SARex - Survival in a Polar Code Environment

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SARex in cooperation with

SARex 1, 2 and 3

SARex1 (2016) – assessment of survivability utilizing normal SOLAS equipment

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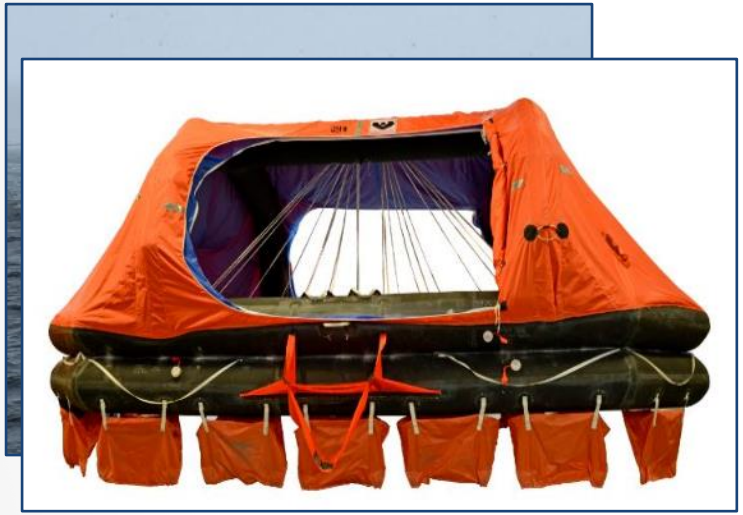
SARex 1, 2 and 3



SARex1 (2016) – assessment of survivability utilizing normal SOLAS equipment

SARex2 (2017) - assessment of survivability utilizing modified SOLAS equipment

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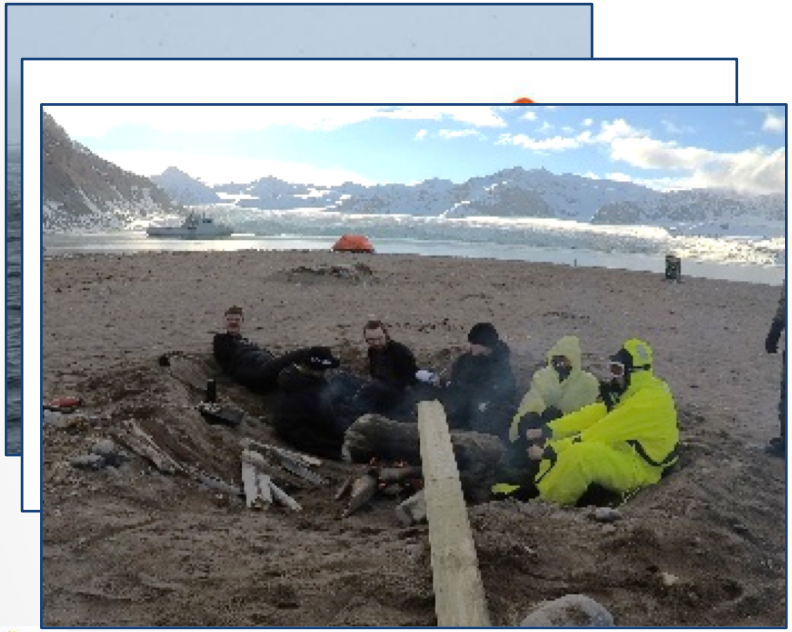
SARex 1, 2 and 3



SARex1 (2016) – assessment of survivability utilizing normal SOLAS equipment

SARex2 (2017) - assessment of survivability utilizing modified SOLAS equipment

SARex3 (2018) - assessment of survivability associated with onshore evacuation

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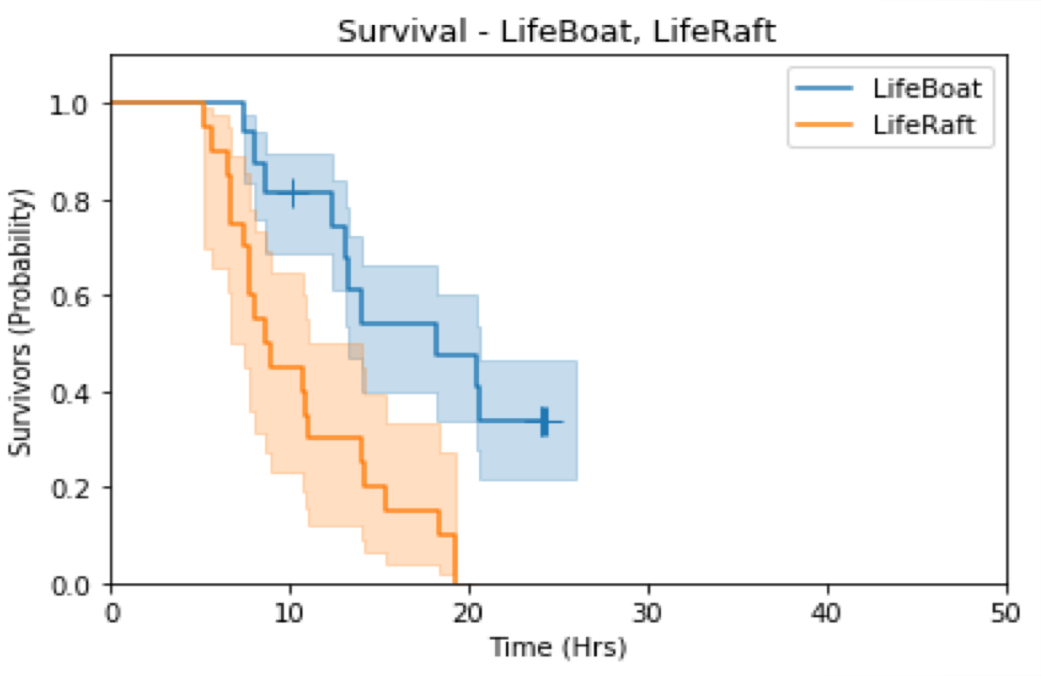
Survival rate (Kaplan-Meier Survival Plot)



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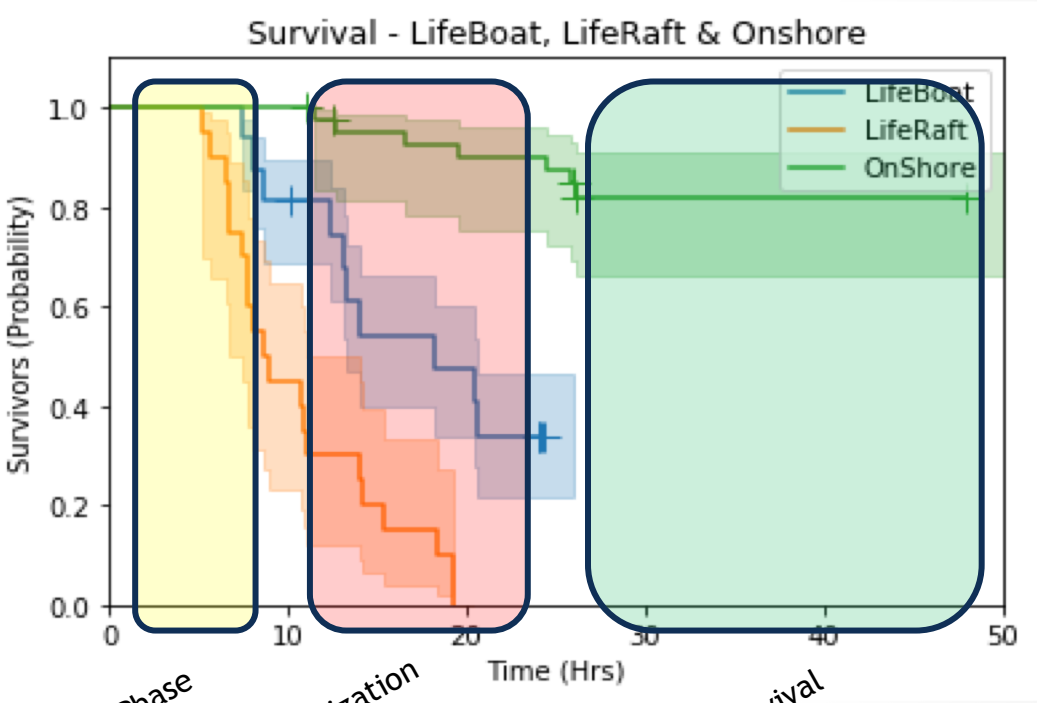
Time to loss of cognitive abilities, uncontrollable shivering or loss of functionality of extremities.

Survival rate (Kaplan-Meier Survival Plot)



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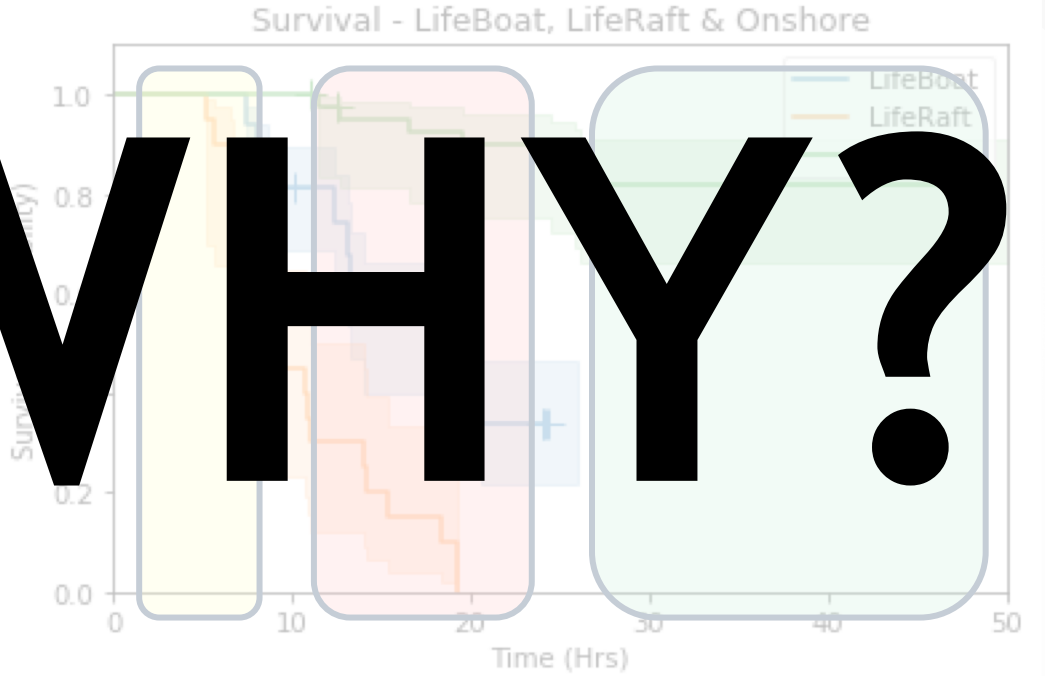
Survival rate (Kaplan-Meier Survival Plot)



WHY??

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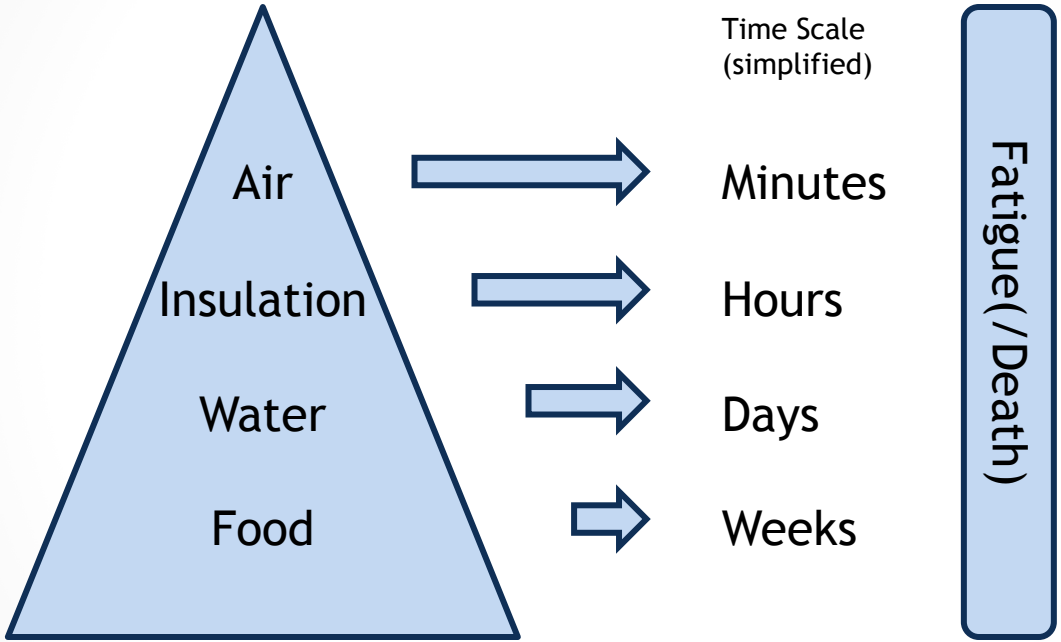
Survival in a 5 day scenario - Pyramide of life(/death)



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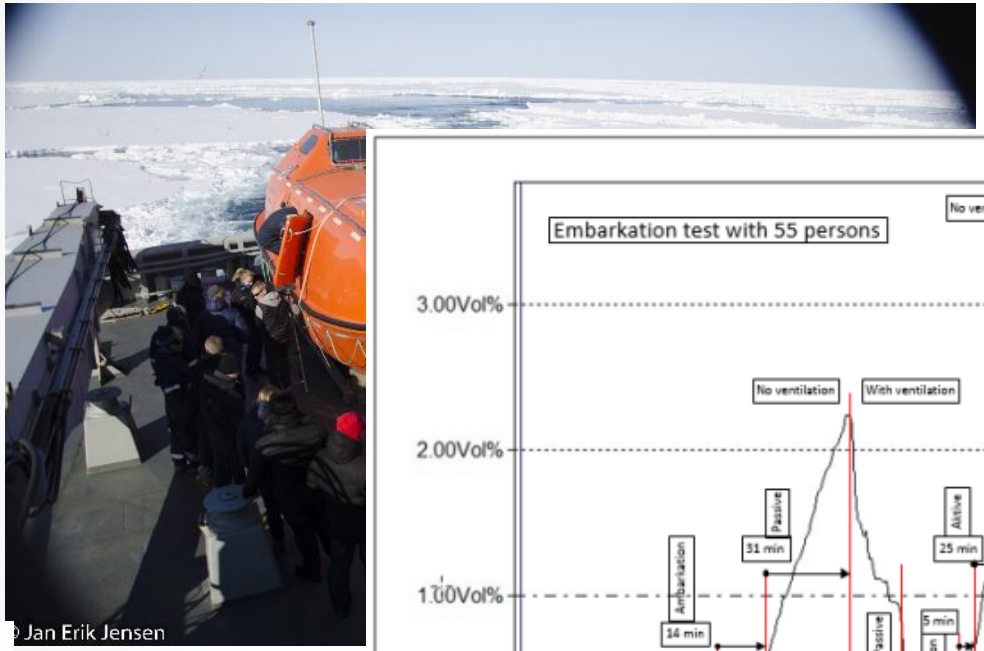
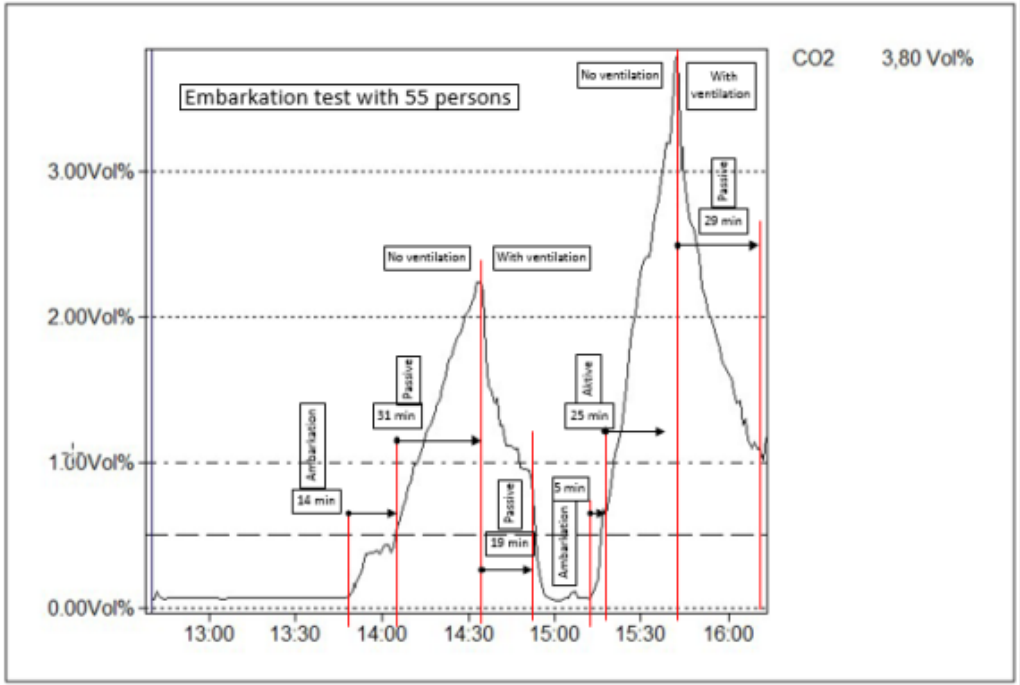
SARex - CO2 levels





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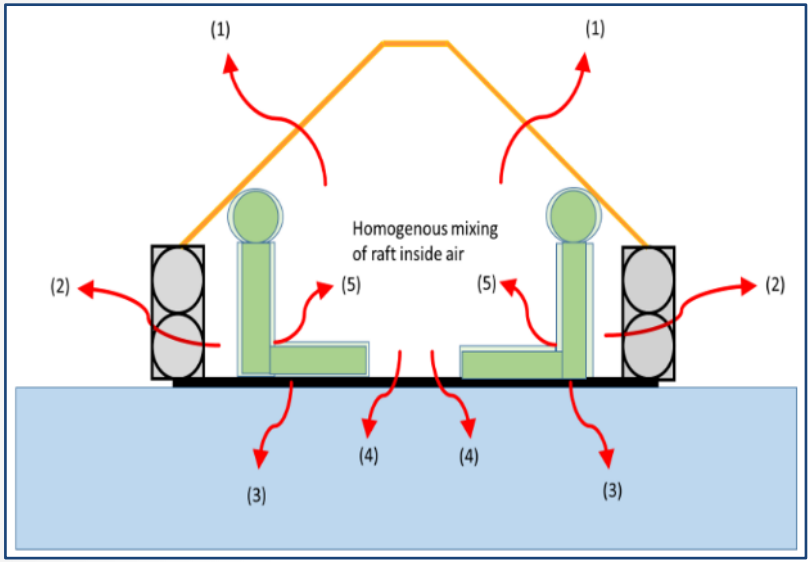
Mechanisms of heat loss - Thermal Equlibrium



$$Q_{produced} = Q_{lost}$$

$$Q_{produced\ by\ participants} =$$

$$Q_{lost\ to\ sea} + Q_{lost\ to\ air} + Q_{lost\ to\ ventilation} + Q_{lost\ to\ radiation}$$

Simplified Thermal Equlibrium:

$$Q_{Metabolism} * ThermalResistance = Q_{lost}\ (t_{surface} - t_{ambient})$$

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Thermal Resistance
- PSK - Core Temperature

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Reaching Thermal Equilibrium

- Increase Metabolism

Activity Description	W/m²	W (body surface area 1.8 m²)
Sleeping	46	83
Standing	70	126
Walking (2km/hour, level ground)	110	198
Walking (5km/hour, level ground)	200	360
Swimming	348	624
Running (15km/hour)	550	990

What average metabolism levels can you expect from average people?

Survival rates Estonia:

22 % of males, 15-45 years
5% of females, 15-45 years
3% of males 65+
0% of females, 65+

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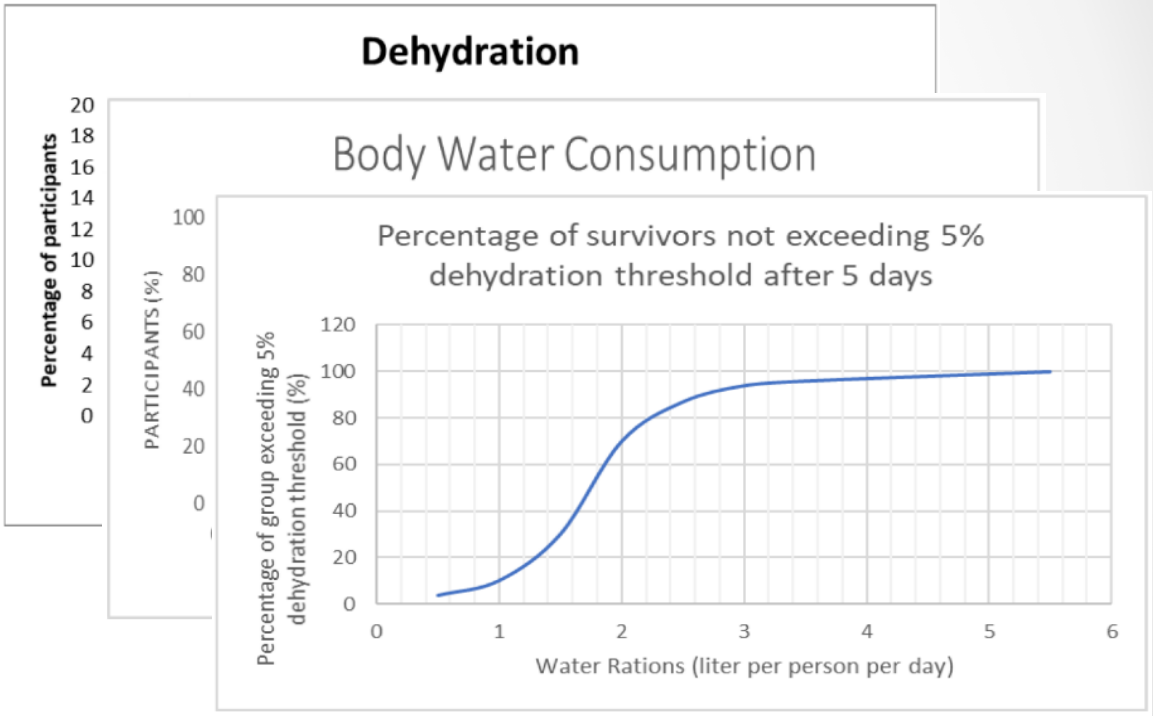
Prevent death from dehydration

Dehydration (% tot.bod.water)	Consequence
3%-4%	No adverse health effects
5% - 8%	Fatigue/Dizieness
10% -15%	Physical and mental deterioration/Severe thirst
15% - 25%	Death



Source: https://en.wikipedia.org/wiki/Dehydration

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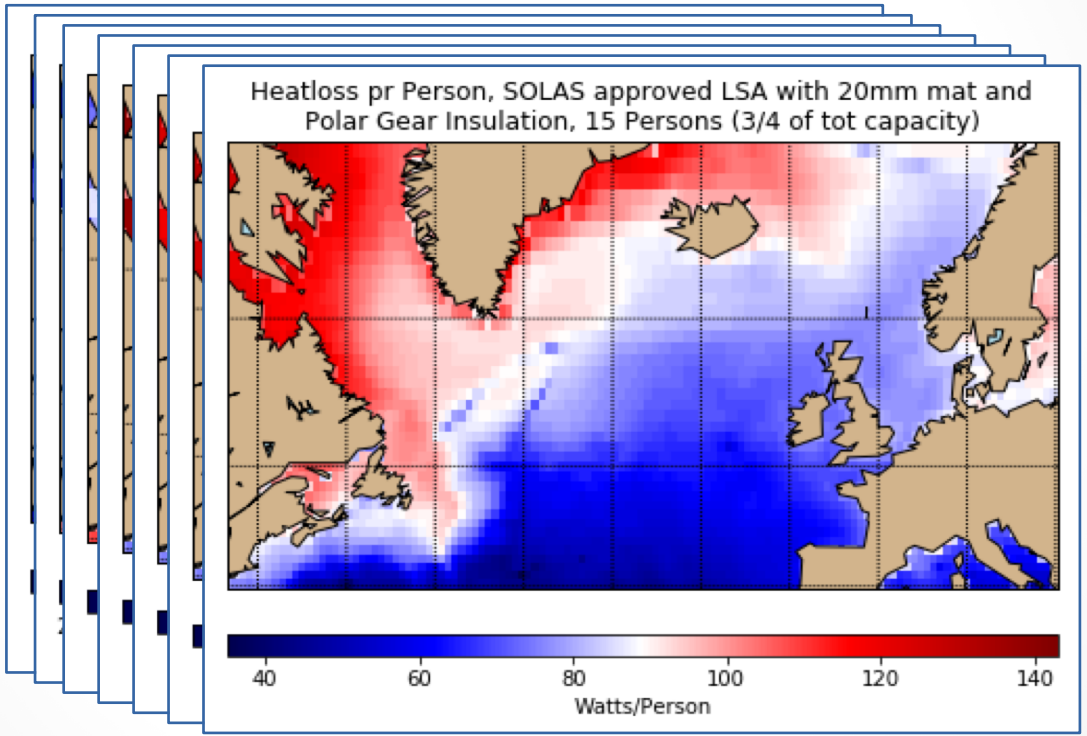
Are there any solutions...



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