WHERE DO TIDAL CHANNELS BEGIN? INSIGHTS FROM THE VENICE LAGOON

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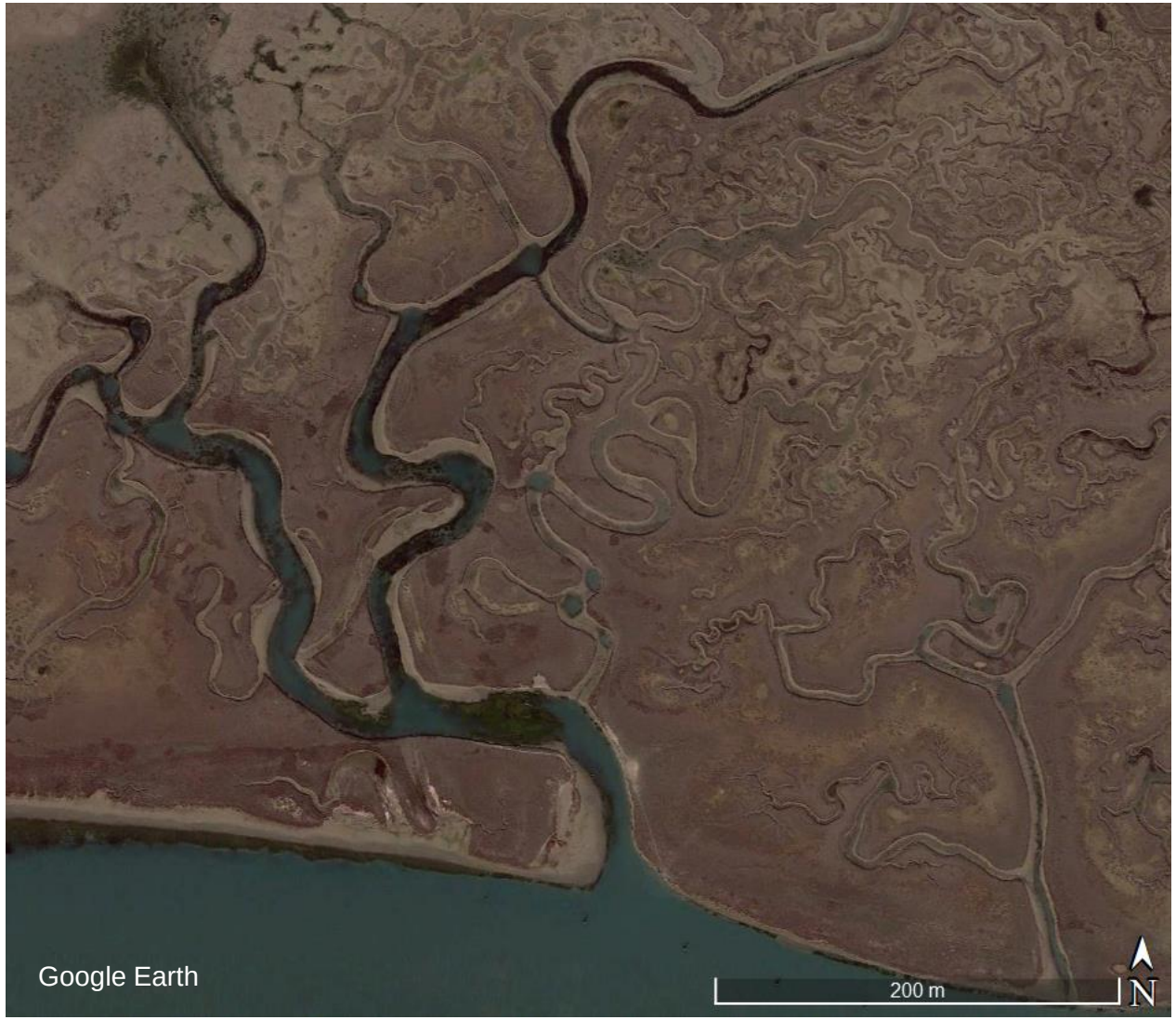
TIDAL CHANNELS



→ Morphodynamics and hydrodynamics control

→ Less attention than their fluvial counterparts

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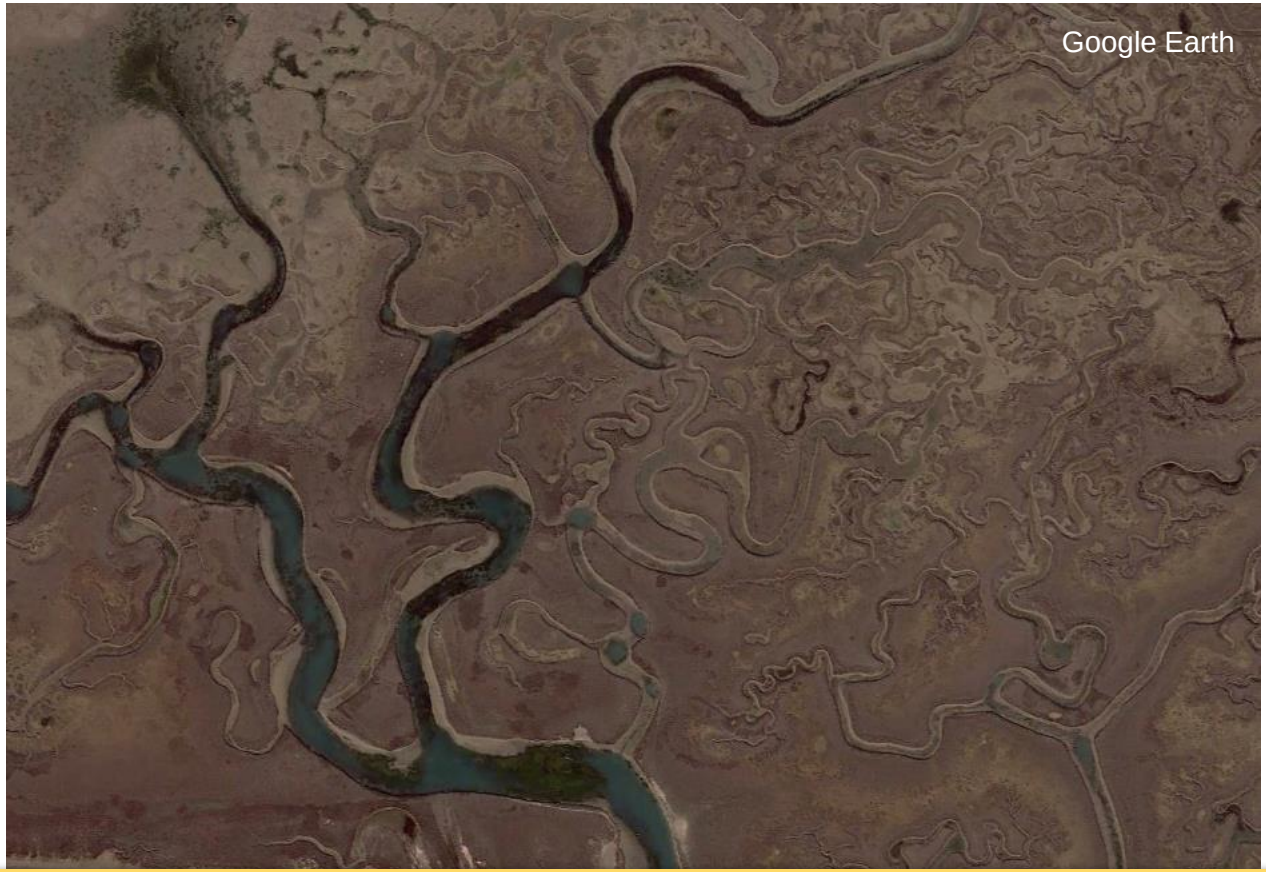


→ Morphodynamics and hydrodynamics control

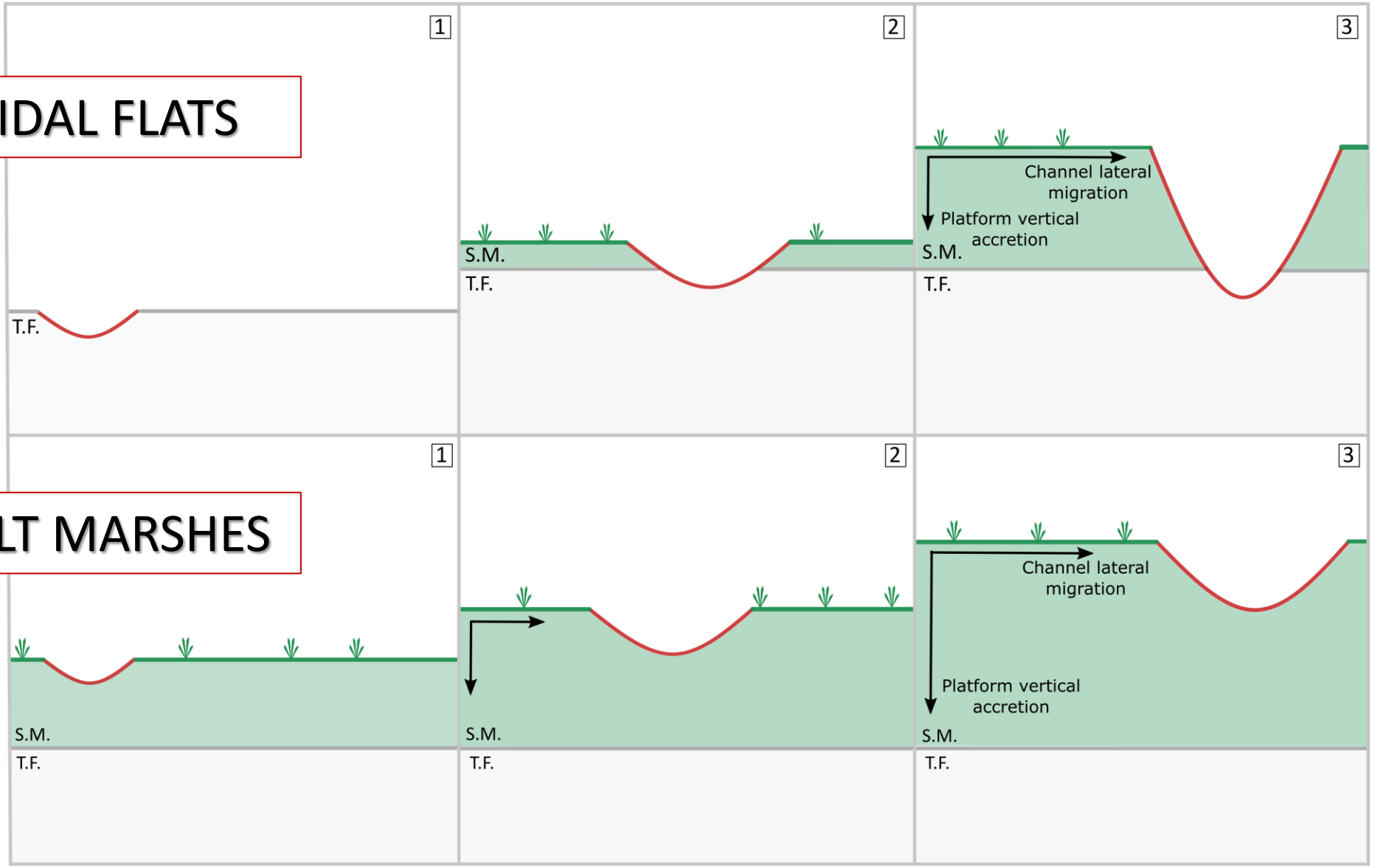
→ Less attention than their fluvial counterparts

Tidal systems' fate → **climate changes** and **anthropogenic disturbances**

WHERE DO TIDAL CHANNELS BEGIN?

OVER TIDAL FLATS

OVER SALT MARSHES



THE STUDY SITES: THE VENICE LAGOON

- **North-western Adriatic Sea** (550 km^2)
- **Flandrian transgression** (Holocene)
- **Microtidal** and **semidiurnal tidal regime**
- **Present setting**: **interactions between natural** and **anthropogenic processes**

METHODS & ANALYSES

SAMPLING ACTIVITIES:

→ 6 meanders for each study site (30 meanders)

→ 6 cores per transect (191 cores)

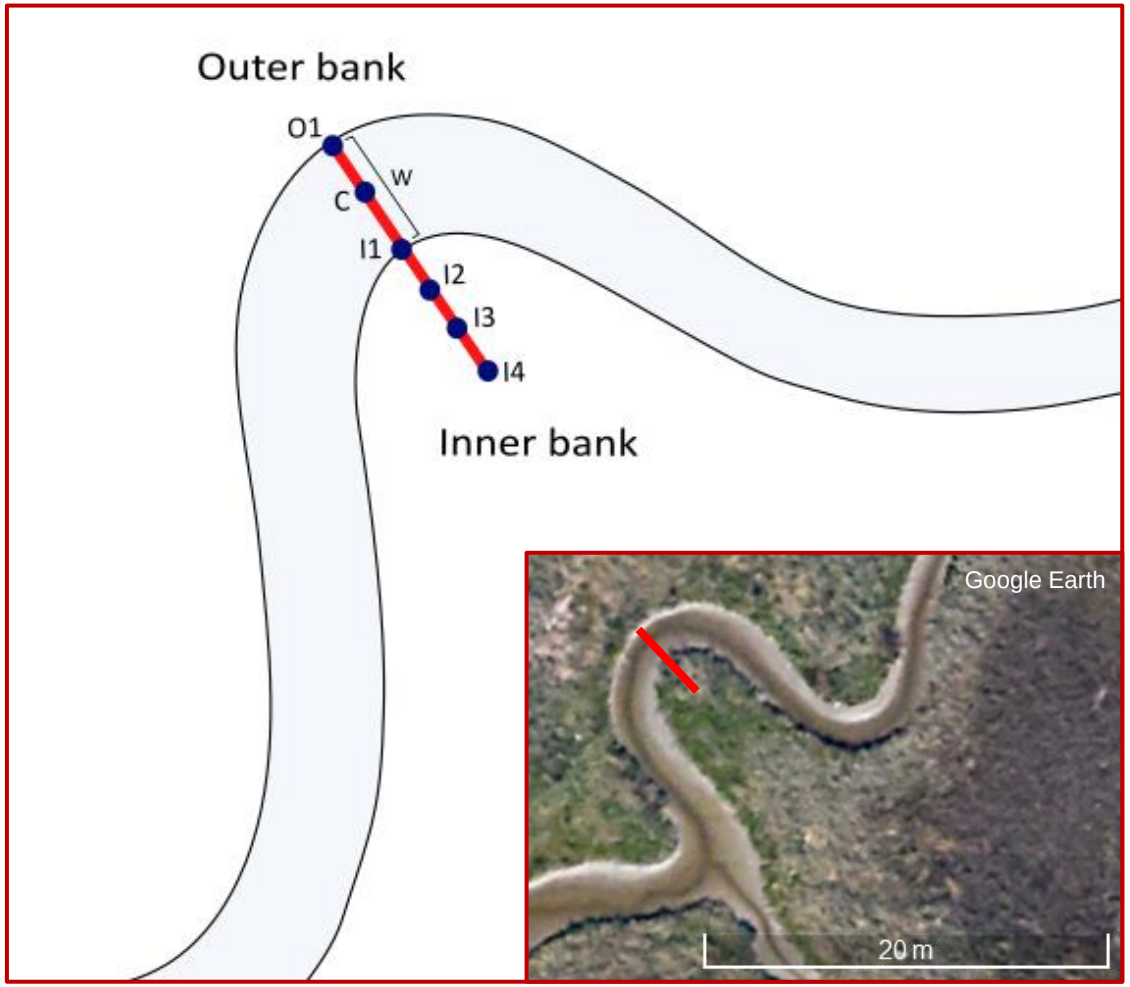
→ L= 1 m, d =30 mm

→ Topographical survey

SEDIMENTOLOGICAL ANALYSES:

→ Facies analyses

→ Sedimentological log



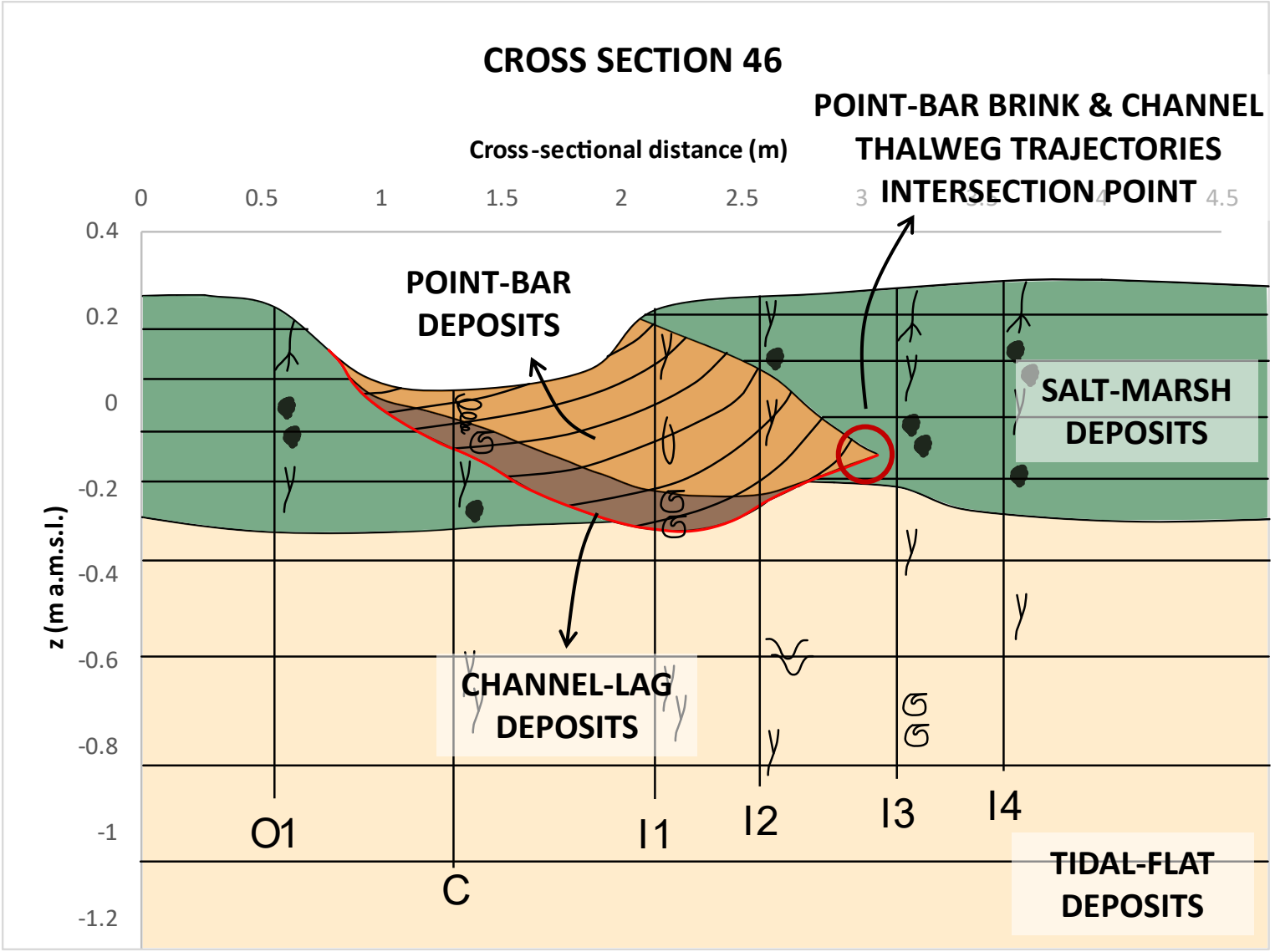
RESULTS

INTEGRATION BETWEEN TOPOGRAPHICAL DATA AND SEDIMENTOLOGICAL ANALYSES

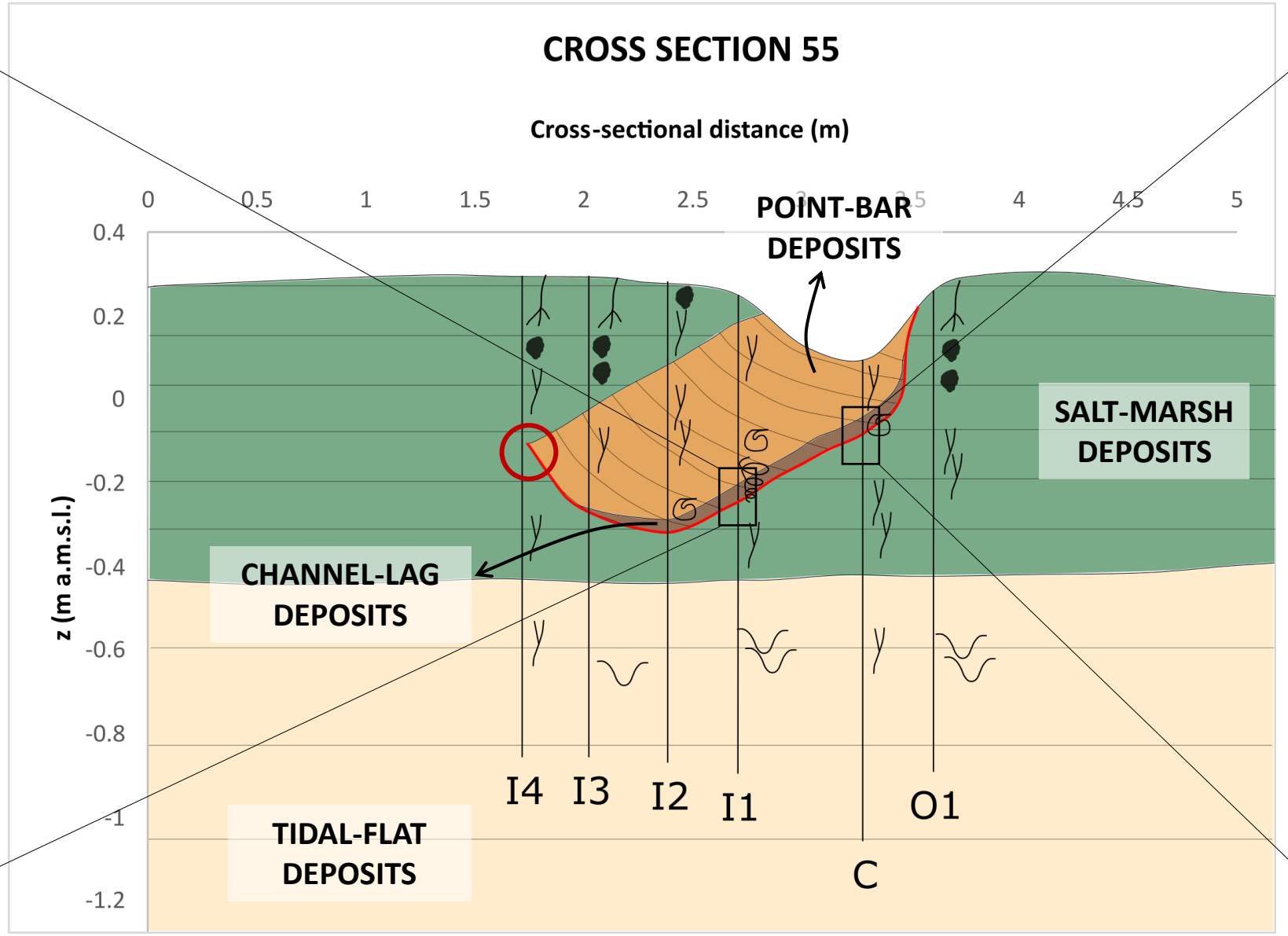
→ 4 main types of deposits

→ Position and dimension of the point bar

→ Brink and channel thalweg trajectories



CHANNEL INCISION ON SALT MARSHES



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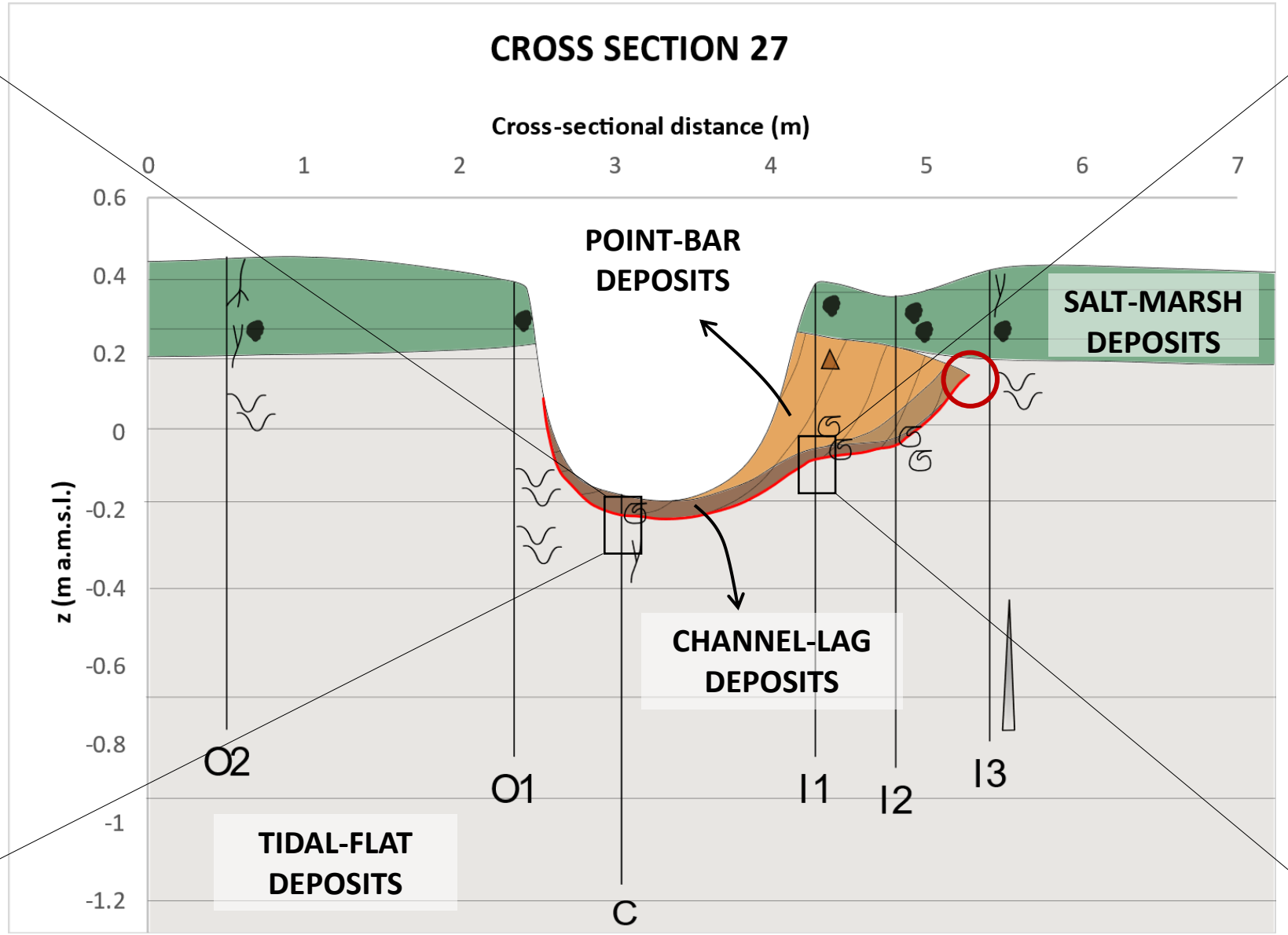
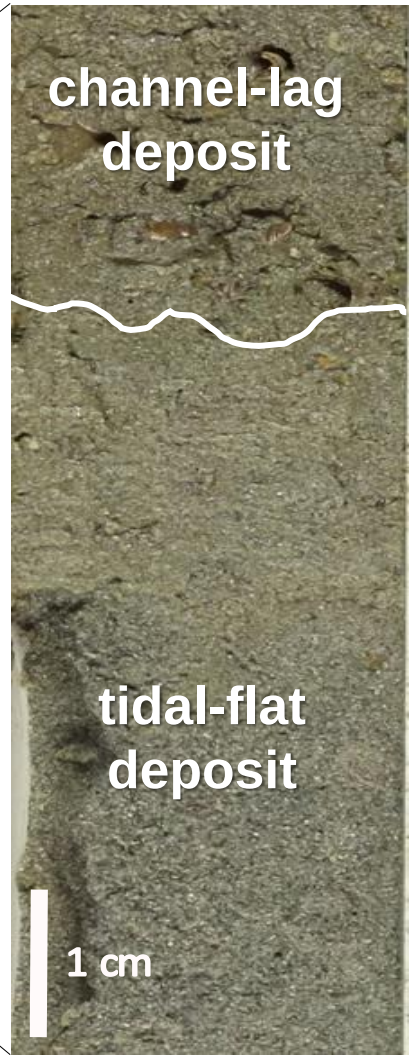
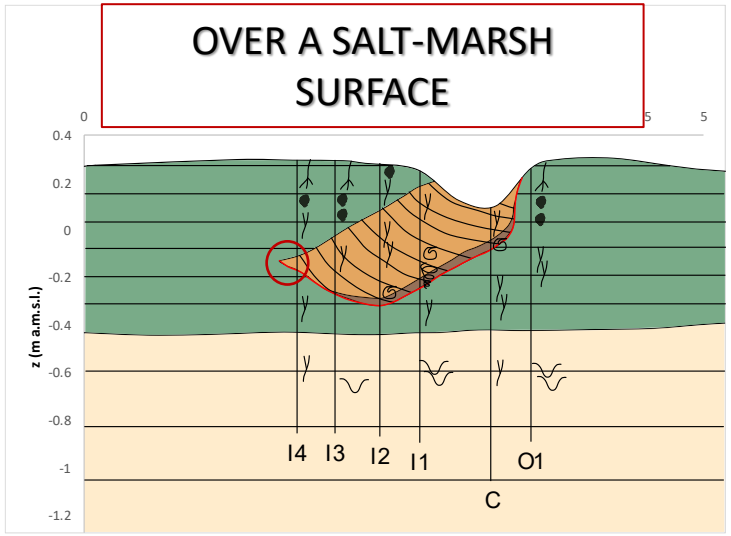
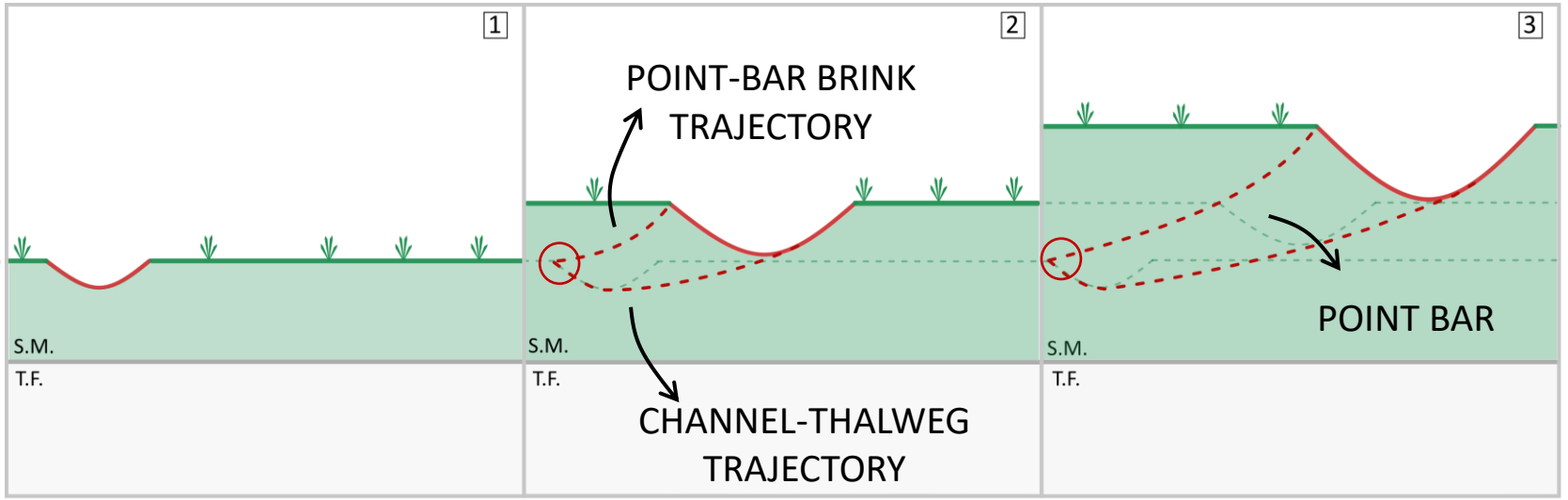
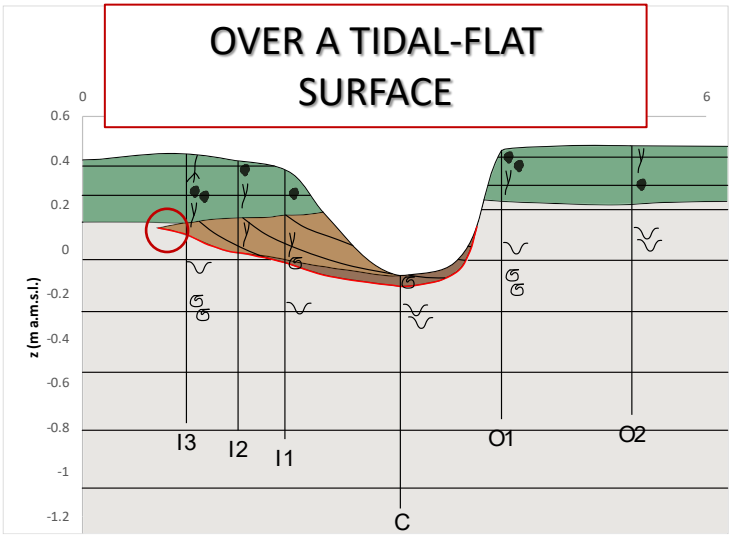


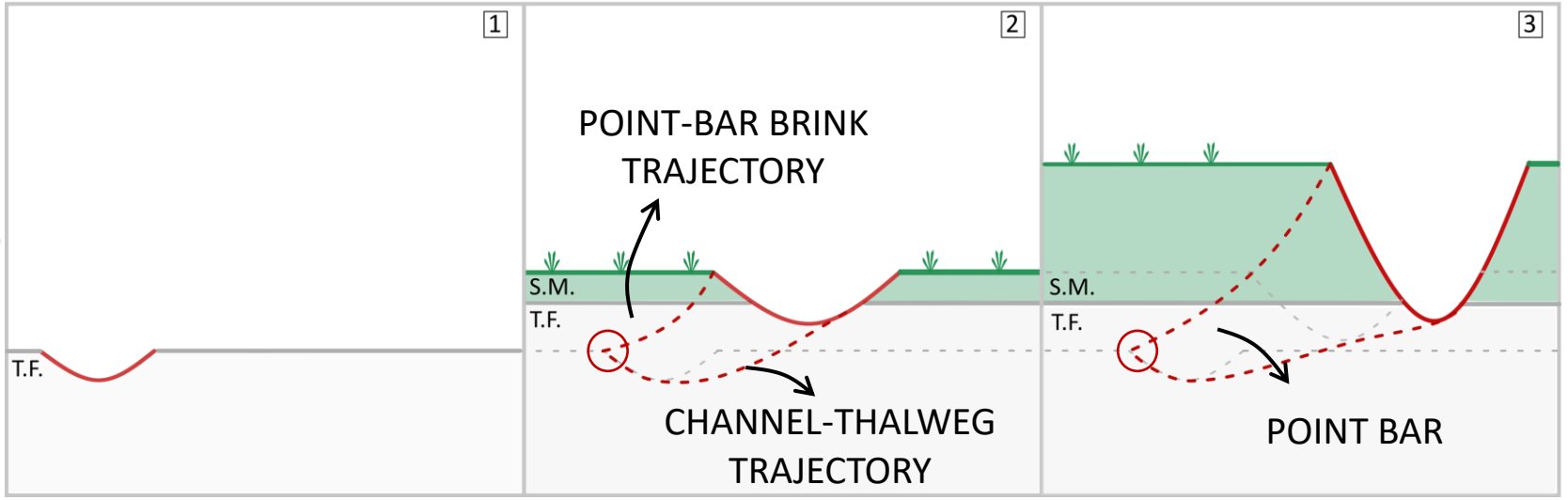


DISCUSSION: CONCEPTUAL MODEL









CONCLUSIONS

→ **Conceptual model for channel initiation** based on the identification of the point-bar brink and the channel thalweg trajectories

→ In most cases, the analysed channels originated through the **incision of a salt-marsh surface**

→ This model **challenges** the traditional paradigm of channel inheritance

→ **Vegetation growth** plays a key role in channel incision