



Modeling of Dredged Material Disposal in Antonina and Paranaguá Bays

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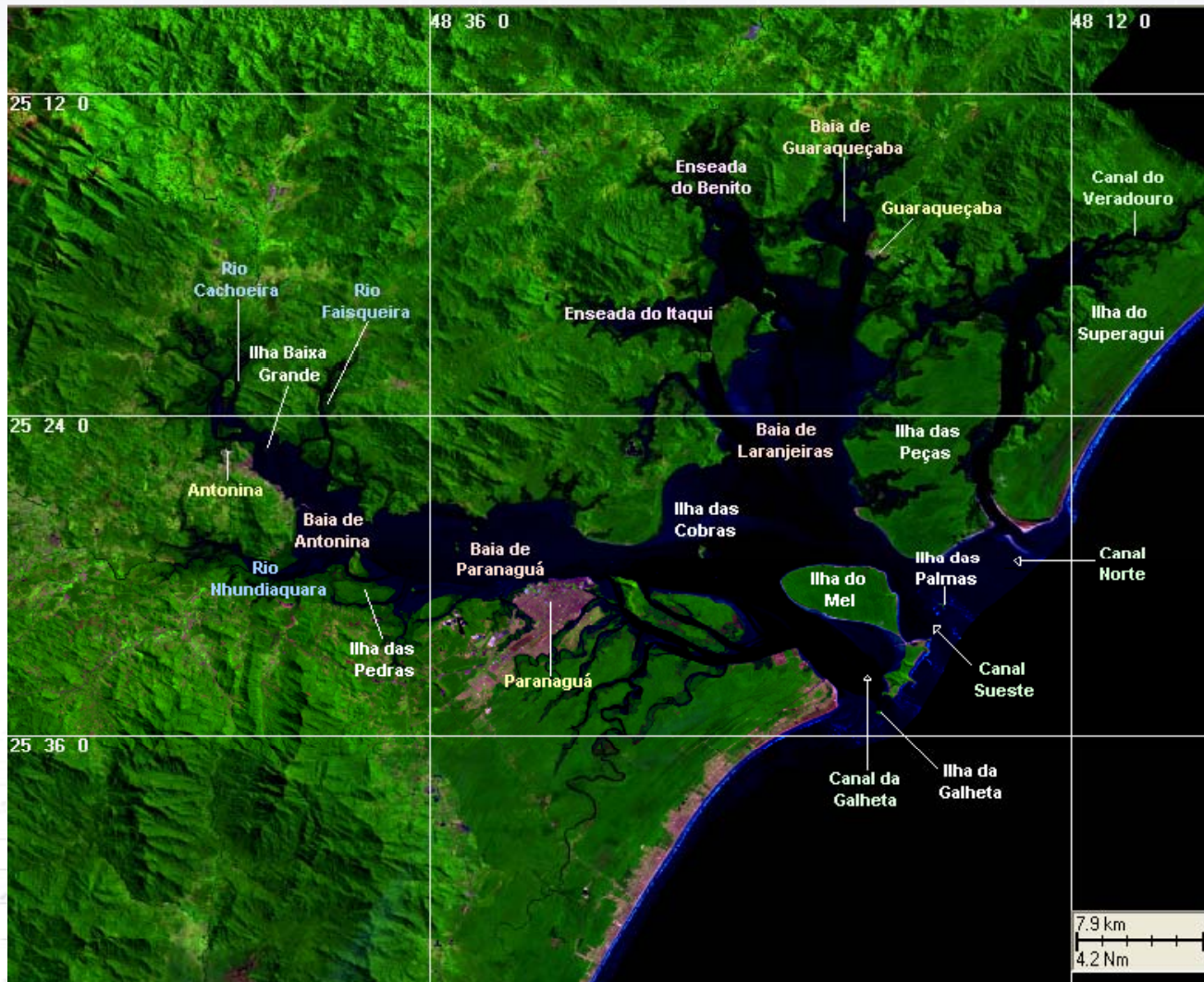
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Objectives

To help the “Terminais Portuários da Ponta do Félix” to evaluate the impact generated by morphological alterations in order to optimize the dredging activities, using numerical modeling as a tool.

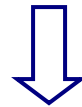


Study Area

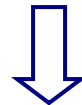


Computacional Modeling

Environmental Characterization



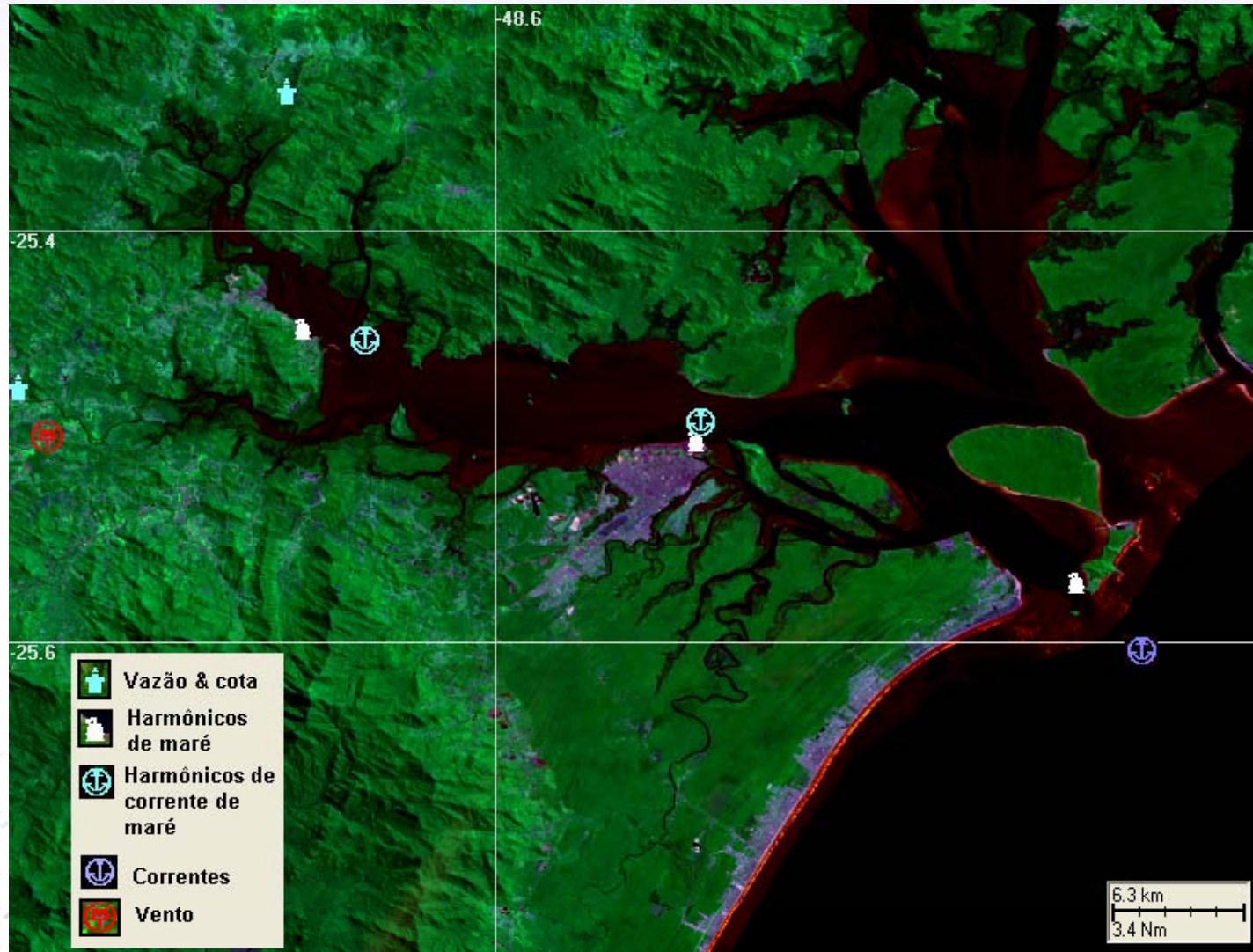
Hydrodynamics Modeling



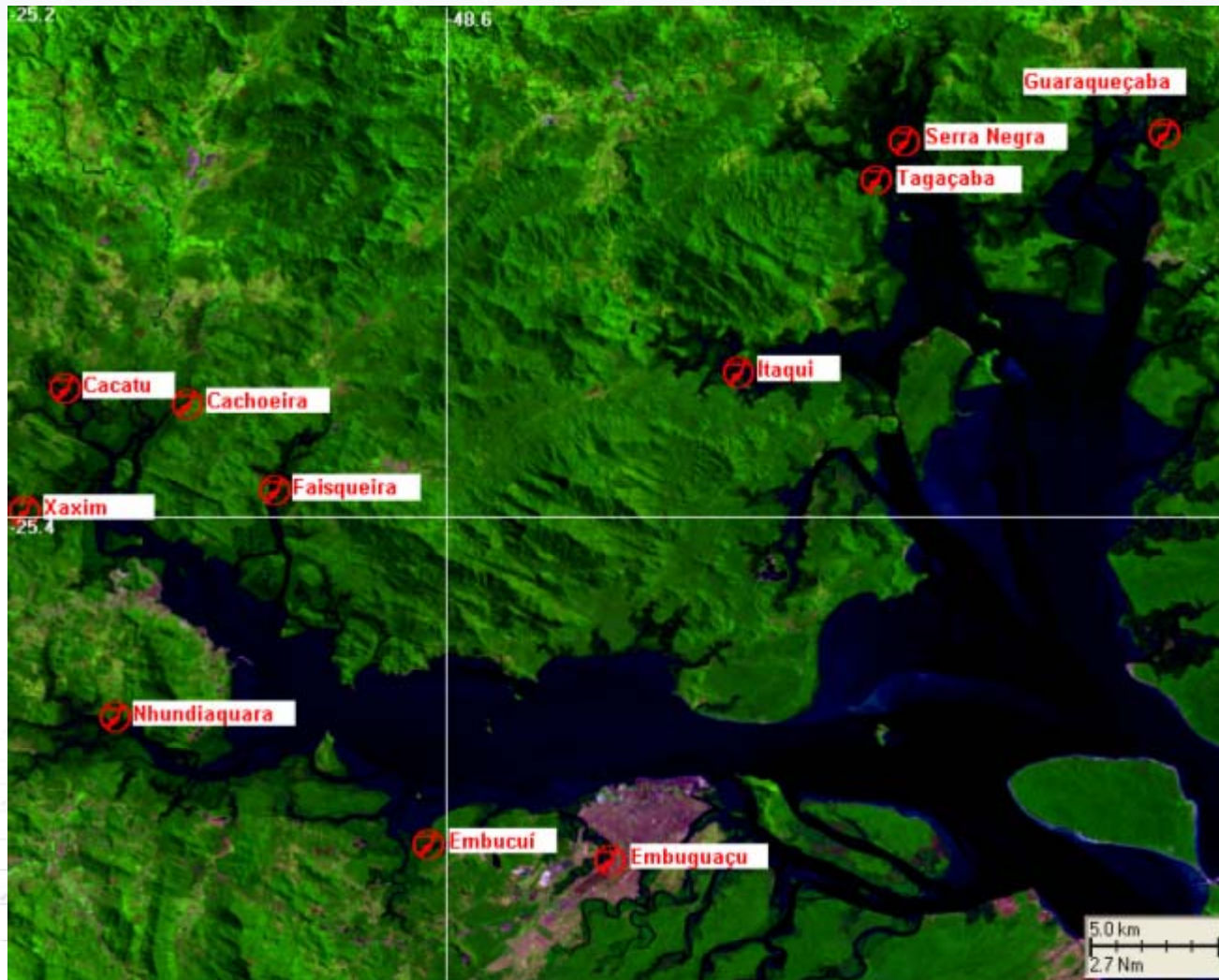
Dredged Material
Disposal Modeling



Data Analysis

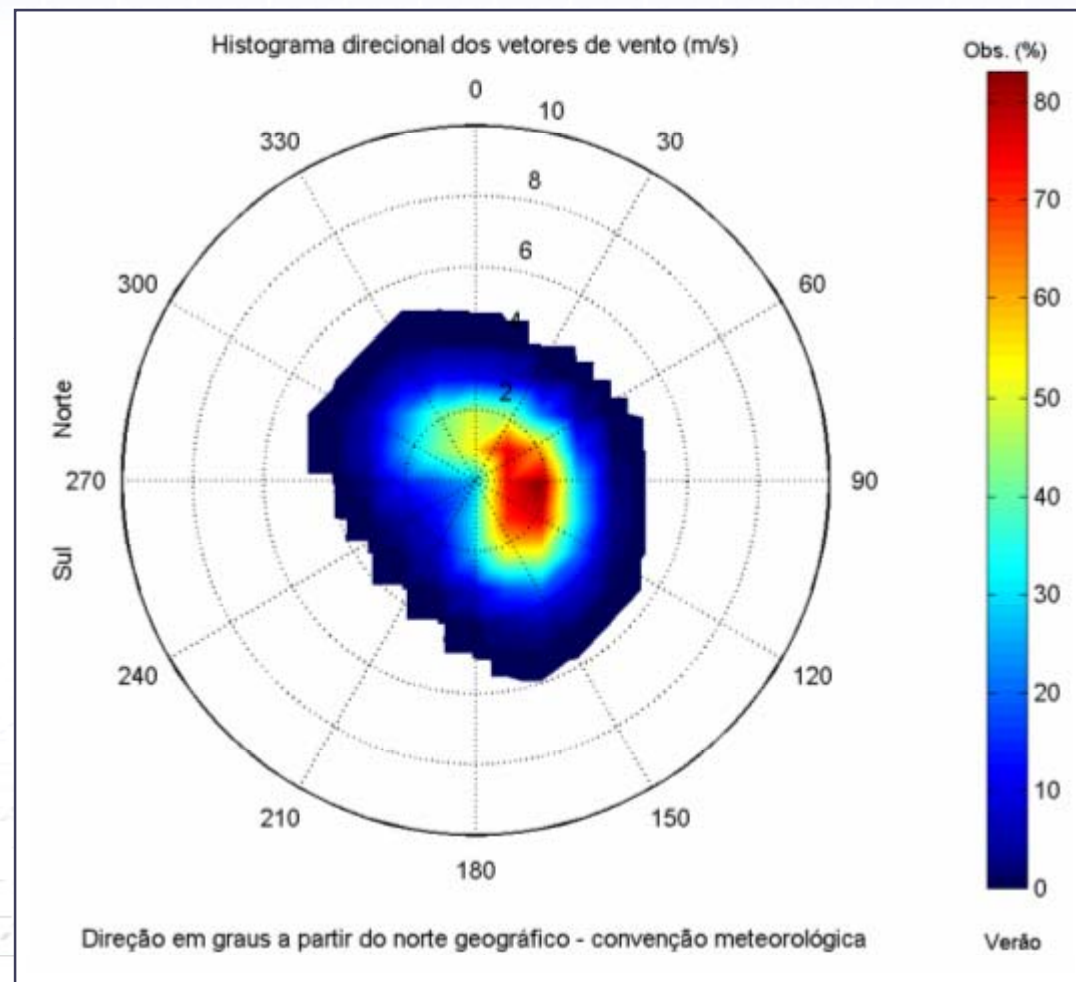


Data Analysis



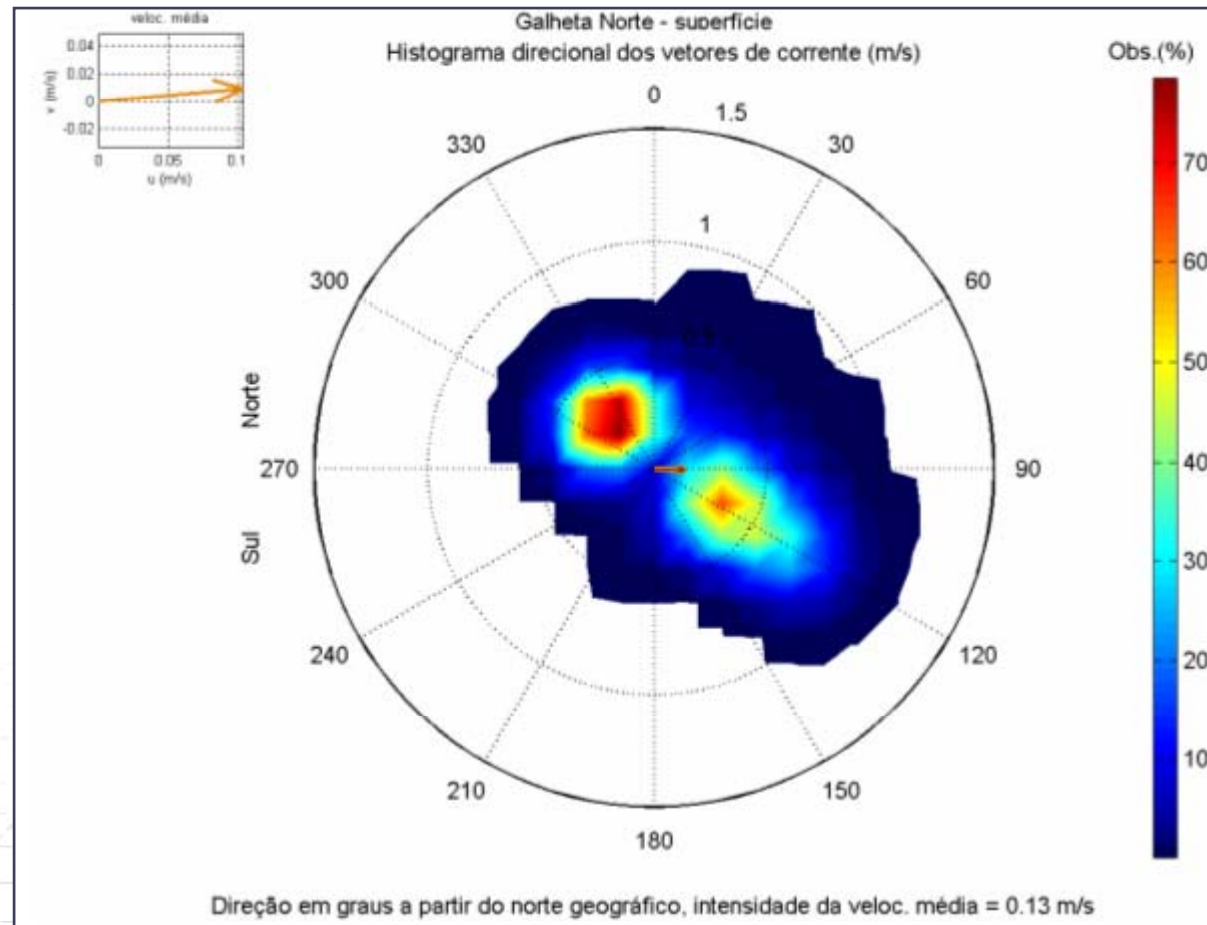
Data Analysis

Wind Analysis:



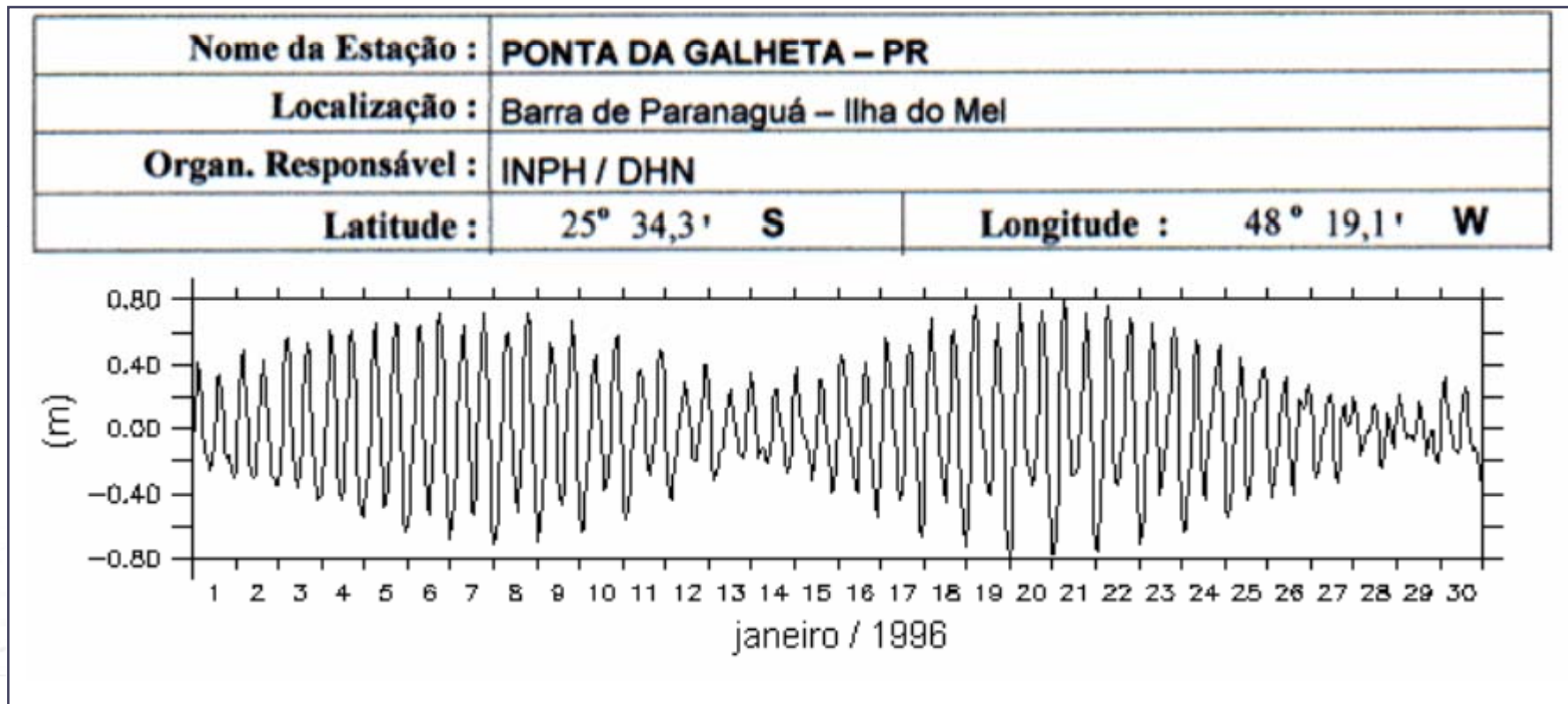
Data Analysis

Current Analysis:



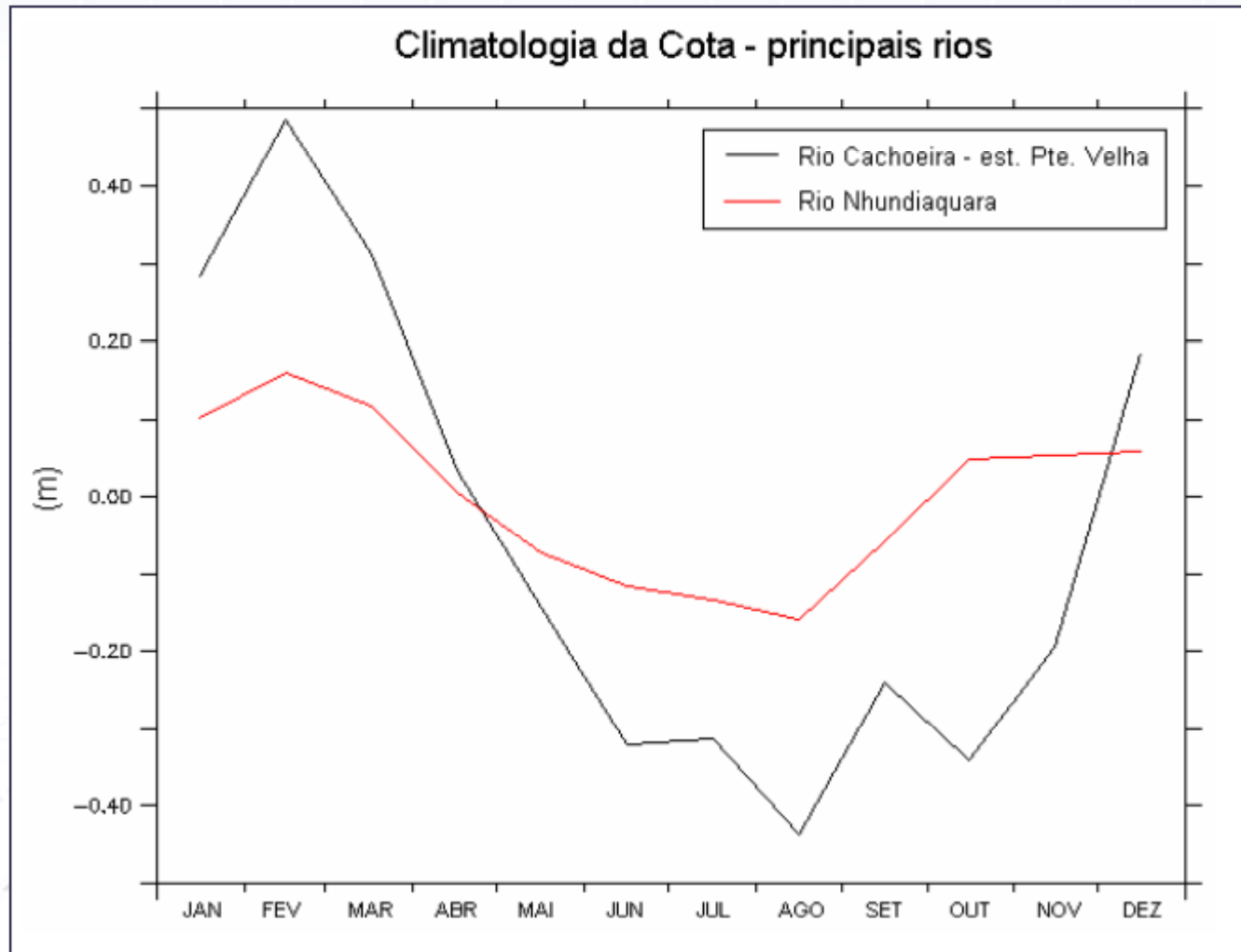
Data Analysis

Tide Analysis:



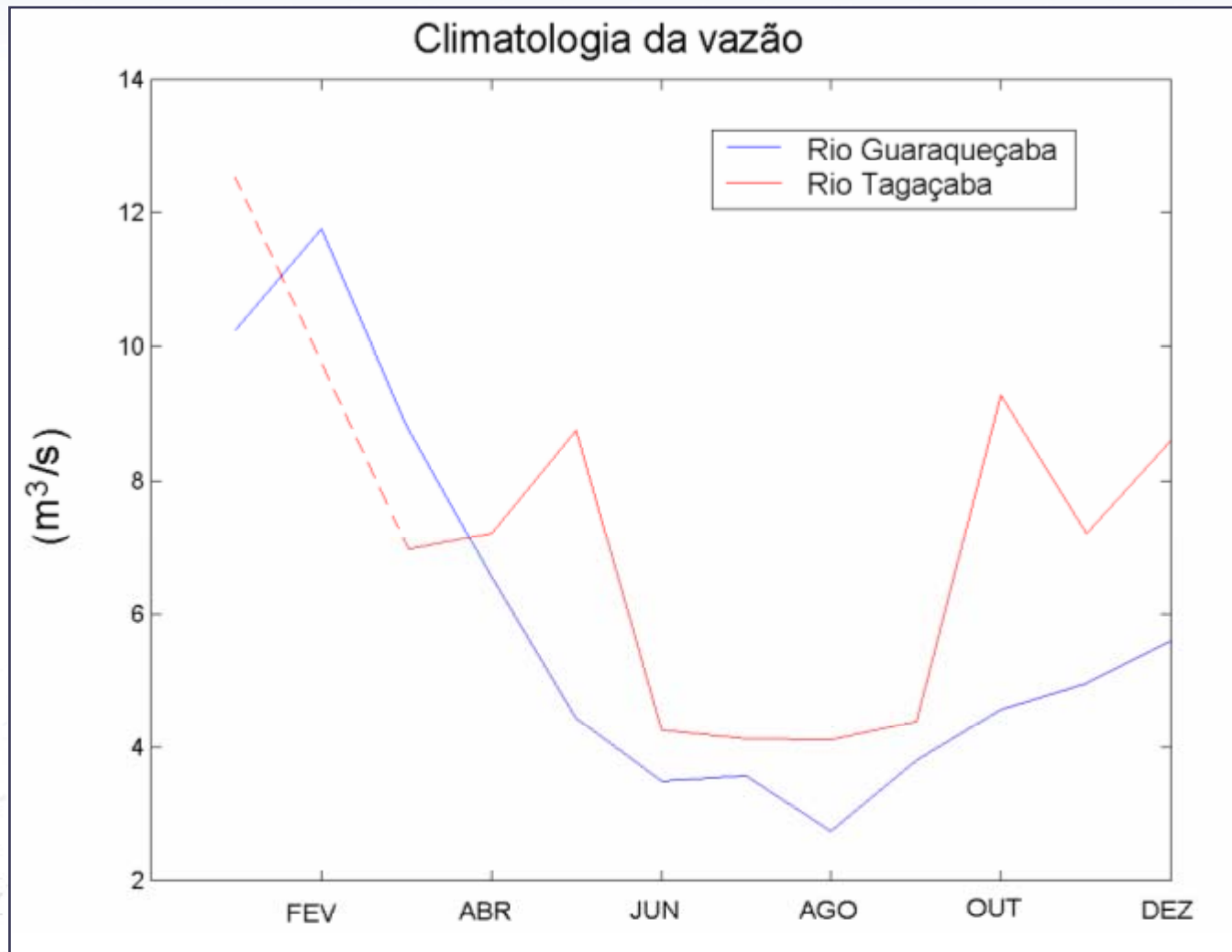
Data Analysis

Hydrological Analysis:

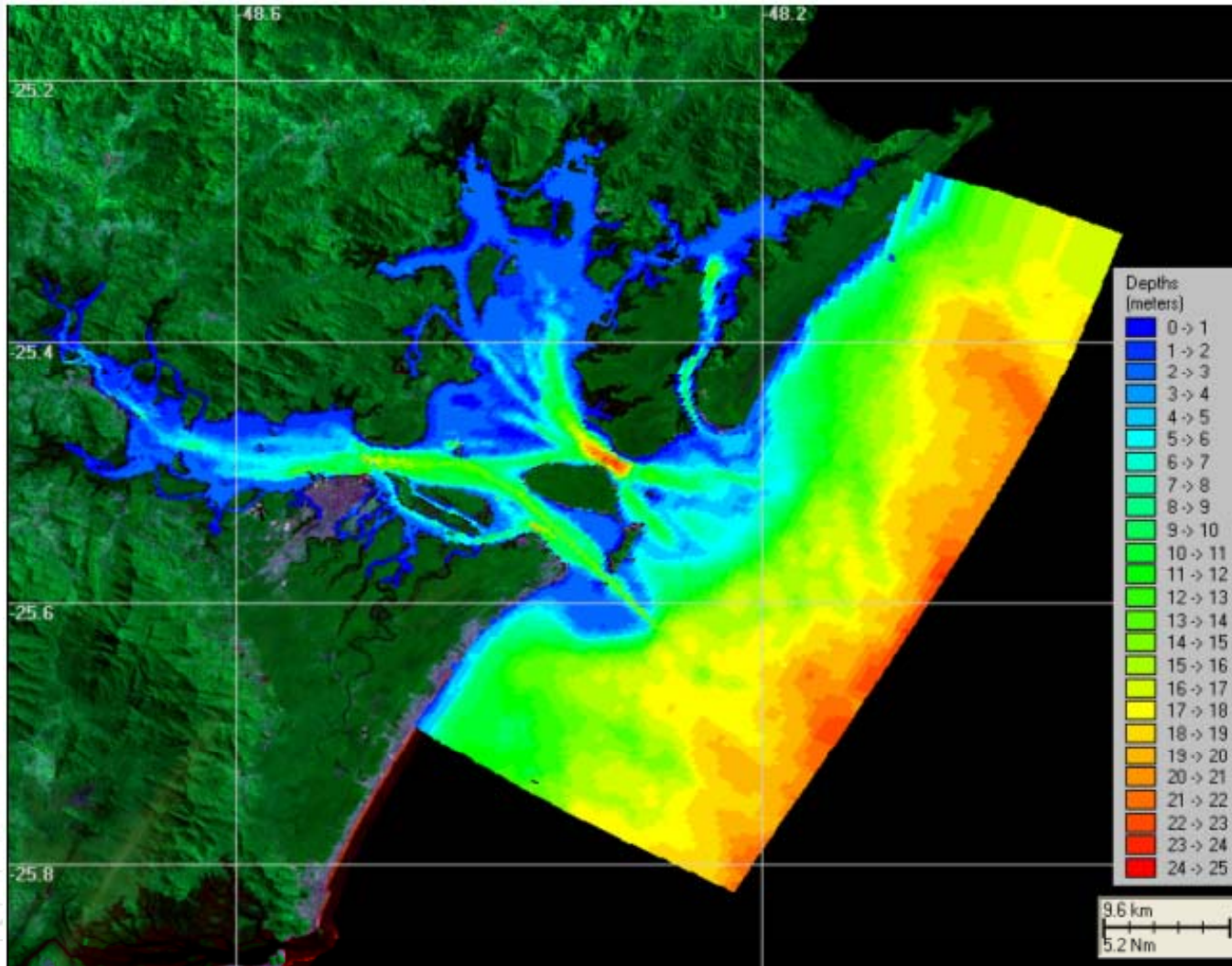


Data Analysis

Hydrological Analysis :

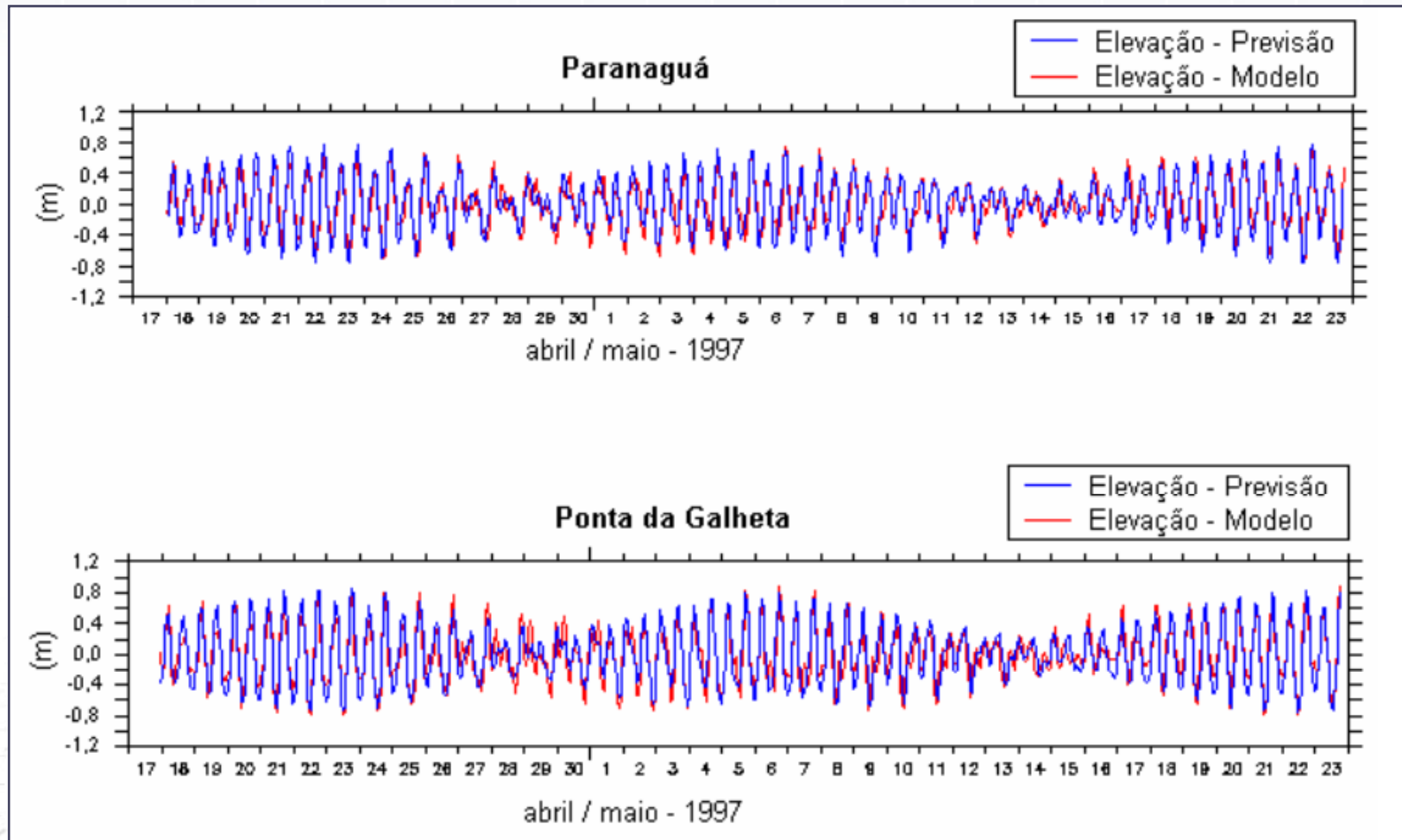


Hydrodynamic Modeling



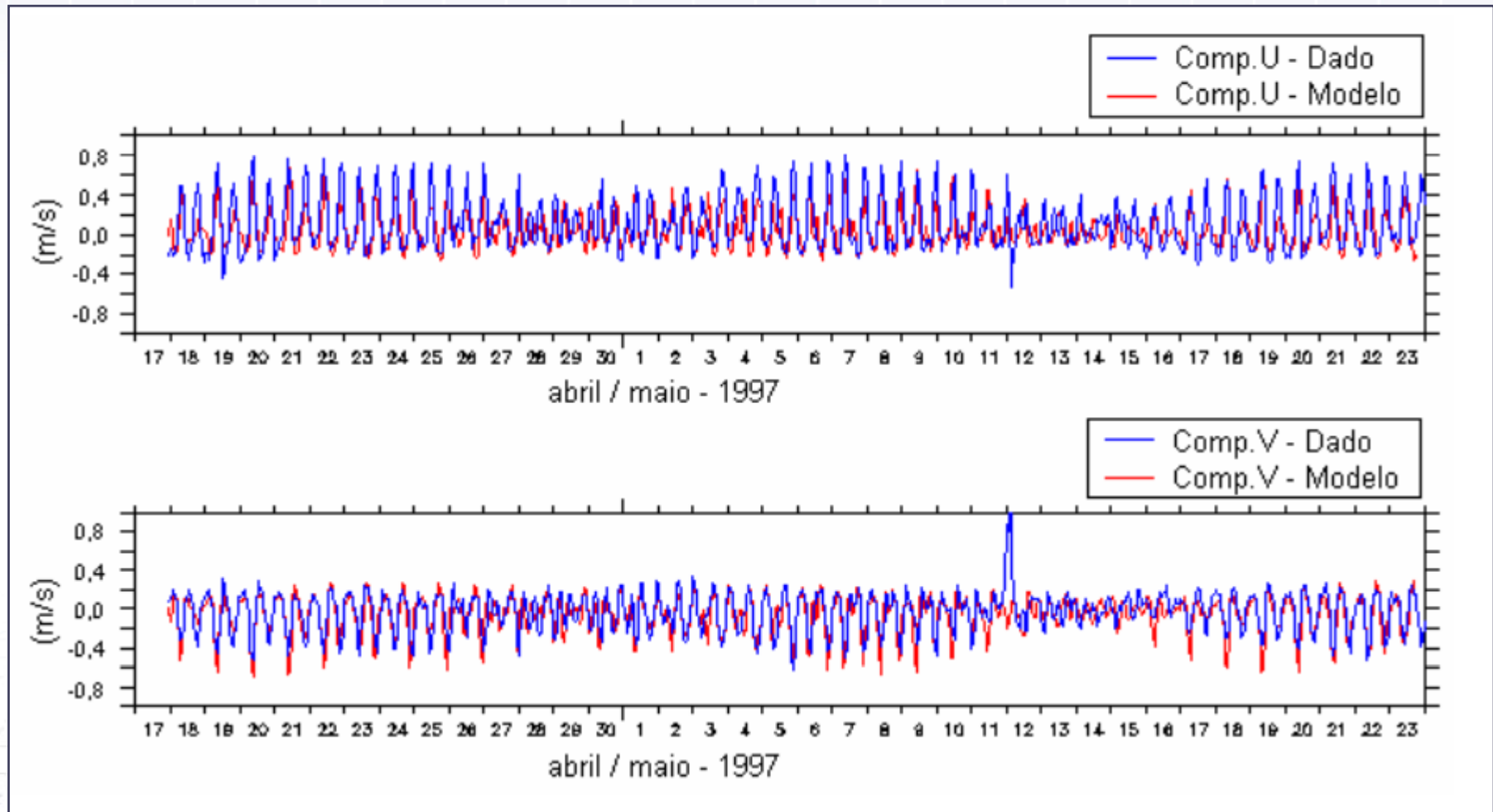
Hydrodynamic Modeling

Sea Level Calibration:



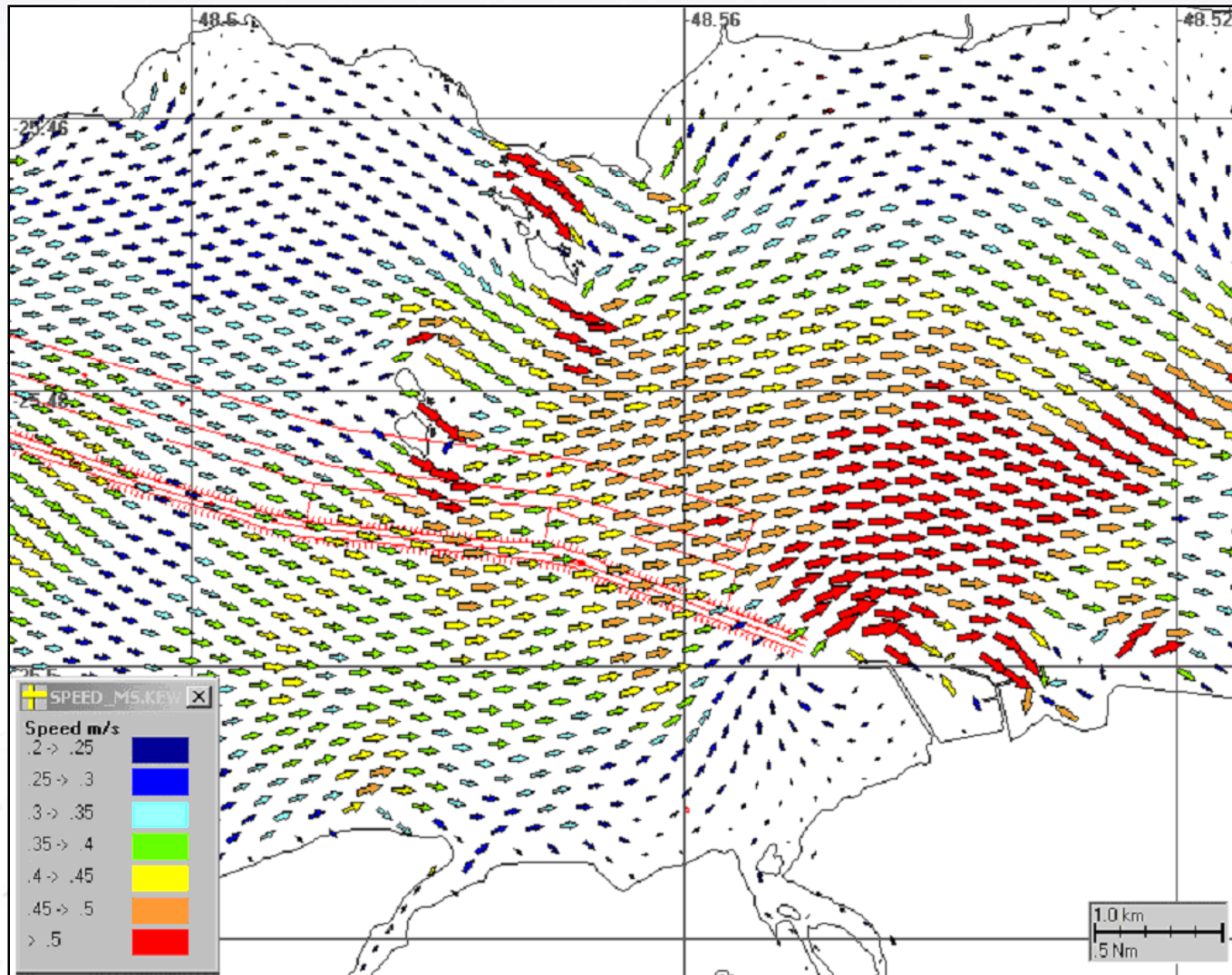
Hydrodynamic Modeling

Current Calibration:

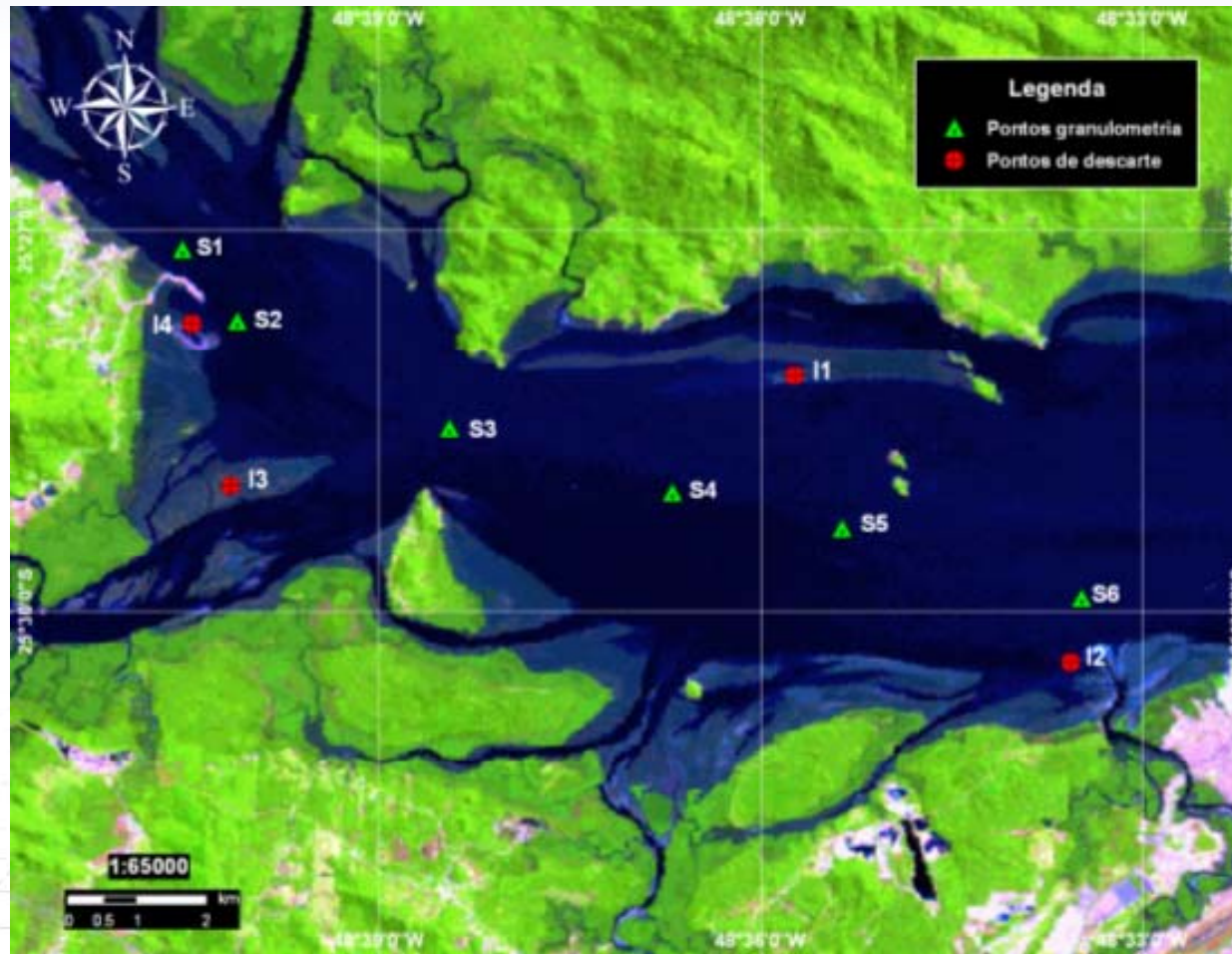


Hydrodynamic Modeling

Current Field Snapshot:



Modeling of Transport, Dispersion and Deposition of Dredged Material



Modeling of Transport, Dispersion and Deposition of Dredged Material

Model inputs and parameters that define a scenario:

Disposal Points

Simulation Period

Disposal Duration

Sediment Information

Current Fields

Output and simulation parameters



Modeling of Transport, Dispersion and Deposition of Dredged Material

Total of 64 scenarios:

4 disposal points

2 seasonal conditions
(summer and winter)

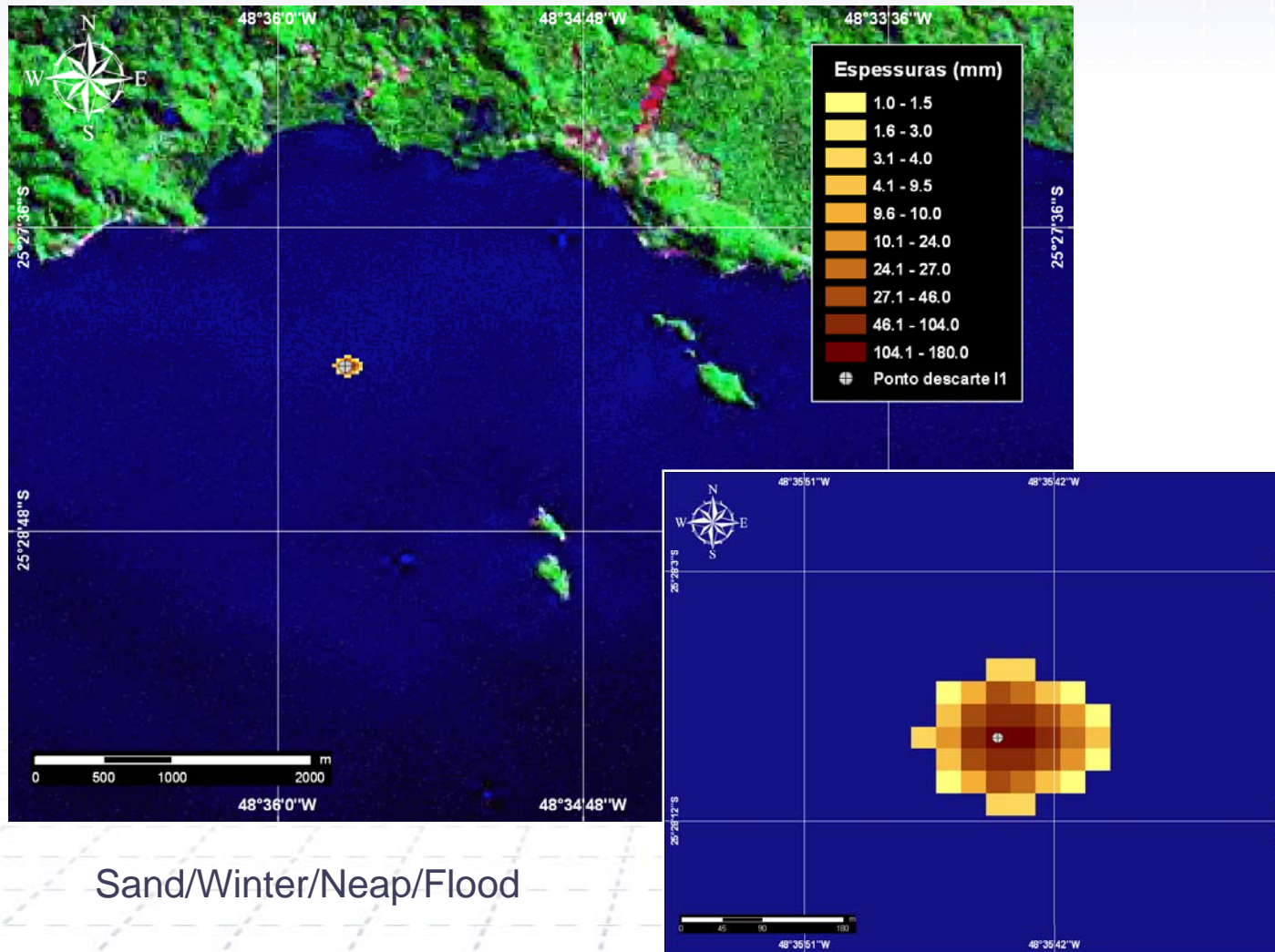
4 tidal current conditions
(spring/neap, ebb/flood)

3 types of sediment
(sand, mud, medium size)



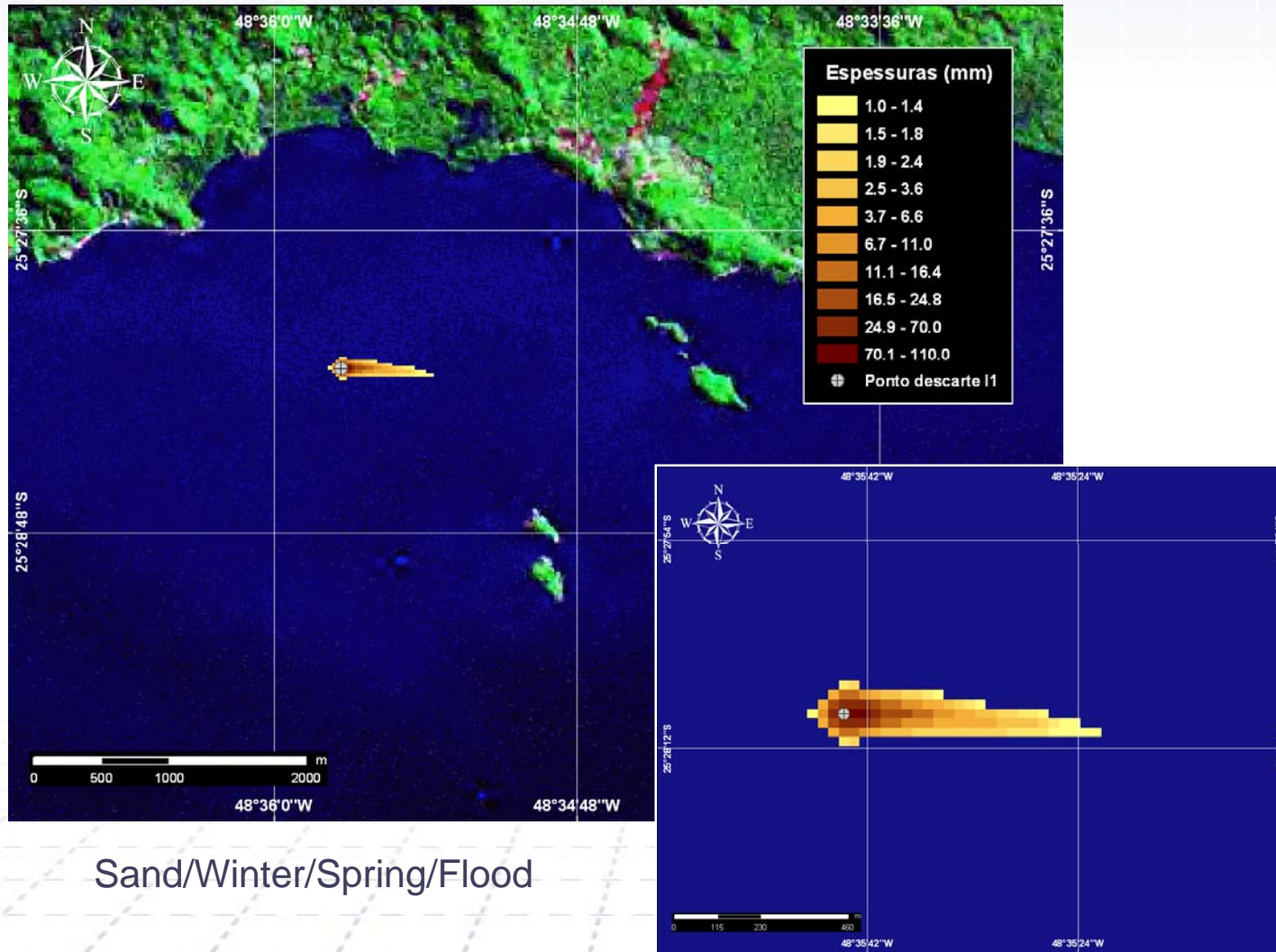
Modeling of Transport, Dispersion and Deposition of Dredged Material

Results



Modeling of Transport, Dispersion and Deposition of Dredged Material

Results

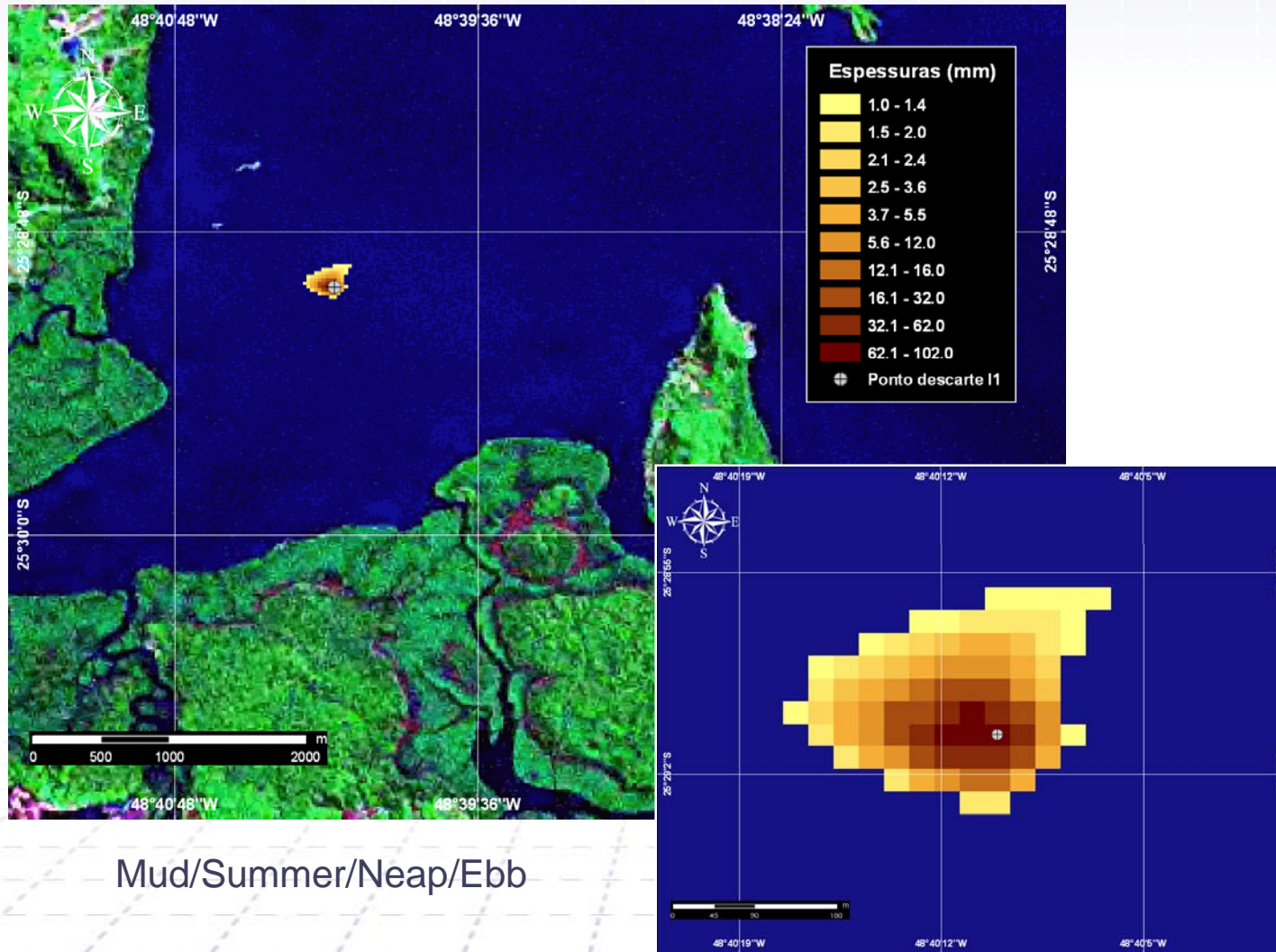


Sand/Winter/Spring/Flood



Modeling of Transport, Dispersion and Deposition of Dredged Material

Results

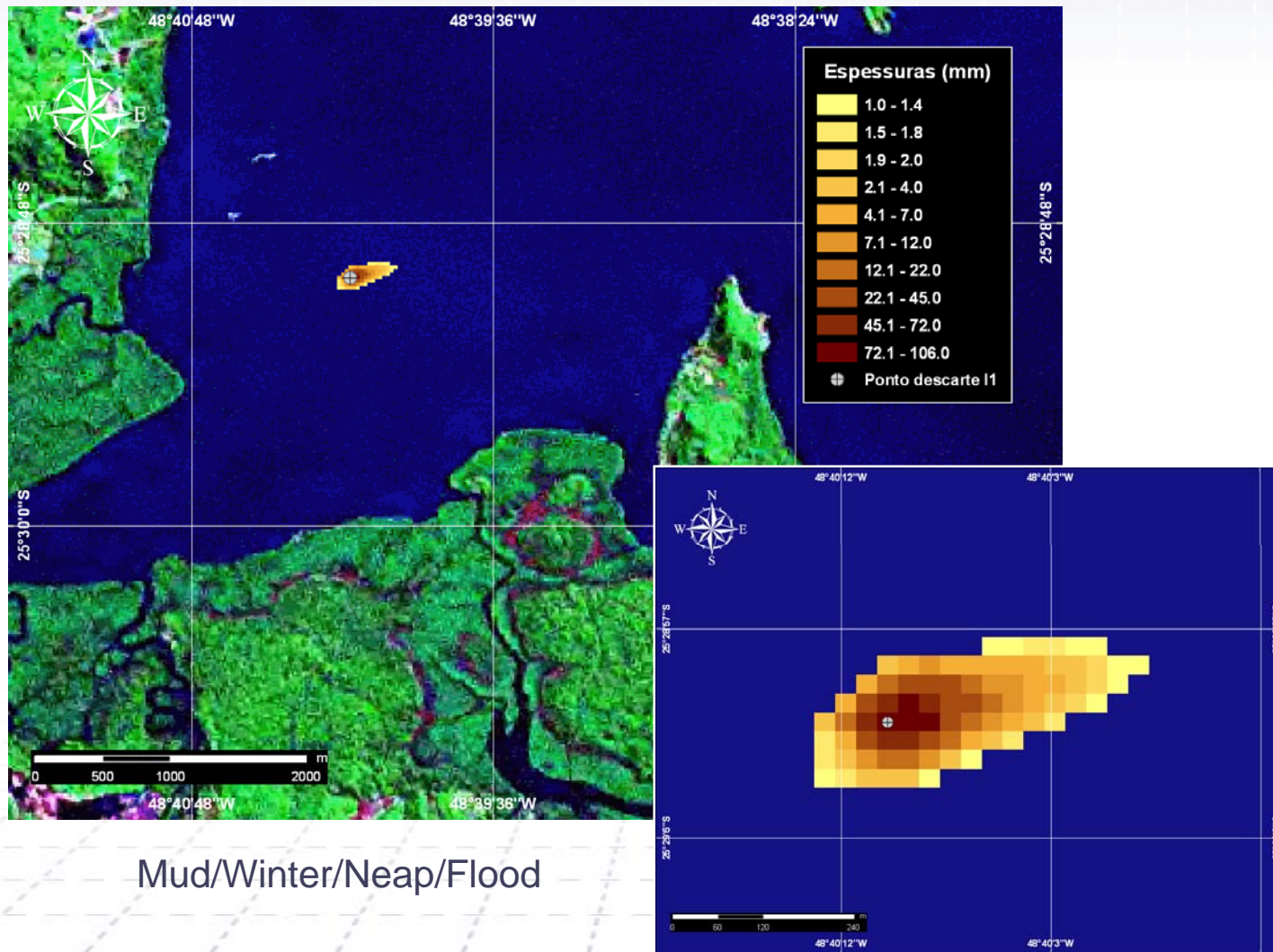


Mud/Summer/Neap/Ebb



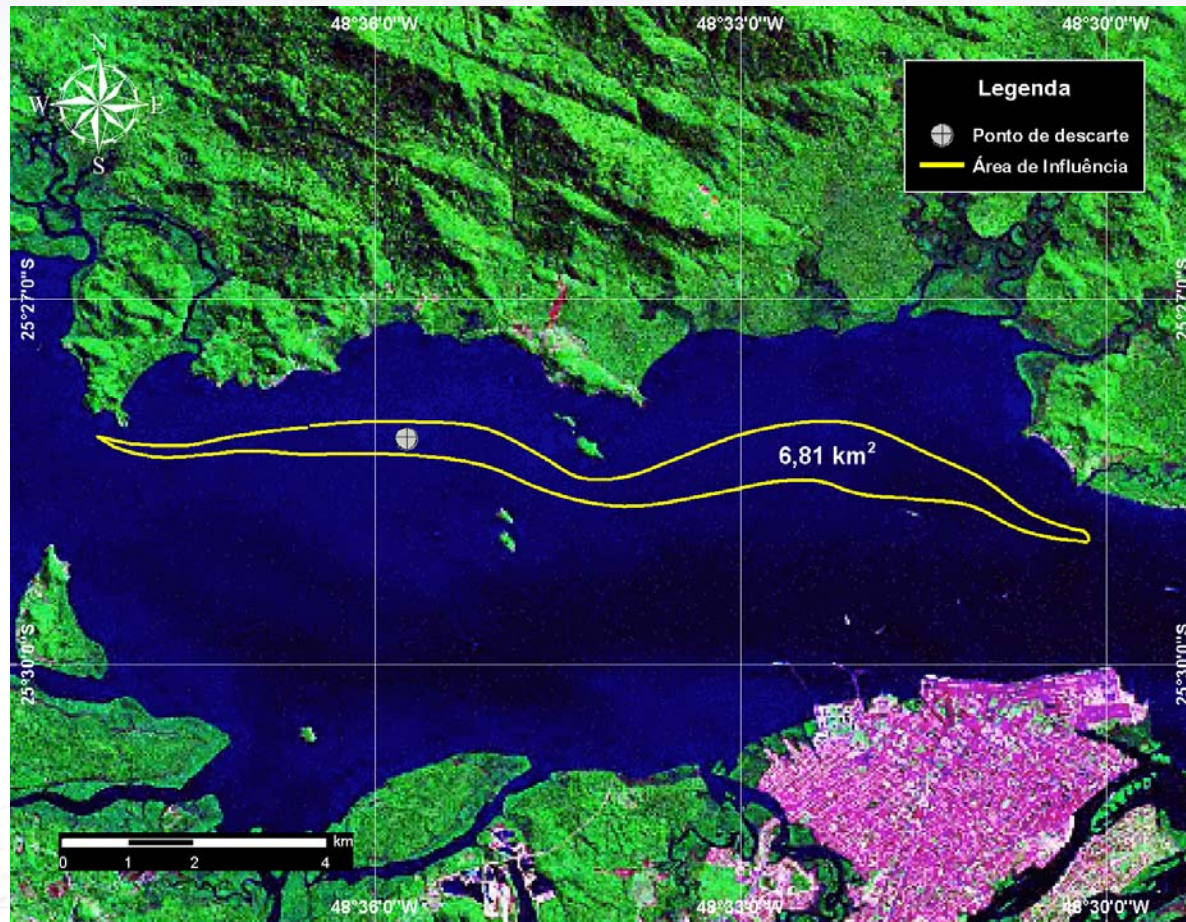
Modeling of Transport, Dispersion and Deposition of Dredged Material

Results



Modeling of Transport, Dispersion and Deposition of Dredged Material

Results

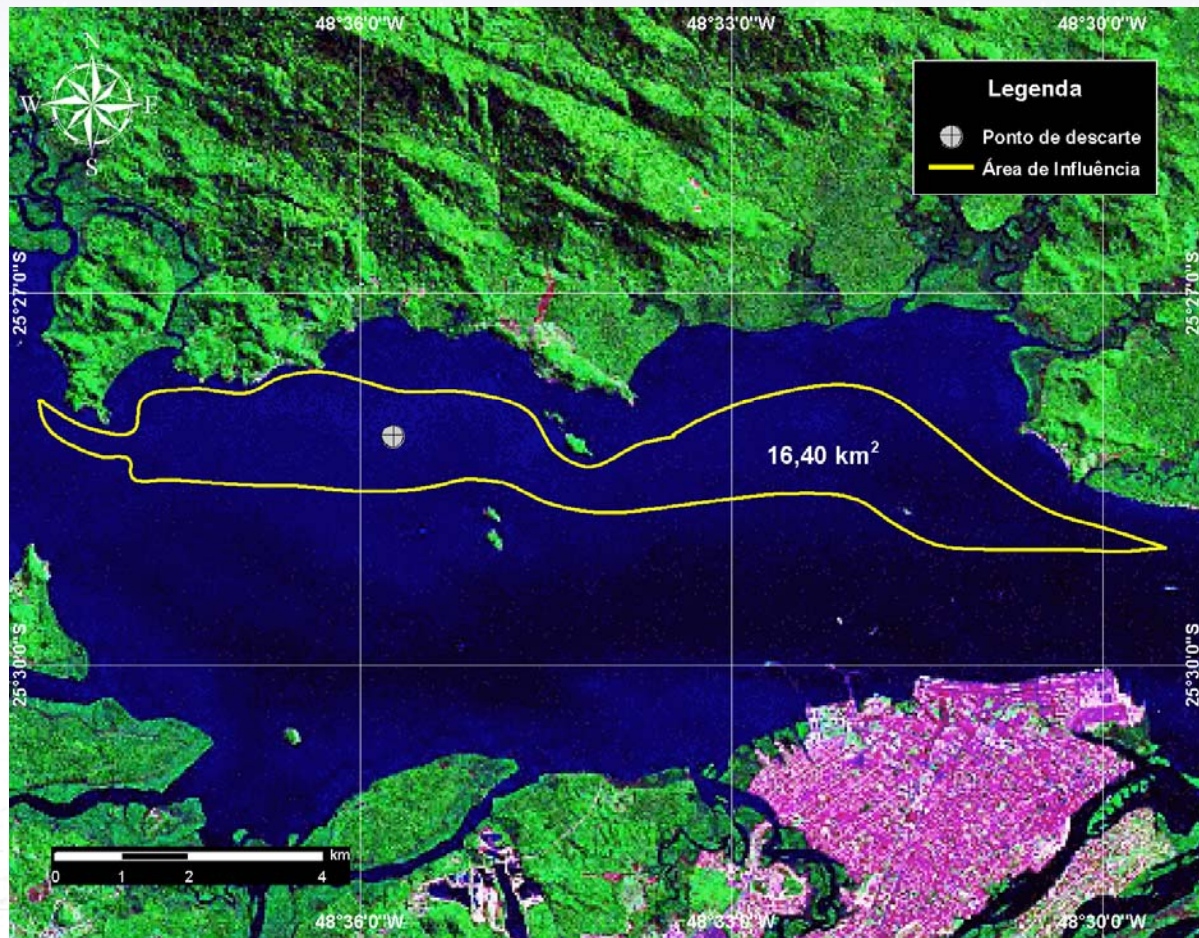


Sand / Point I1



Modeling of Transport, Dispersion and Deposition of Dredged Material

Results

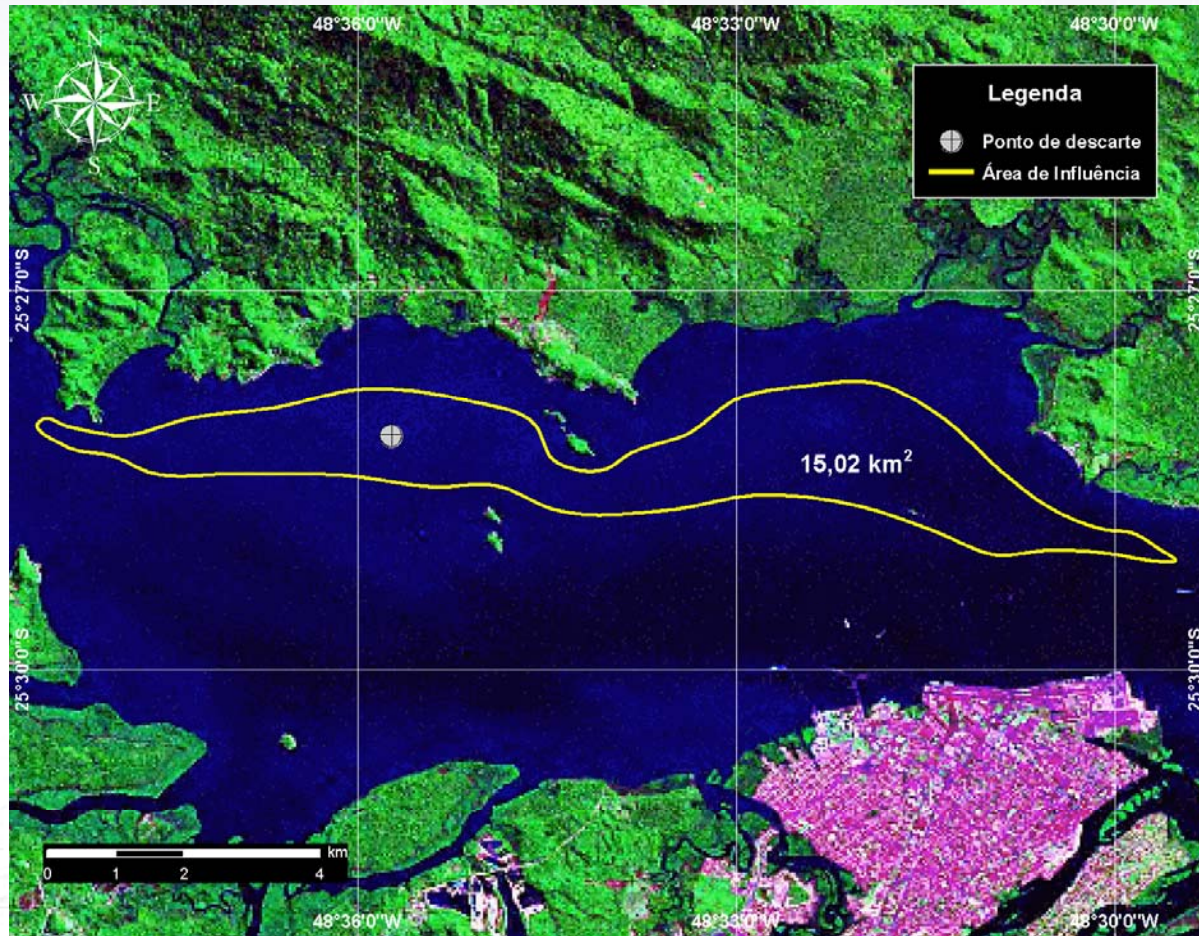


Mud / Point I1



Modeling of Transport, Dispersion and Deposition of Dredged Material

Results



Medium Size / Point I1





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