

Development of Indicators for Regional Integrated Bluff Management

Nick Jordan, Brent Teske, Chin Wu



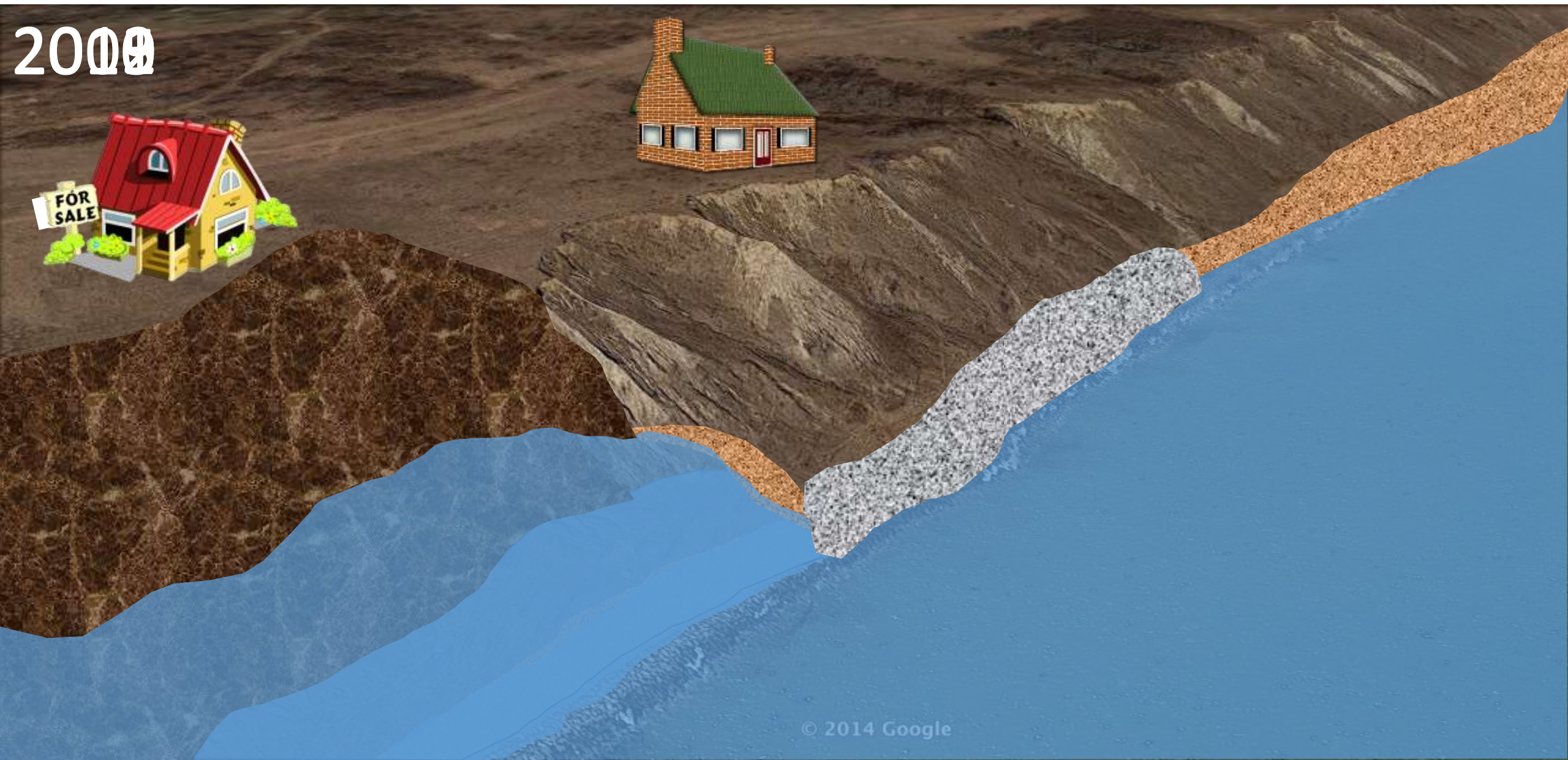
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**WISCONSIN COASTAL
MANAGEMENT PROGRAM**

Coastal Bluff Erosion

2000



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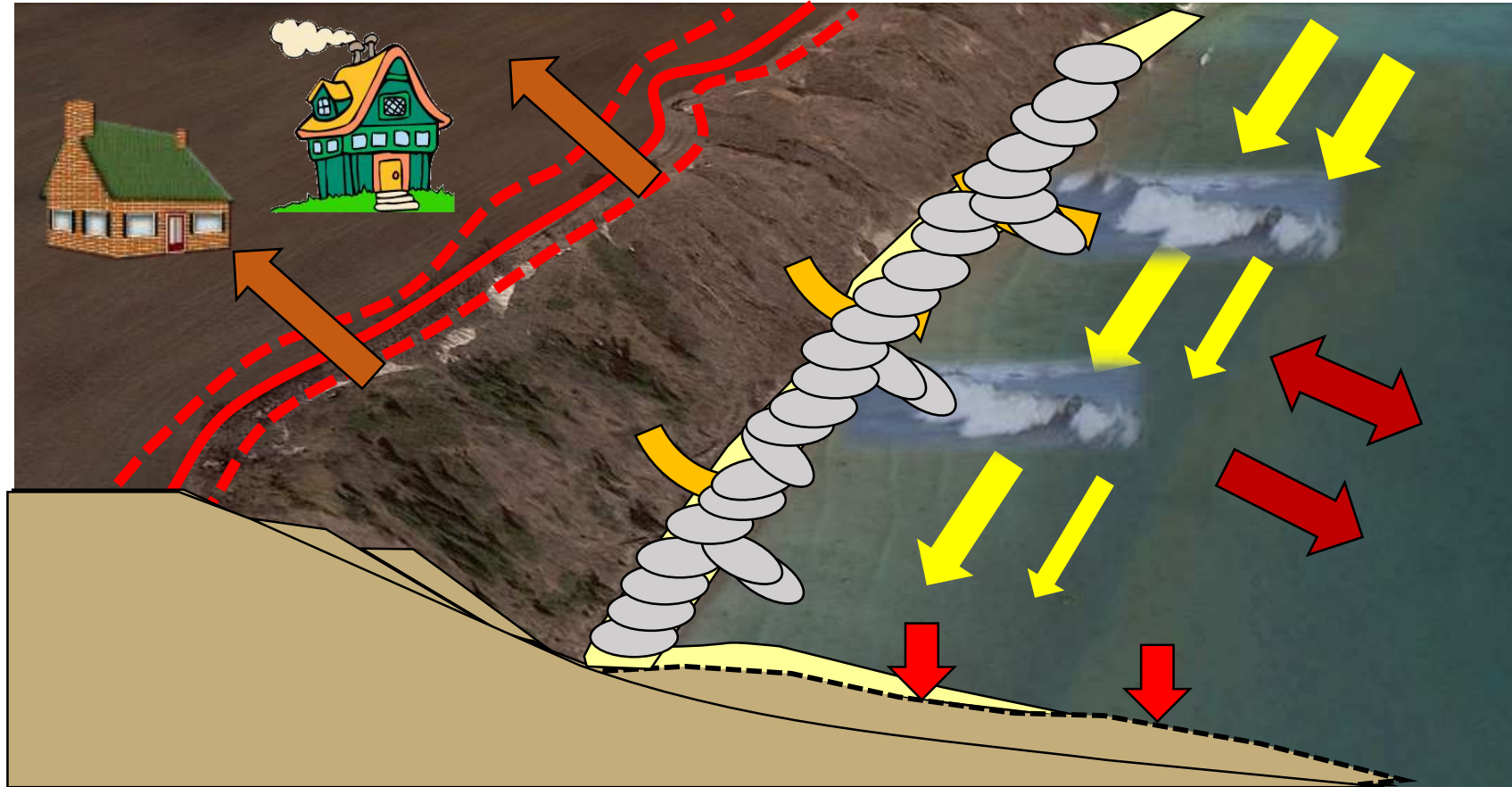


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Bluff erosion affects many coastal communities in Wisconsin



Coastal Bluff Processes



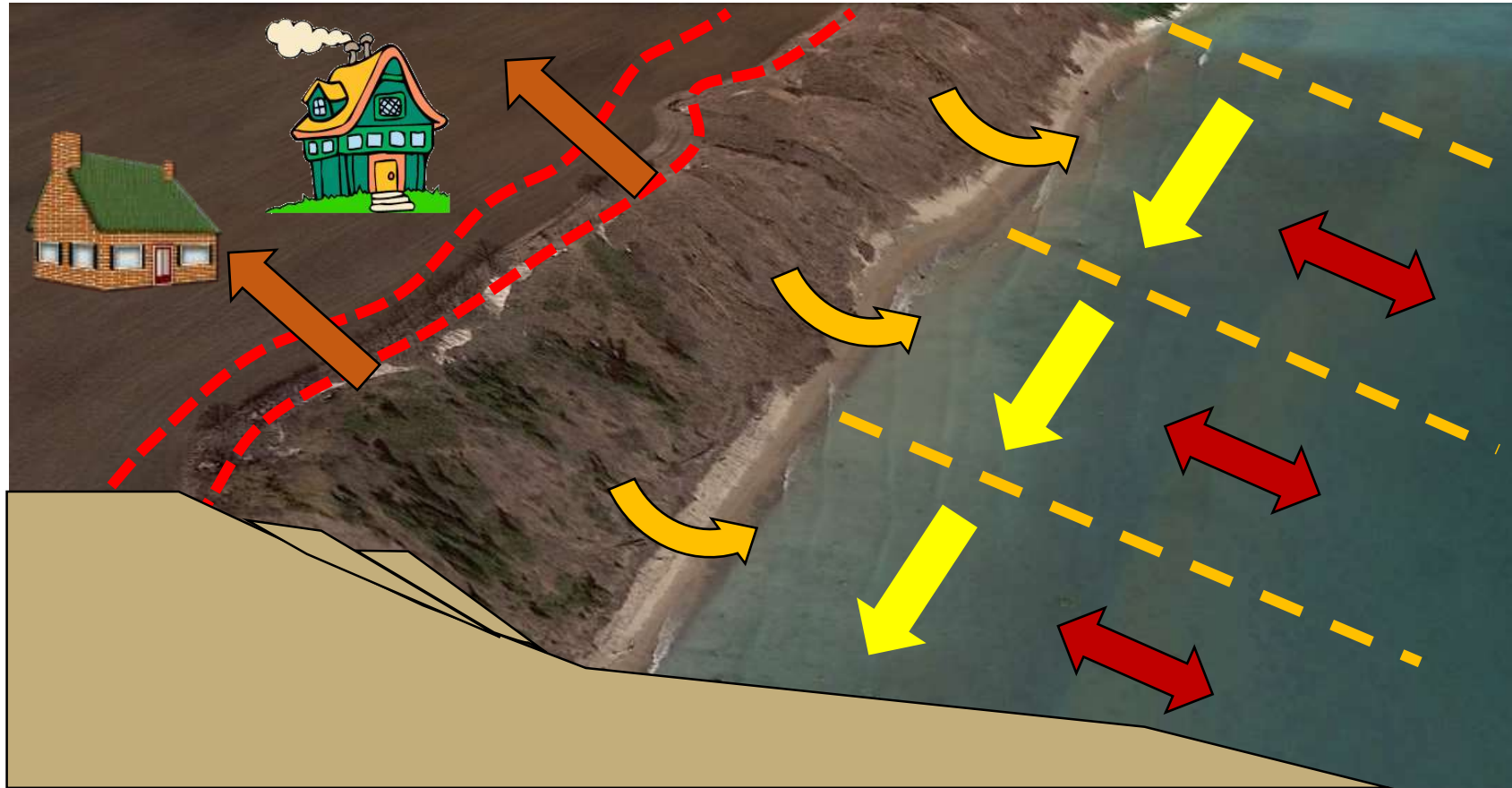
Bluff Recession

Wave Attack

Longshore Transport

Cross-shore Transport

How do we address the balance of nearshore sediment transport?

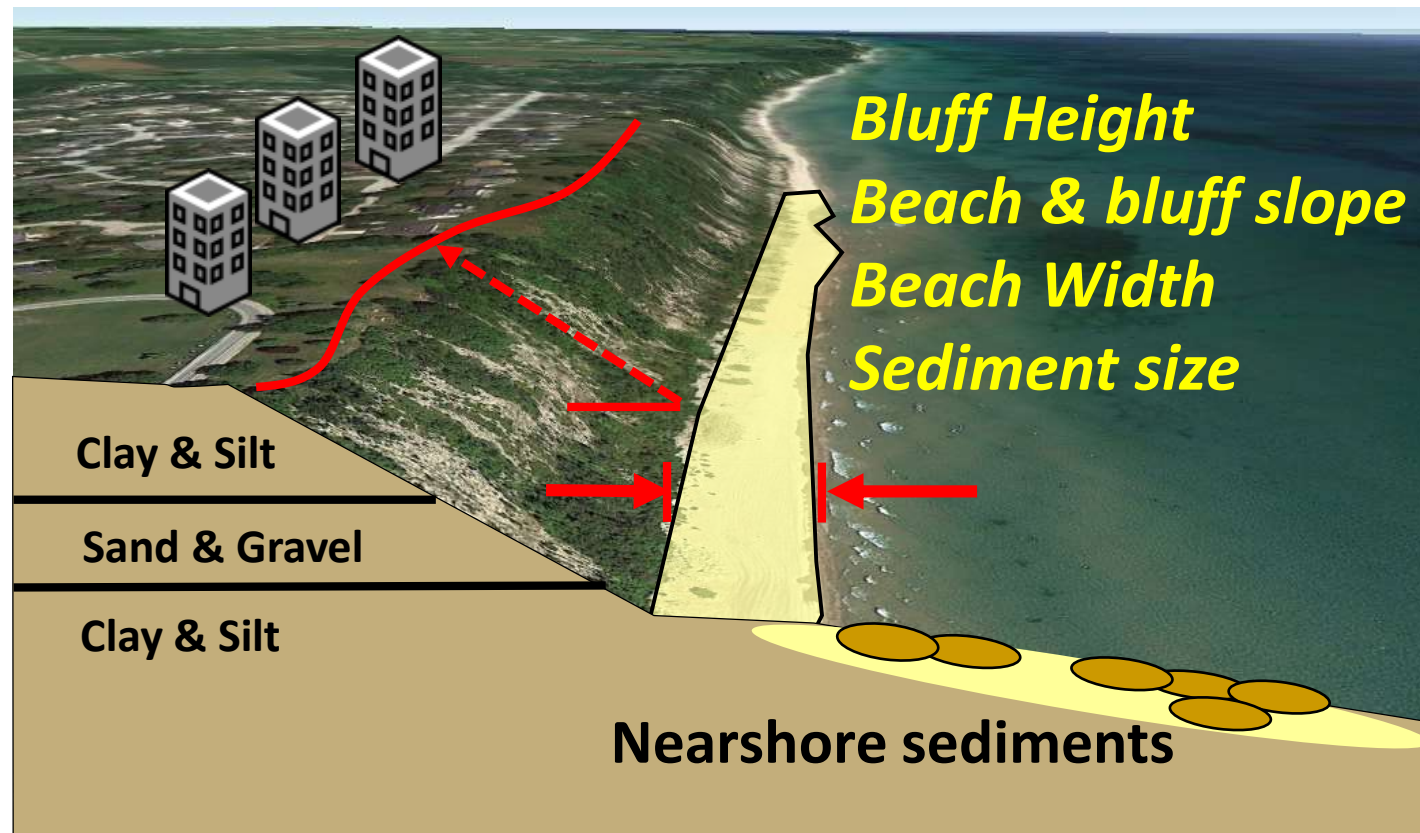


Regional Sediment Budgets

Indicators for Regional Sediment Budgets

1. Primary indicators

- Measurements of bluff and beach
- Observations of coastline



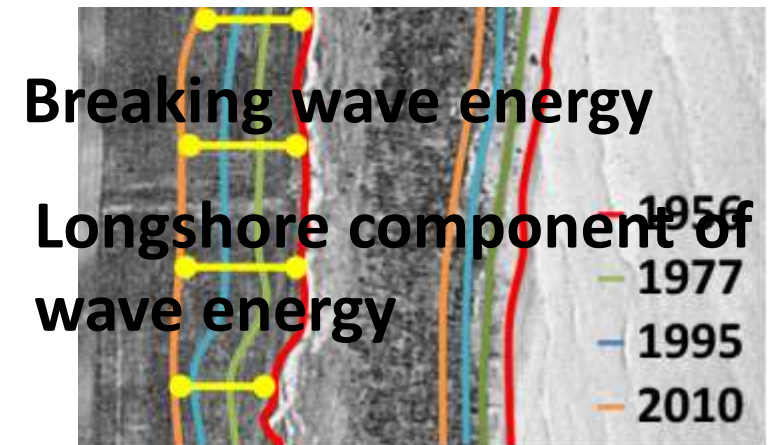
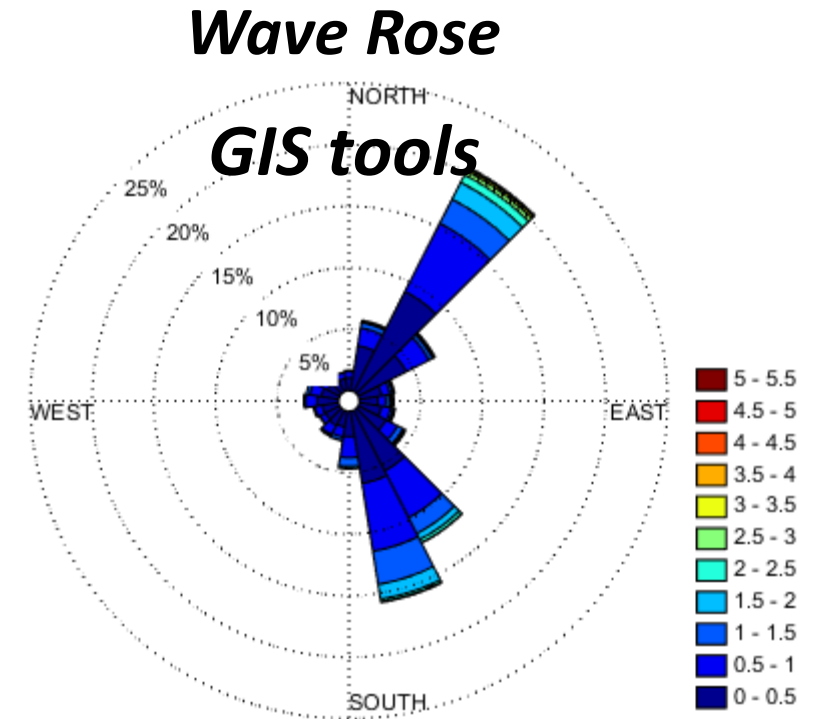
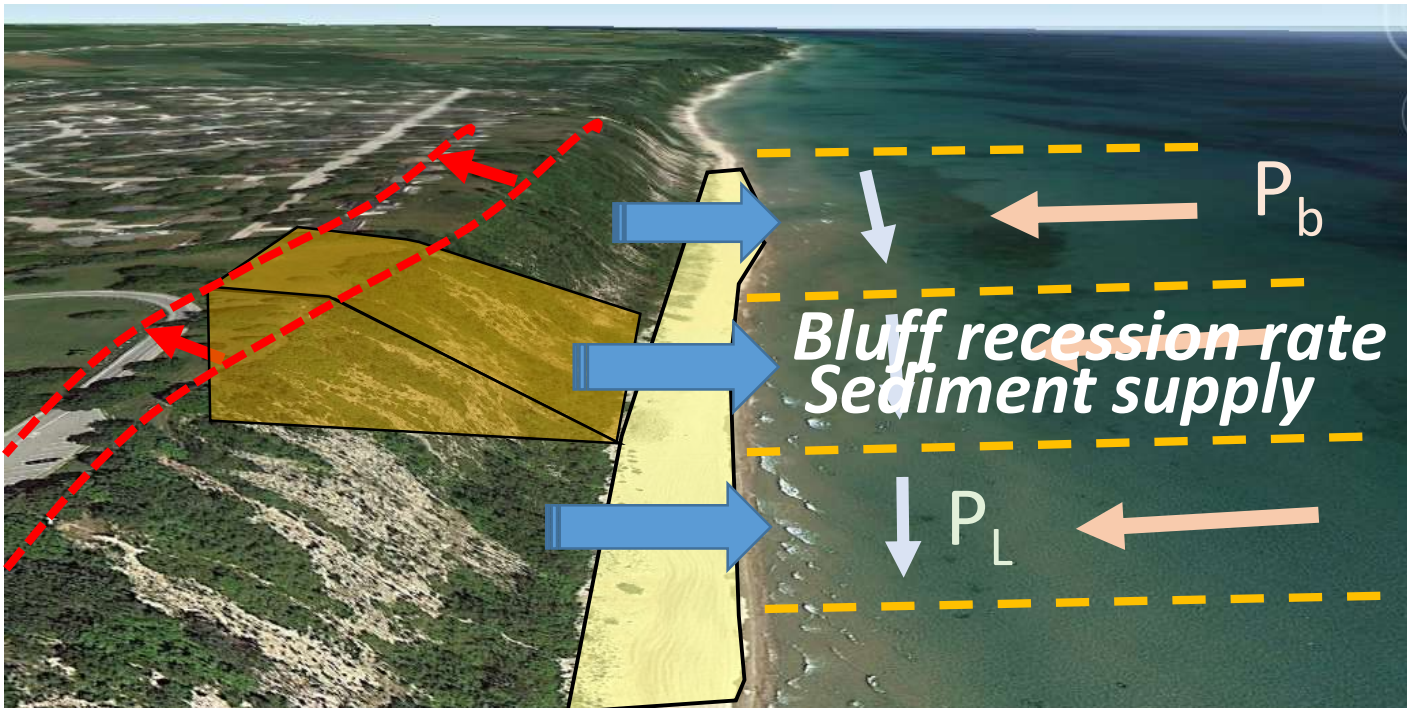
Field Measurements



Indicators for Regional Sediment Budgets

2. Process indicators

- Measure **geomorphic** processes
- Analyze **wave climate**



Indicators for Regional Sediment Budgets

2. Process indicators

- Quantify **geomorphic** processes
- Analyze **wave climate**
- Determine **longshore sediment transport (LST)** rates



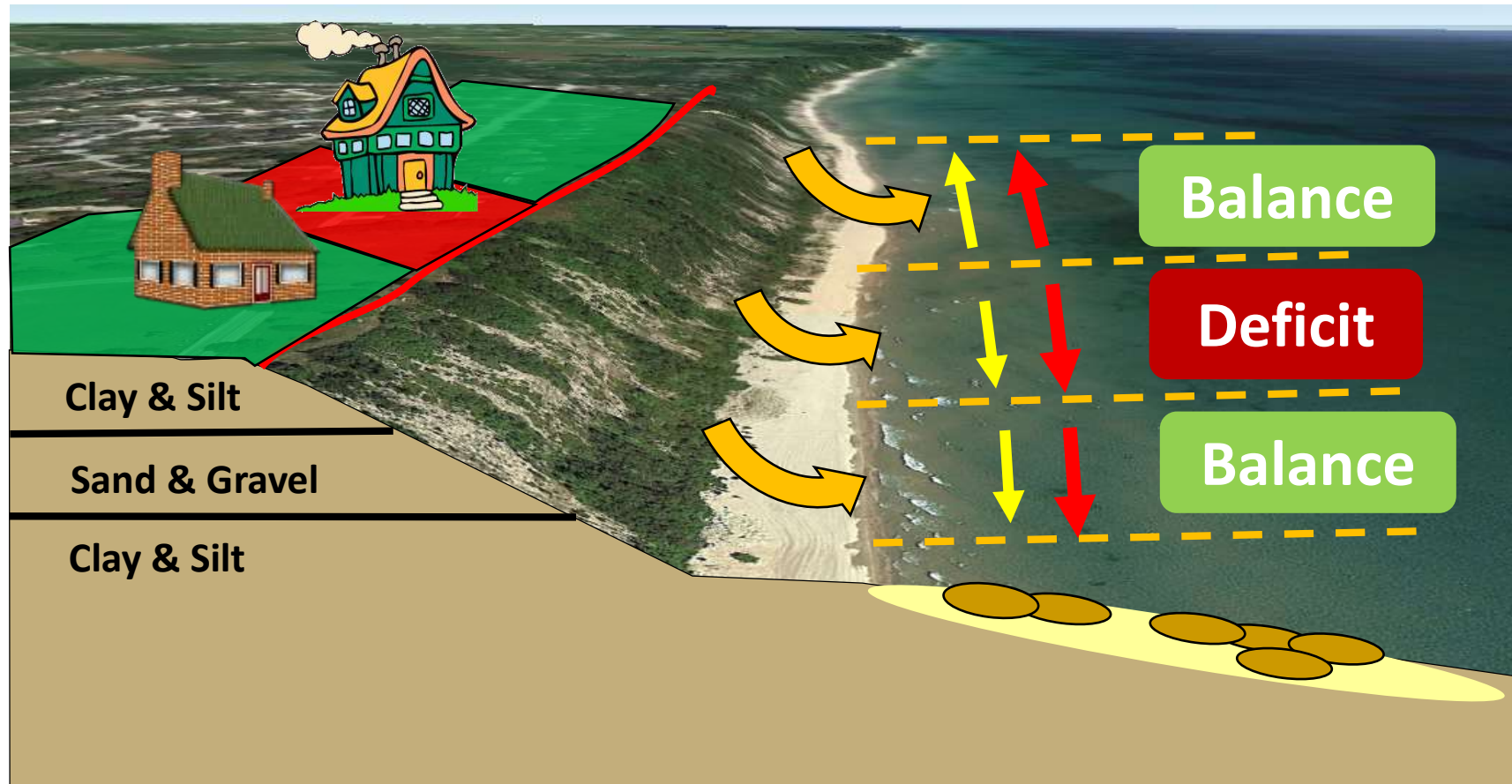
Potential LST
Actual LST
Wave height & period
Cross-shore transport
Beach slope
Beach sediment size
Angle of incidence

Indicators for Regional Sediment Budgets

3. Outcome indicators

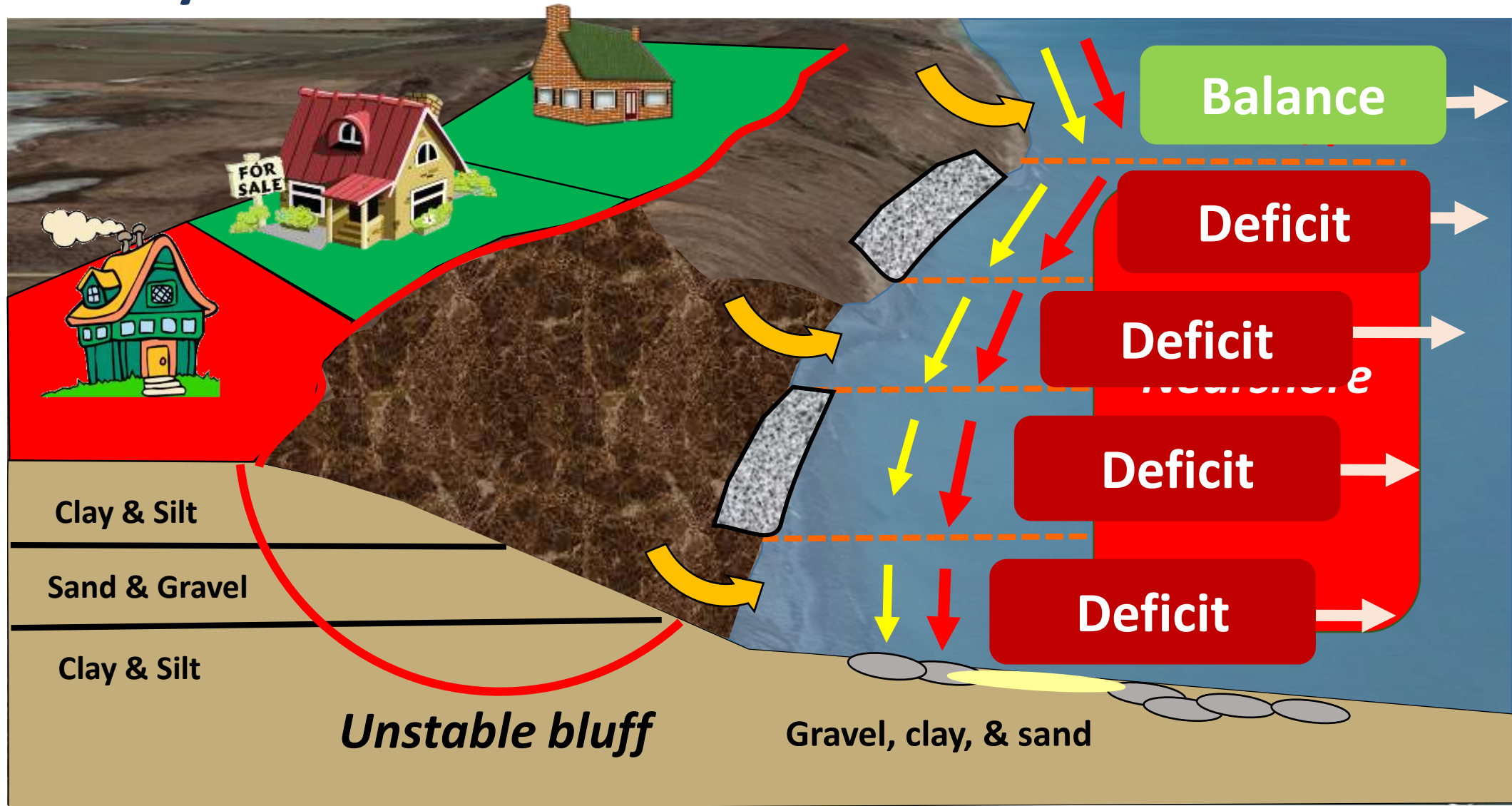
a. Regional sediment budget balance

b. Predict coastal and nearshore erosion risk



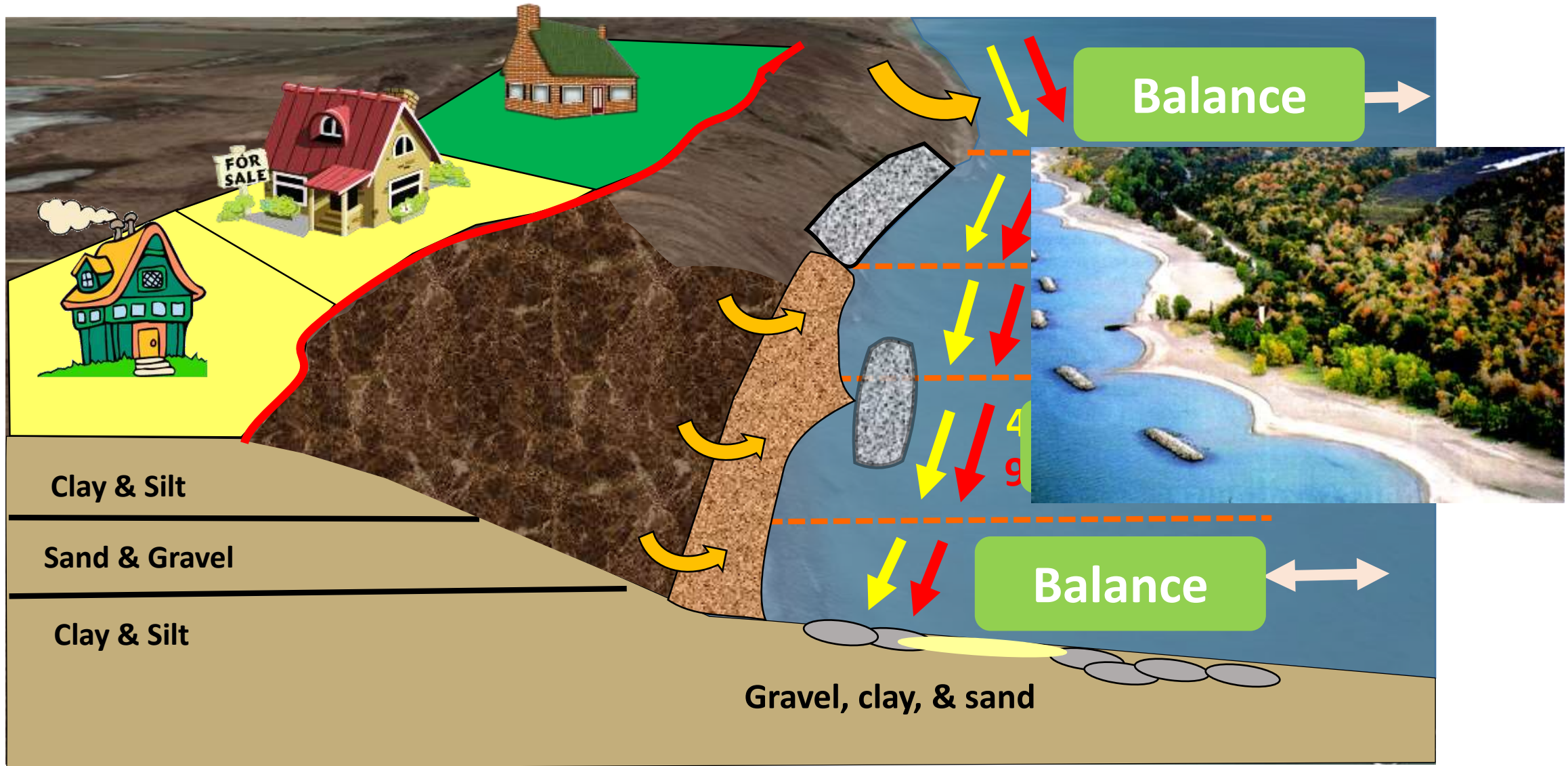
Regional Sediment Budget

Primary Indicators Process Indicators Outcome Indicators



Regional Sediment Budget

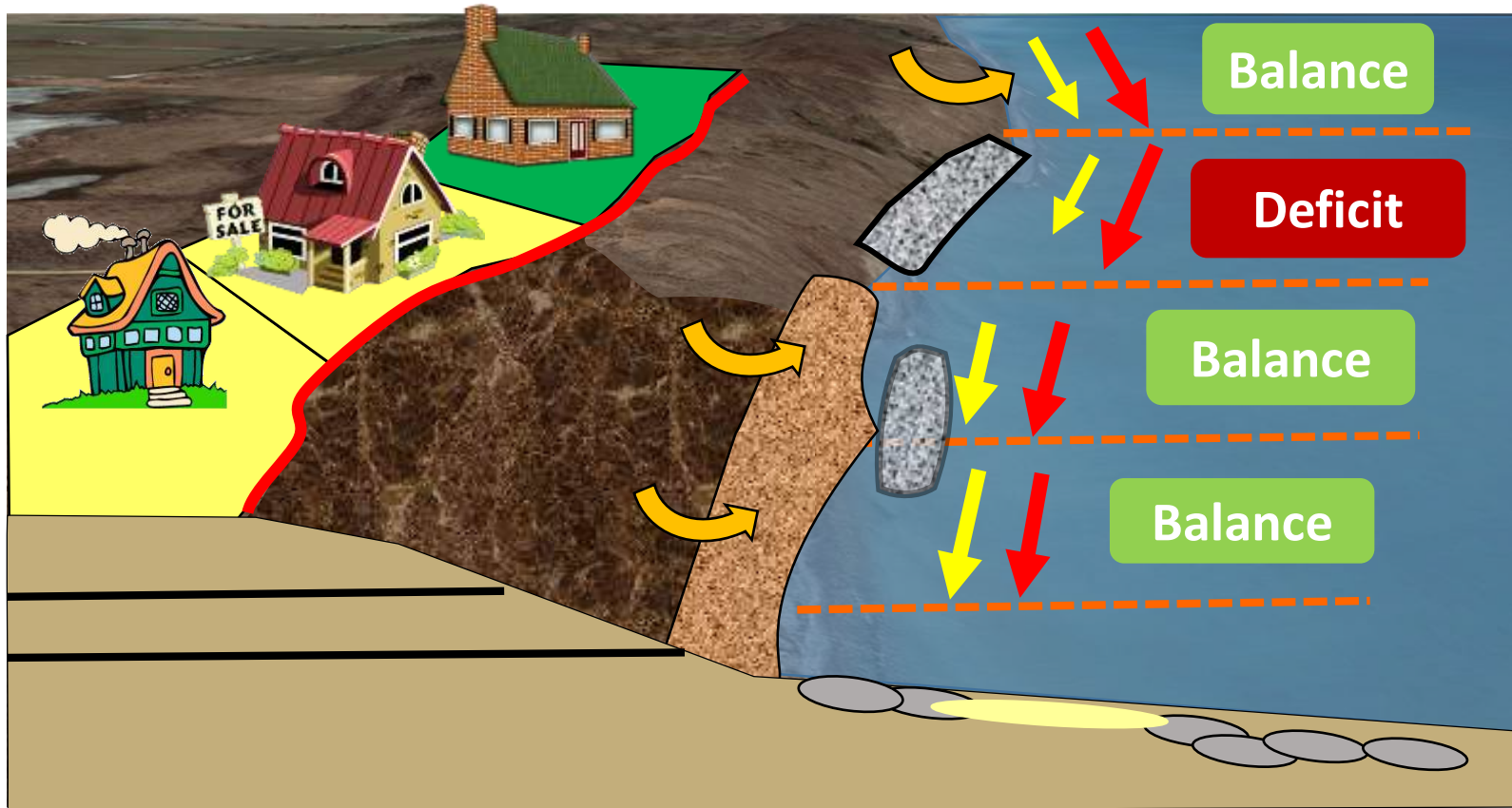
Process Indicators Outcome Indicators



Summary

Indicators characterize regional sediment budgets

- **Primary indicators**
- **Process indicators**
- **Outcome indicators**



Coastal Bluff Research

- **Nearshore sediment transport** measurements and models
- **Regional sediment budgets**
- Balance of **coastal protection** and **ecosystem health**
- Assess **coastal hazards**
- Guide **coastal management**

