

CASE STORY

Geophysical survey - Buried vegetation | GPR - Ground Penetrating Radar |

► GPR used to visualize aeolian lithosomes

CLIENT PROFILE

Universities in the US and Lithuania.

CHALLENGE

The interaction of windblown sand with maritime vegetation, either as a dune migration or episodic grain transport is a common phenomenon along many sandy coasts. Vegetation introduces antecedent surface roughness, especially when scaled to the landform height, but its role may be concealed if overwhelmed by aeolian incursion and burial. The challenge lies in the identifying and mapping of buried targets.

SOLUTION

Where field observations and cores lack detail for characterizing this complex process, ground-penetrating radar (GPR) offers continuous visualization of aeolian sequences. Lithuania e.g: Mid-frequency (200MHz) georadar surveys reveal landward-dipping lateral accretion surfaces interrupted by high-amplitude point-source anomalies produced by recently buried trees. Bahamas e.g: High frequency (800MHz) GPR images resolve diffractions from trunks and roots buried by >2 m of oolitic sand.

CONCLUSION

The findings demonstrated the viability of the georadar as a non-invasive means of rapidly assessing the distribution of vegetation buried by active dunes. Ground penetrating radar has emerged as an indispensable high-resolution imaging technique in coastal aeolian research.

PROJECT

▷ Site: Sandy coasts of Lithuania & Bahamas

▷ Method: GPR (200 & 800 MHz frequency)

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"Sand incursion into temperate (Lithuania) and tropical (the Bahamas) maritime vegetation: Georadar visualization of target-rich aeolian lithosomes"

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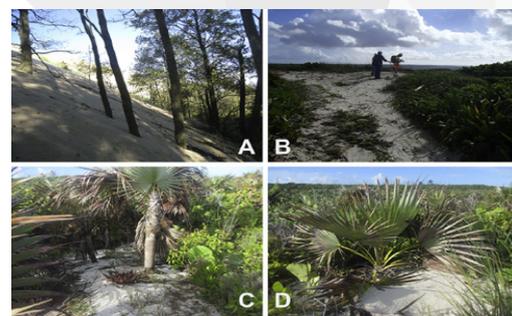
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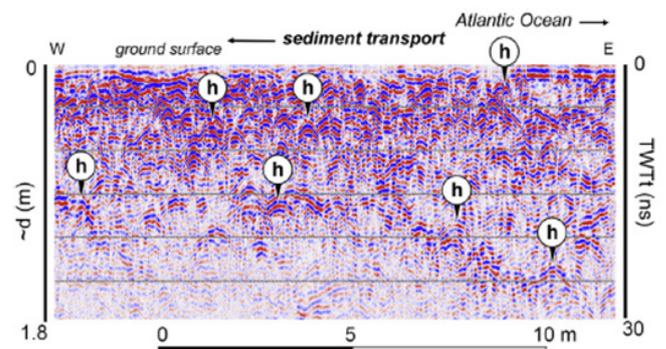
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A-D Examples of aeolian incursion into vegetated areas



Subsurface (800MHz GPR) image of tropical vegetations buried by carbonate aeolian sand. San Salvador Island, the Bahamas