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**Scientific motivation for permanent observations of
fluid and gas seepage in the Black Sea**

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Scientific motivation for permanent observations of fluid and gas seepage in the Black Sea

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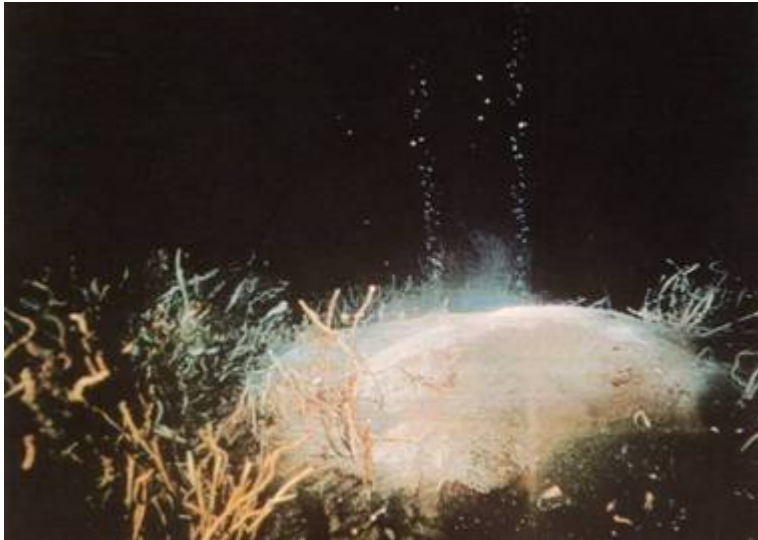
Yuri Artemov et al. IBSS, Sevastopol, Ukraine

Michael Ivanov et al. MSU, Moscow, Russia

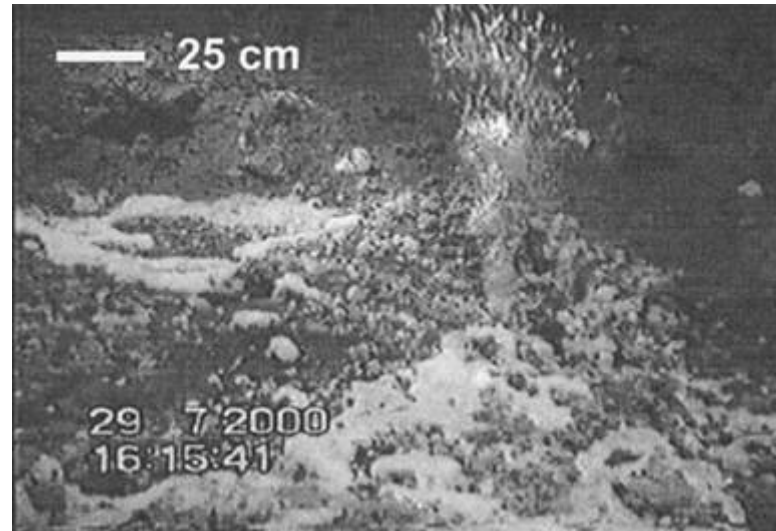
Evgeny Sakvarelidze et al. TSU, Tbilisi, Georgia

Günay Çifçi et al. DEU, Izmir, Turkey

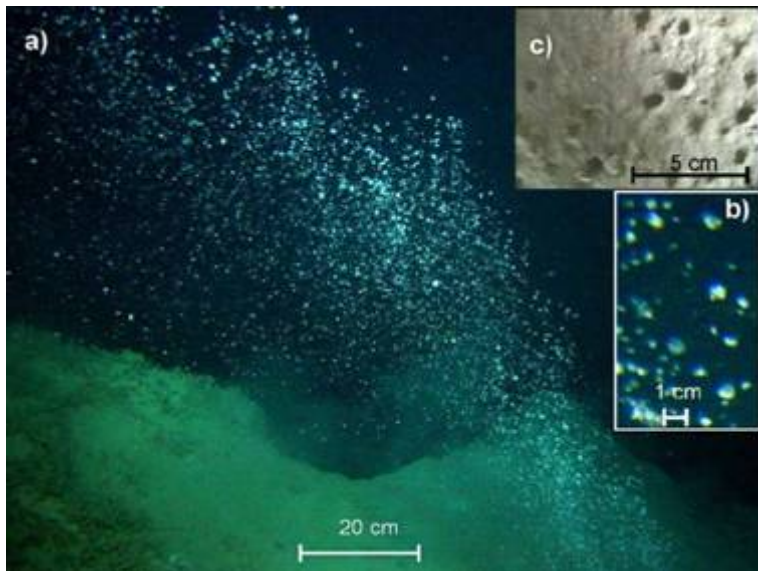
Mustafa Ali Engin et al. TPAO, Ankara, Turkey



GC 185, 543 m
Sassen et al 2001 in Geophy Mono 124, 131-143



Hydrate Ridge, 780 m
Haeckel et al 2004 GCA 68, 4335-4345

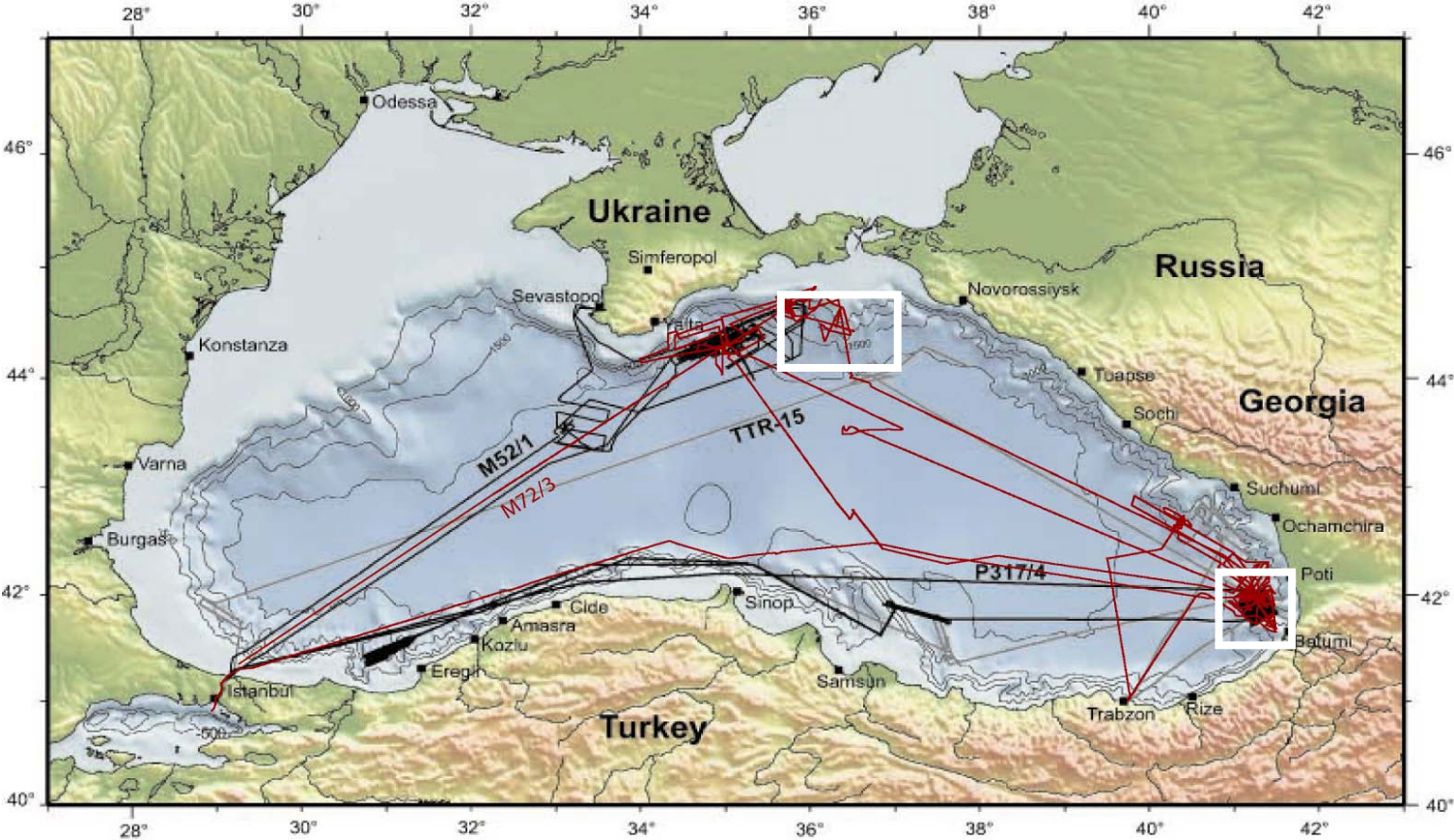


Håkon Mosby Mud Volcano, 1260 m
Sauter et al 2006 EPSL 243, 354-365



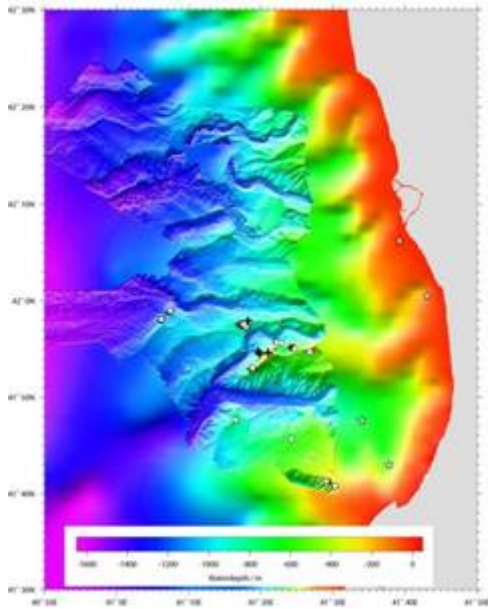
Regab Pockmark, 3150 m
Olu et al 2007 Mar Ecol 28, 1-16

Working areas off Georgia and the Crimean Peninsula

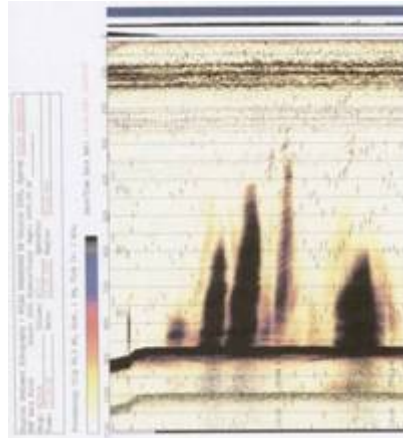


Cruise tracks M52, P317/4, TTR-15, M72/3

Gas seeps off Georgia



Swath mapping –
SIMRAD EM 120 ~12 kHz



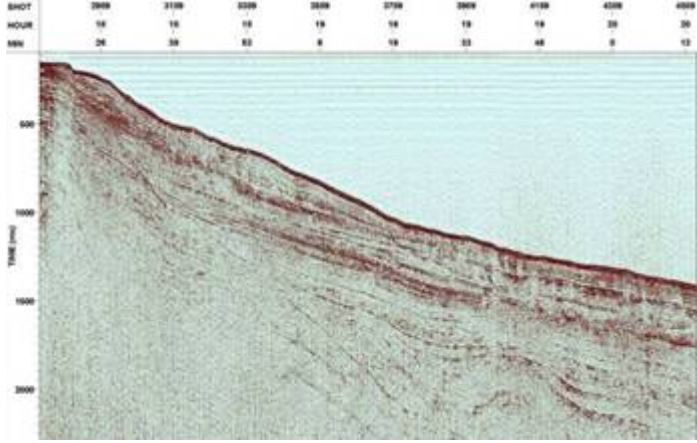
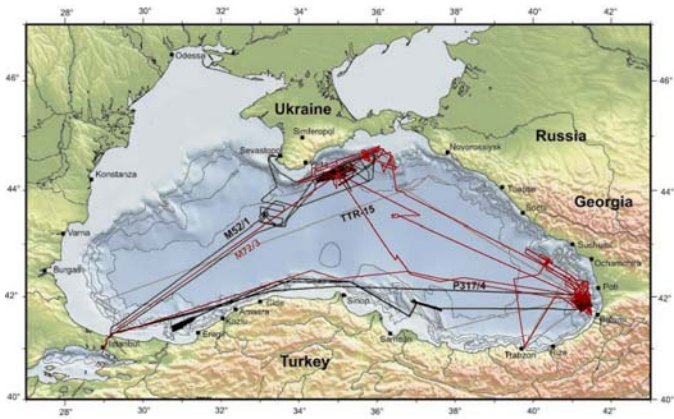
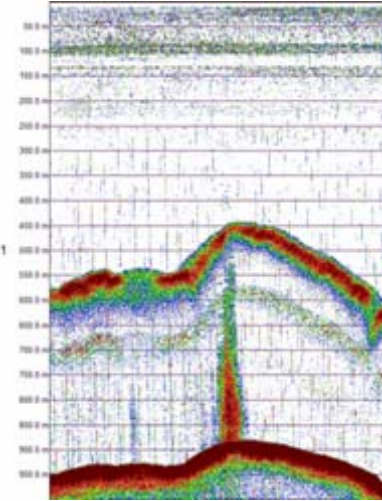
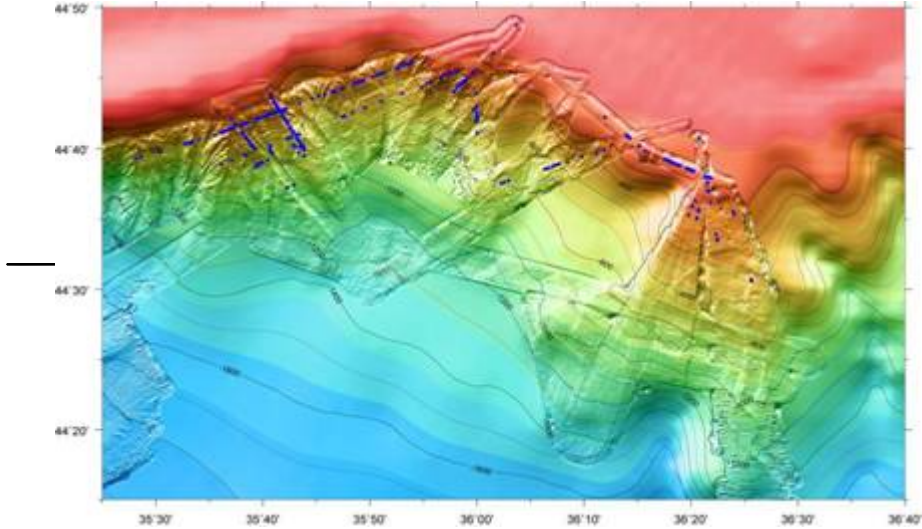
PARASOUND
- parametric
sediment
echosounder ~4 kHz



ROV Quest seafloor observations
© marum

Bohrmann et al., unpubl.

Gas seeps off Ukrainian Peninsula



Bohrmann & Artemov, unpublished

Why is the Black Sea of interest for ESONET?

- Modern analogue of an anoxic basin
- Model of seepage dominated by gas flux
- Interaction between seepage and presence of hydrate
 - ⇒ High sensitivity to global change

Steps towards permanent monitoring of gas and fluid seeps

