

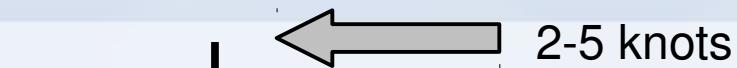
The Wire Flyer vehicle system and high resolution hydrographic sections

Chris Roman

University of Rhode Island



Current 1000
meter depth
rating



Ship

0.322" or 0.68" cable

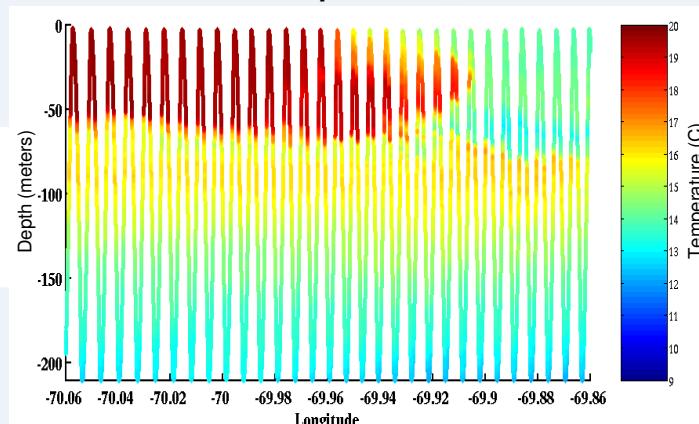
Wire Flyer vehicle automatically
profiling up and down
the cable at controlled speeds
between specified depths

Acoustic modem
communications

Clump weight
(2000 lb)

Sea floor

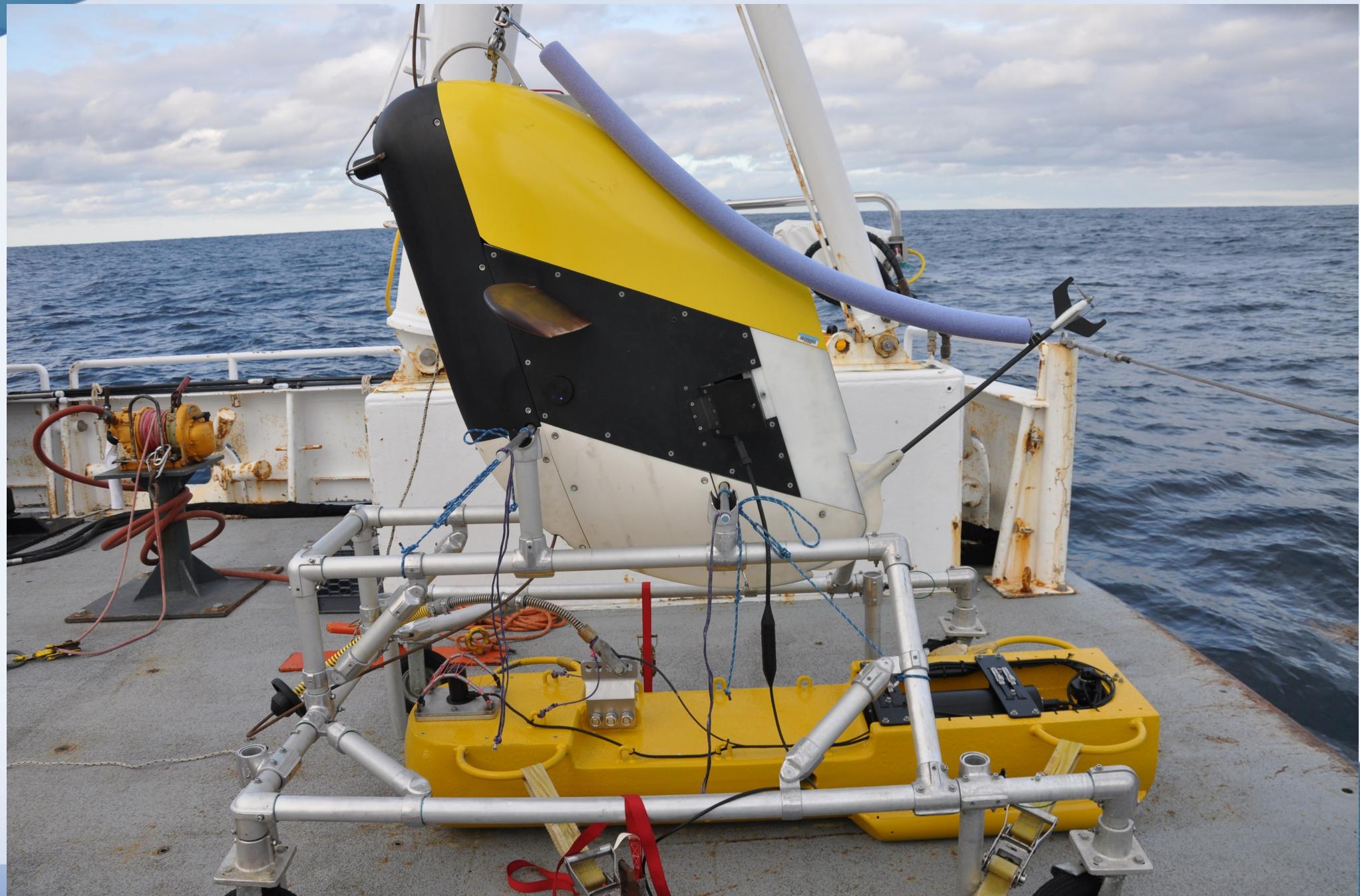
Example data



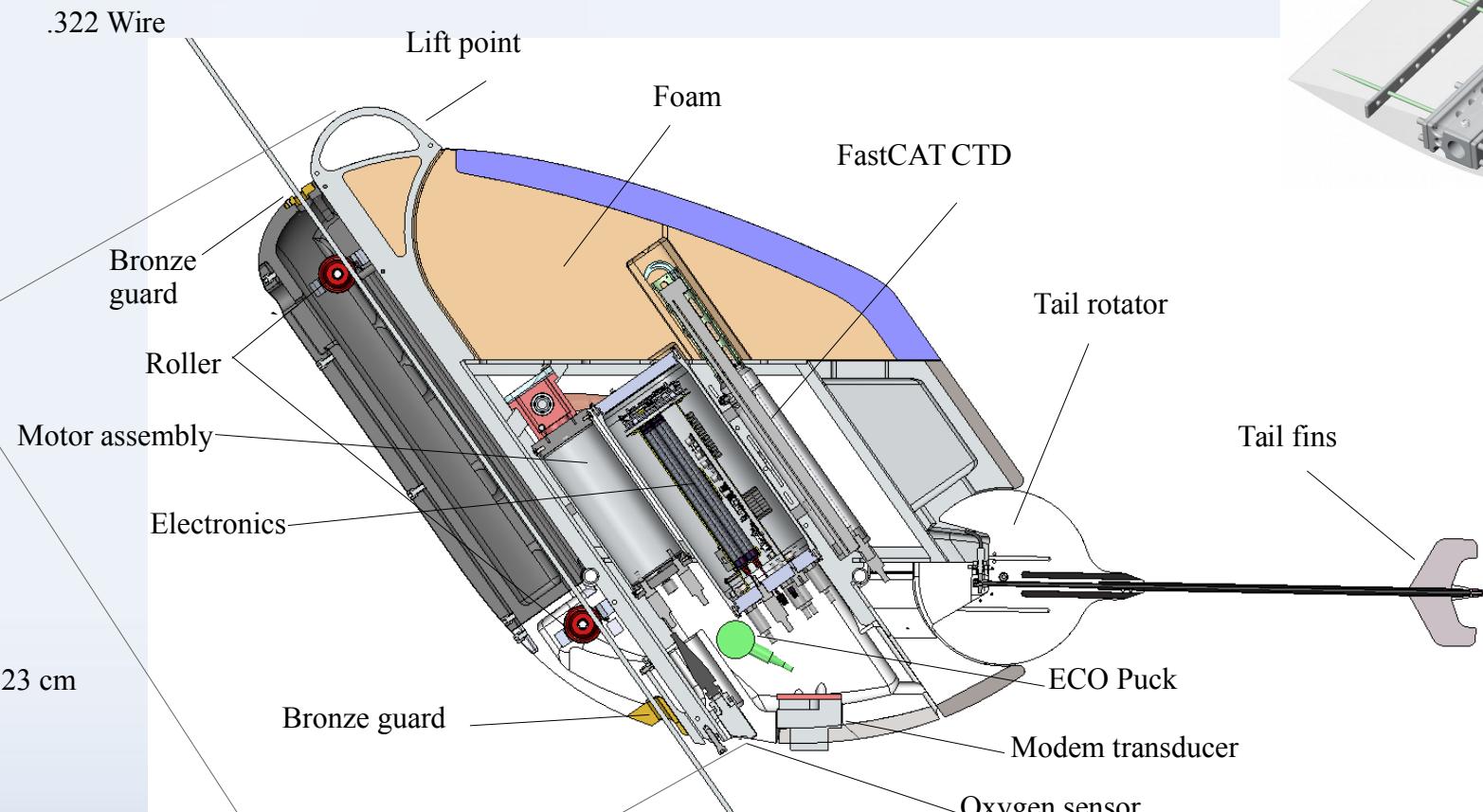
Flight path

Glide slope = rise/run

Acoustic
altimeter



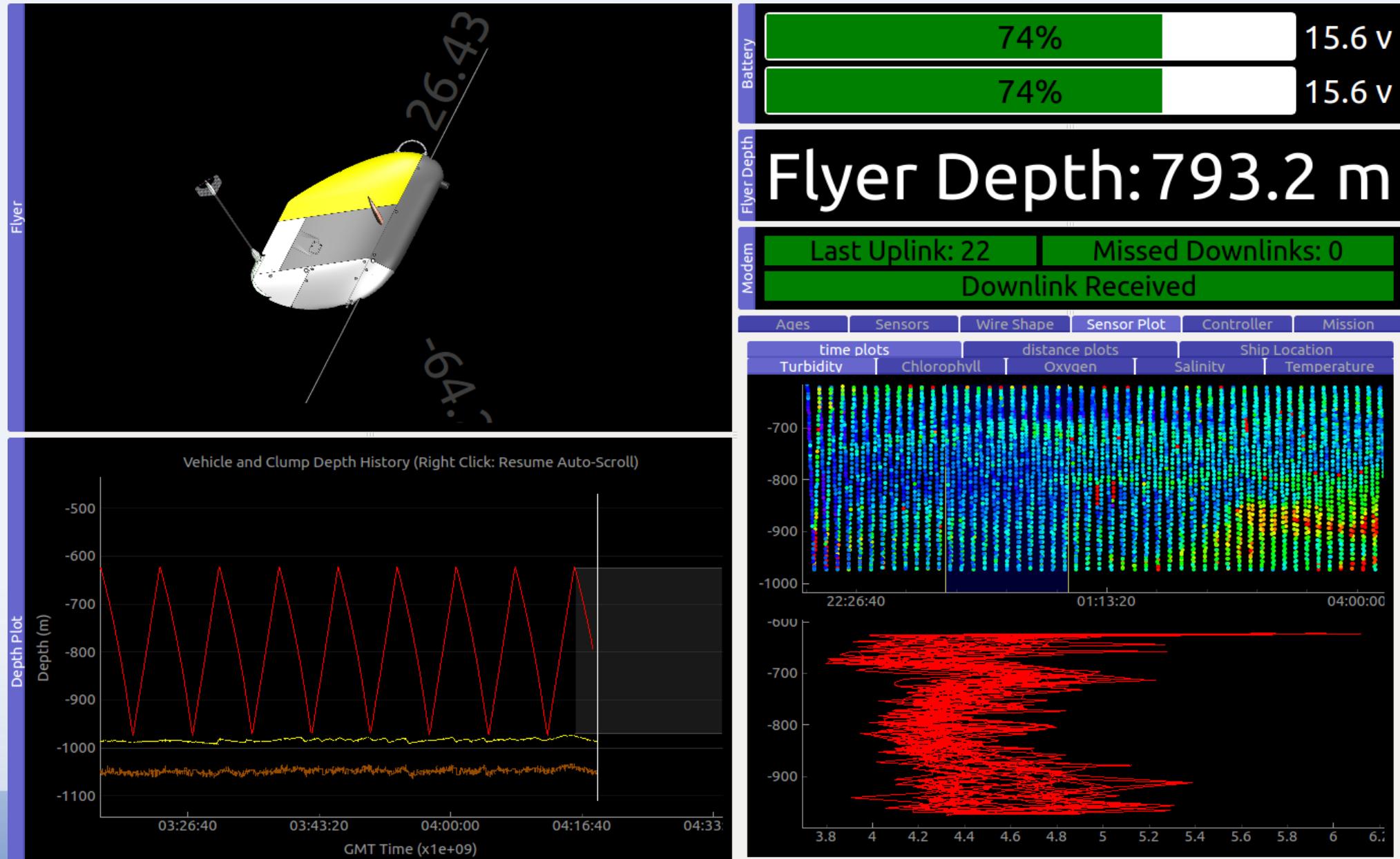
Vehicle layout



Urethane wings

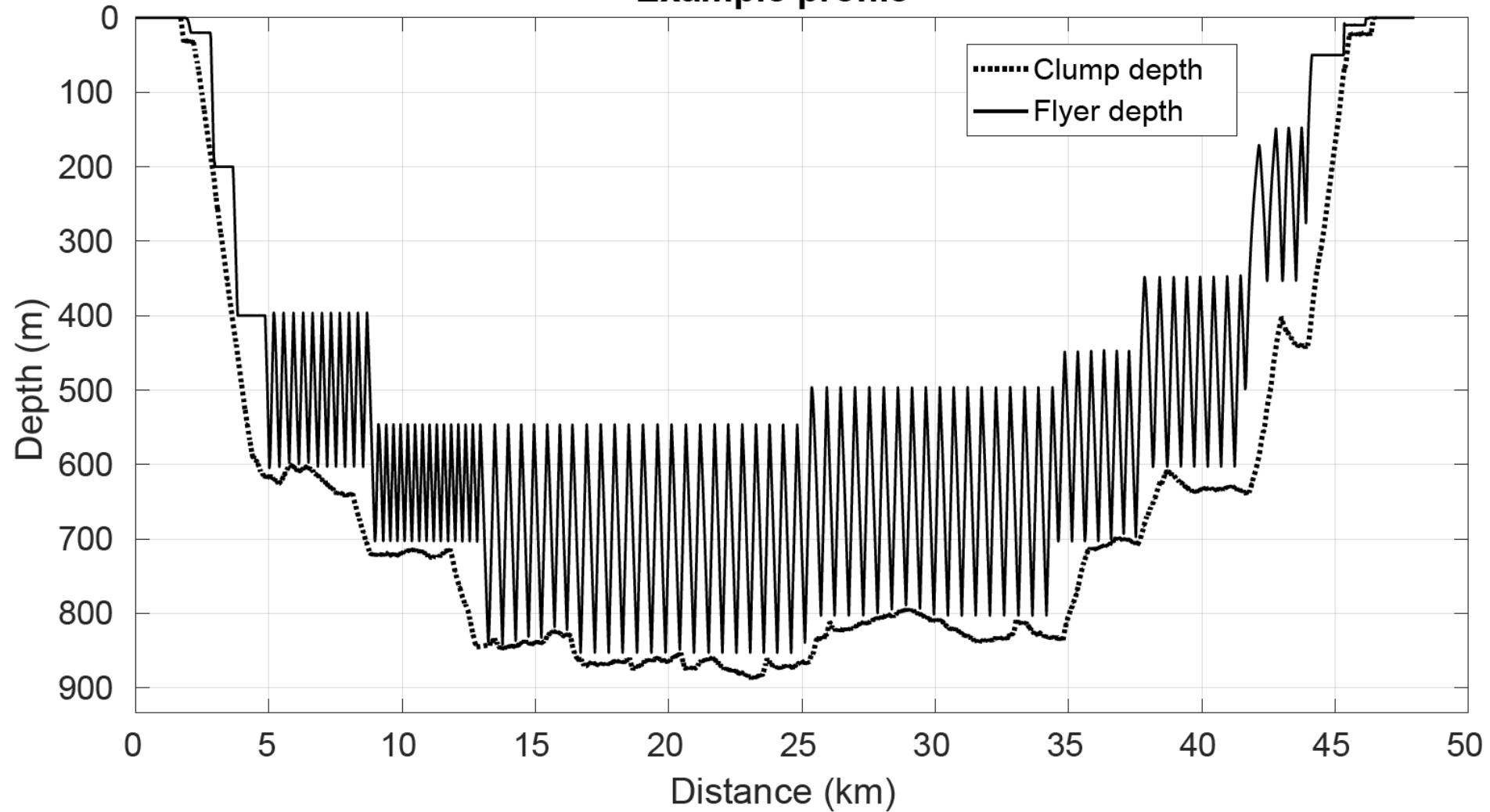


Modem interface



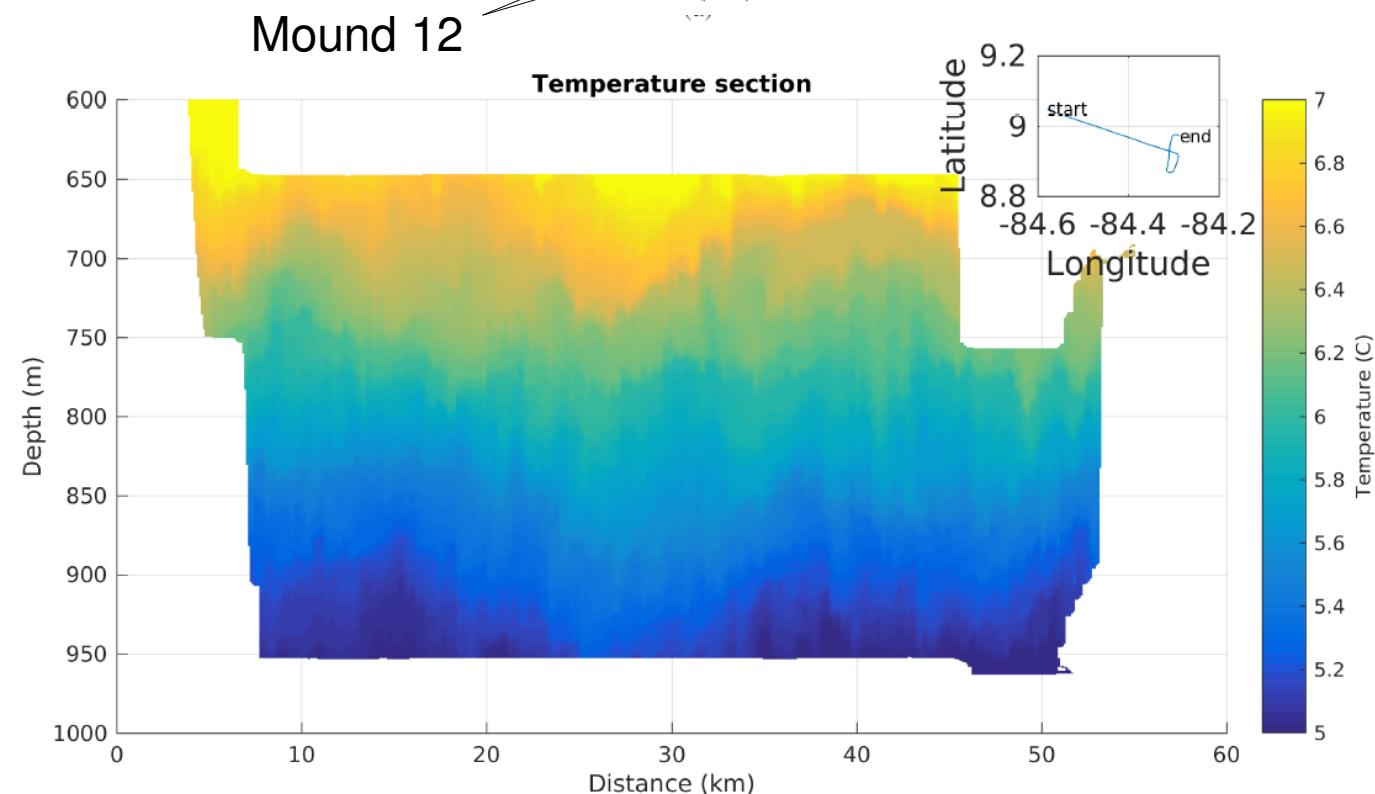
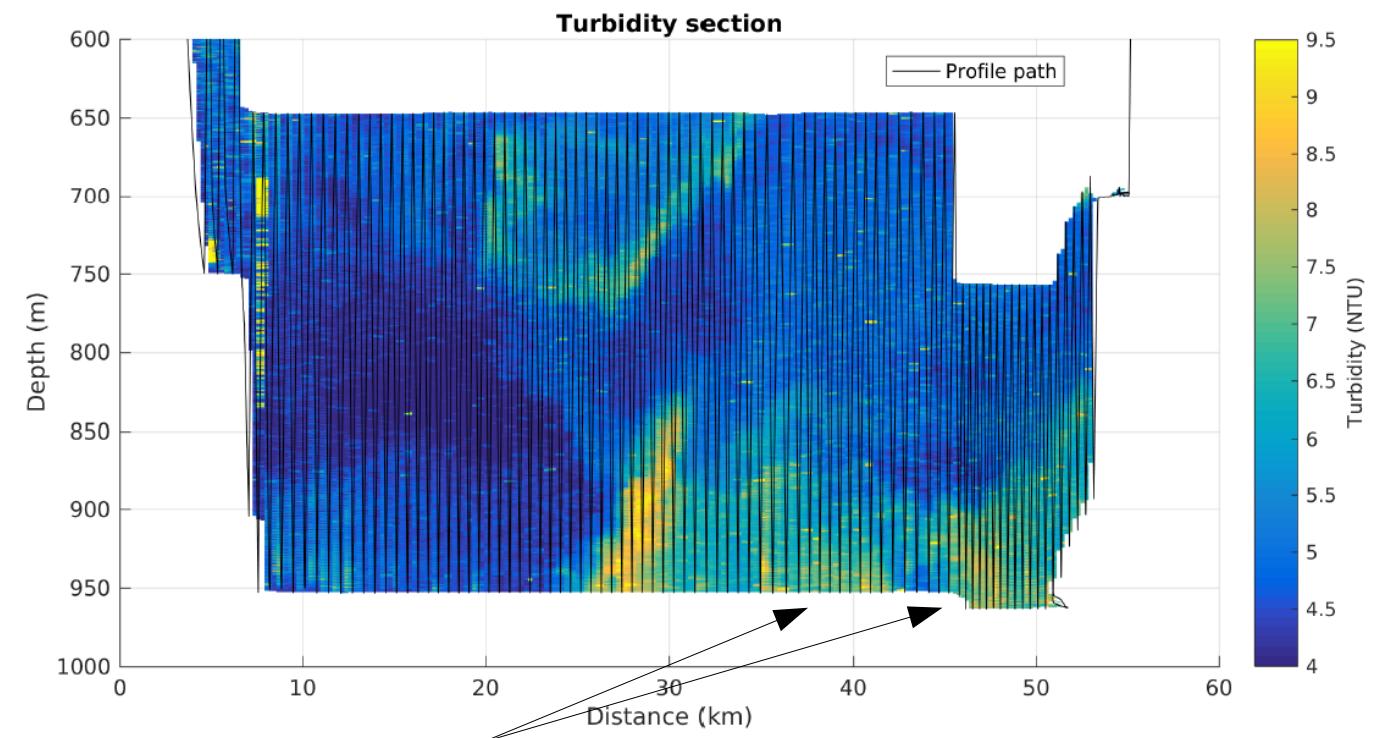
Typical mission

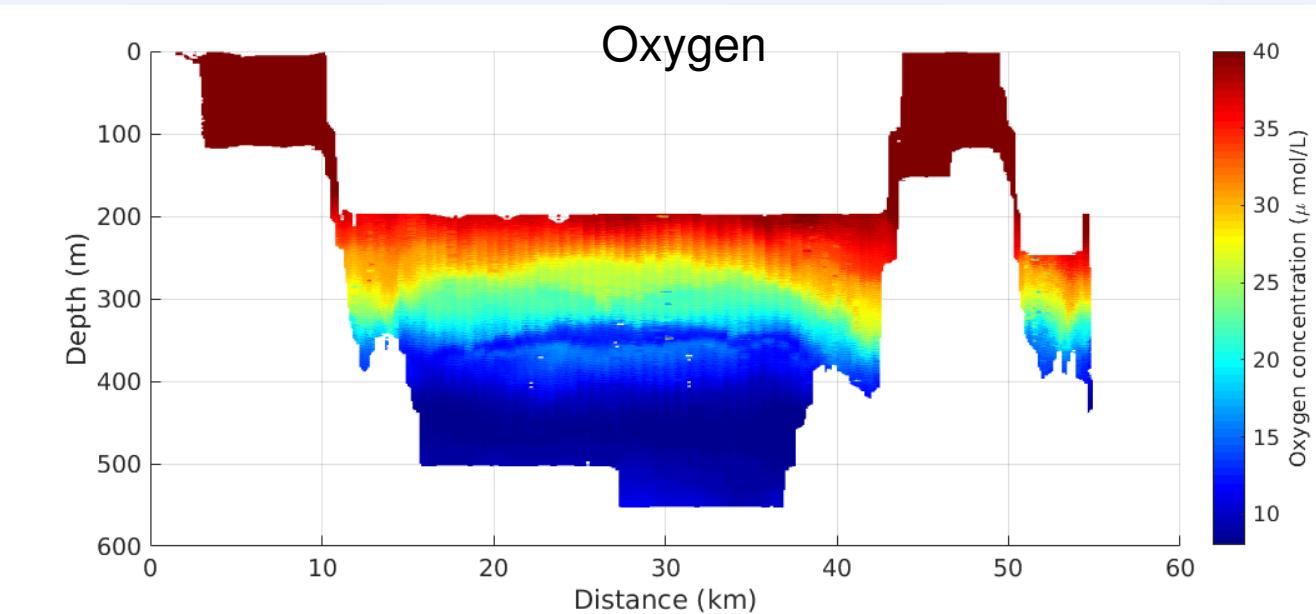
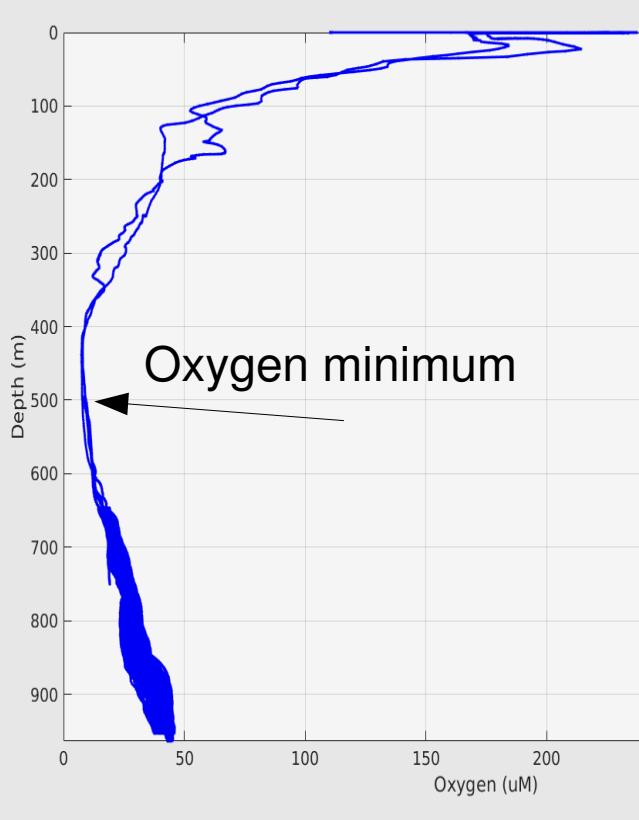
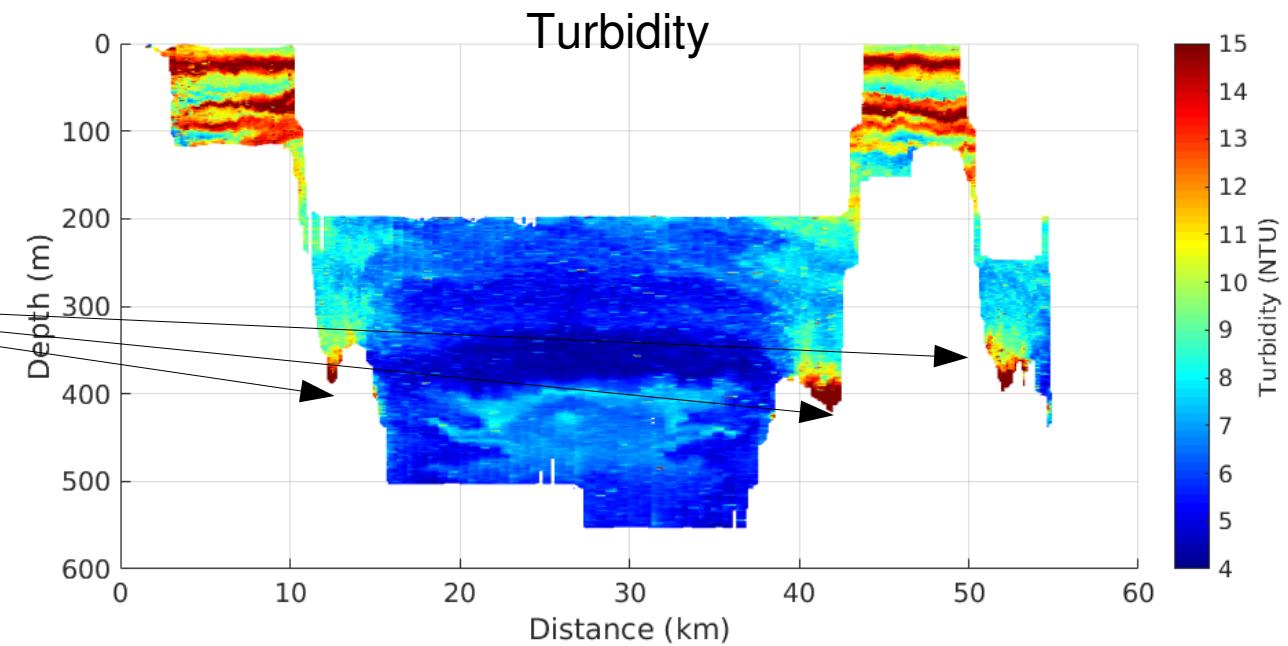
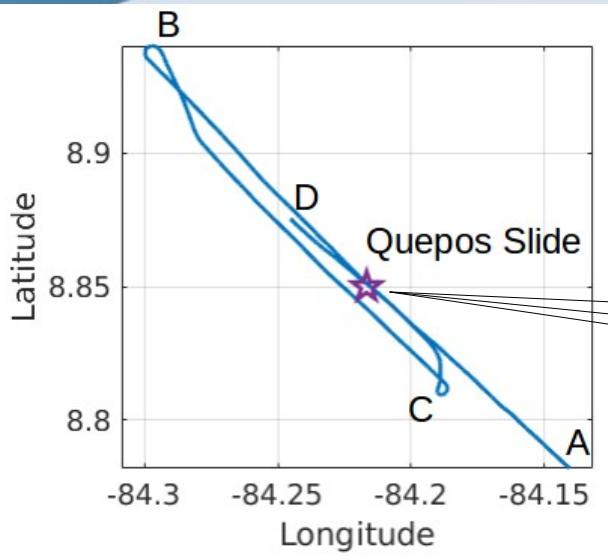
Example profile



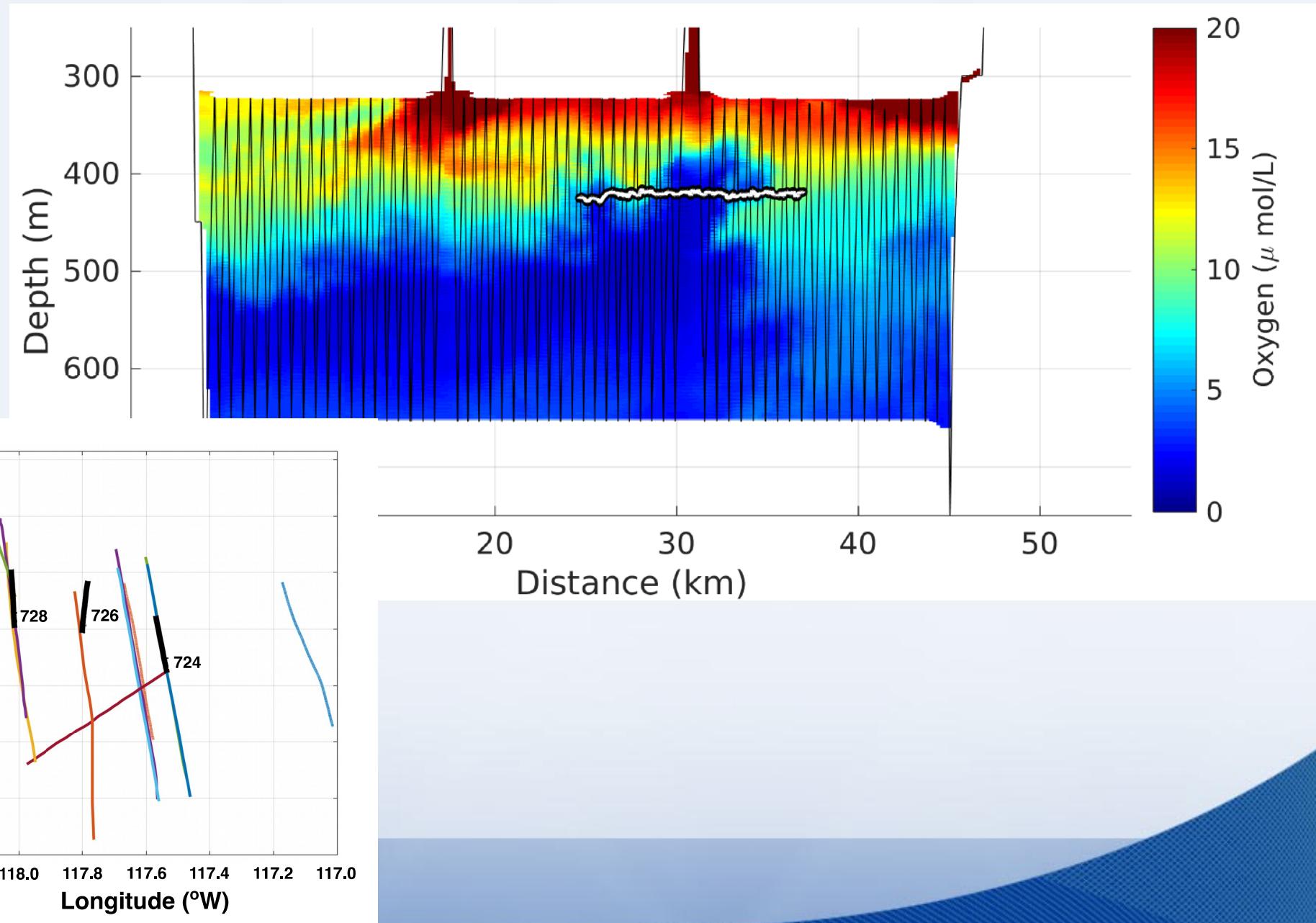
8 hours

Looking for seep related water column features, Costa Rica margin

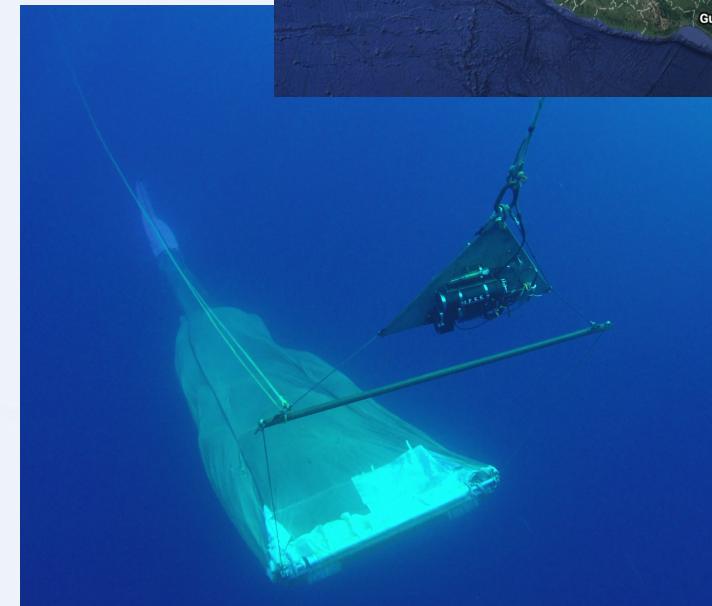
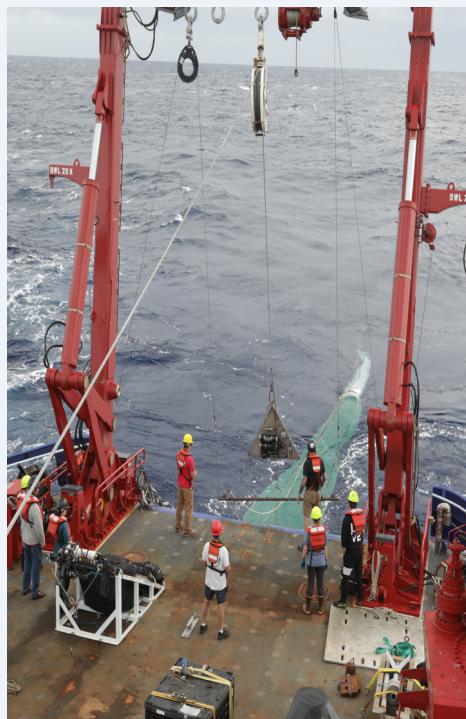




OMZ Wire Flyer Transect with MOCNESS



Zooplankton Sampling



MOCNESS

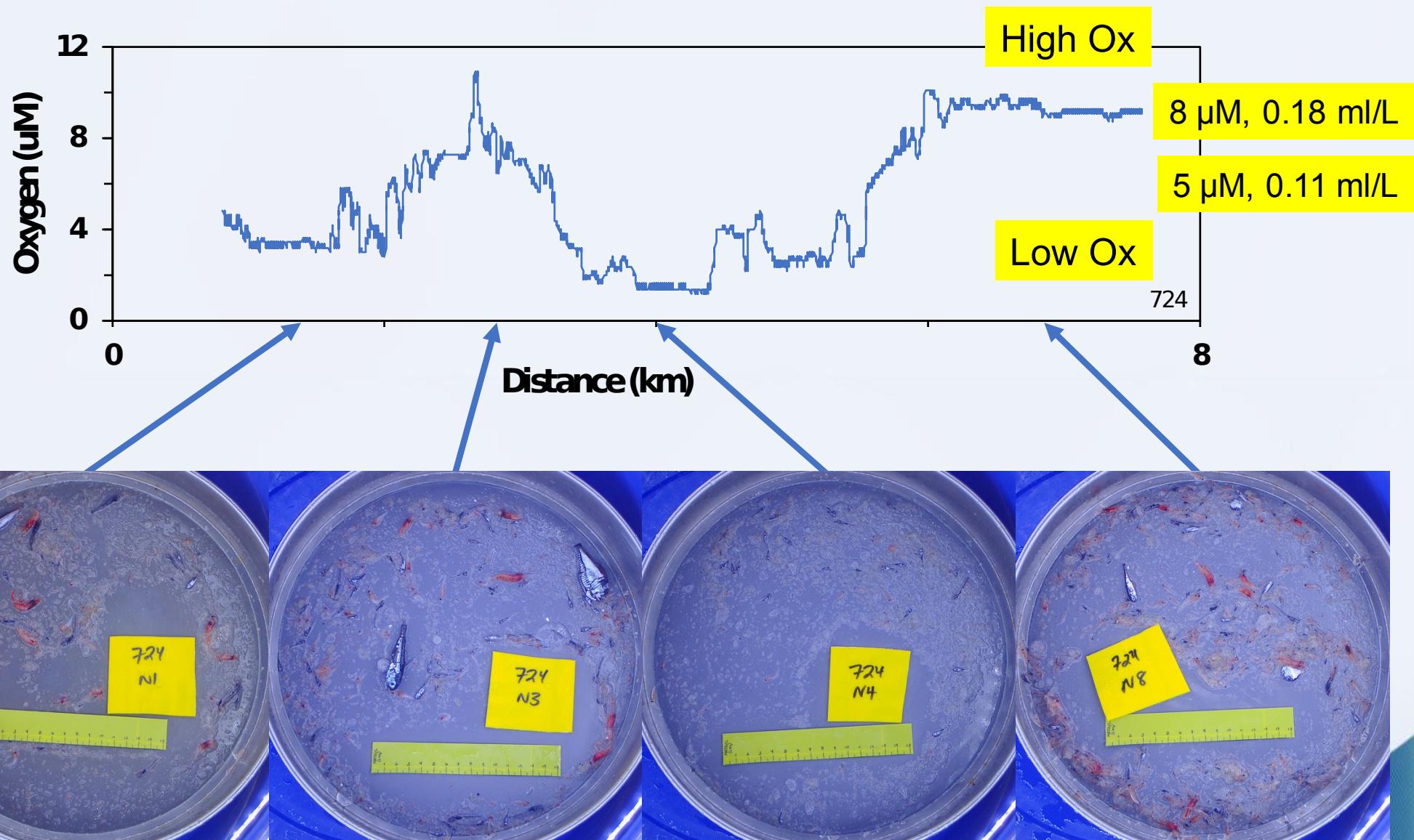
1 m², 222 µm mesh
Sea-Bird SBE911plus CTD SBE43
oxygen sensor
Horizontal
8 nets same depth
Vertical (8 or 9 nets)
Day Night
0-1000, 0-350, 350-650,
600-800, oxycline tracking

Tucker Trawls

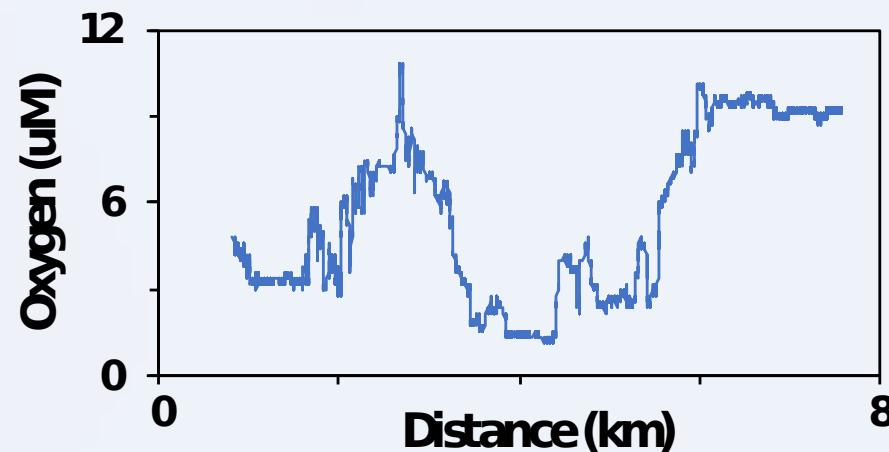
3 m² mouth
100 m long
Insulated cod end
CTD sensors
Long tows at depth



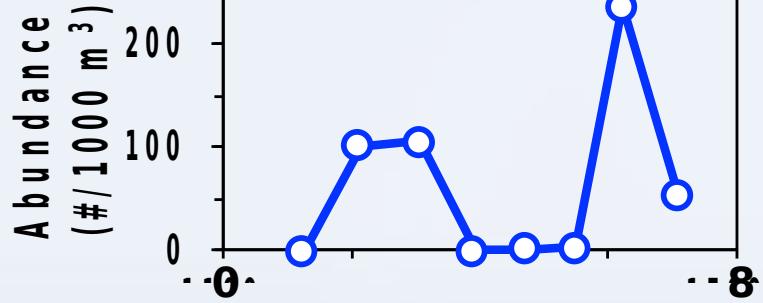
Zooplankton Variability and Oxygen (425 m)



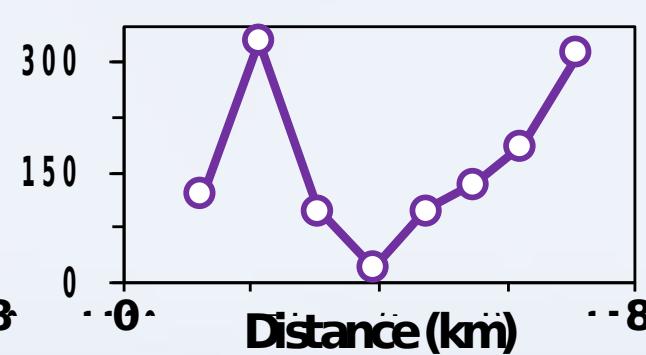
Zooplankton Abundance and Oxygen (425 m)



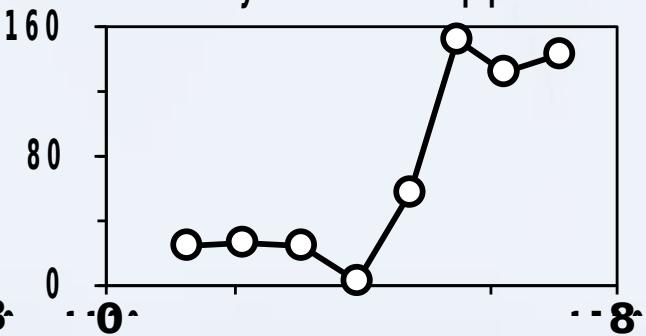
Copepod
Pleuromamma abdominalis



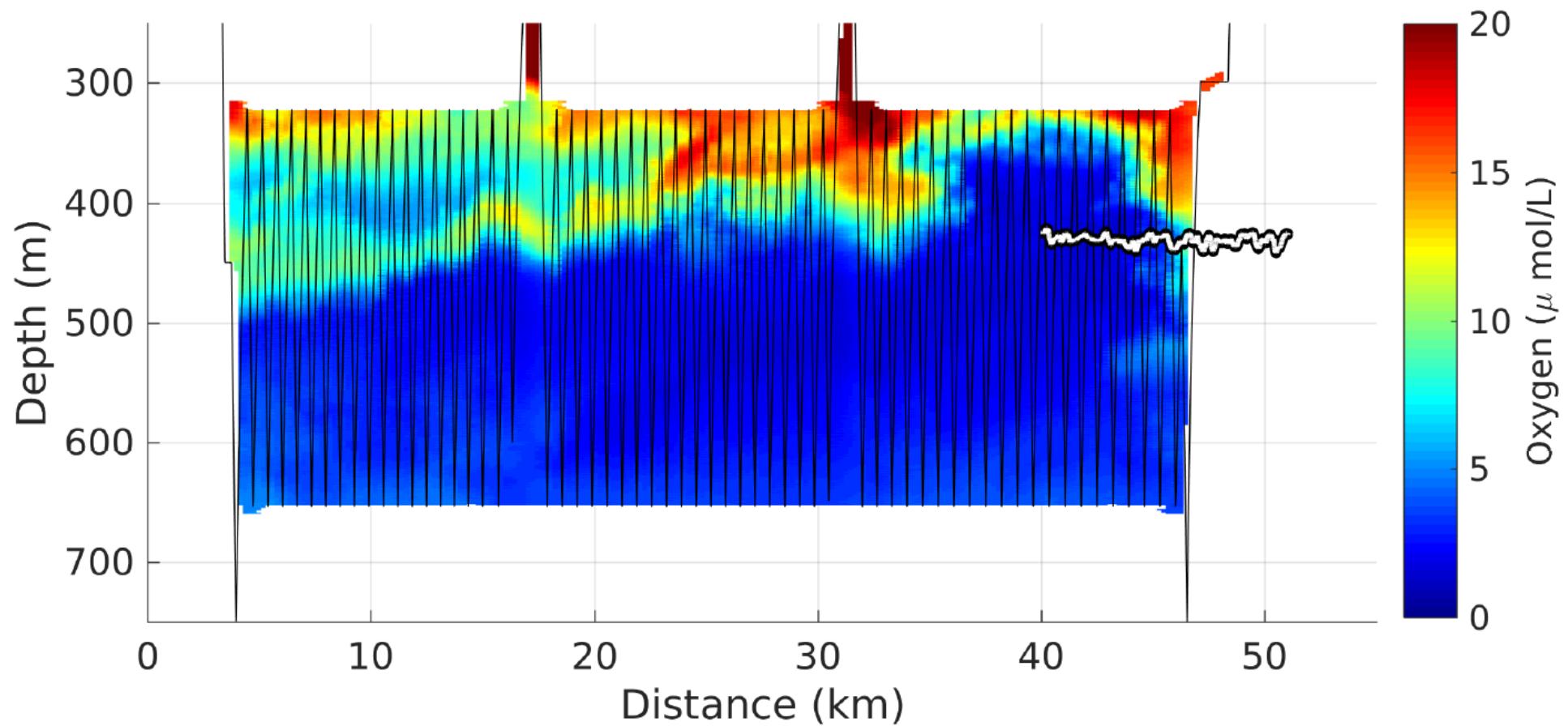
Total Euphausiids



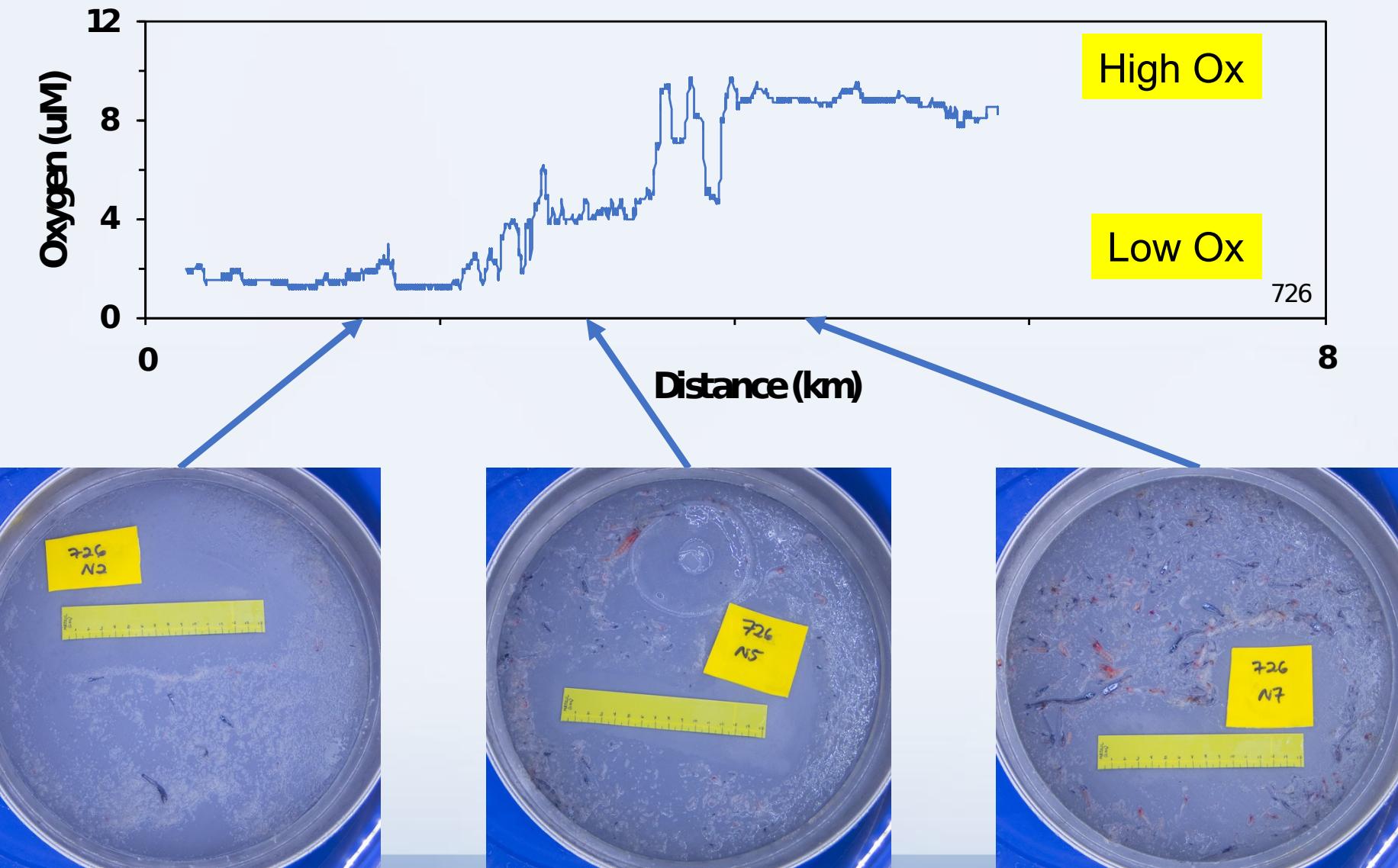
Fish
Cyclothona spp



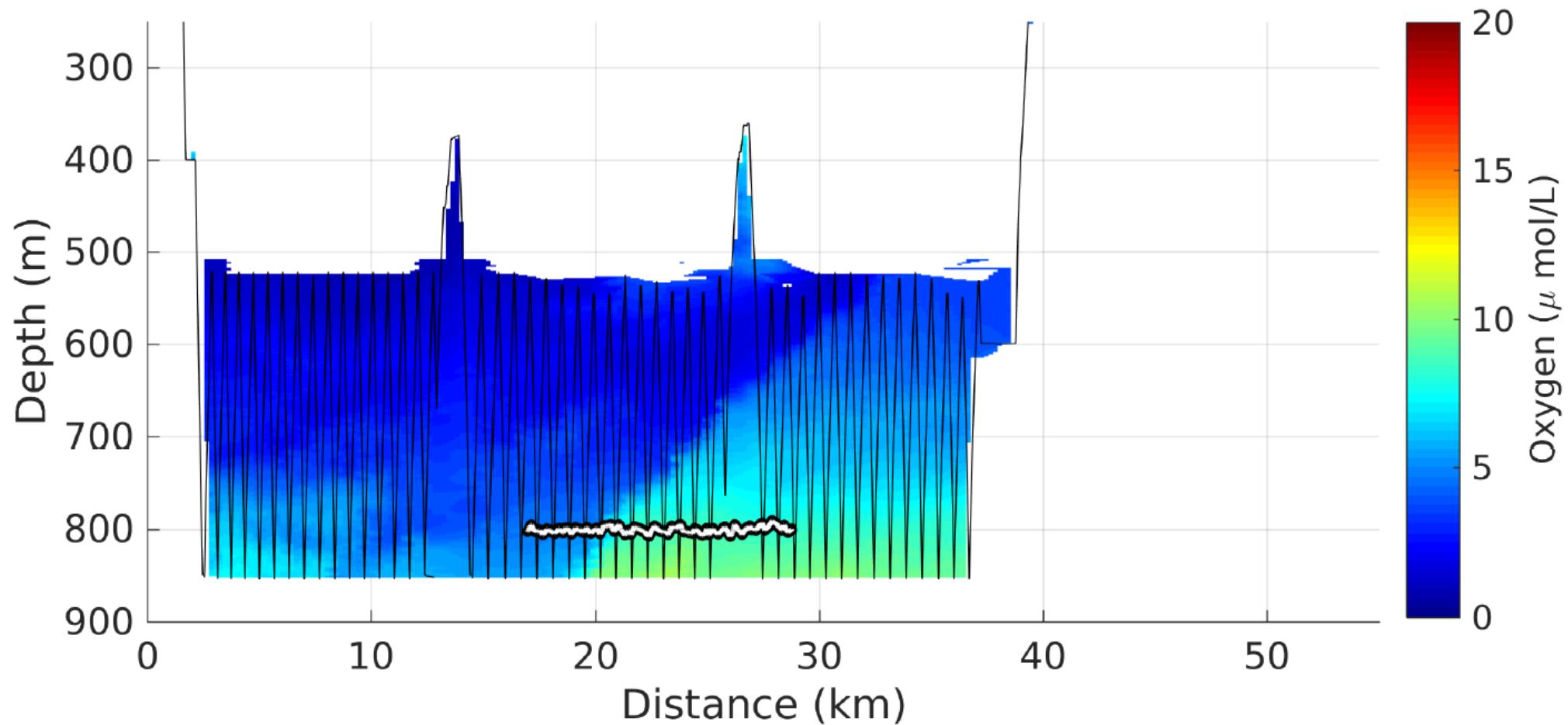
Wire Flyer Transect with MOCNESS 726



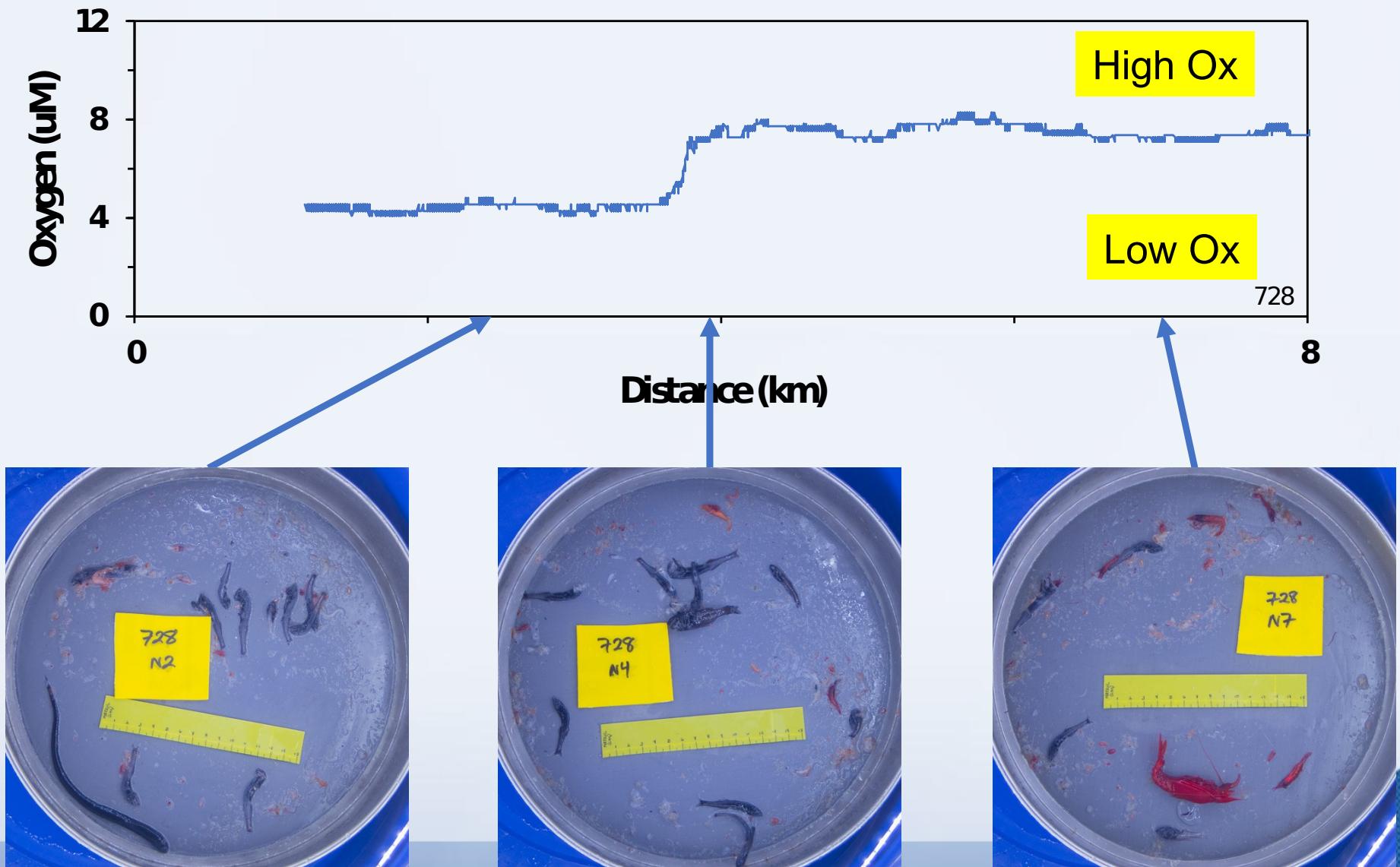
Zooplankton Variability and Oxygen (430 m)



Wire Flyer Transect with MOCNESS 728



Zooplankton Variability and Oxygen (800 m)



Side-looking acoustics

- EK80 echosounder with 70 kHz and 200 kHz frequencies

