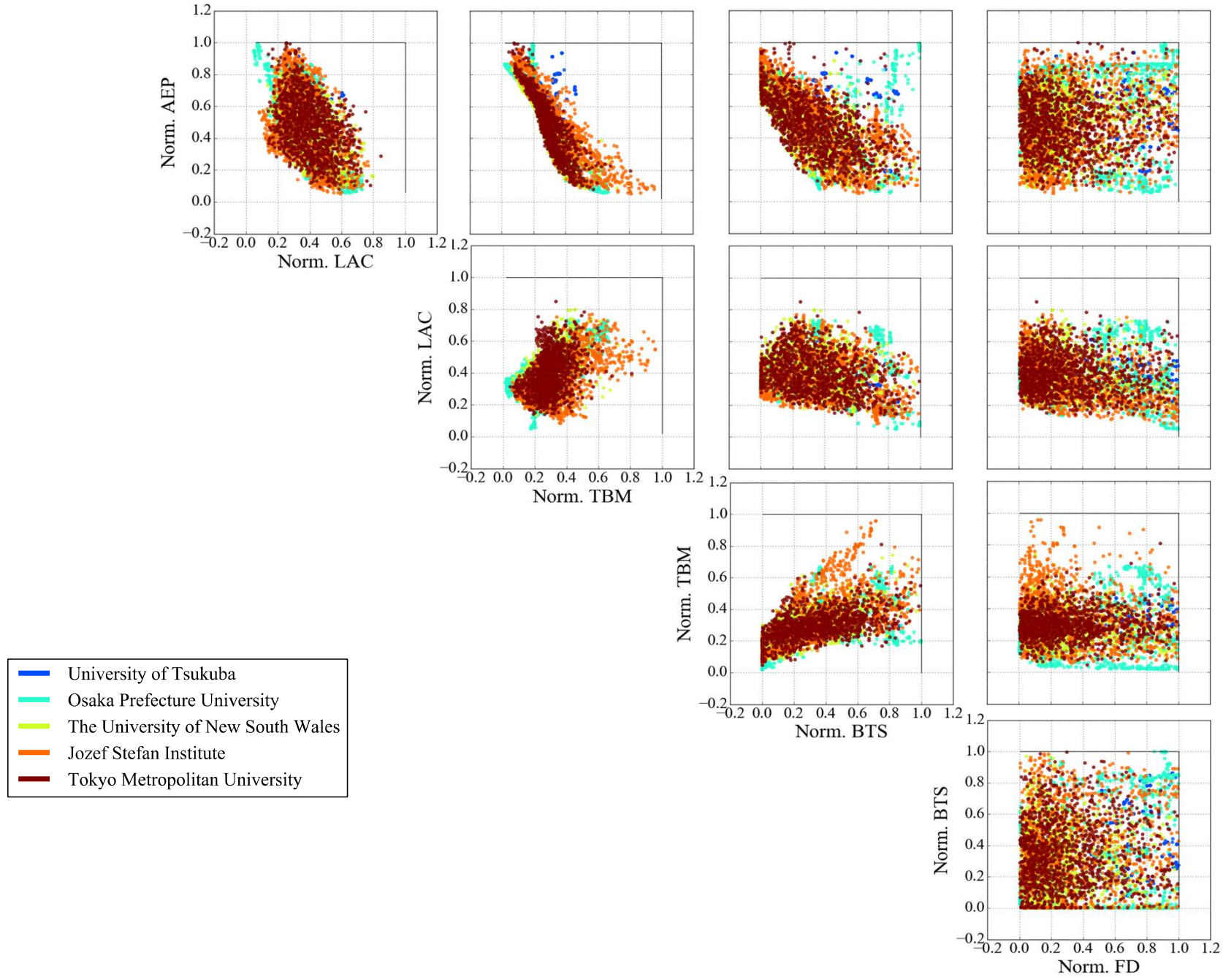
進化計算コンペティション2019
MOP 目的関数空間上での比較

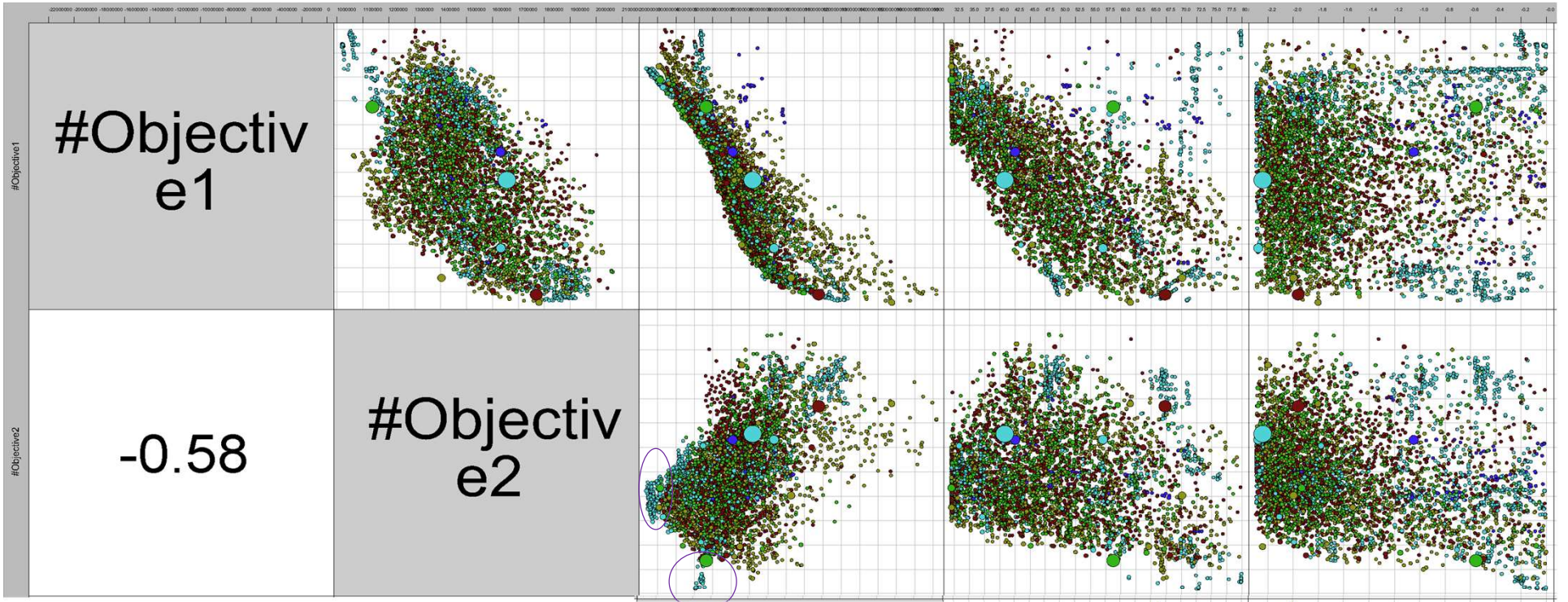
2019/12/12 Fukumoto

MOP 目的関数空間 (正規化なし)



MOP 目的関数空間 (正規化あり)





府立大のこのあたりの解は優れているように見えてあまりHVに寄与していない

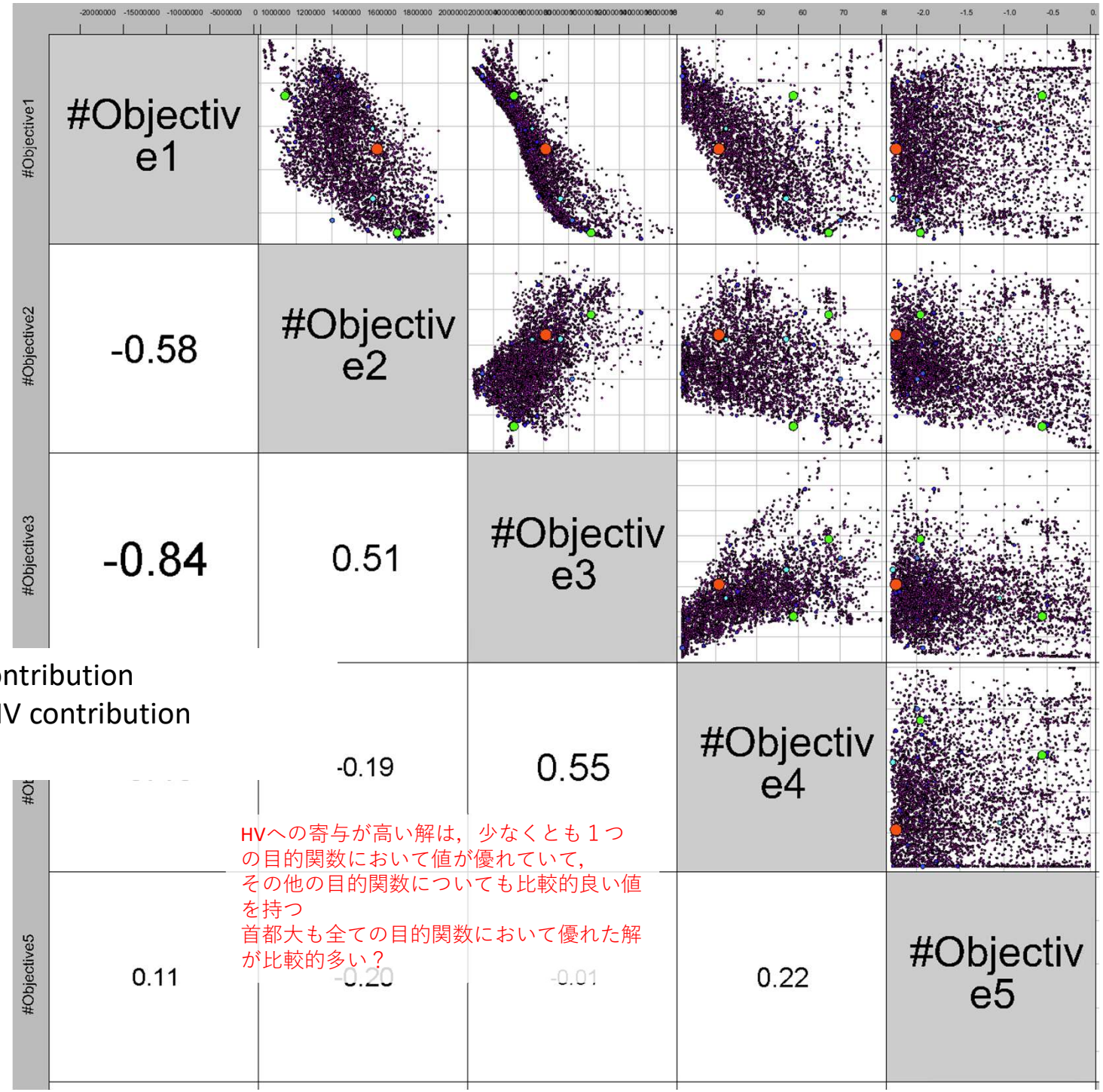
Color: team

Plot size :HV contribution

- 各チームごとに計算
- その解を抜いてHVを計算すると，そのチームのHVが何% 低下するかの指標

(ファイル gathered_contrib_forEach.csv,
iSPMv5.0設定ファイル gathered_contrib_config02.csv)

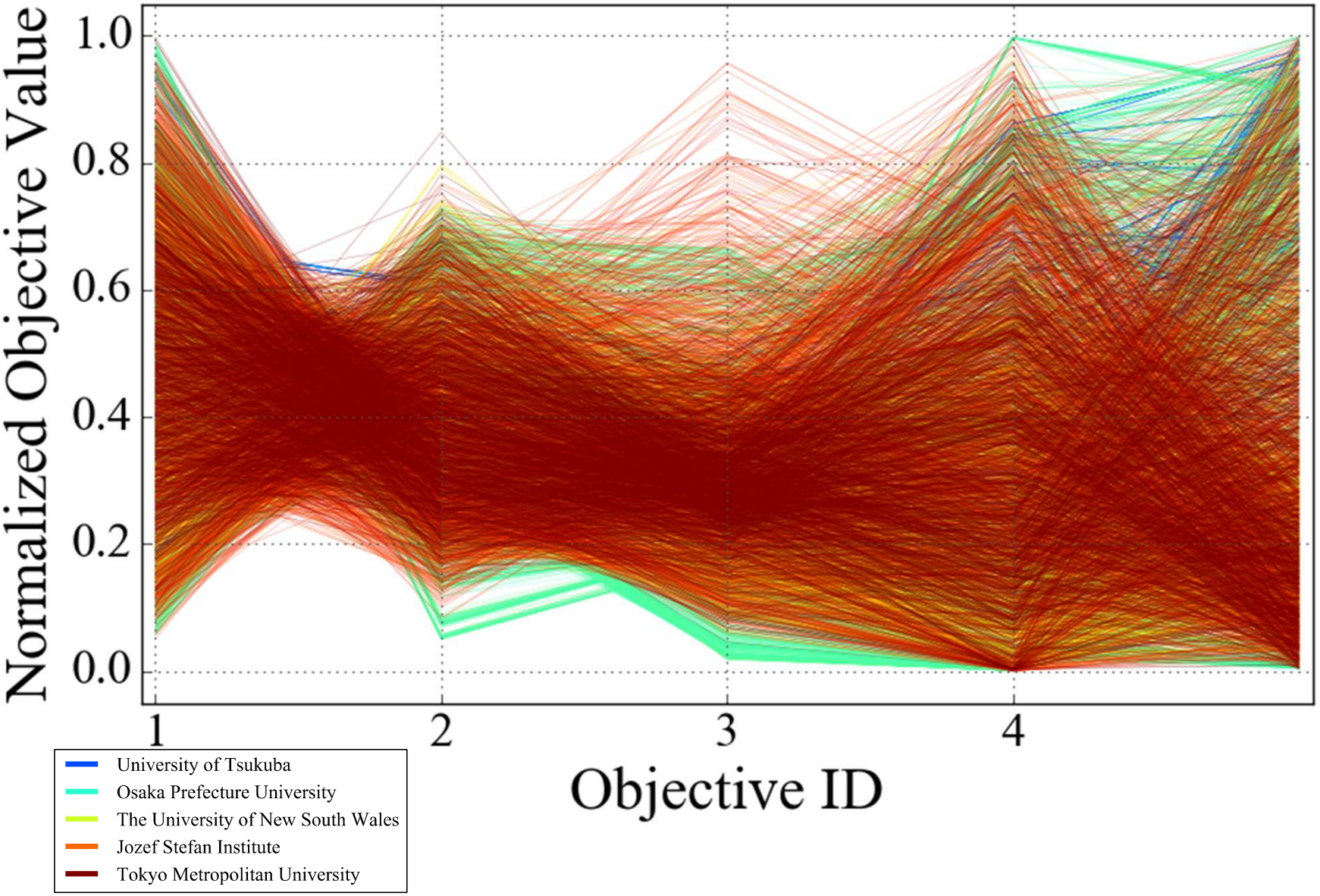
$$\mathrm{CON}_M(x) := \mathrm{HYP}(M) - \mathrm{HYP}(M \setminus \{x\})$$



色: HV contribution
大きさ:HV contribution

HVへの寄与が高い解は，少なくとも１つの目的関数において値が優れていて，
その他の目的関数についても比較的良い値を持つ
首都大も全ての目的関数において優れた解が比較的多い？

MOP PCP


Normalized Objective Value
1.0
0.8
0.6
0.4
0.2
0.0
1
2
3
4
Objective ID
University of Tsukuba
Osaka Prefecture University
The University of New South Wales
Jozef Stefan Institute
Tokyo Metropolitan University

Congratulations!!!

単目的部門 最優秀賞

串田淳一(広島市立大学)

発電コスト: 0.05524

多目的部門 最優秀賞

野口隼(立命館), 原田智広(首都大)

HV値: 5.163