Building Design Criteria for Climate Change in Florida

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Two damage components of Climate Change are particularly relevant to building design criteria in Florida

Sea Level Rise
Temperature Rise

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SEA LEVEL RISE

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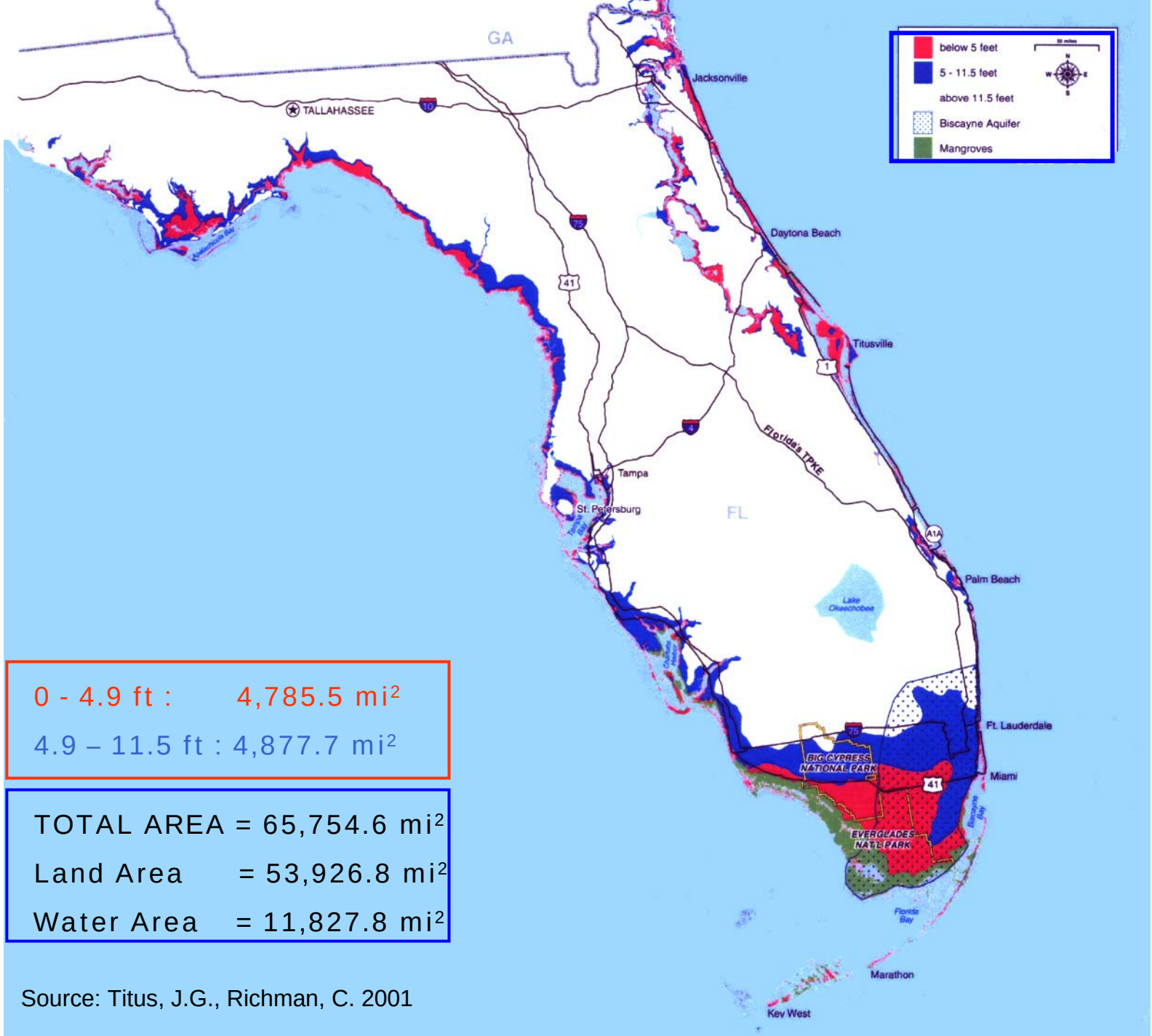
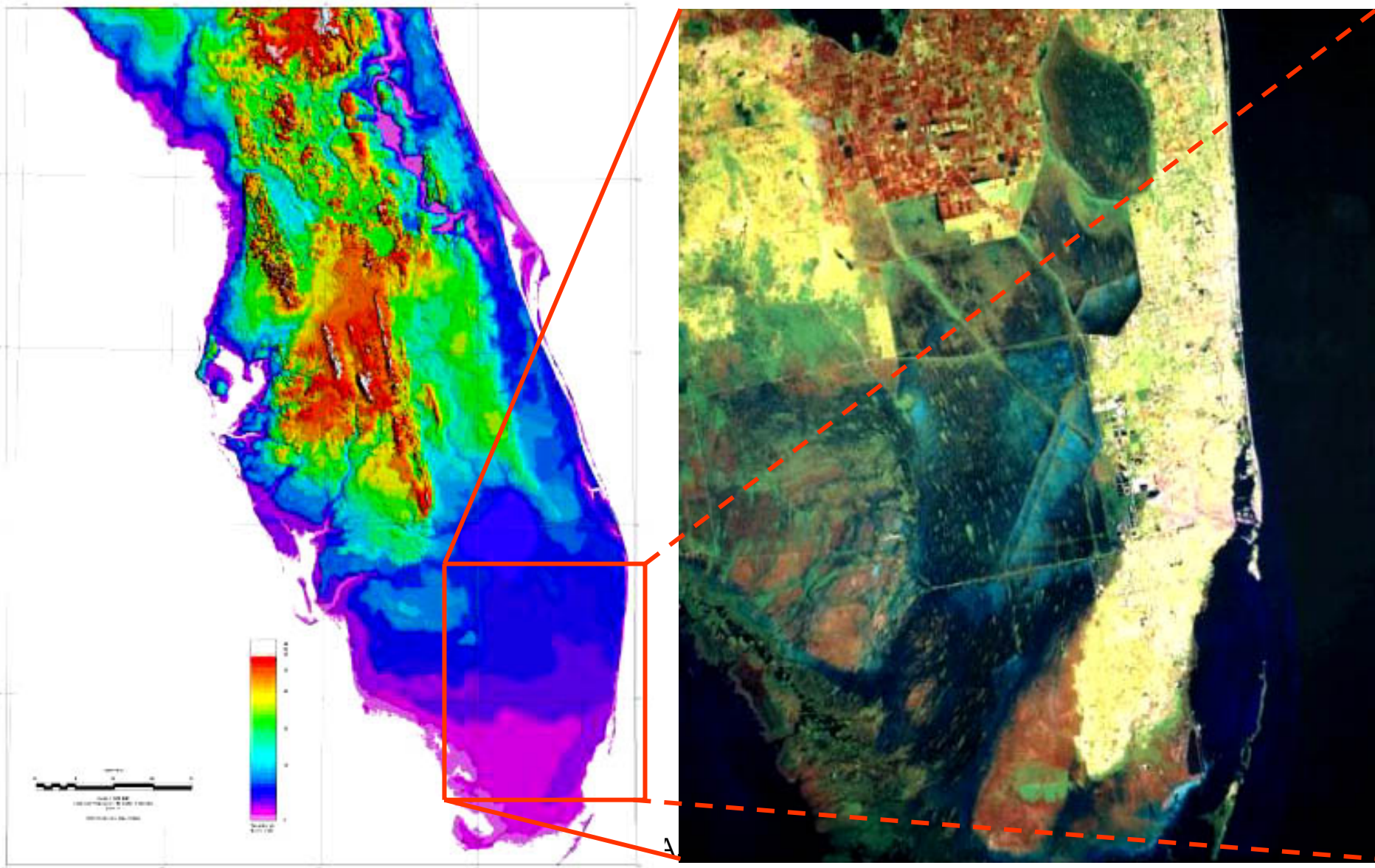


Source: Titus, J.G., Richman, C. 2001

Topography of the Florida Peninsula



SEA LEVEL RISE
Built Environment

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Consequences

- Storm surge – higher – stronger – farther inland
- Higher waves – higher loads
- Hydrodynamic pressure – stronger – higher loads
- Floating debris – larger – higher impact loads
- Flooding - deeper
- Hydrostatic pressure – higher loads
- Beach erosion – sand - undermining

Design Criteria

- Elevated sites – elevated buildings
- Surge deflectors
- Surge/flood doors – barriers
- Flood-proofing – to higher levels
- Stronger structure required for higher loads
- Stronger building envelope
- Impact protection
- Hardened outdoor infrastructure

TEMPERATURE RISE

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Consequences

- Heat waves
- Extreme rain events
- Flooding – flash flooding
- Higher humidity - Mold
- Drought
- Wild fires
- Air quality – tropospheric ozone
- Water availability – quality issues

Design Criteria

- Roof drainage capacity
- Improved water penetration barriers
- Site drainage
- Cooling loads – higher electrical load
- Additional insulation
- Water pressure boosters
- Water recycling
- Air conditioning – air filtration needs

Agenda for Action

- Development and adoption of design criteria
- Building code process
- R & D new products and systems
- Product approval process
- Impact on construction industry
- Higher cost of construction
- Retrofitting of existing buildings
- Relocation – elevation
- Energy conservation – higher utility costs
- Insurance issues