

MALASPINA 2010: Observations of R/ETS

Federico Maldonado, Ted Packard & May Gómez



**UNIVERSIDAD DE LAS PALMAS
DE GRAN CANARIA**



METHODS

LEG 3

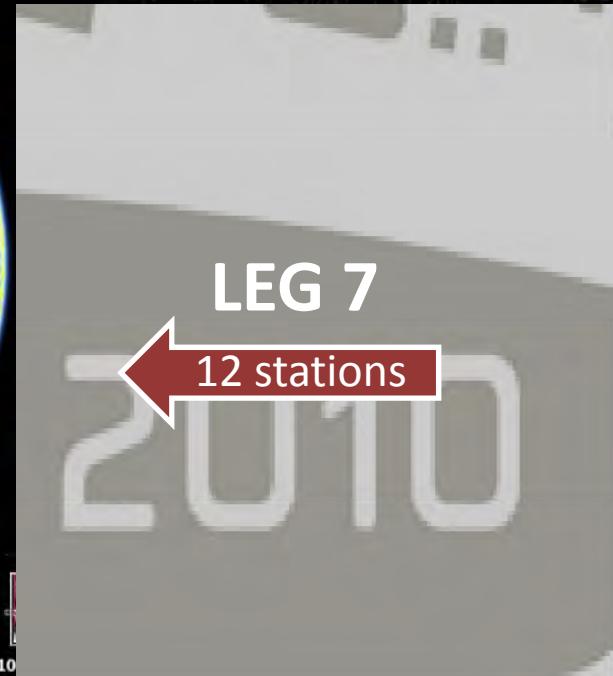
7 stations

LEG 4

6 stations

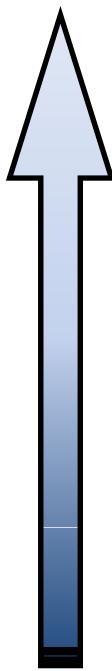
LEG 7

12 stations



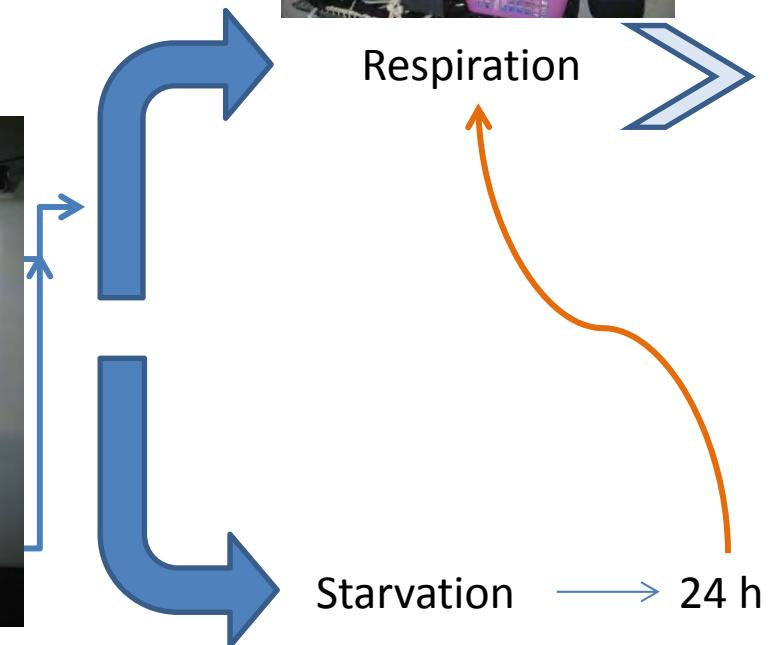
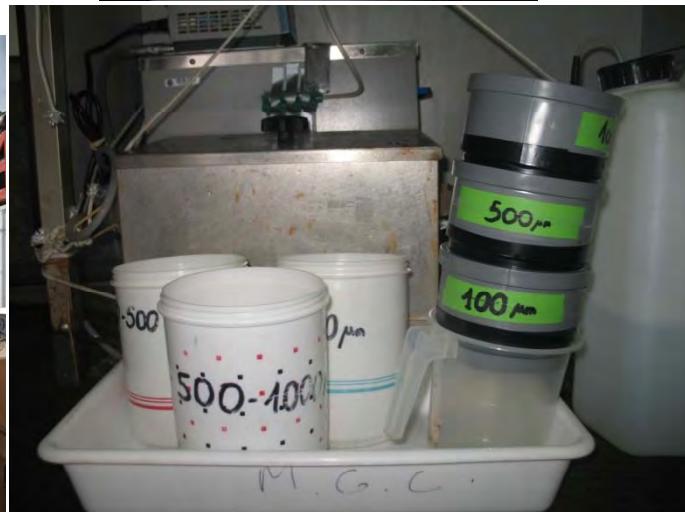
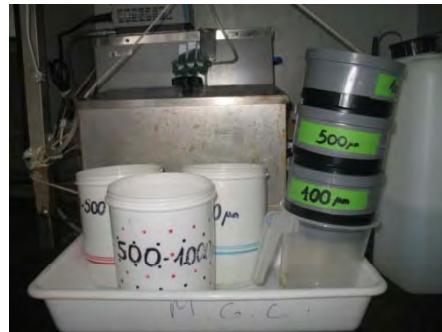


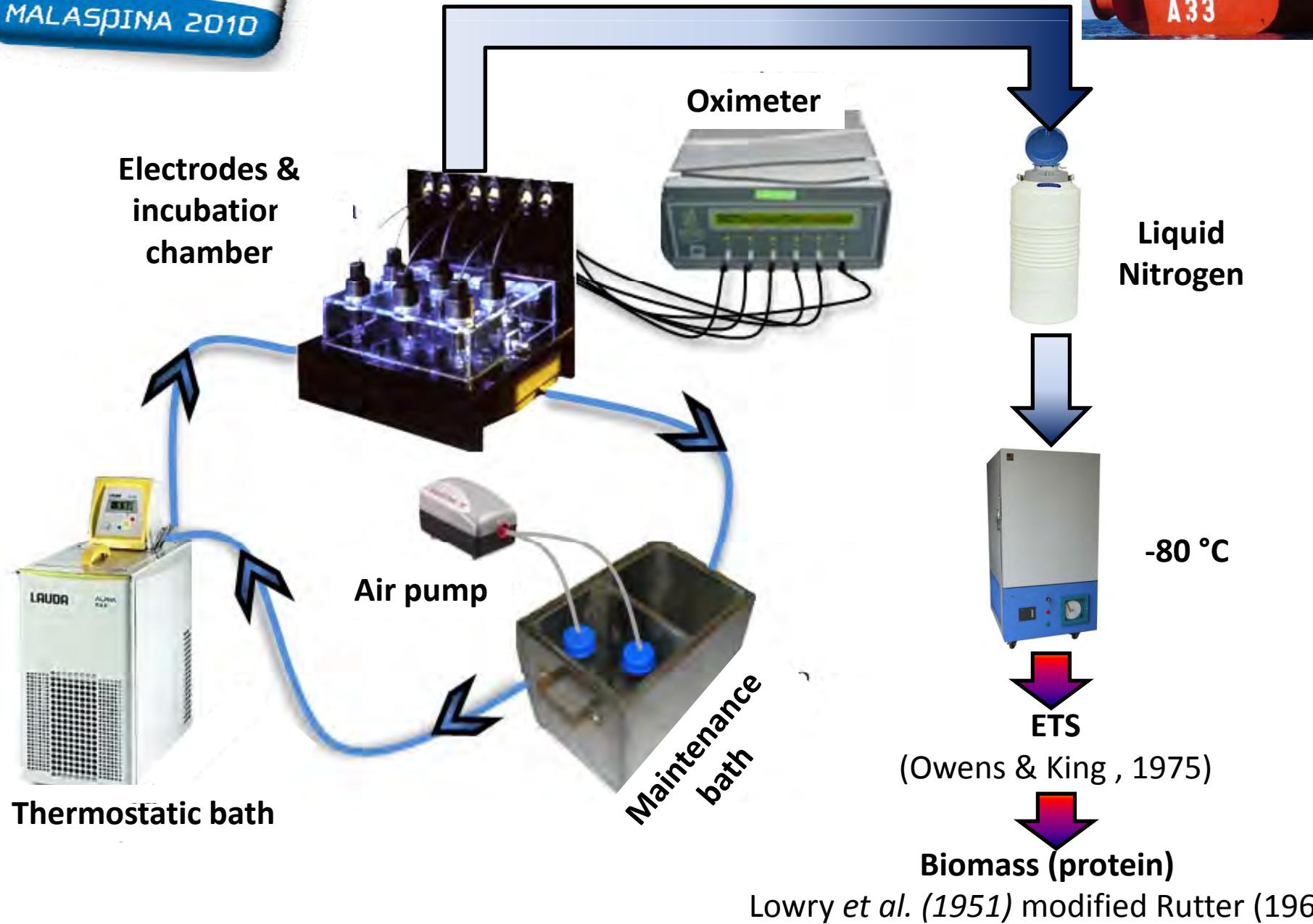
0 m



150 m

Gelatinous
organisms







RESULTS & DISCUSSION

SPECIFIC ACTIVITY

LEG	R ($\mu\text{mol O}_2 \cdot \text{h}^{-1} \cdot \text{mg prot}^{-1}$)	Φ ($\mu\text{mol O}_2 \cdot \text{h}^{-1} \cdot \text{mg prot}^{-1}$)
3	1.53 ± 0.59	1.67 ± 0.60
4	1.68 ± 0.79	1.99 ± 0.48
7	0.98 ± 0.57	1.09 ± 0.66

Size Class	R ($\mu\text{mol O}_2 \cdot \text{h}^{-1} \cdot \text{mg prot}^{-1}$)	Φ ($\mu\text{mol O}_2 \cdot \text{h}^{-1} \cdot \text{mg prot}^{-1}$)
100-500 μm	1.49 ± 0.56	1.72 ± 0.54
500-1000 μm	1.35 ± 0.84	1.49 ± 0.79
>1000 μm	0.96 ± 0.54	1.06 ± 0.63



MALASPINA 2010

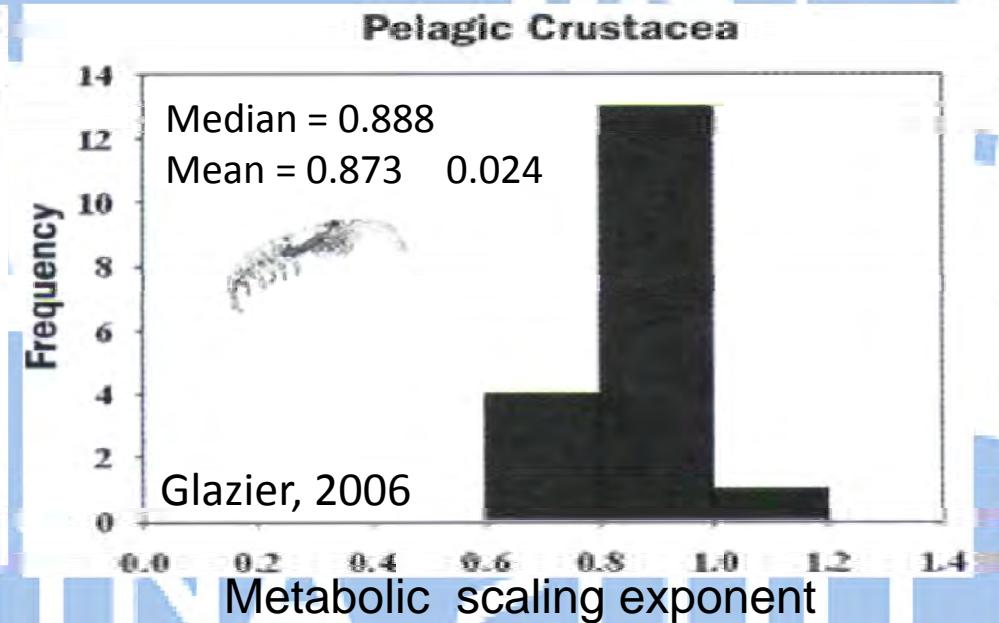
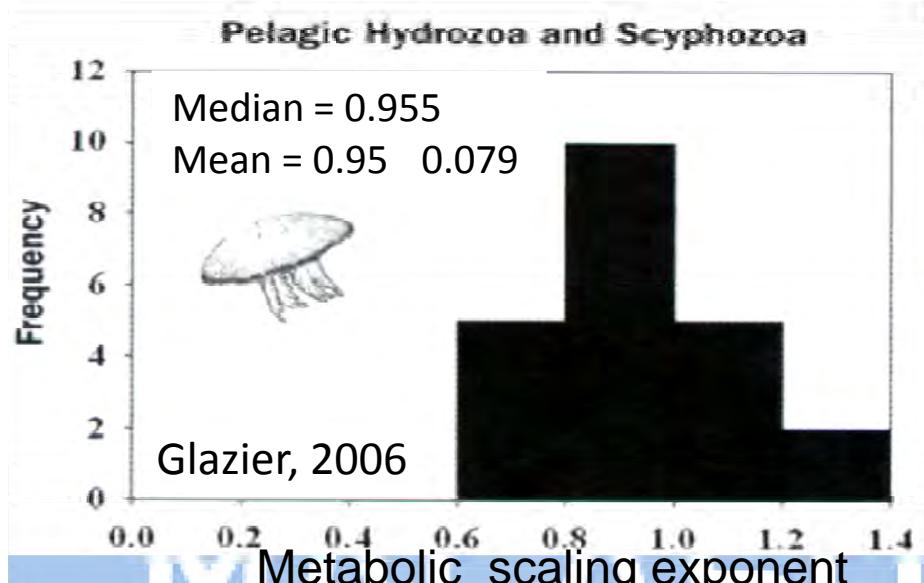




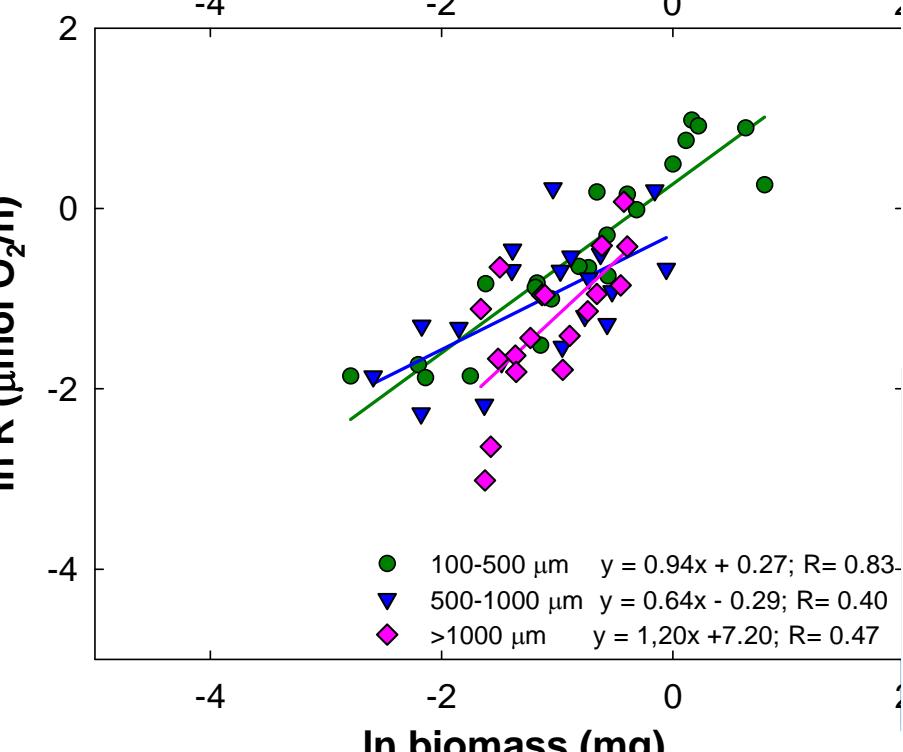
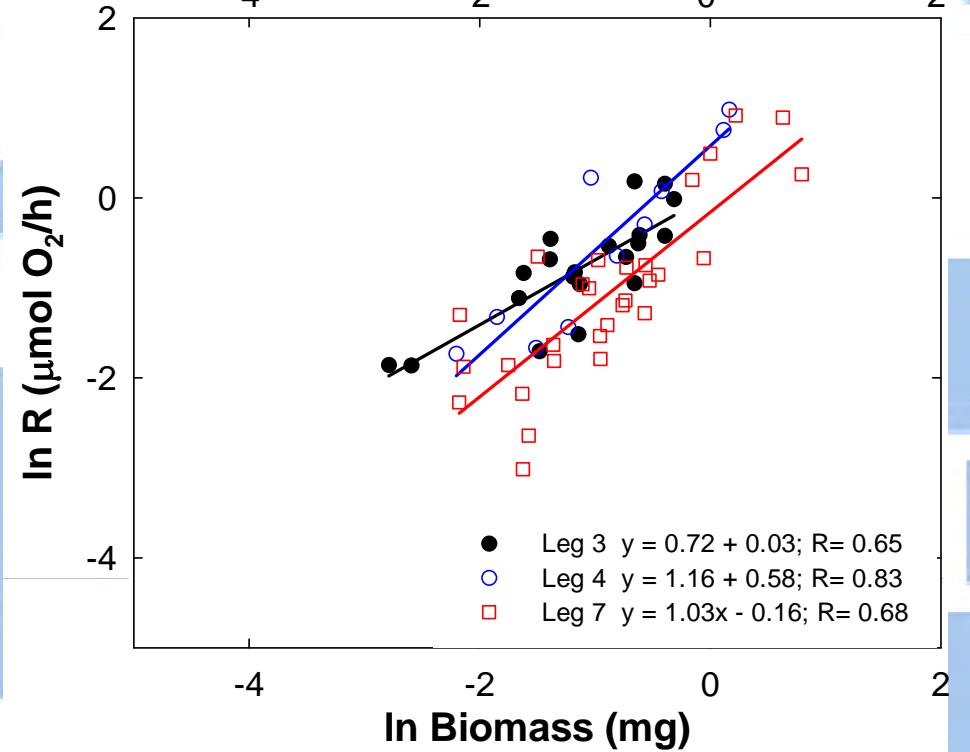
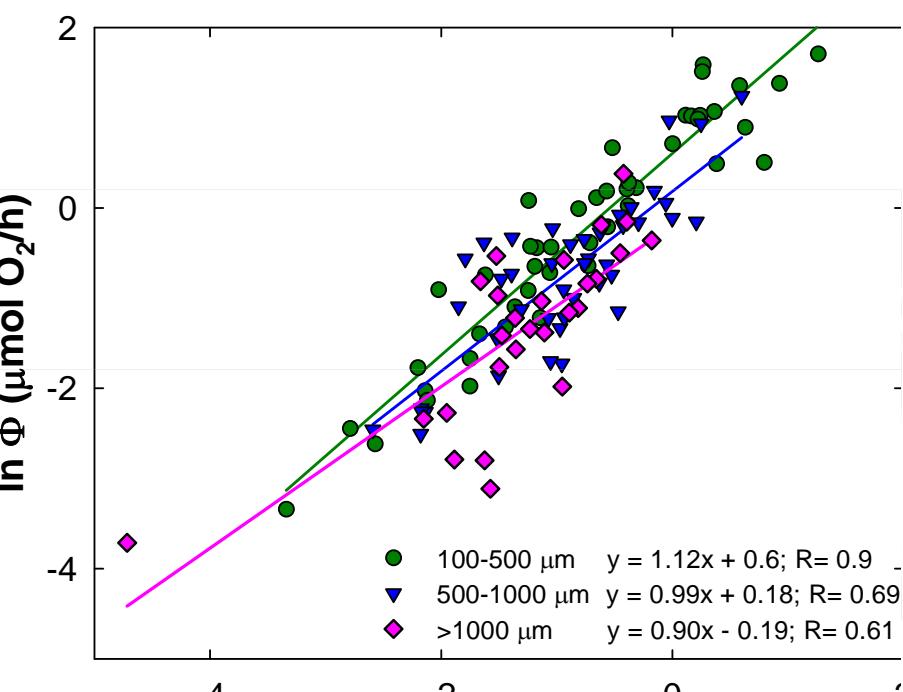
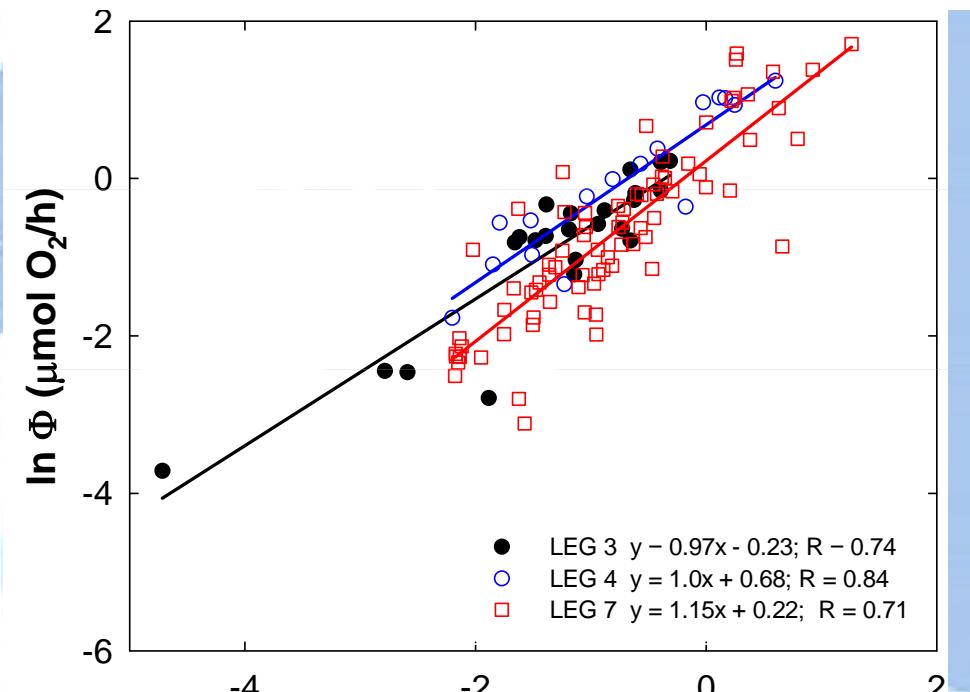
KLEIBER'S LAW

	$\log R / \log \text{biomass}$	
100-500 μm	0.94	
500-1000 μm	0.64	
>1000 μm	1.2	

	$\log R / \log \text{biomass}$	
Leg 3	0.72	
Leg 4	1.16	
Leg 7	1.03	



NO SINGLE SCALING RELATIONSHIP ADEQUATELY CHARACTERIZES THE EFFECT OF MASS ON METABOLISM





Log Φ / log biomass Log R / log biomass

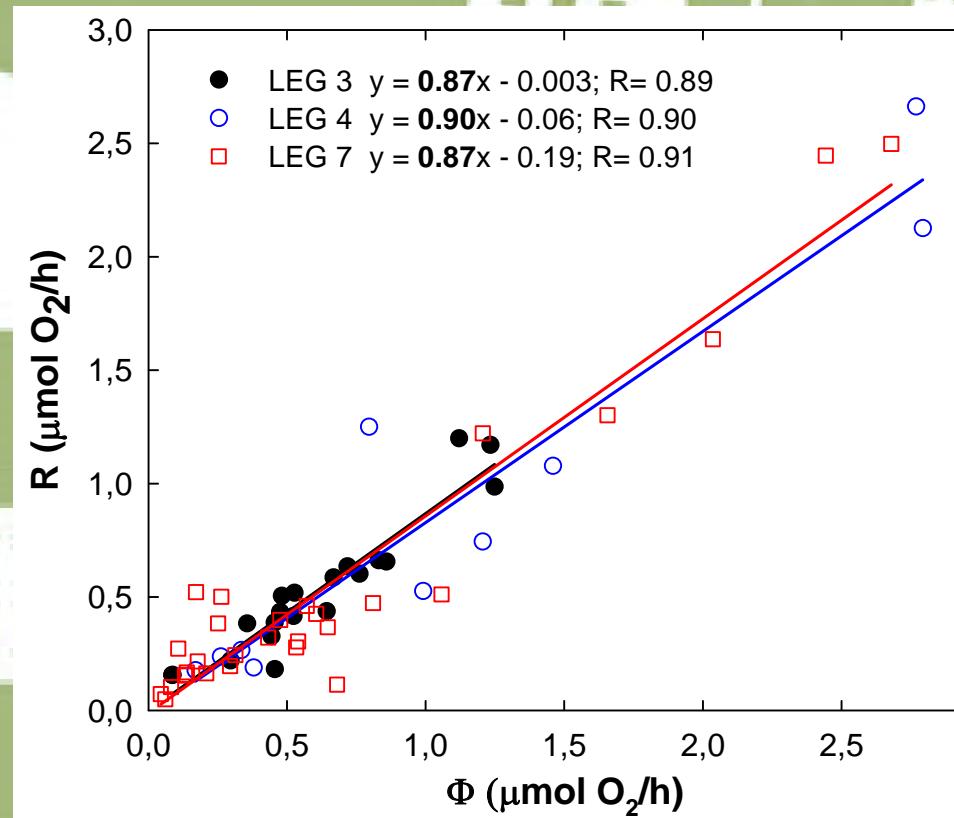
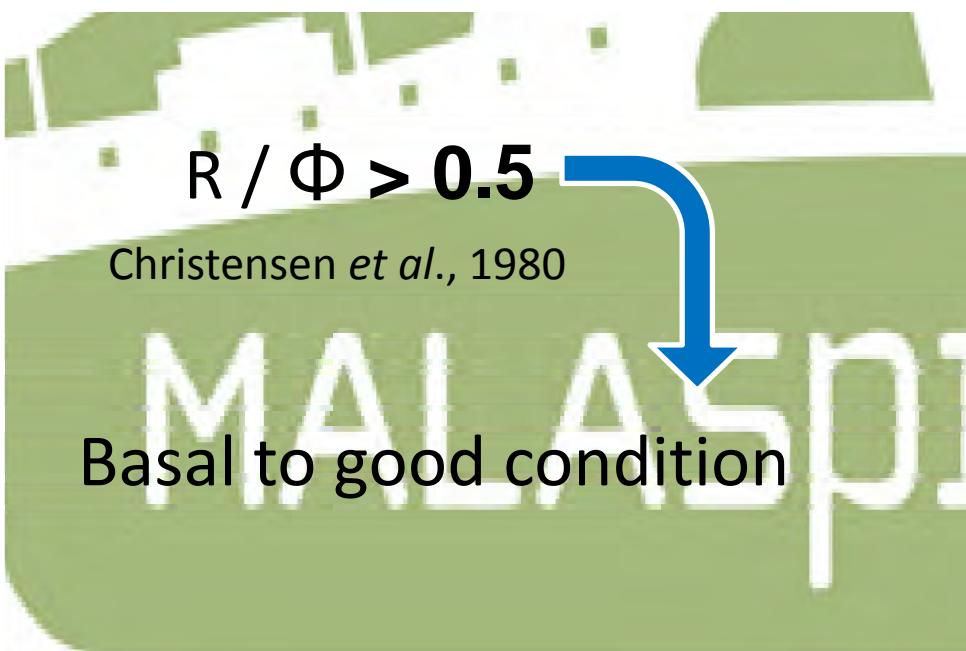
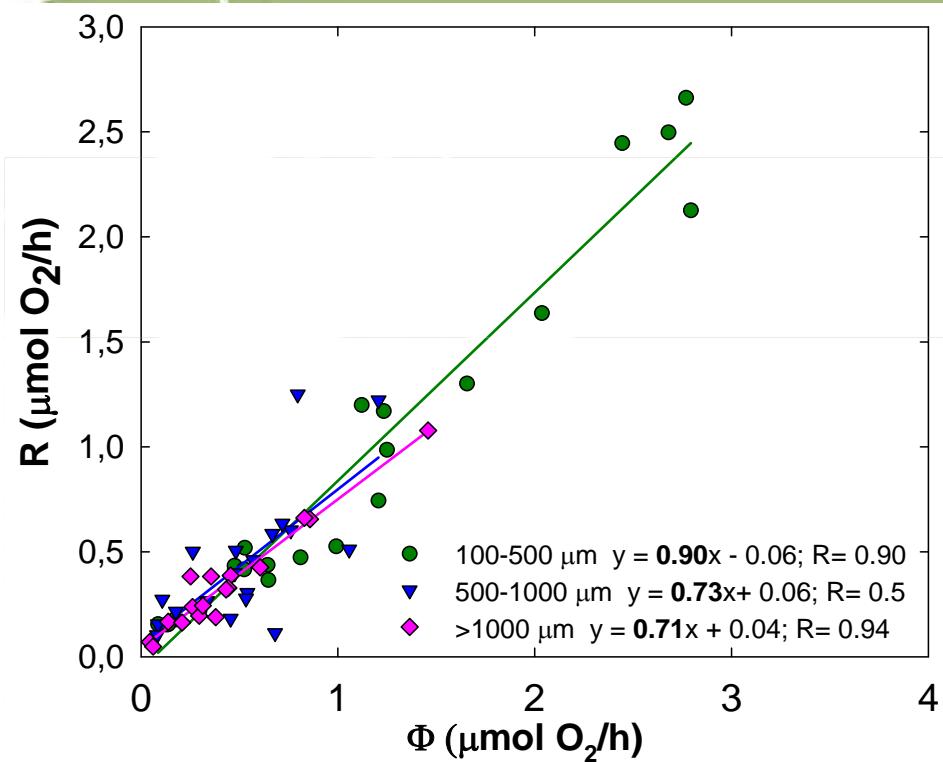
LEG

3	0.97 ($r^2= 0.74$)	0.72 ($r^2= 0.65$)
4	1.00 ($r^2= 0.84$)	1.16 ($r^2= 0.83$)
7	1.15 ($r^2= 0.71$)	1.03 ($r^2= 0.68$)

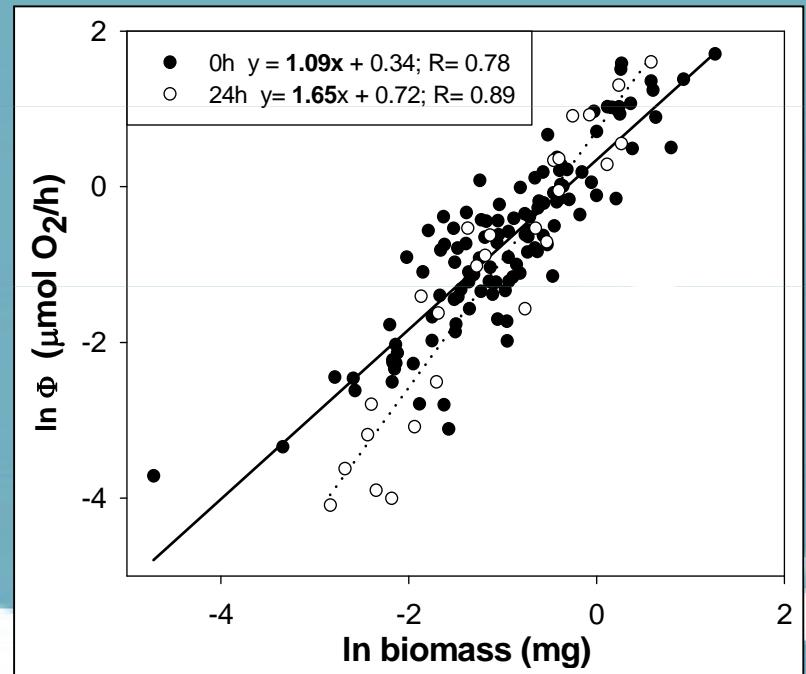
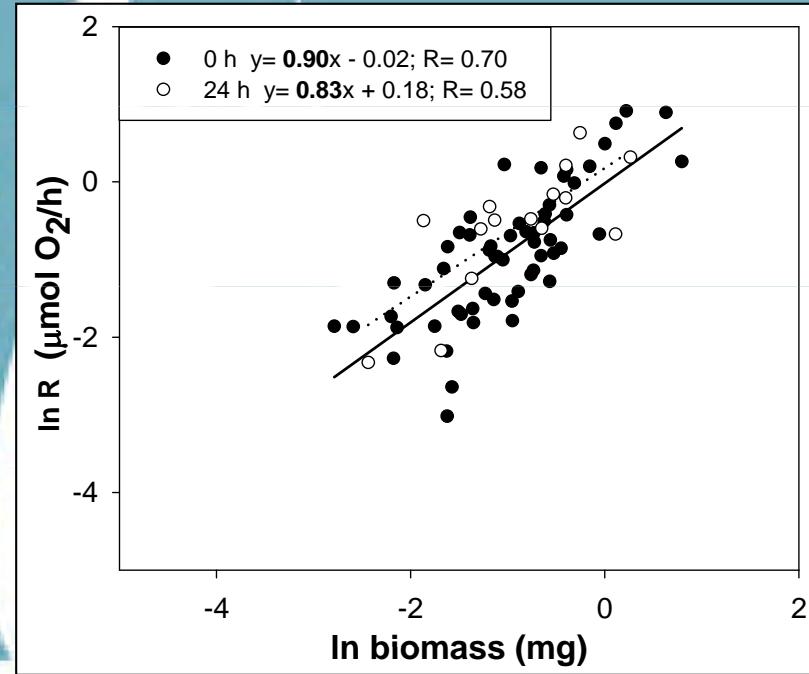
Log Φ / log biomass Log R / log biomass

Size Class

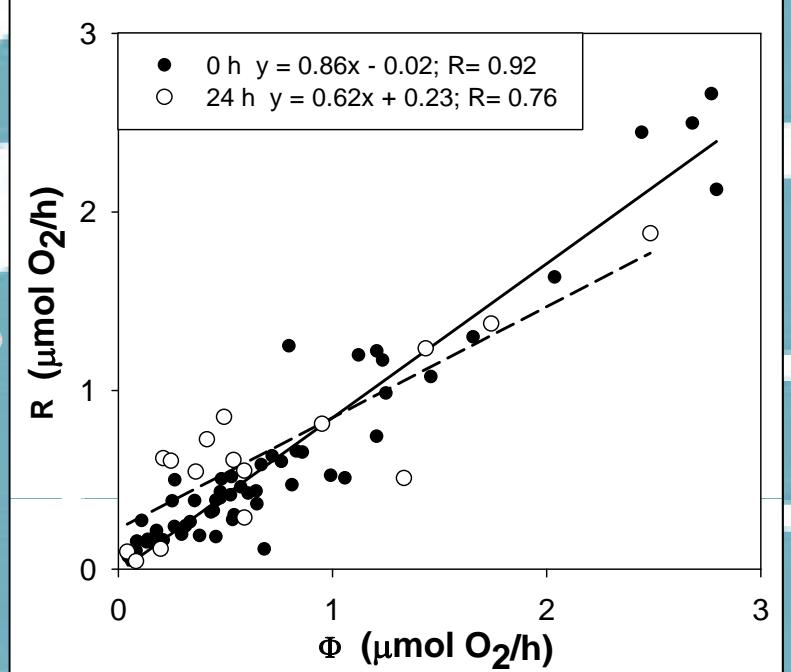
100-500 μm	1.12 ($r^2= 0.90$)	0.94 ($r^2= 0.83$)
500-1000 μm	0.99 ($r^2= 0.69$)	0.64 ($r^2= 0.40$)
>1000 μm	0.90 ($r^2= 0.61$)	1.20 ($r^2= 0.47$)



KLEIBER'S LAW



R / Φ



	0 h	24 h
Biomass (mg)	0.49 ± 0.40	0.53 ± 0.39
$R (\mu\text{mol O}_2 \cdot \text{h}^{-1})$	0.61 ± 0.61	0.72 ± 0.50
$\Phi (\mu\text{mol O}_2 \cdot \text{h}^{-1})$	0.72 ± 0.68	0.91 ± 0.98
Log $\Phi / \log \text{biomass}$	1.09	1.65
Log $R / \log \text{biomass}$	0.90	0.83
R / Φ	0.86	0.62
$R (\mu\text{mol O}_2 \cdot \text{h}^{-1} \cdot \text{mg prot}^{-1})$	1.15 ± 0.69	1.02 ± 0.91
$\Phi (\mu\text{mol O}_2 \cdot \text{h}^{-1} \cdot \text{mg prot}^{-1})$	1.35 ± 0.73	1.46 ± 0.80

CONCLUSIONS



1. Even though there is no statistical differences among the metabolic activities from the 3 zones. It can be inferred that there is a difference between the Indic Ocean and the North Atlantic Ocean.
2. Values of metabolic scaling and R/Φ points to a zooplankton community in good conditions.
3. There is no effect of the starvation in the metabolic behavior of the zooplankton collected, pointing for a well adapted condition to the environment or insufficient time to see any changes in the decrease of respiration.