INSTITUTE OF APPLIED & COMPUTATIONAL MATHEMATICS
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CONTRIBUTION OF IACM/FORTH IN PHASE C OF MEASURE 3.3

-SEDIMENT TRANSPORT AND BED EVOLUTION SYBMODEL "COAST"

-RETHIMNO EASTERN COAST EVOLUTION

-CONCLUSIONS

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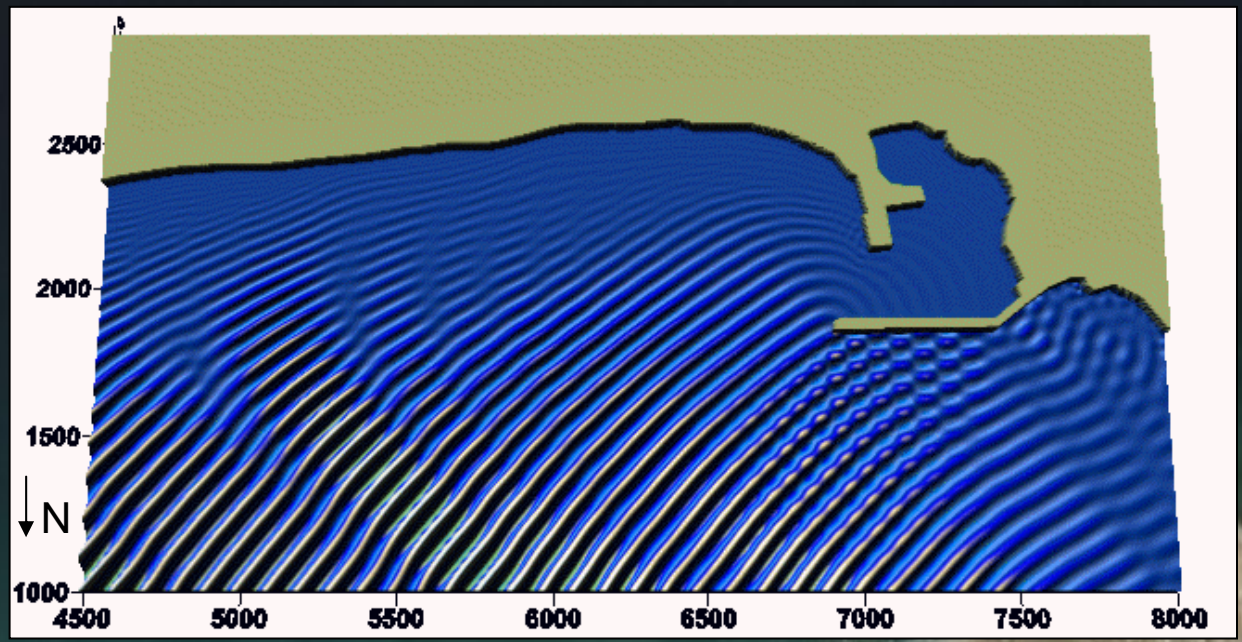
COAST SUBMODEL

- The prediction of the sediment transport is based on the energetic approach.
- The model COAST is coupled with a 3D bed evolution model or with a one-line model to provide bathymetry or shoreline changes.

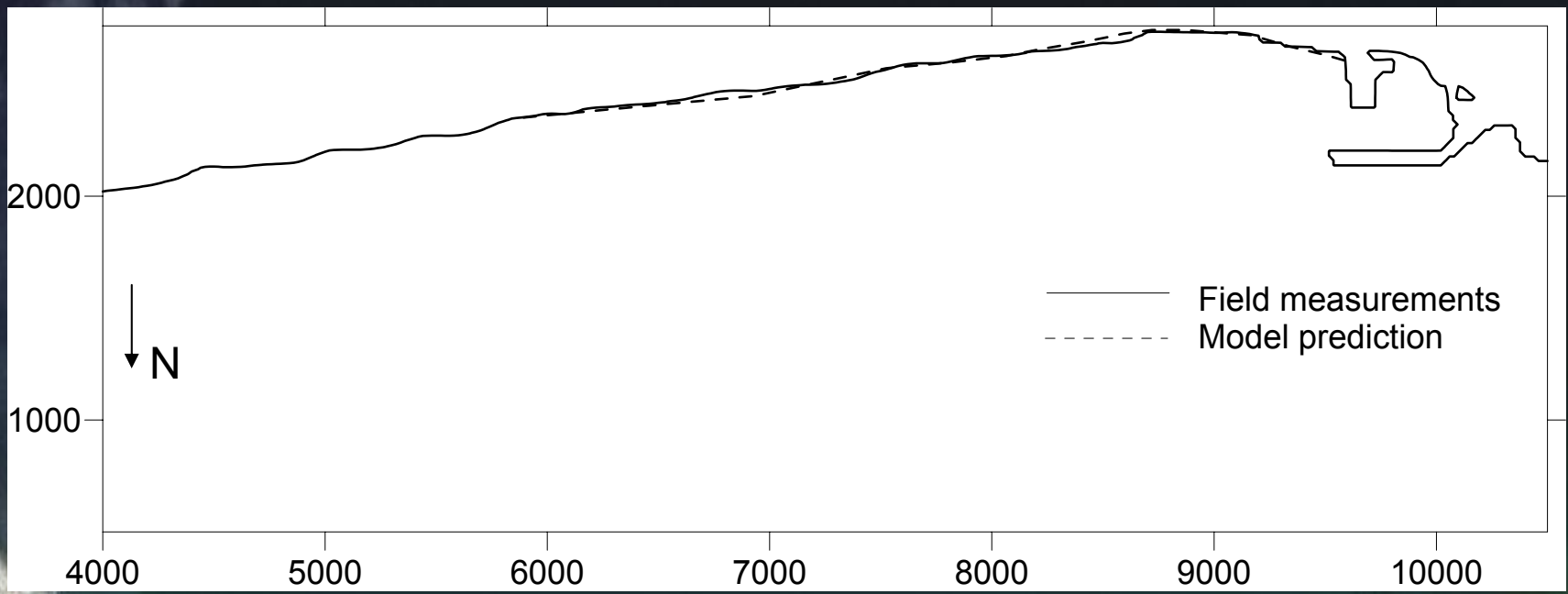
After the construction and extension of the breakwater shoreline changes had been recorded



Free surface elevation of obliquely incident waves

RETHIMNON EASTERN COAST EVOLUTION

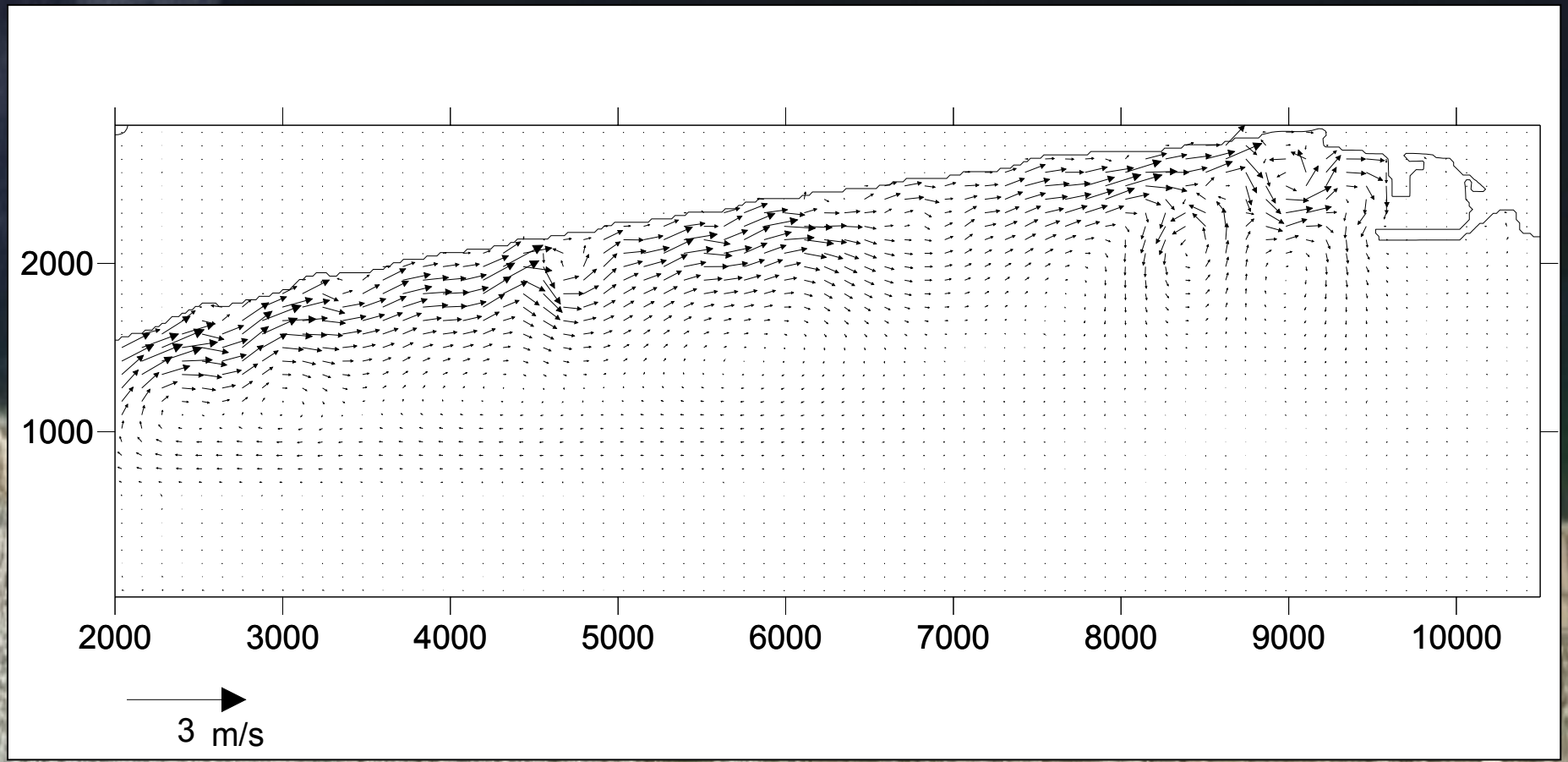
- The shoreline changes are well predicted by the model.



Shoreline change in Rethimnon Eastern coast: Comparison between model results and field measurements 5 years after the extension of the breakwater.

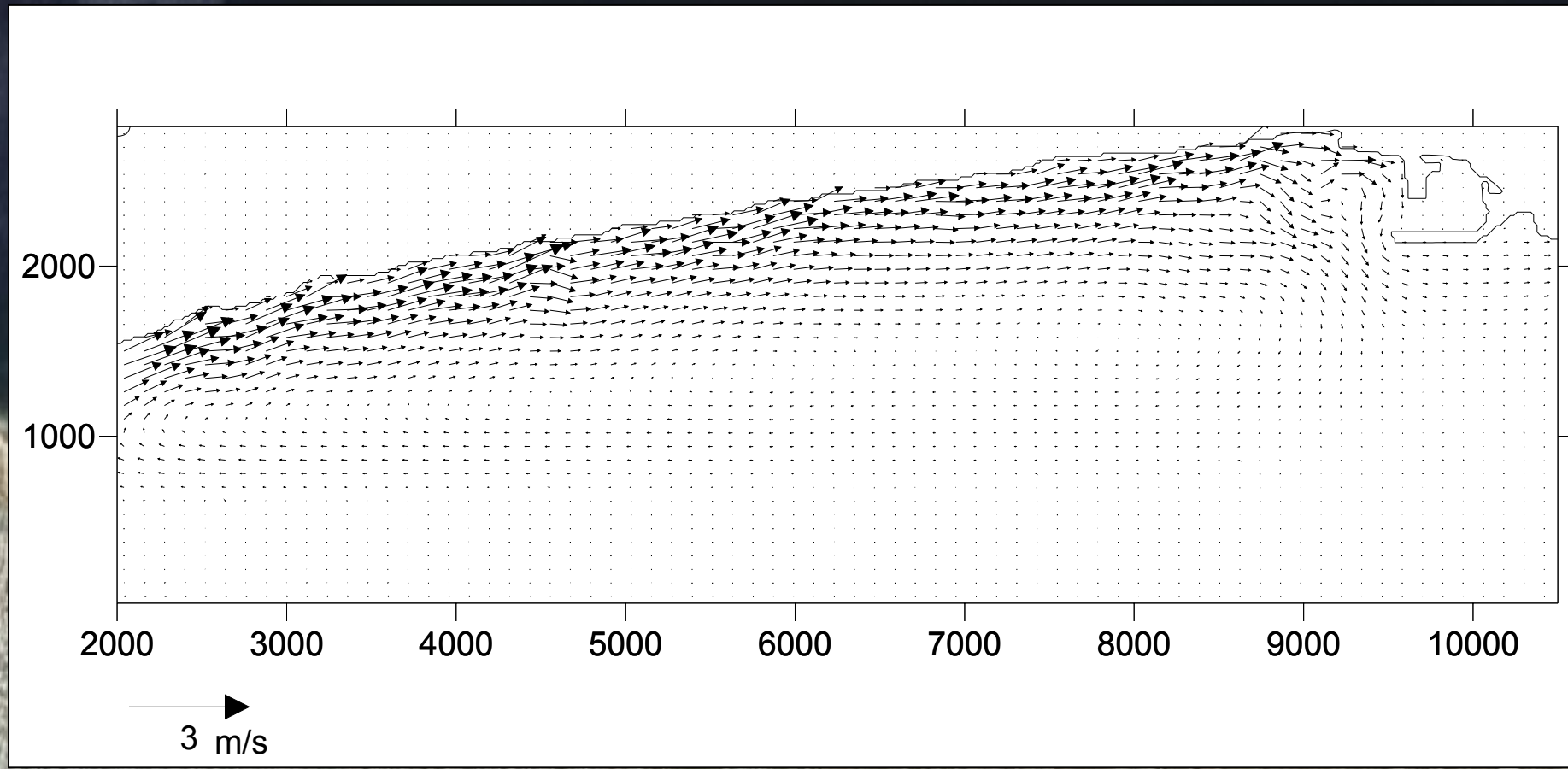
RETHIMNON EASTERN COAST EVOLUTION

Current status: Wave induced current velocities for North direction winds.



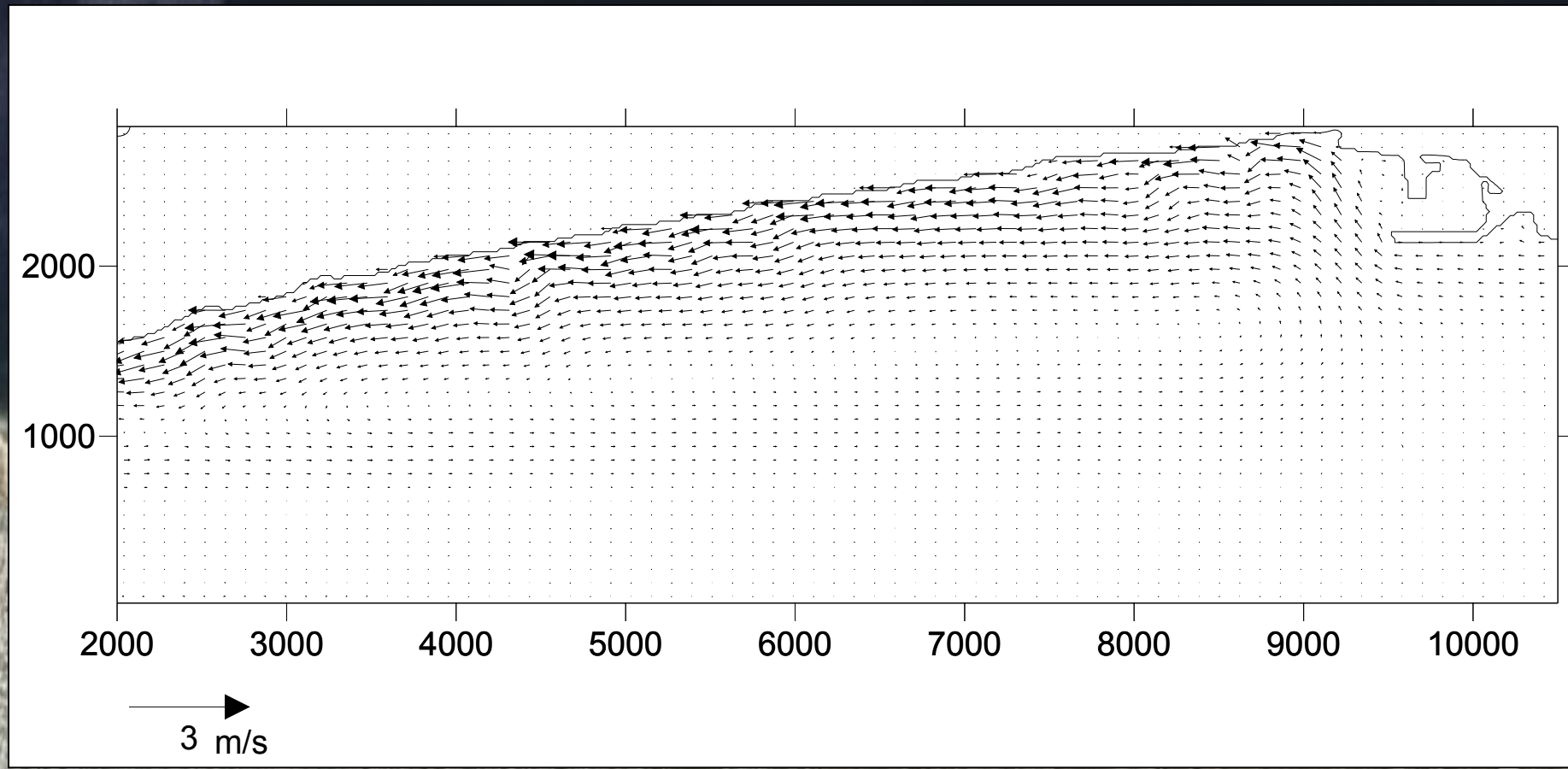
RETHIMNON EASTERN COAST EVOLUTION

Current status: Wave induced current velocities for North-East direction winds.



RETHIMNON EASTERN COAST EVOLUTION

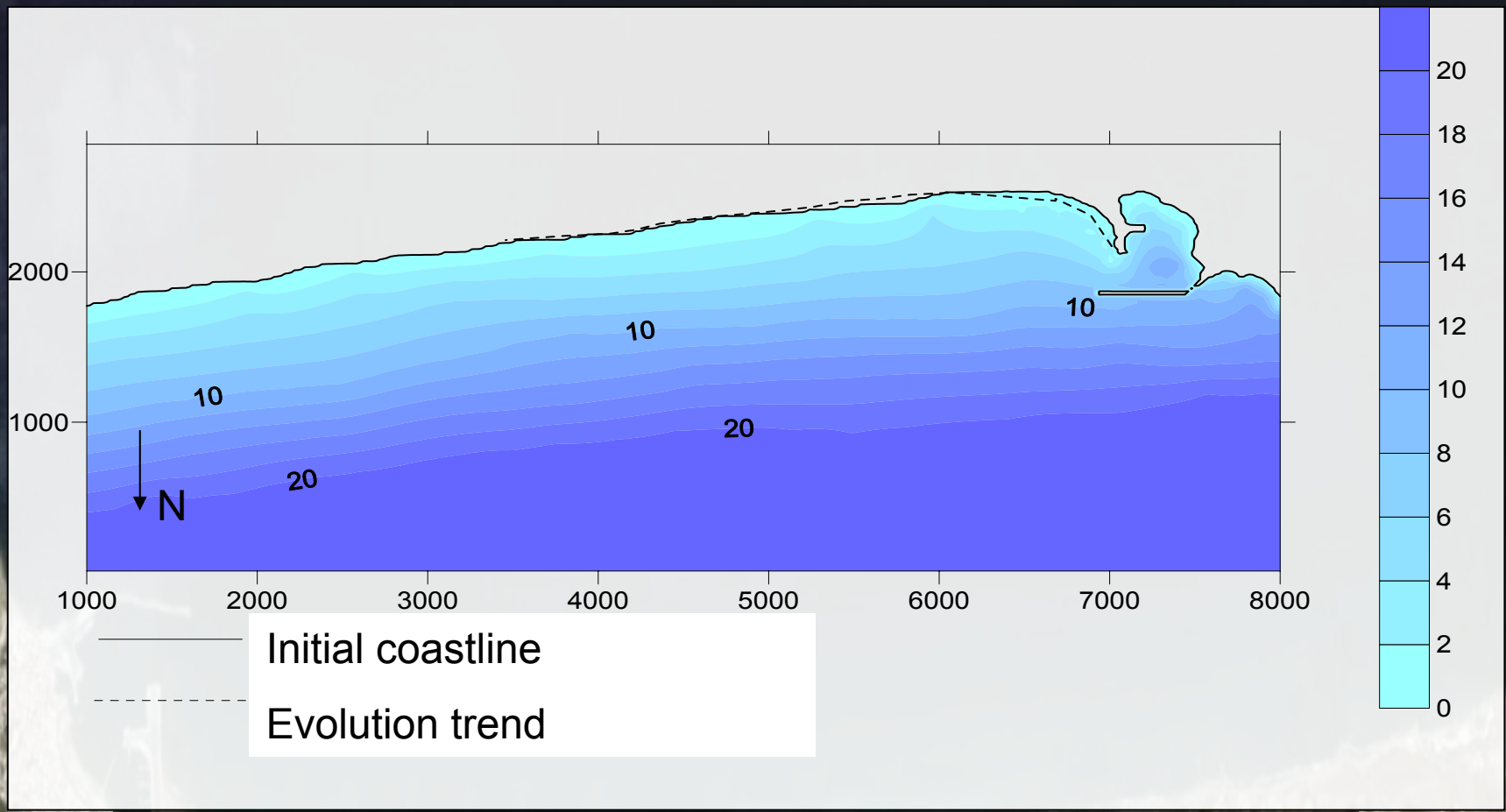
Current status: Wave induced current velocities for North-West direction winds.



RETHIMNON EASTERN COAST EVOLUTION

Current status - Coast and bottom evolution trend

(sequence of NW, N and NE waves)



- N and NE winds → Accretion in the port entrance
- NW winds → Erosion 1km east from lee jetty

CONCLUSIONS

- *ALS* model was successfully applied to Rethimnon Eastern coast area, where significant shoreline changes has been recorder last 5 years.
- The width of the breaker zone can be estimated around 300m.
- Wave refraction and breaking phenomena due to the existence of the coast and the harbor are revealed.
- On the West direction we meet the entrance of the harbor that intervenes in the alongshore current that is the main sediment transport mechanism.
- The final result is expected to be the deposition of sediments in the entrance of the harbor.


Thank you