

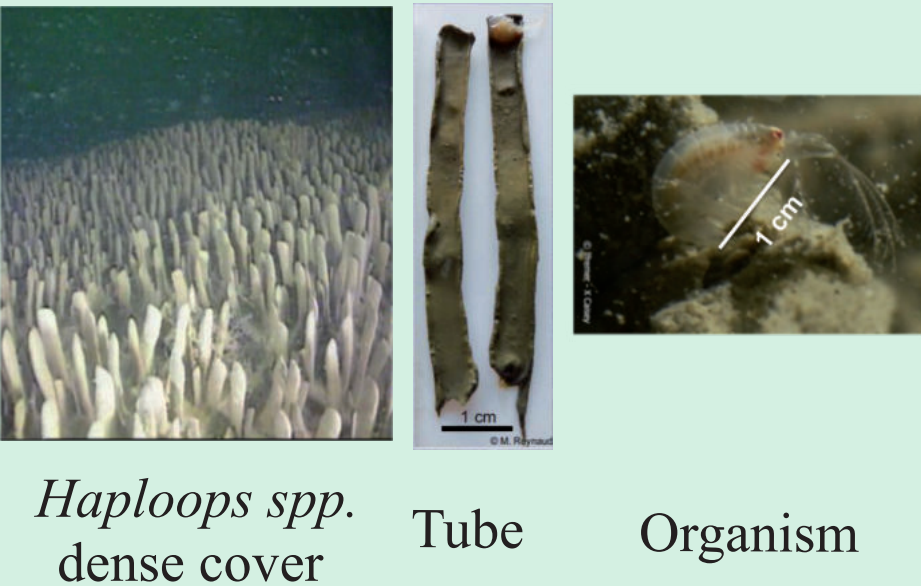
Gas-*Haploops* spp. links through 3 study sites on the West Coast of France

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Scientific context



>> A field of active pockmarks of 36 km², was mapped during different oceanographics surveys from 2003 to 2014 for depths < 40m in the central part of the Bay of Concarneau.

>> Geophysical data and sediment samples show that this field's limits correspond to a zone densely covered of *Haploops nirae* (Ehrhold *et al.*, 2005; Baltzer *et al.*, 2014).

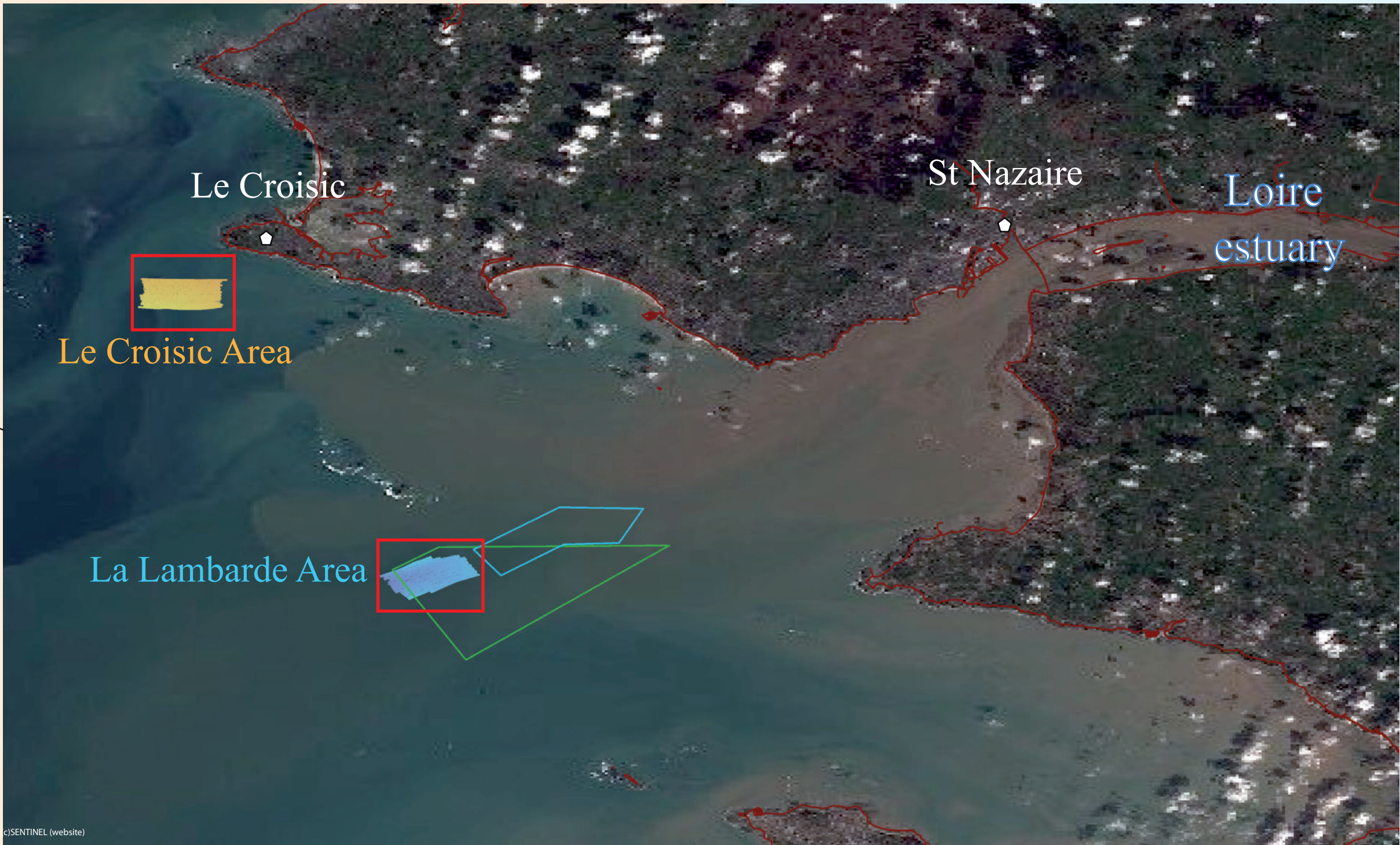
>> 2 new sites surveys have been explored in the Atlantic Loire estuary: the «Le Croisic» and the «La Lambarde» areas to better constrain the links between gas/pockmarks/*Haploops* spp.

All these data have been acquired in 2011, 2014 and 2016 by the O/V Haliotis

Concarneau



Le Croisic



La Lambarde

La Lambarde (Loire estuary dredging deposit)
Merchants vessels waiting area

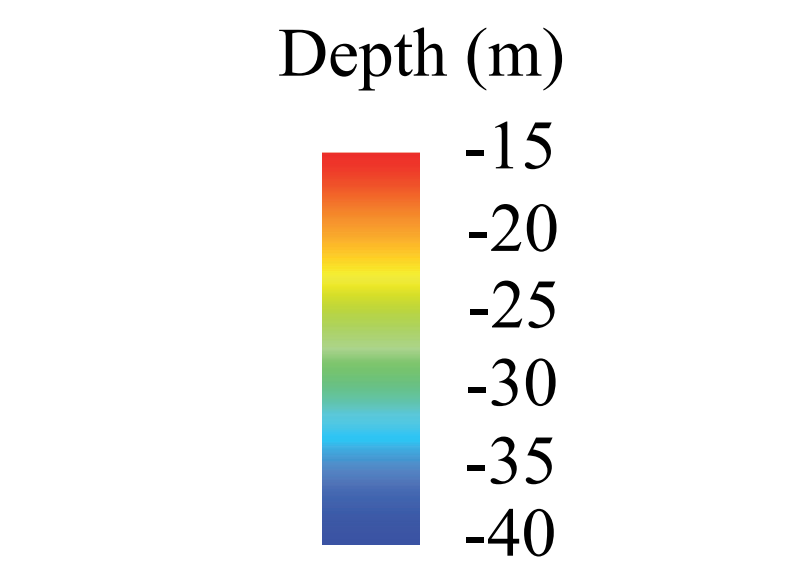
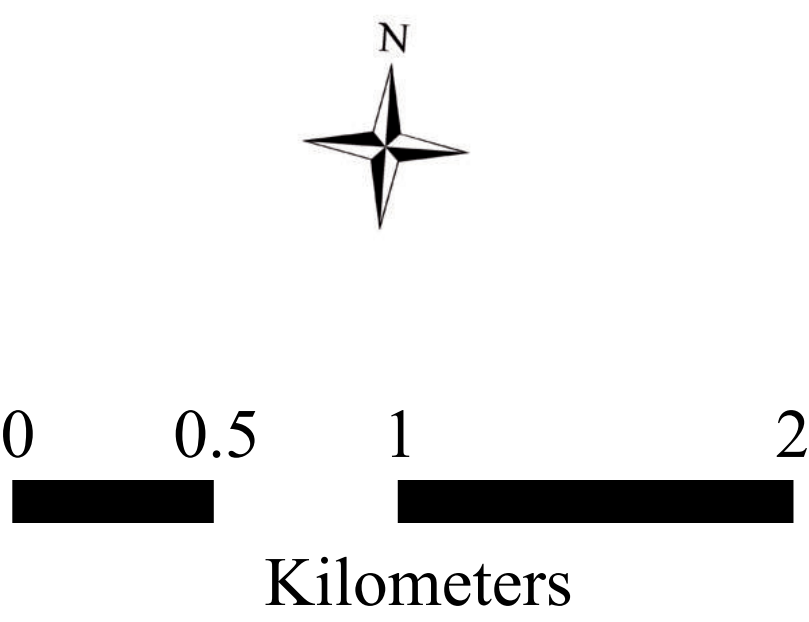
Similarities

- Located above a faulted eocene outcrop
- Presence of gas into the sediment column (paleovalleys)
- Shallow water depths (15-40 m)
- Presence of *Haploops* sp. dense cover

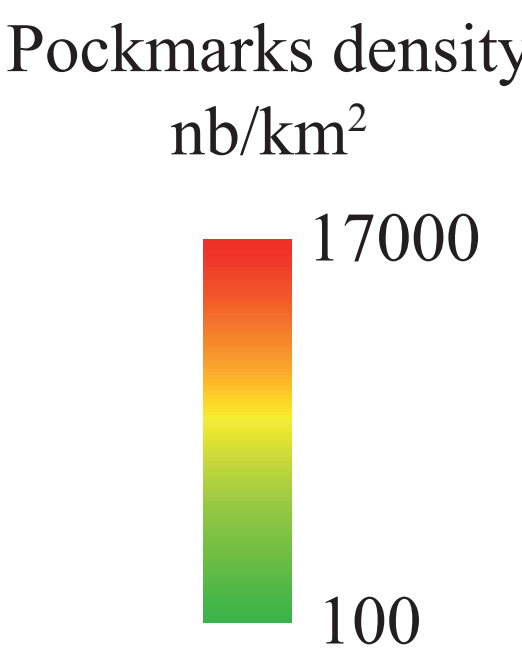
Differences

	Hydrodynamics	Sedimentary supplies	Anthropic impacts
Concarneau	Protected area with low tidal current (max 20cm/s)	Very low	Few
Le Croisic	More energetic area (swell) with medium tidal current (max 50cm/s)	Loire supply (SM = 2x10 ⁶ T/an)	Important trawling scars
La Lambarde	Very energetic area (swell) with high tidal current (max 90cm/s)	Loire supply + dredging (8 Mm ³ /an)	Remolded by anchors

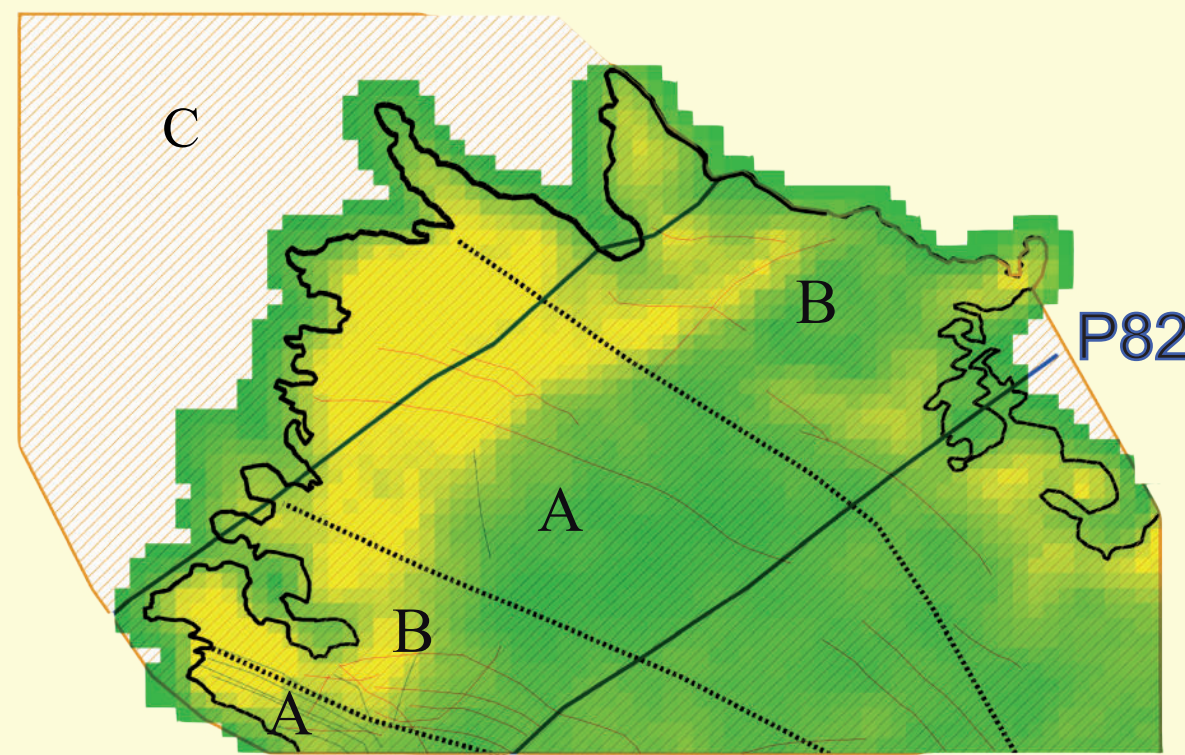
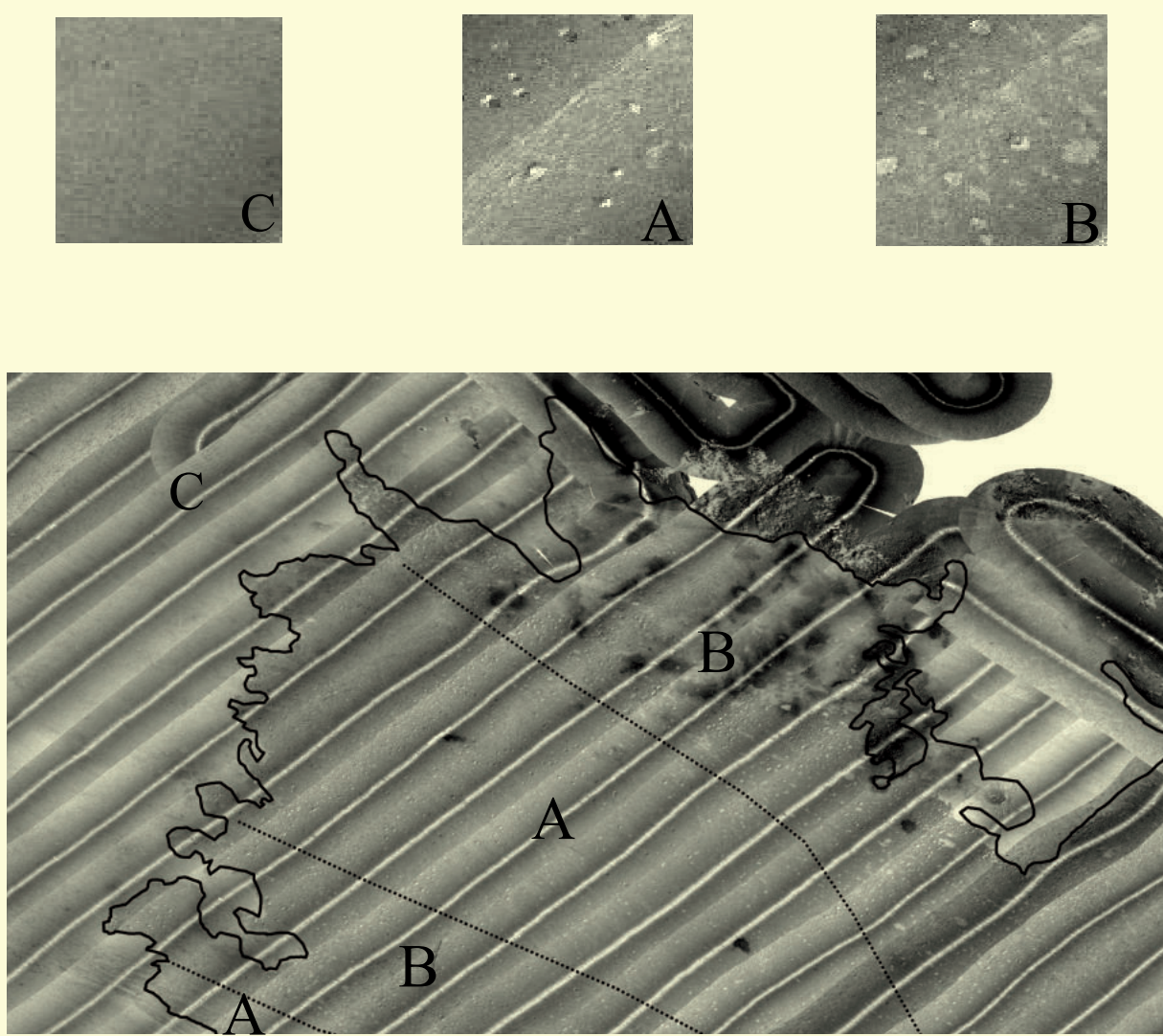
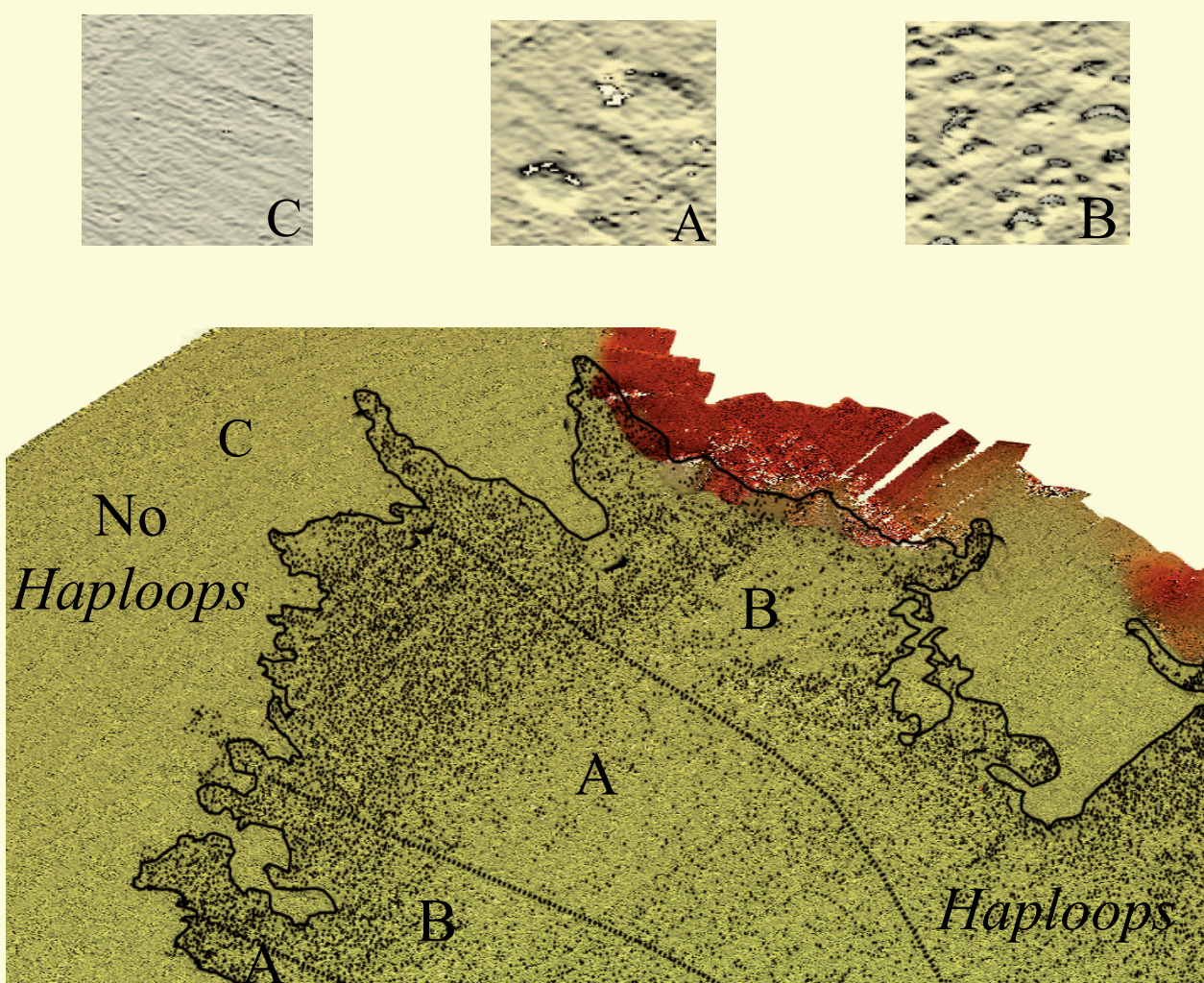
Results



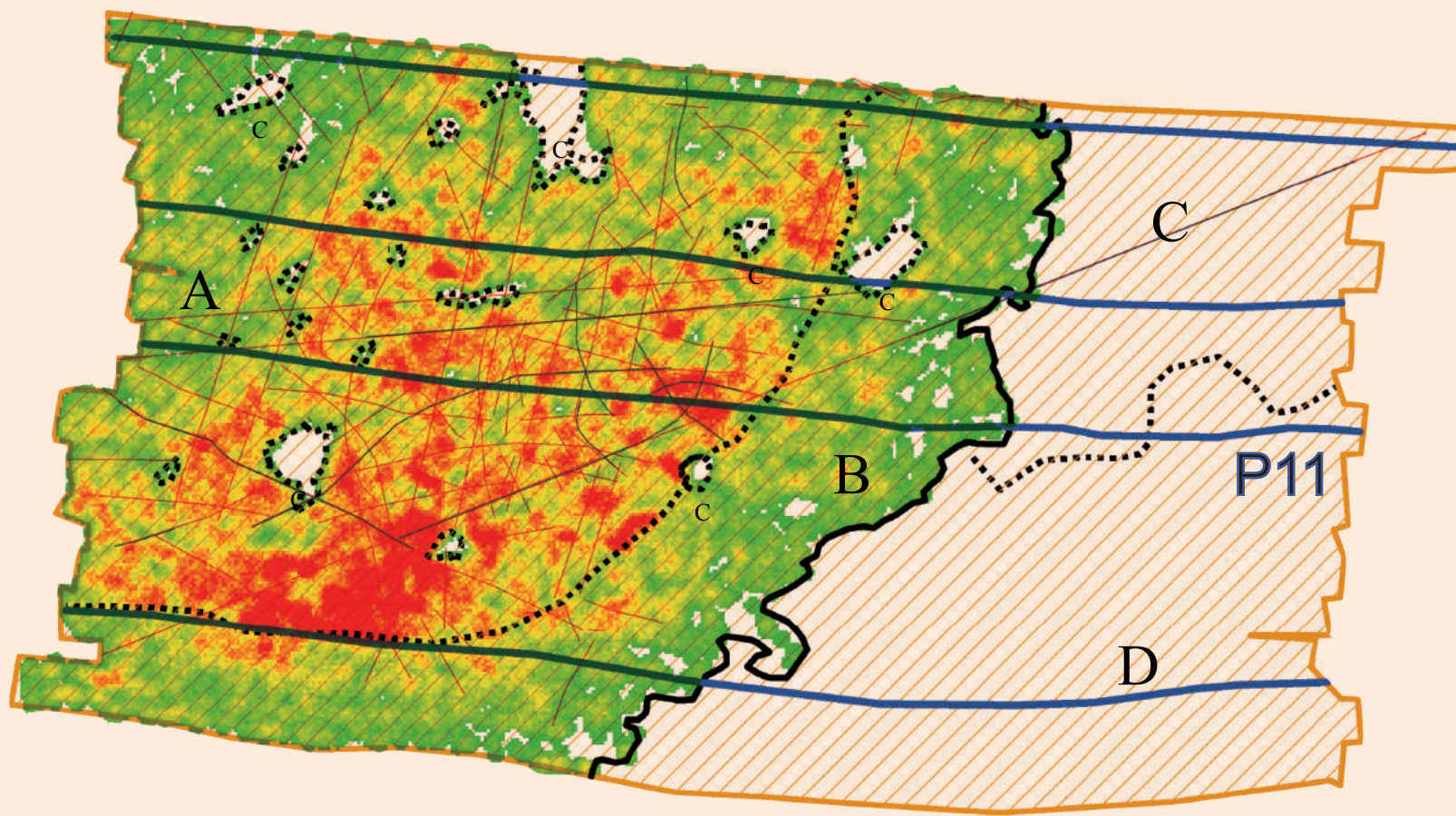
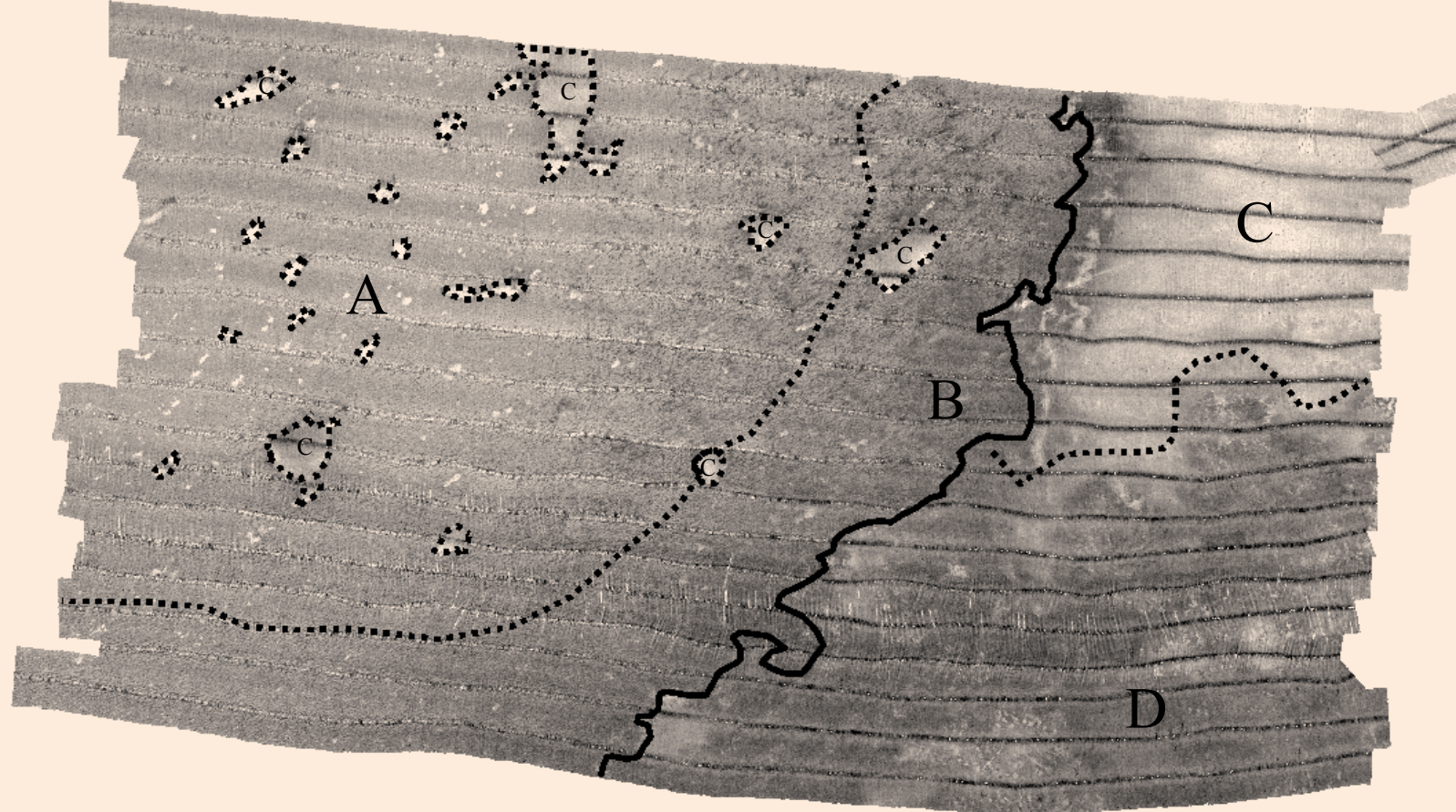
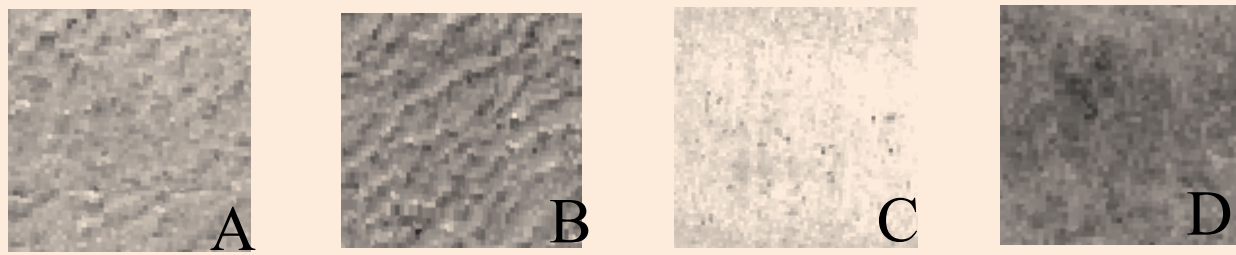
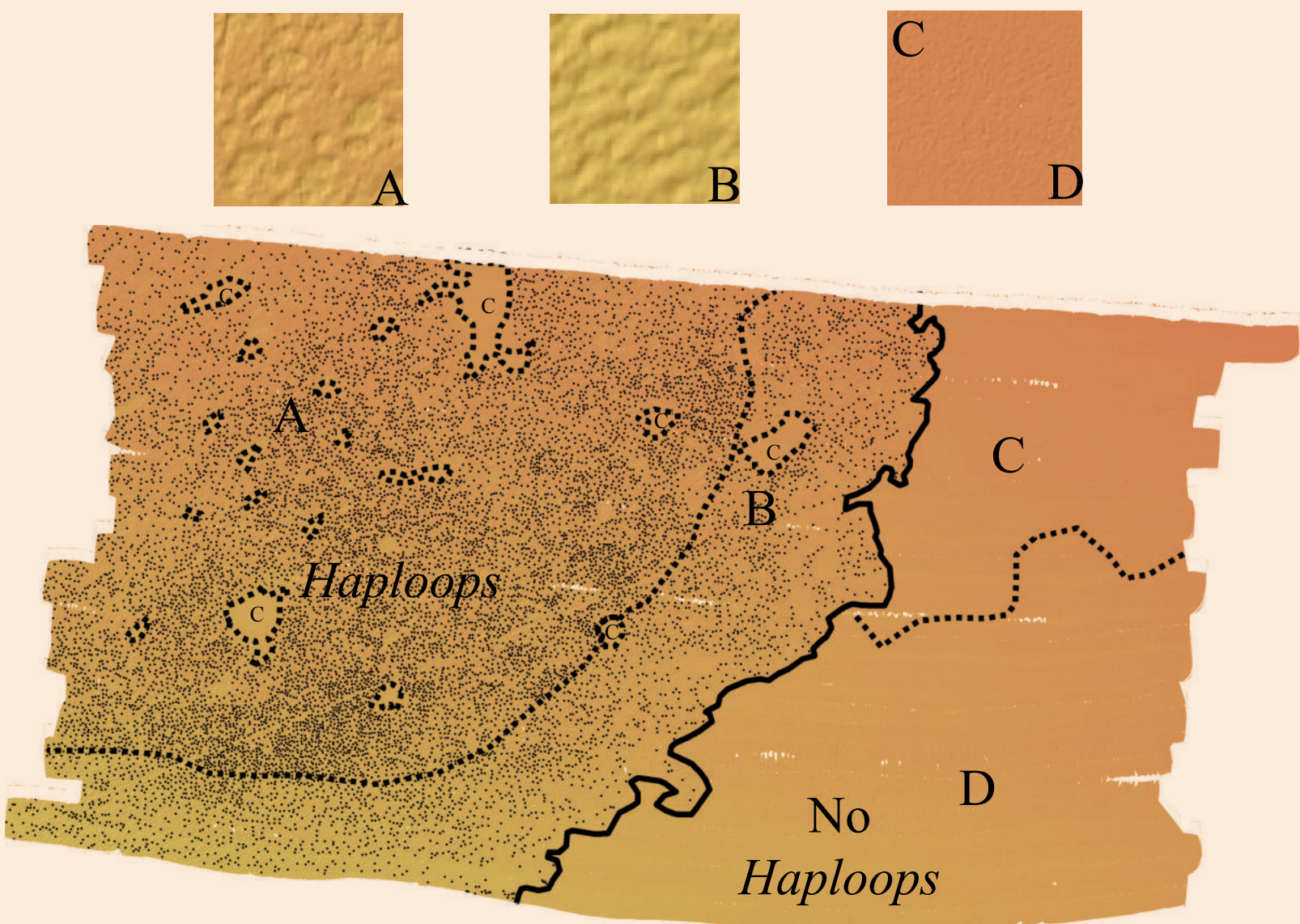
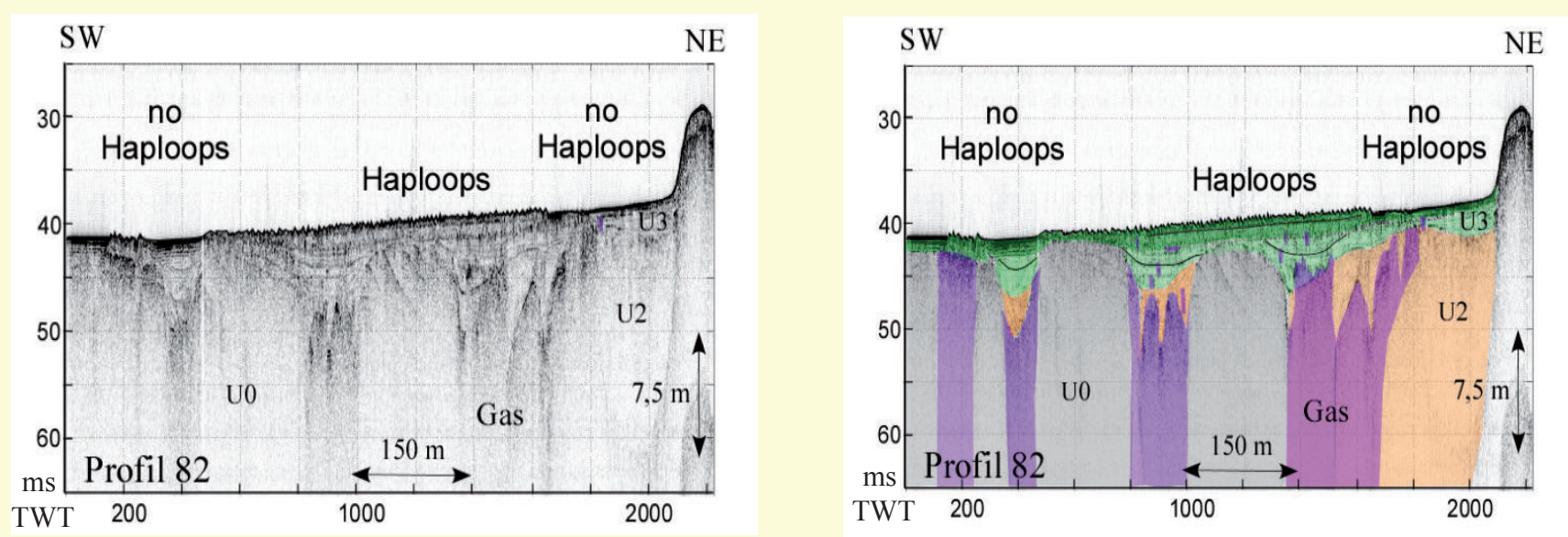
Pockmarks
Limits of continuous *Haploops* spp. cover
Limits of sedimentary faciès



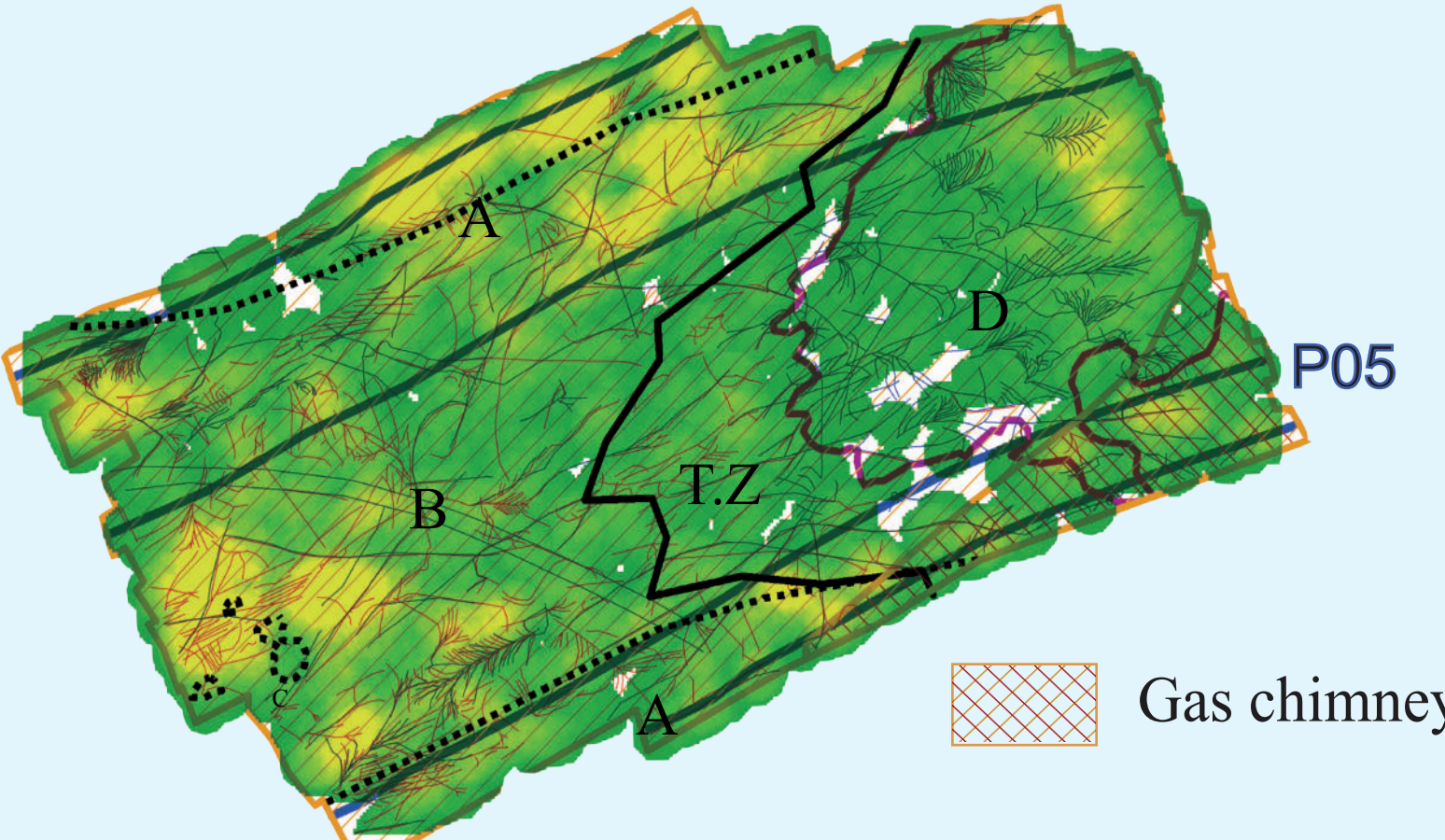
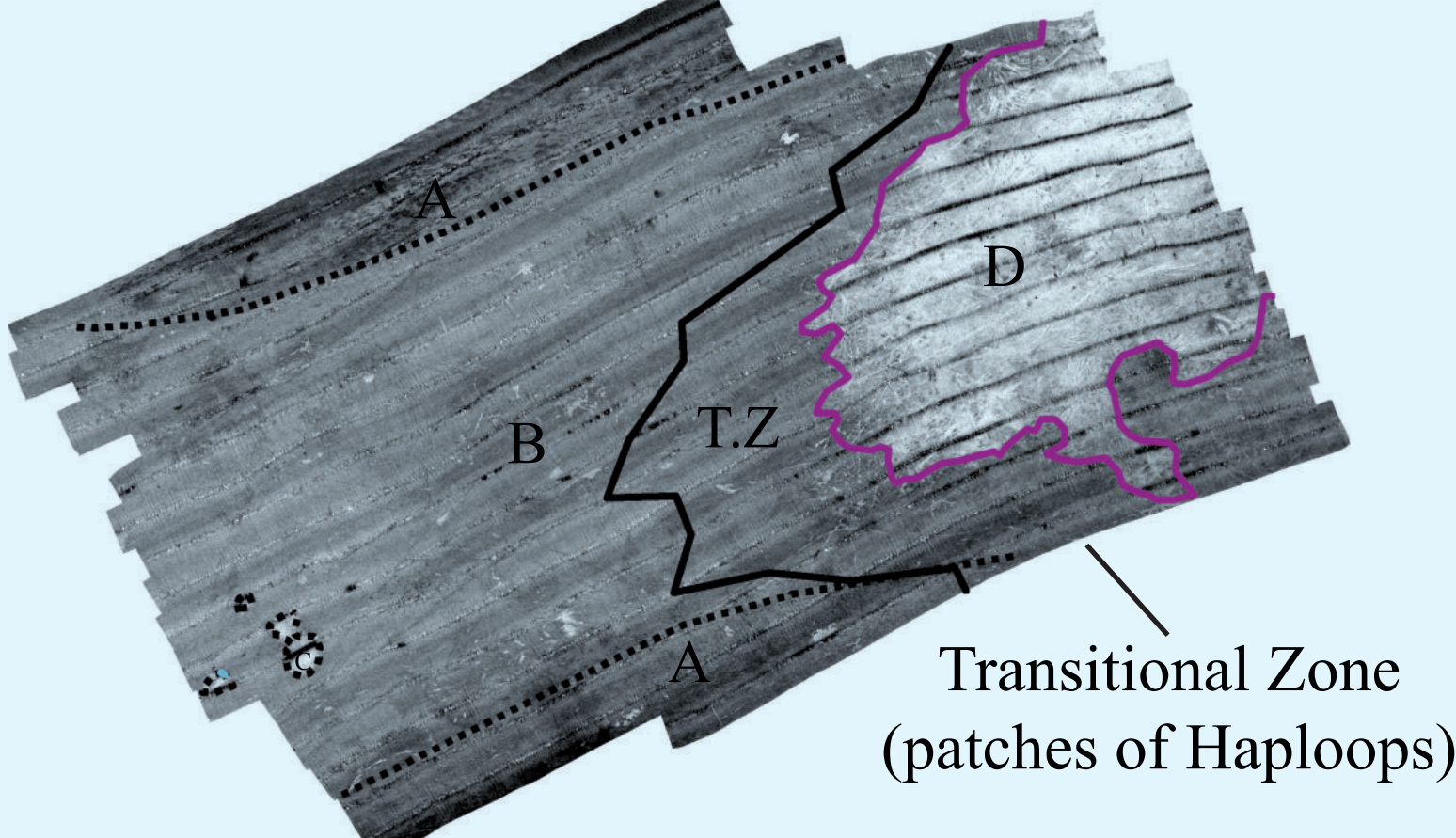
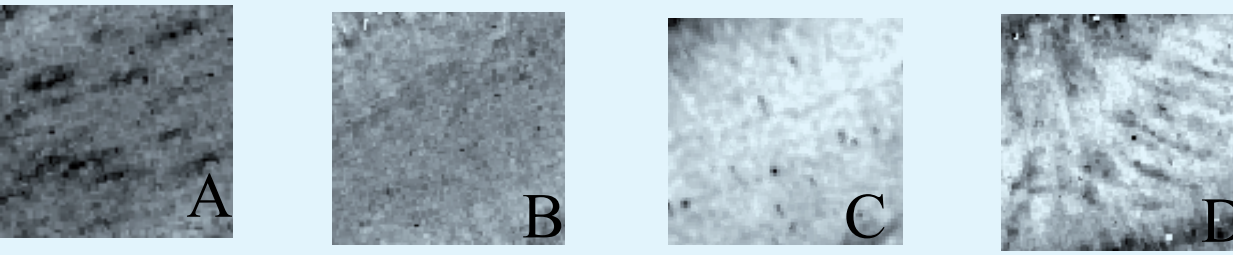
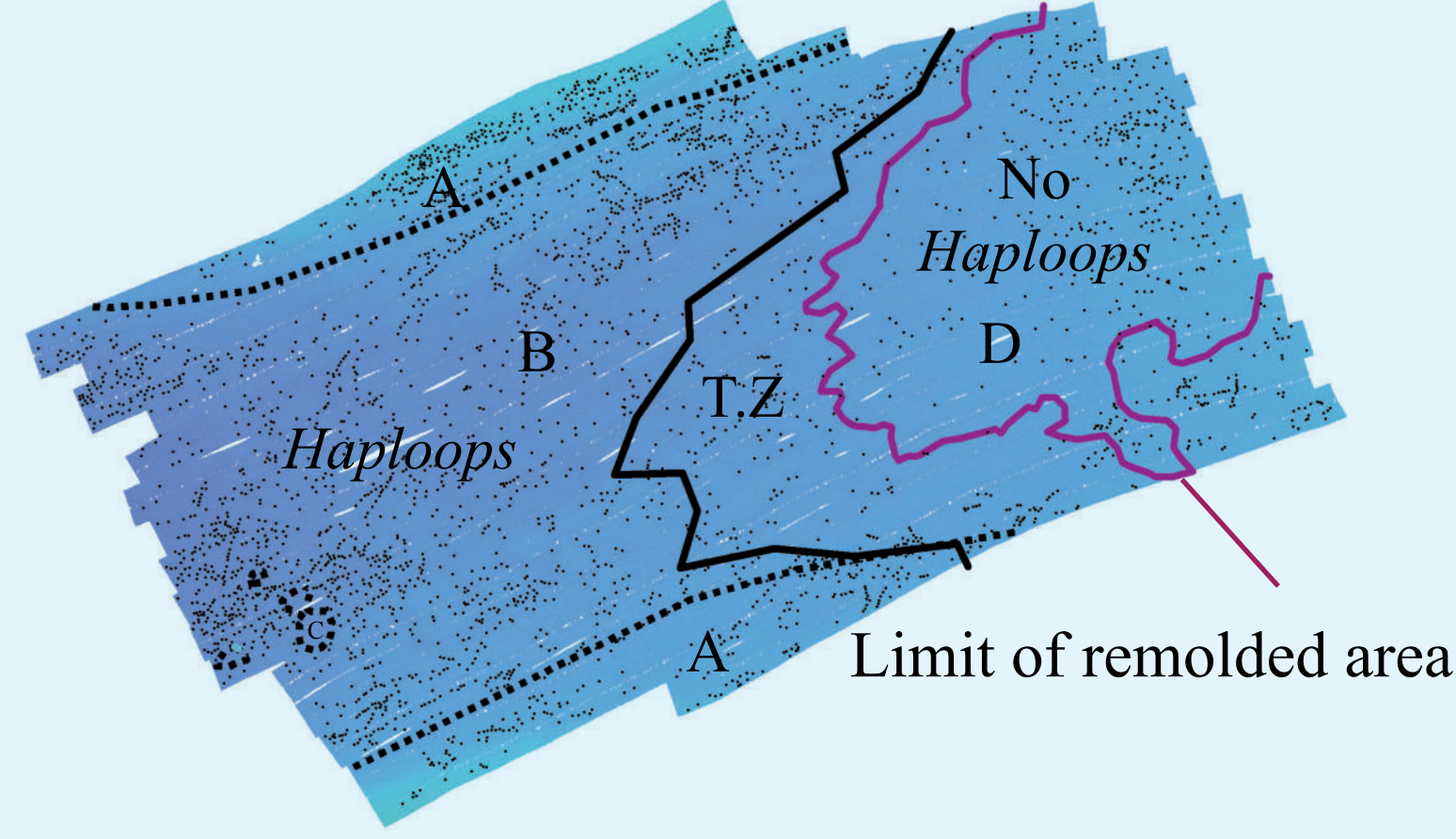
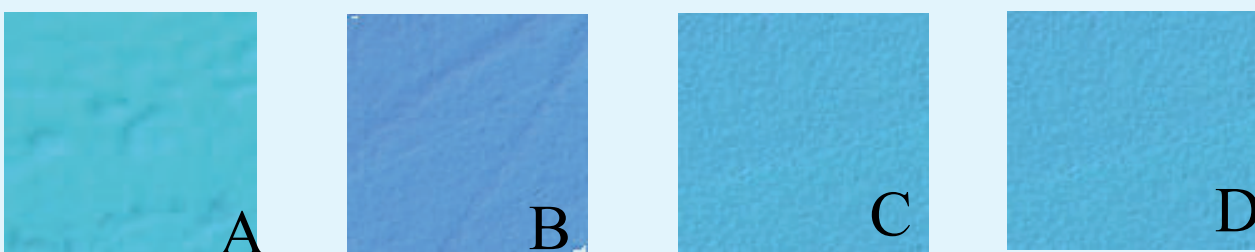
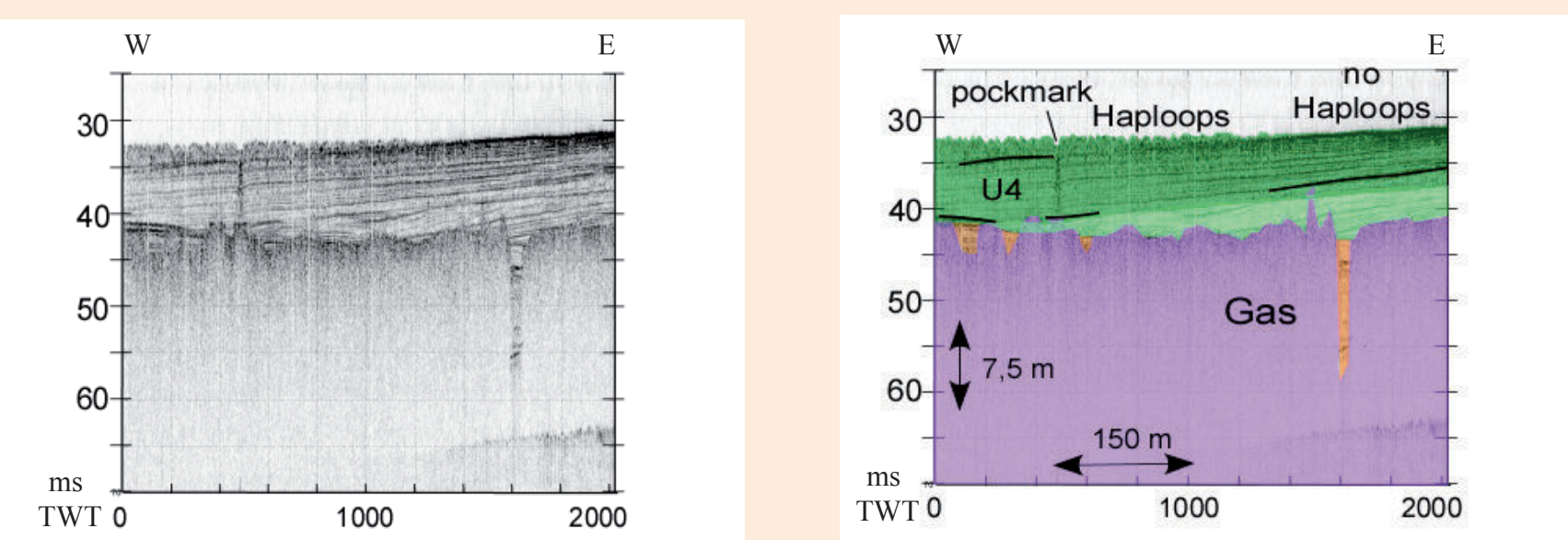
Gas mask
Anthropics scars from bathymetry
Anthropics scars from sonar imagery
Selected profiles



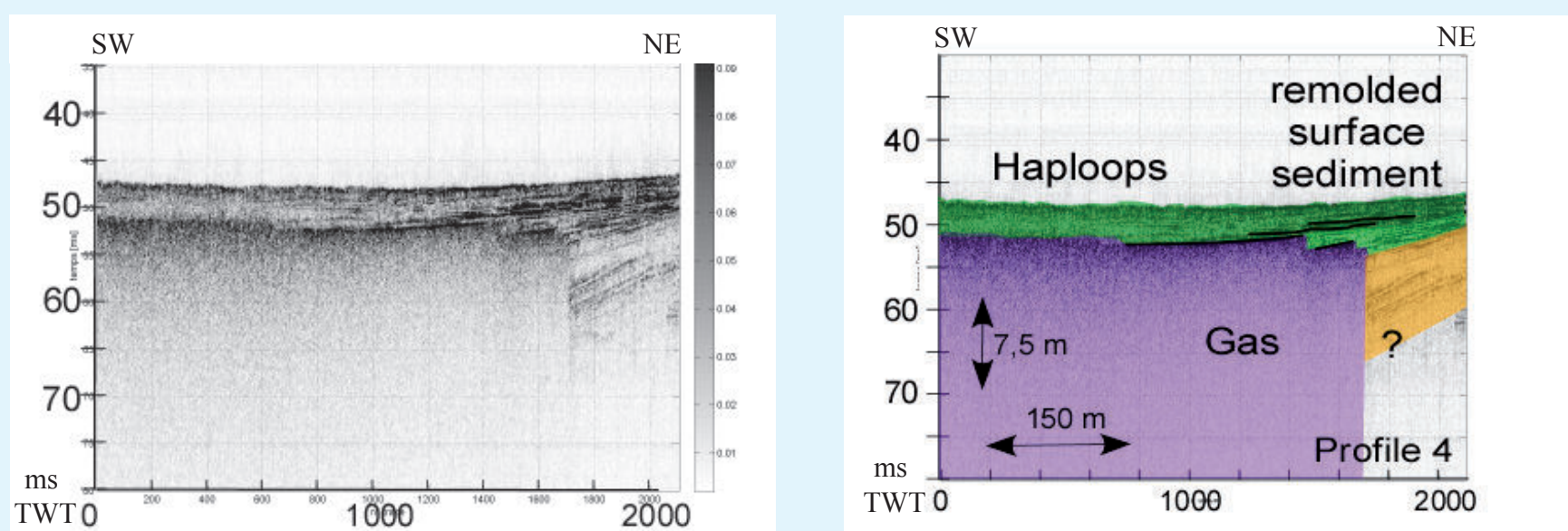
Diameters of pockmarks: between 8 and 30 m



Diameters of pockmarks: between 2 and 7 m



Diameters of pockmarks: between 2 and 7 m



Main conclusions

- >> Presence of *Haploops* limited to area with gas in the underlying sediments
- >> If gas stored below 10 ms TWT (7.5m), no pockmark on the seafloor
- >> Limits of *Haploops* spp. habitats coincide with pockmarks fields limits
- >> In the Lambarde area, absence of *Haploops* on the pockmarks field due to physical removal

Hypotheses and perspectives

- >> No pockmark, no *Haploops* spp.; sediment supply and hydrodynamics are minor controlling factors on *Haploops* spp.
- >> Fluid/particles expelled through pockmarks seem to be necessary for *Haploops* spp. development
- >> A geochemical approach is needed to identify these fluid/particles (how do *Haploops* use them?)