



Buildings - intermodel comparison

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Ina De Jaeger

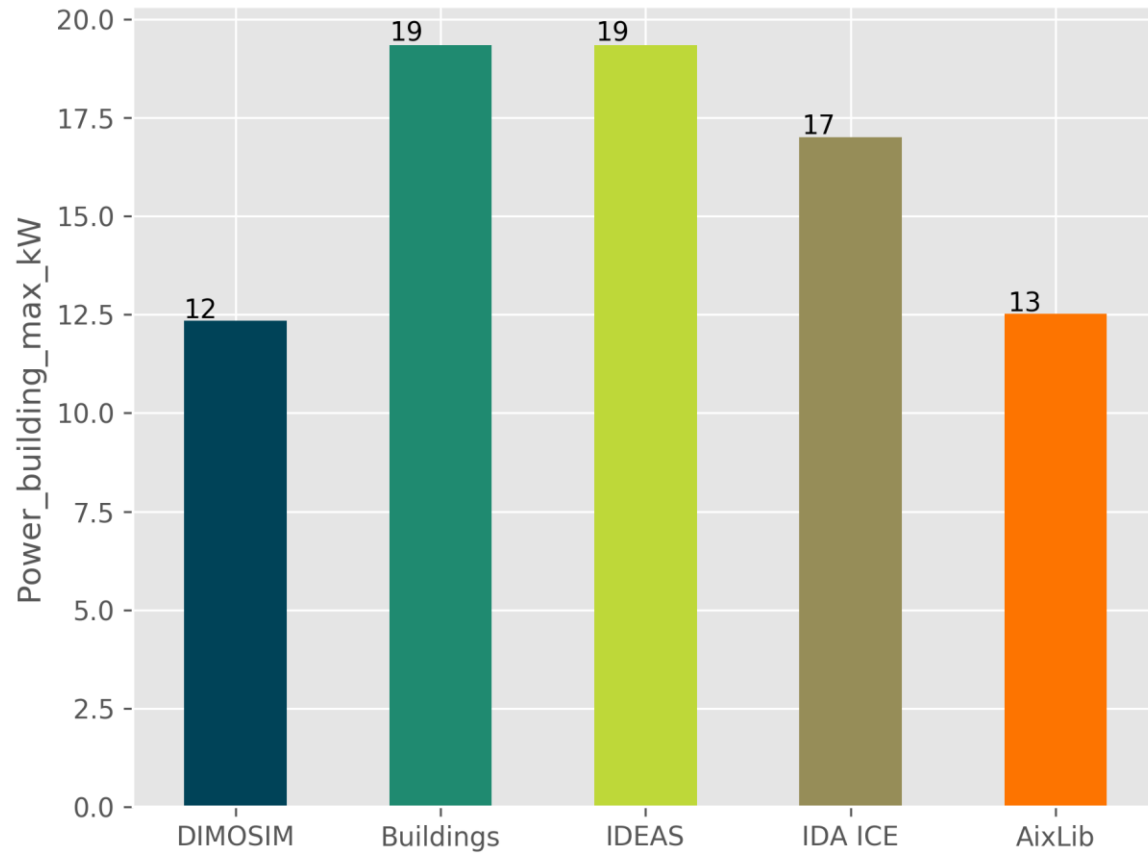
Introduction

Building models

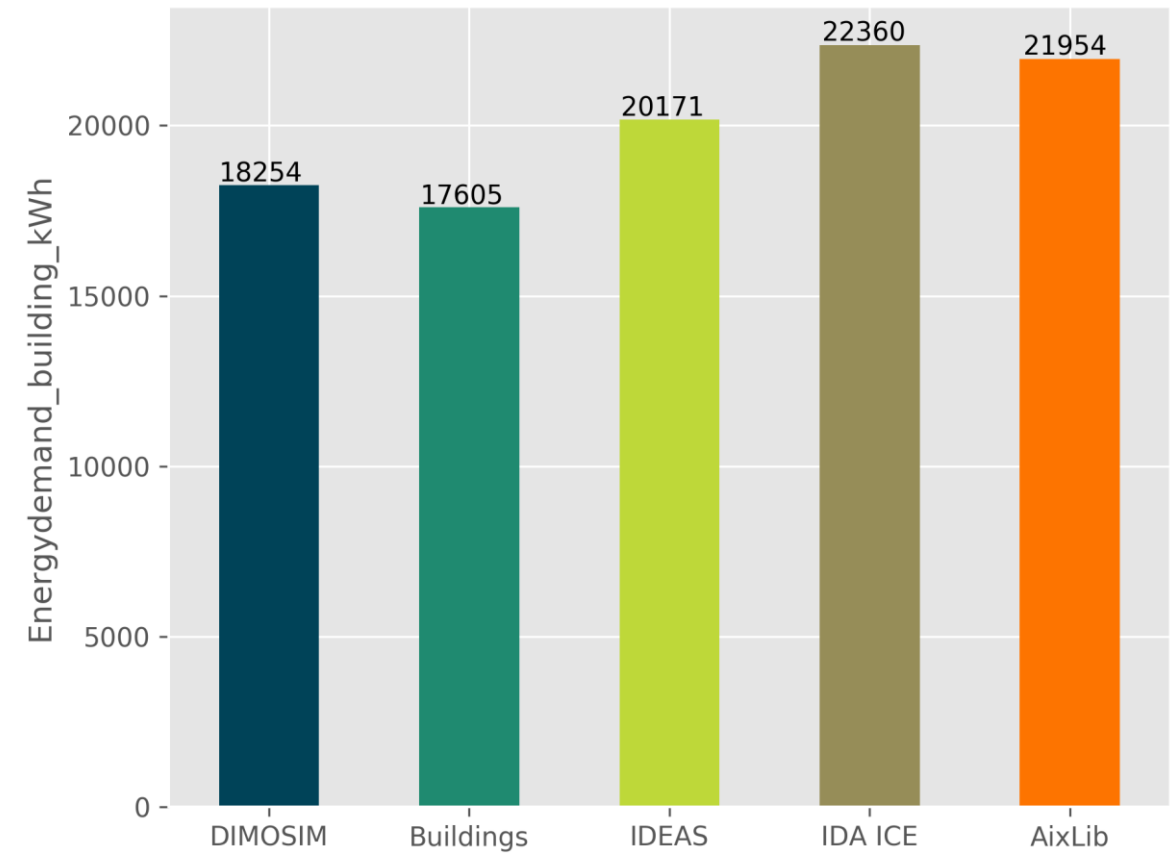
Modelling environment	Modeler	Remarks
DIMOSIM	Enora Garreau	T air
Modelica Buildings	Alessandro Maccarini	T operative
Modelica IDEAS	Ina De Jaeger	T operative
IDA ICE	Øystein Rønneseth	T air (for heating system?) + T operative
Modelica AixLib	Michael Mans	T air (+ other thermal properties !!)

Peak power & energy demand

Peak power



Annual energy demand



Temperatures

Min

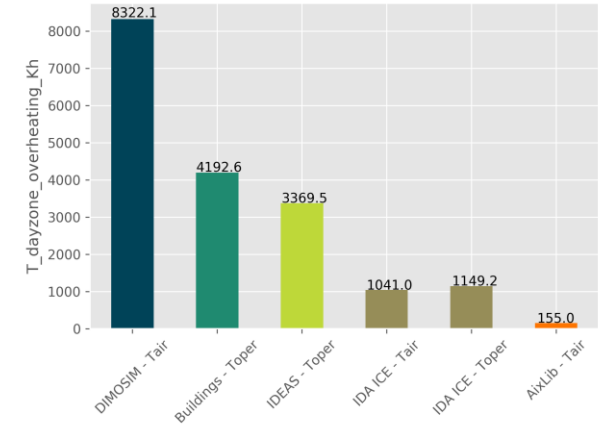
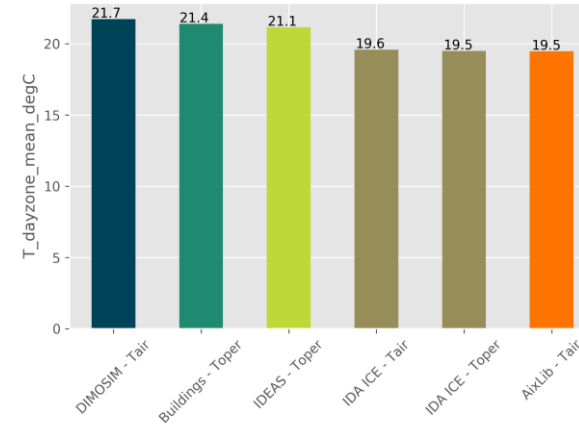
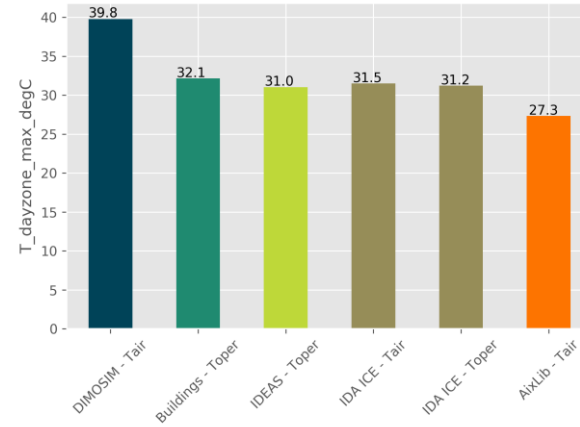
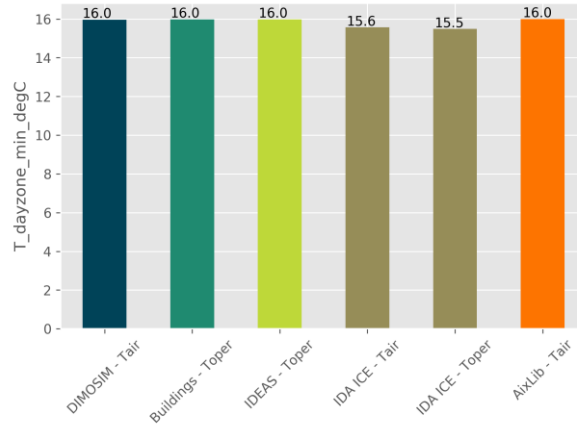
Max

Mean

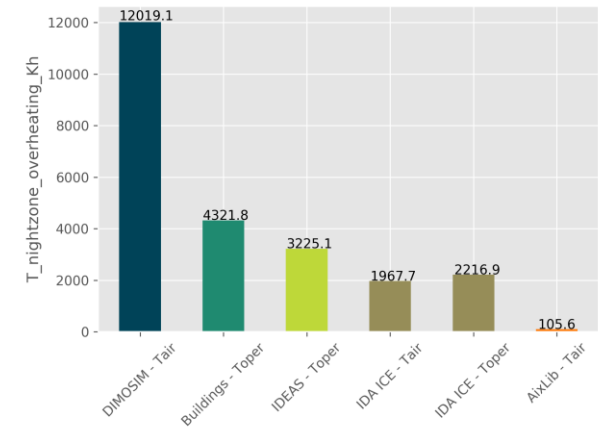
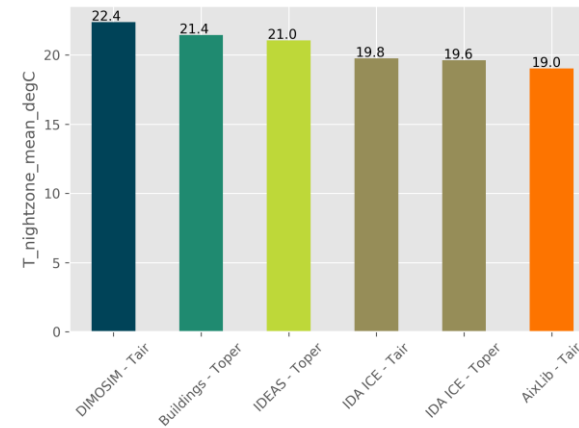
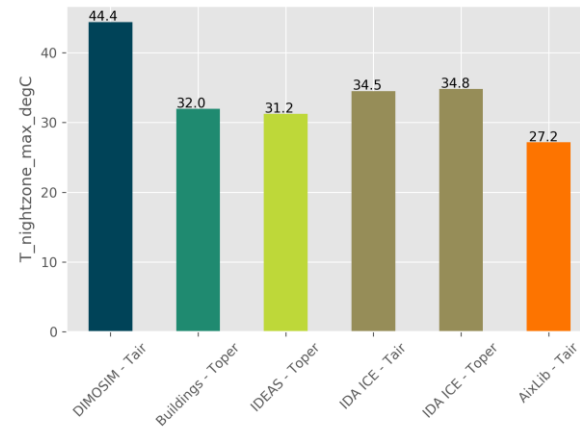
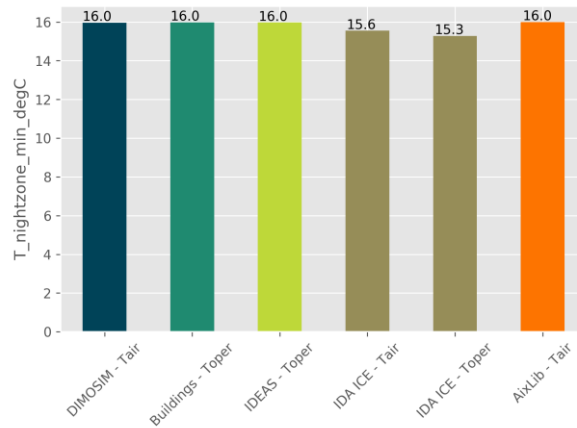
Hours * degC over 25 degC

Overheating

Day zone



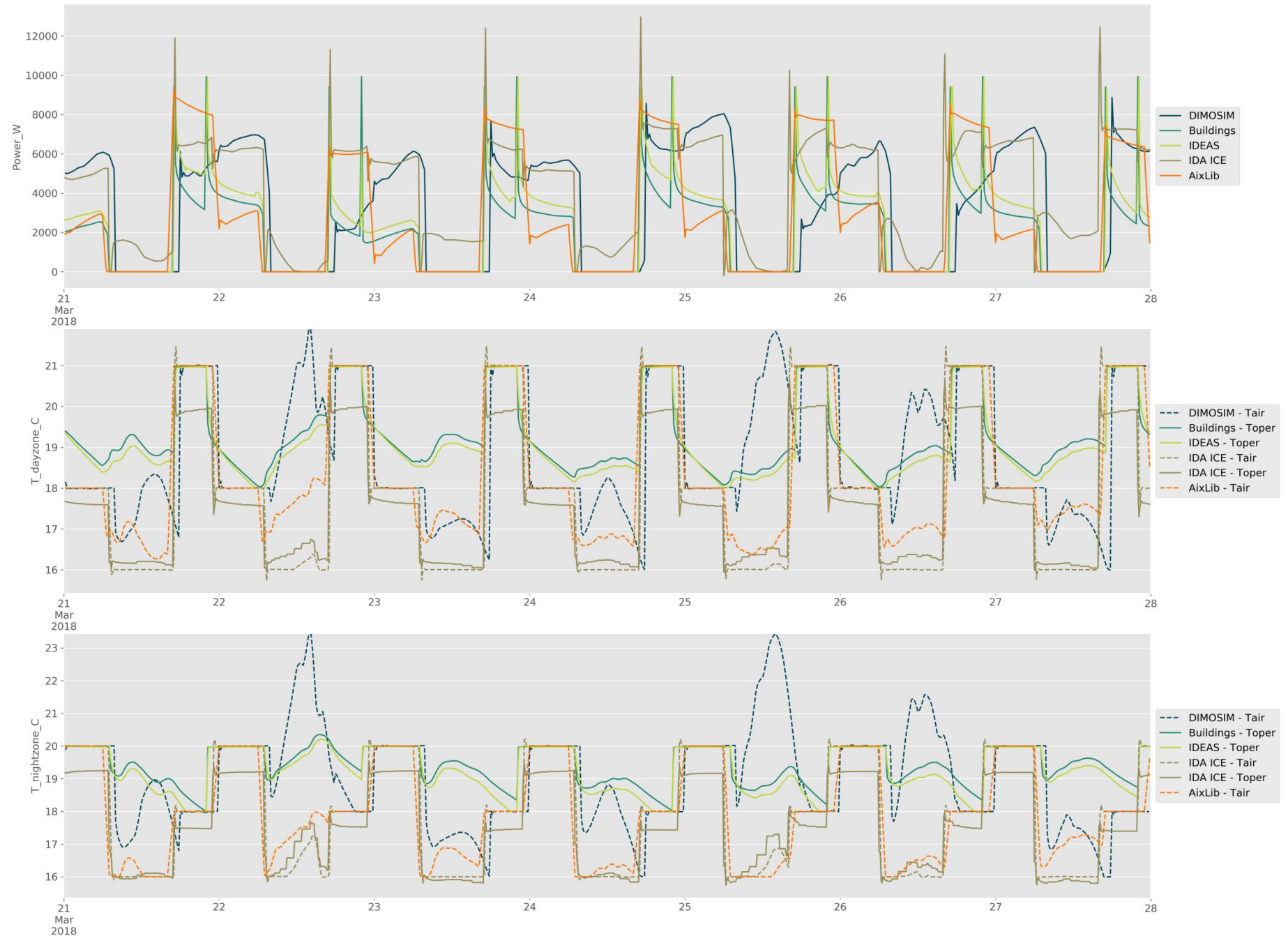
Night zone



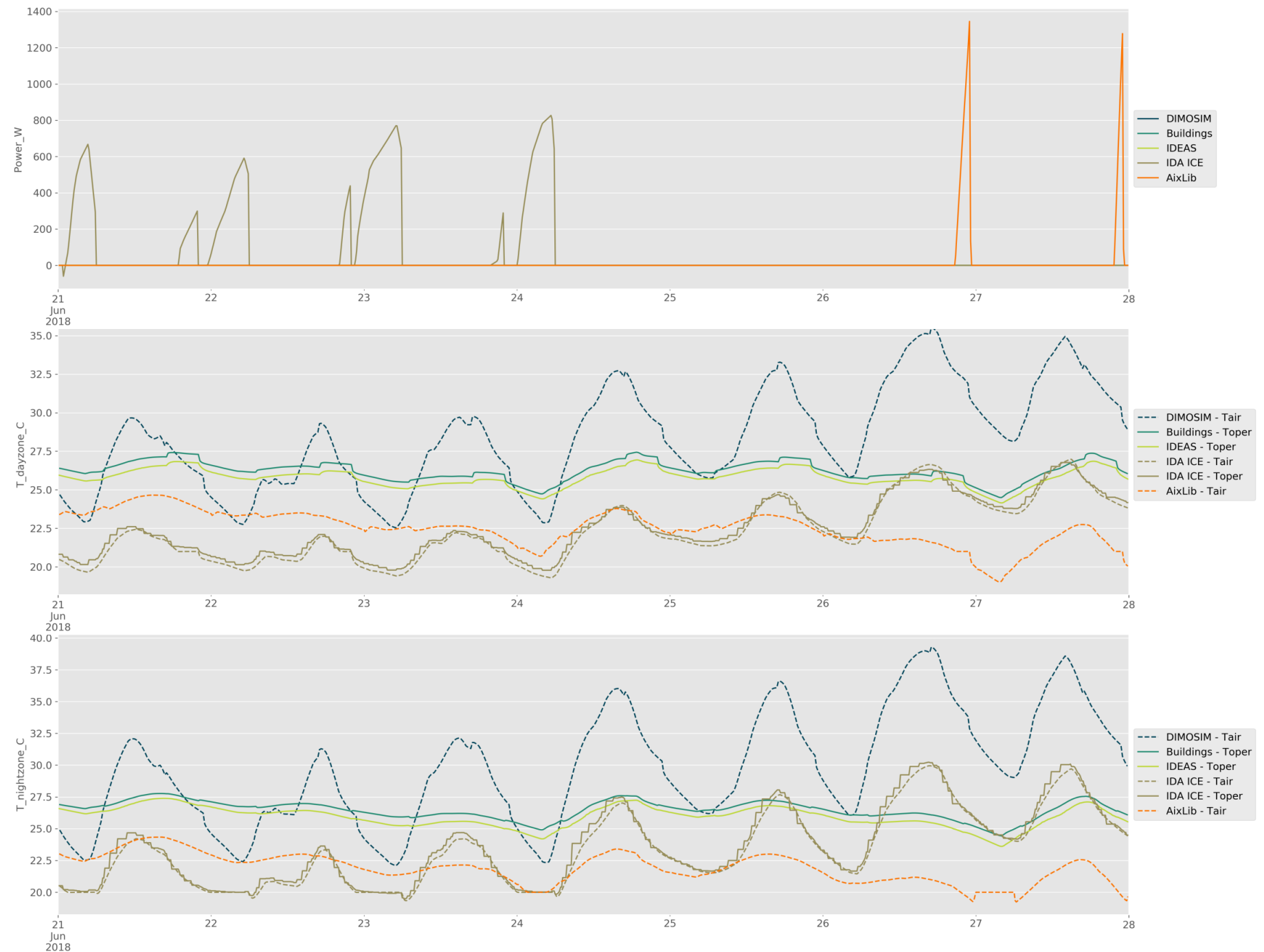
Overview of the numbers

	DIMOSIM – Tair	Buildings – Toper	IDEAS – Toper	IDA ICE – Tair	IDA ICE – Toper	AixLib – Tair
T_dayzone_max_degC	39.77	32.15	31.03	31.49	31.20	27.34
T_dayzone_mean_degC	21.72	21.38	21.14	19.57	19.49	19.46
T_dayzone_min_degC	15.96	15.98	15.98	15.57	15.50	16.0
T_dayzone_overheating_Kh	8322	4193	3369	1041	1149	155
T_nightzone_max_degC	44.41	31.97	31.22	34.51	34.79	27.18
T_nightzone_mean_degC	22.38	21.45	21.04	19.77	19.61	19.02
T_nightzone_min_degC	15.96	15.99	15.97	15.55	15.29	16.00
T_nightzone_overheating_Kh	12019	4322	3225	1968	2217	106
Energydemand_building_kWh	18254	17605	20171	22360		21954
Power_building_max_kW	12.3	19.3	19.3	17.0		12.5

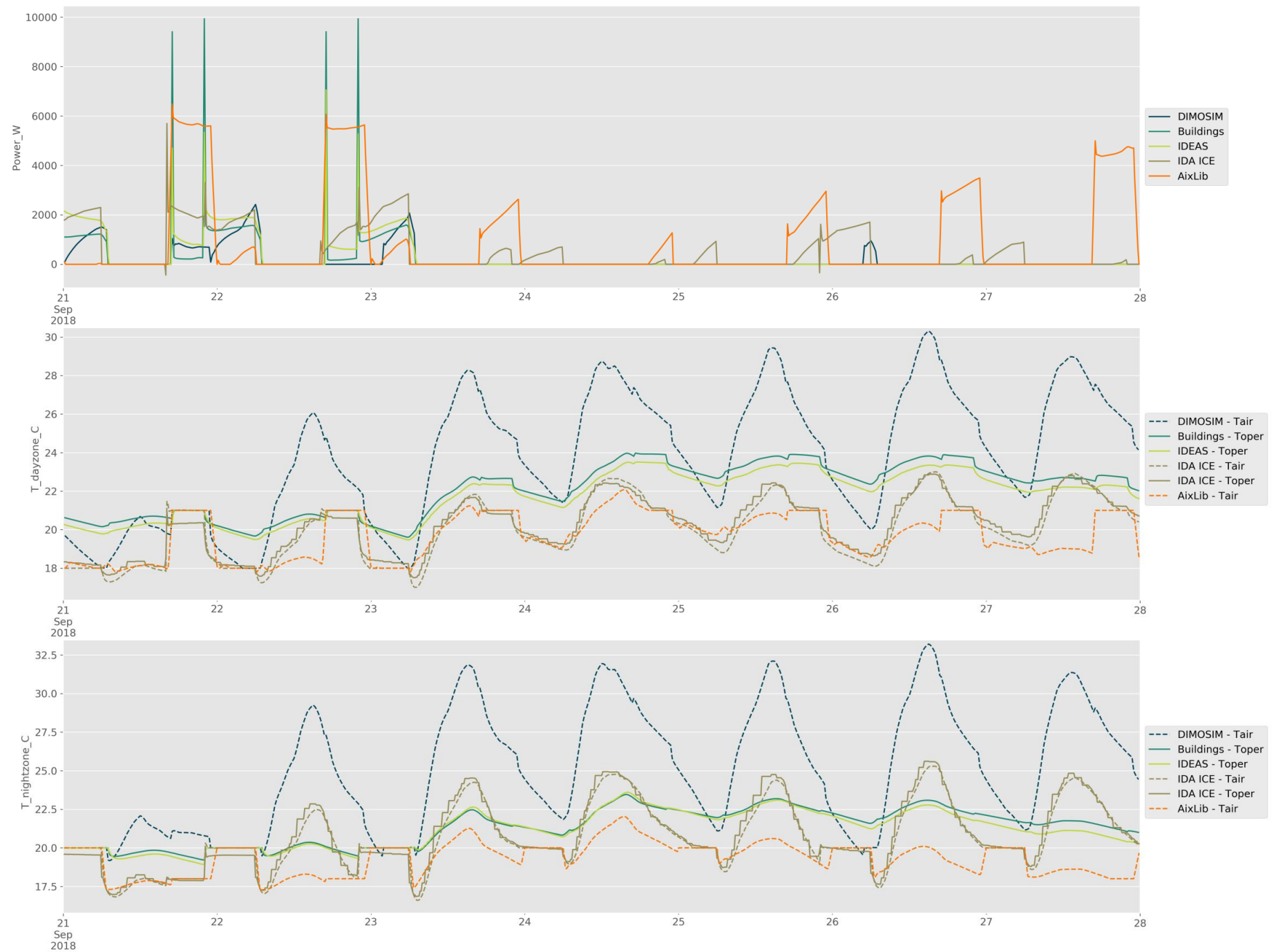
Profiles: March



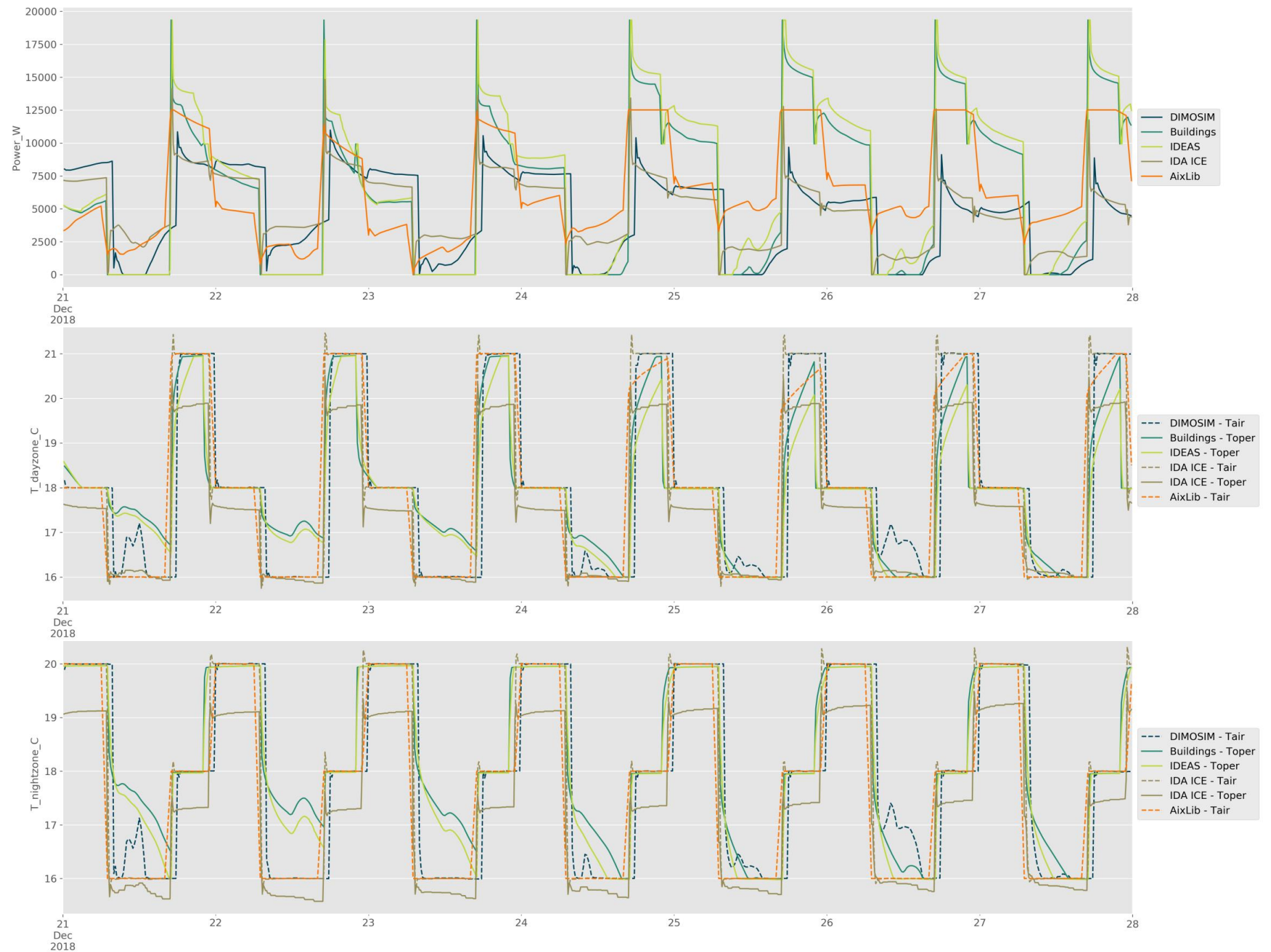
Profiles: June



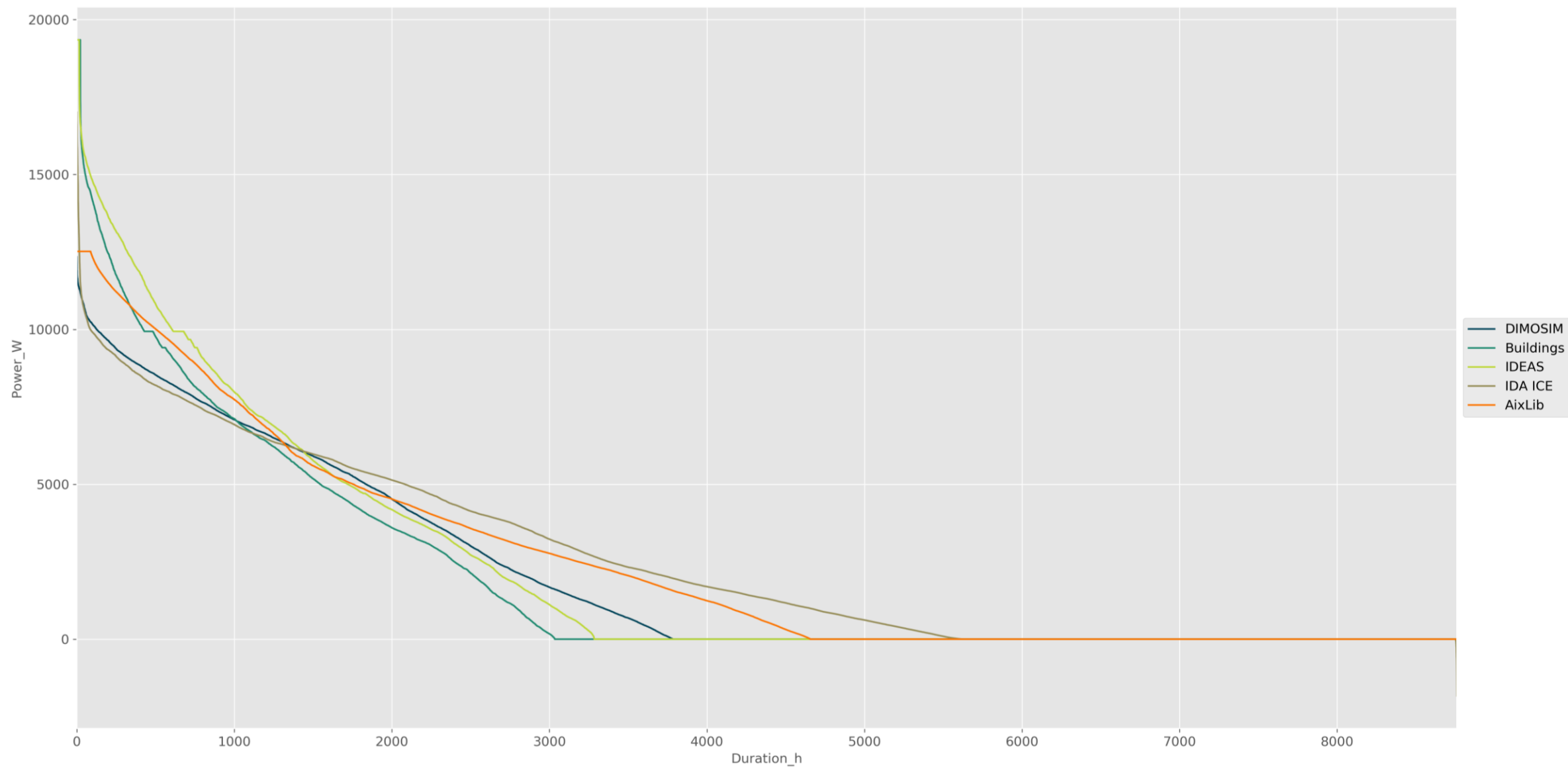
Profiles: September



Profiles: December



Load duration curve



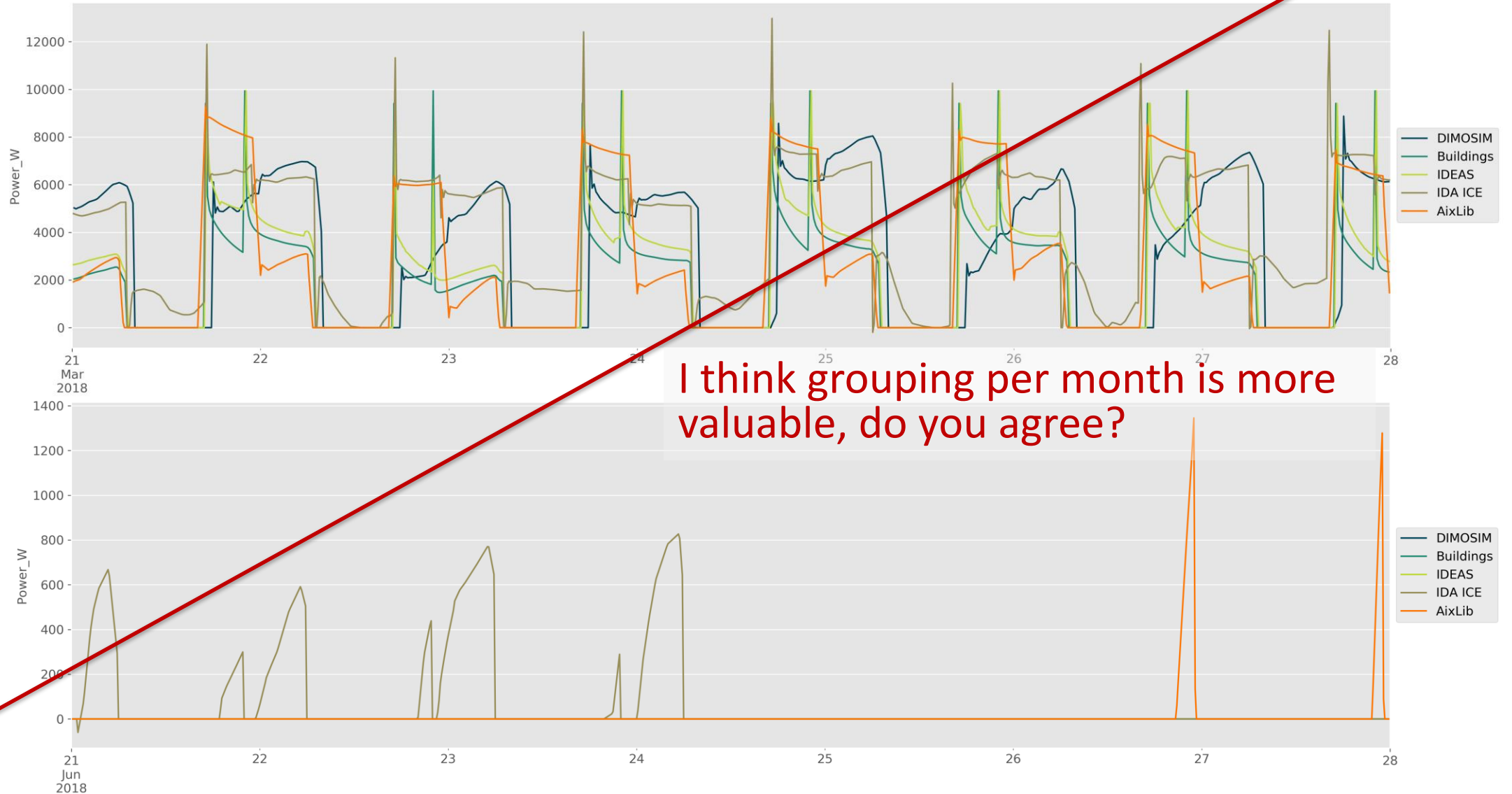
Next steps

- All models should be based on the same temperature > air temperature (more realistic)
 - Alessandro and Ina re-run simulations with an air-temperature based ideal heating system
 - Send results to Ina by Monday, December 3, 2018
- Peak power calculation should be more aligned
 - Details & plan: see meeting minutes of Buildings meeting (November 21, 2018)
 - Send results to Ina by Monday, January XX, 2019 (so we can discuss in our next Buildings meeting, on January XX, 2019; dates to be decided after next WP3 Coordination meeting)

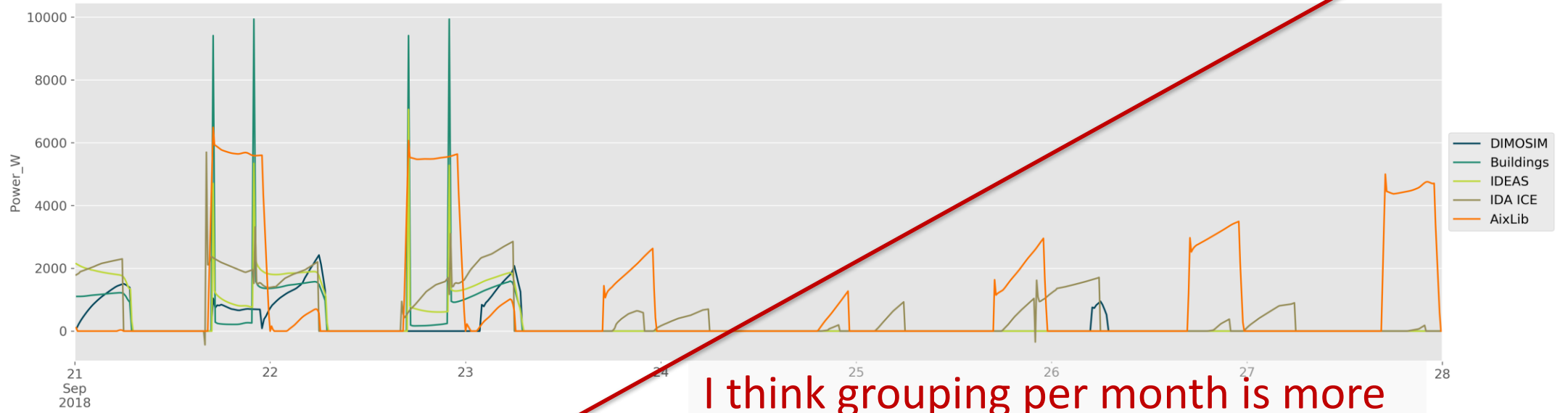
Questions? Suggestions?
ina.dejaeger@kuleuven.be



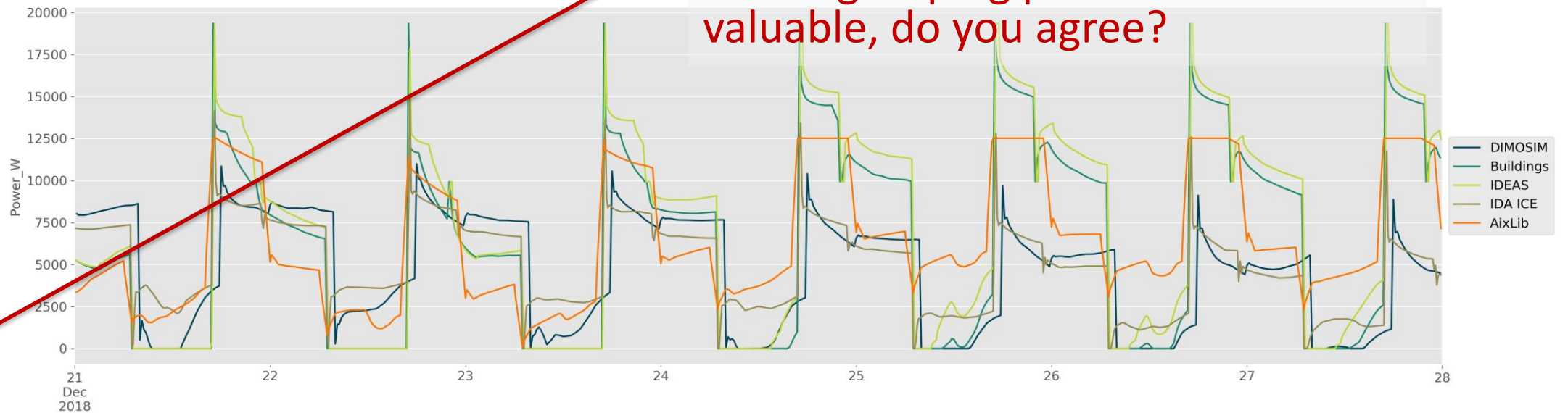
Profiles: heating power (March, June)



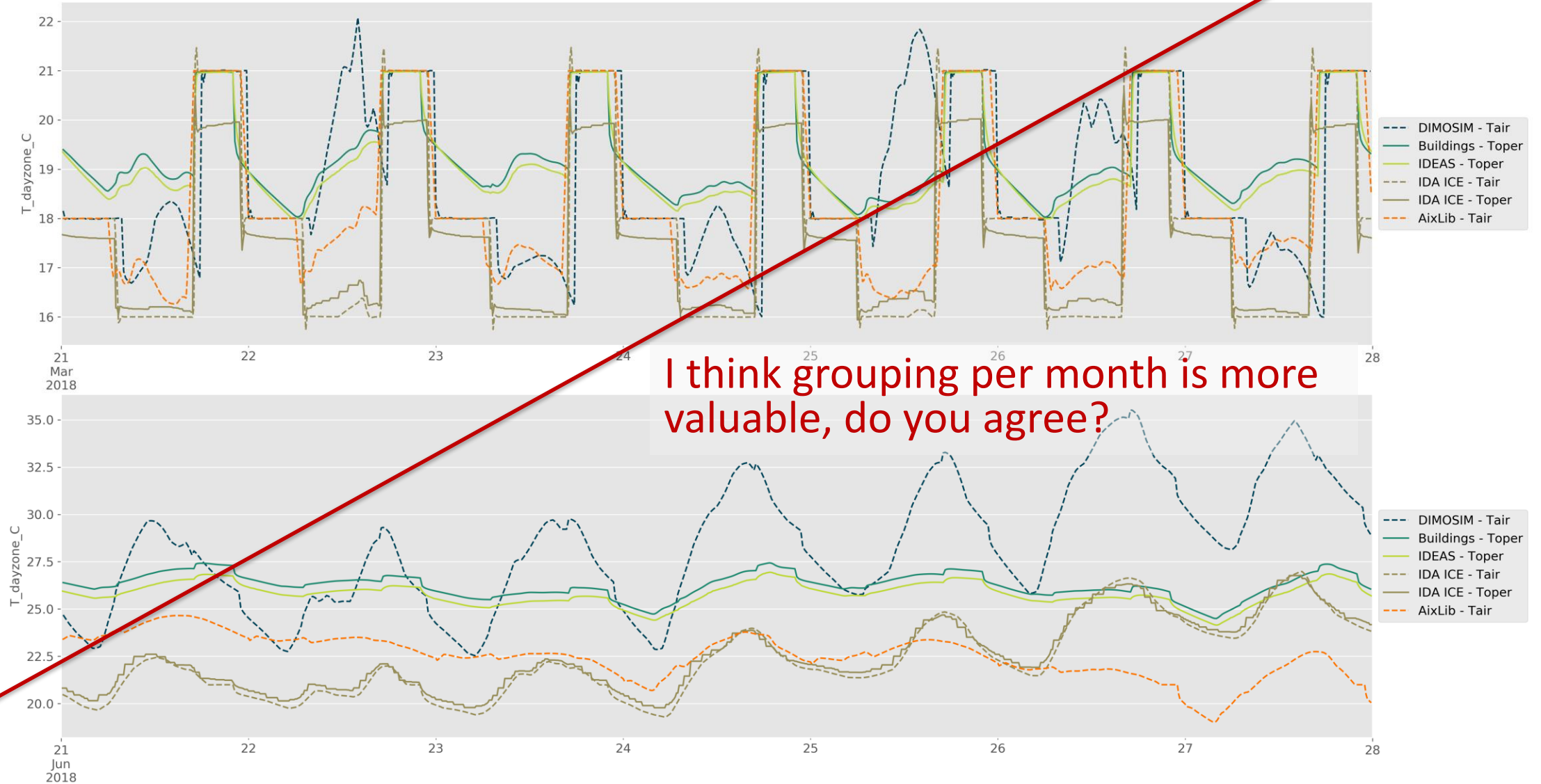
Profiles: heating power (Sept, Dec)



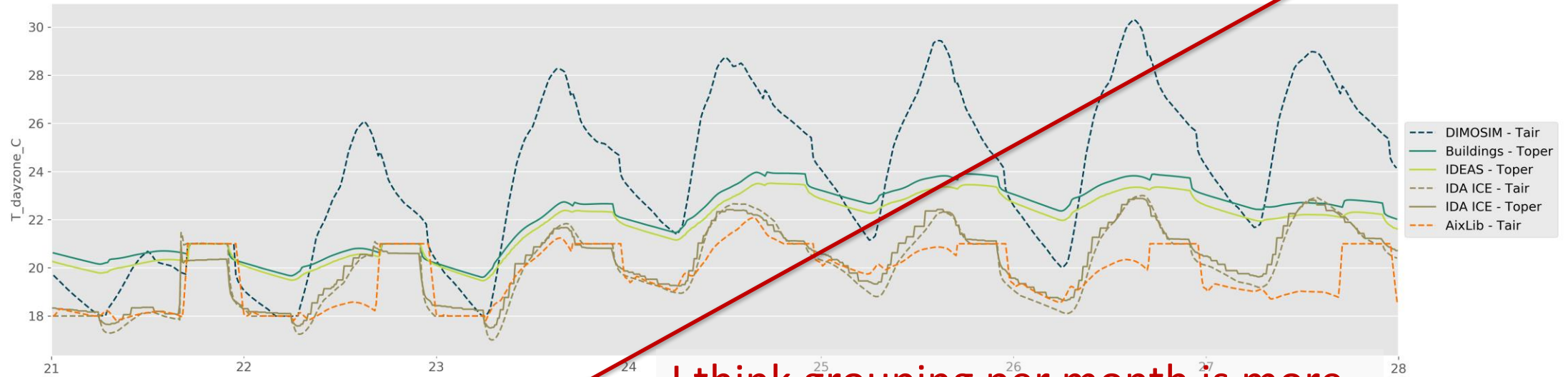
I think grouping per month is more valuable, do you agree?



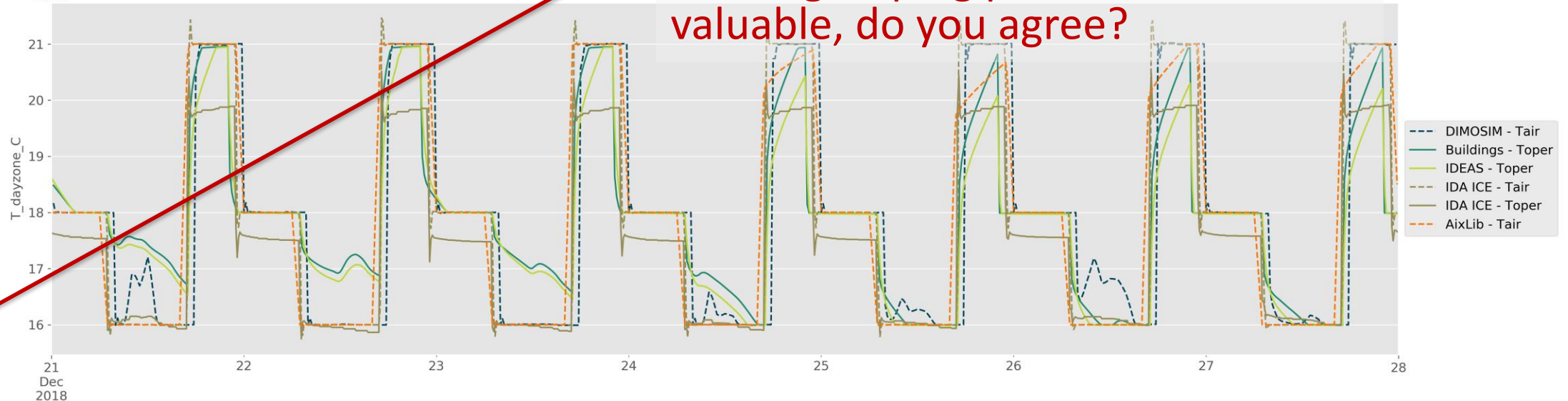
Profiles: Day zone temperature (March, June)



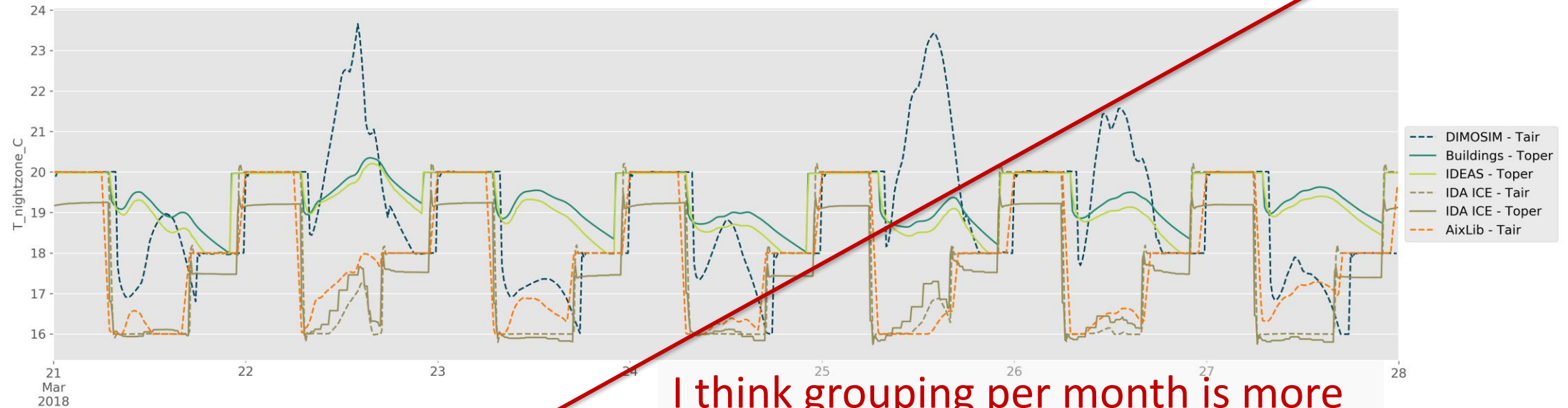
Profiles: Day zone temperature (Sept, Dec)



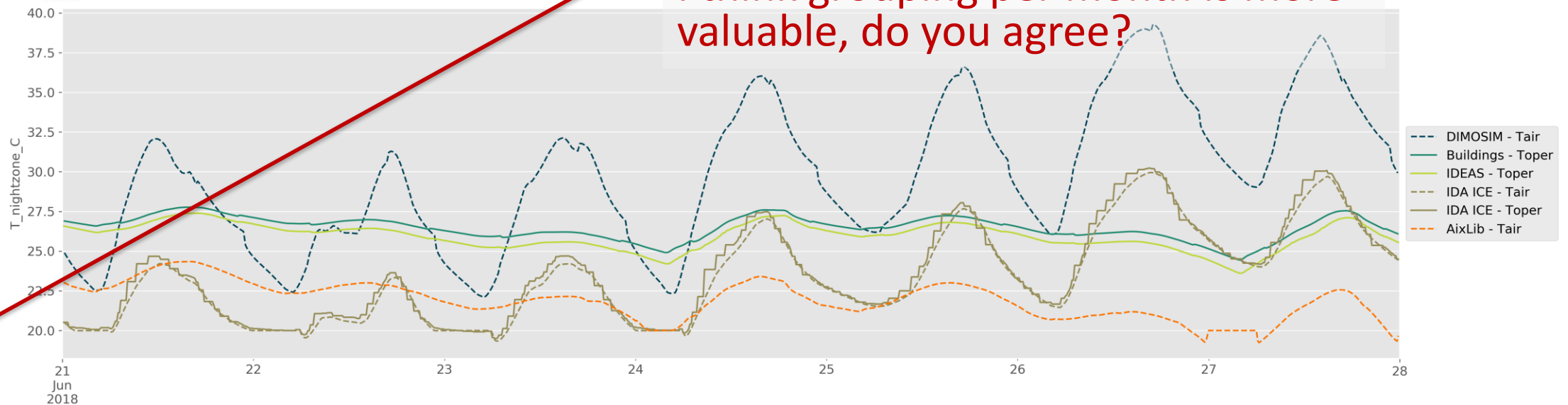
I think grouping per month is more valuable, do you agree?



Profiles: Night zone temperature (March, June)



I think grouping per month is more valuable, do you agree?



Profiles: Night zone temperature (Sept, Dec)

