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PROJEC

InVEST model structure

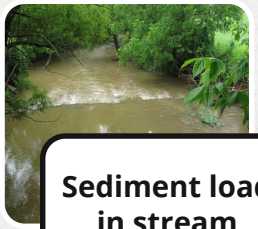
Production Functions and Ecosystem Services

Alternative management, policy → Δ Ecosystem structure → Δ Ecosystem function → Δ Ecosystem service → Δ Ecosystem service value

Habitat restoration decision

Streamside habitat area

Water filtration & retention



Sediment load in stream

agricultural yield

Avoided treatment cost

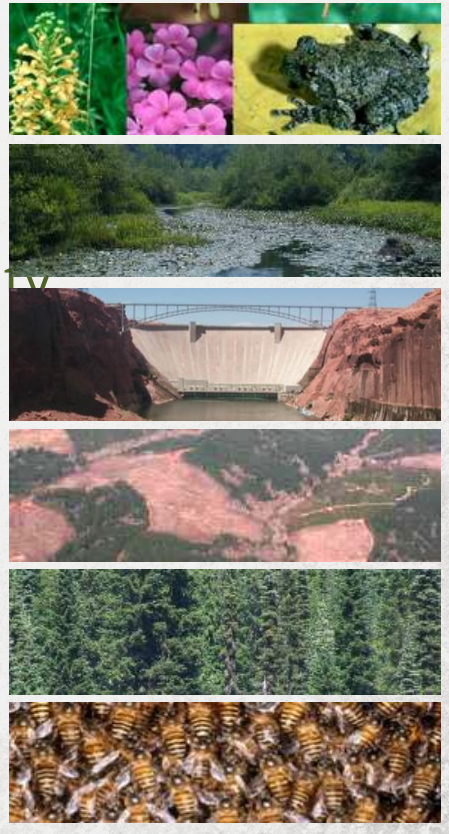
Crop revenues

People affected

Change in environment → change in benefits (production function)

InVEST MODELS – FRESHWATER & TERRESTRIAL

- Habitat quality & Risk assessment
- Water yield for hydropower production
- Erosion control: reservoirs and water quality
- Water purification: nutrient retention
- Carbon storage & sequestration
- Managed timber production
- Crop pollination
- *Coming Soon – Agricultural Production*



InVEST MODELS - MARINE

- Recreation
- Aquaculture
- Fisheries
- Coastal protection
- Renewable energy (wave and wind)
- Scenic quality
- Water quality
- Habitat risk assessment
- Blue Carbon






FRESHWATER & TERRESTRIAL INPUTS

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Spatial data

Land use/ Land cover

Soil type

Topography

Cities

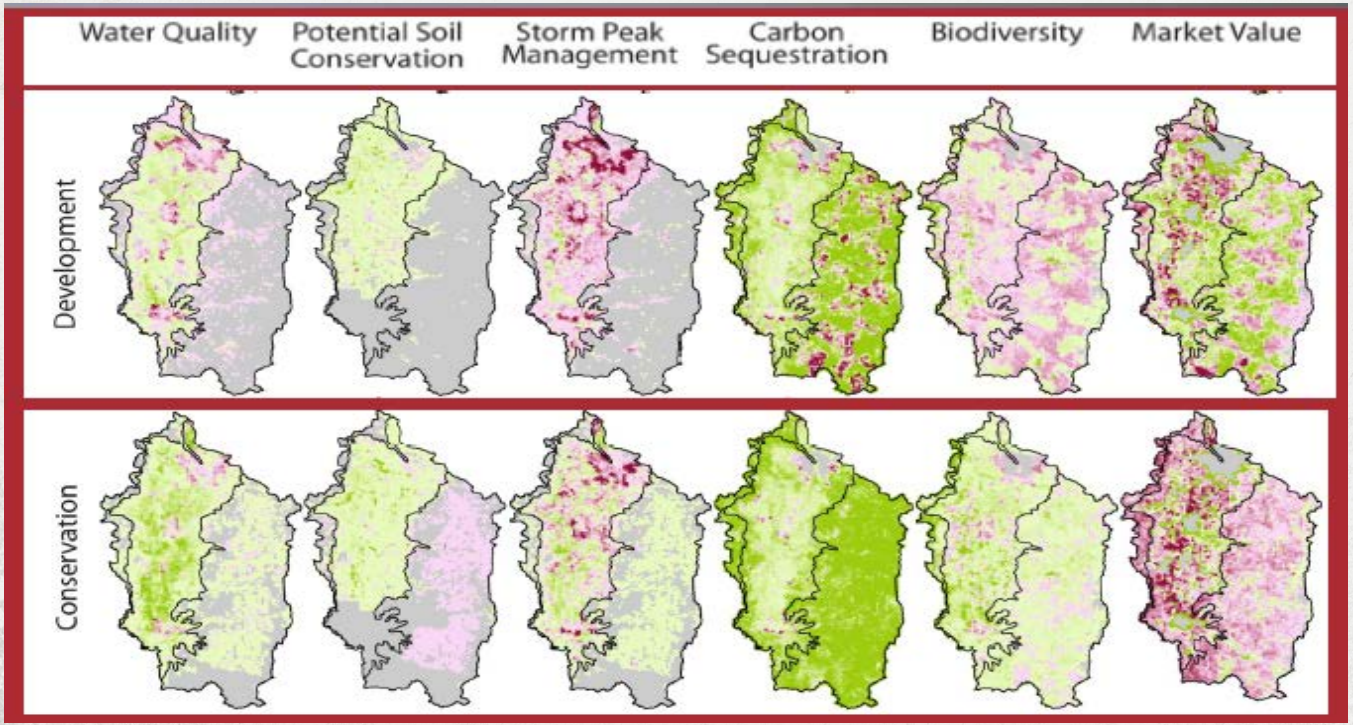
Infrastructure

Associated data

Examples:

- Carbon pools by land use/land cover and soil
- Habitat suitability by land use/land cover
- Market value of timber or carbon

OUTPUTS: QUANTIFYING & MAPPING



1) Relative or absolute measures **2) Biophysical amount or value**

ECONOMIC VALUATION METHODS

- Market valuation
  - Carbon
  - Timber
  - Non-timber forest products
- Avoided damage costs
  - Water purification
  - Flood mitigation
  - Avoided reservoir sedimentation
- Production Economics
  - Water for irrigation
  - Pollination of agricultural crops

SEDIMENT RETENTION: EXAMPLE

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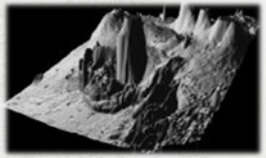
Sediment erosion can:

- Increase reservoir dredging costs
- Increase water treatment costs
- Decrease agricultural productivity

SEDIMENT EXAMPLE: BIOPHYSICAL INPUTS

Land use/Land cover
+ associated factors affecting soil loss and retention



Slope

Rainfall erosivity

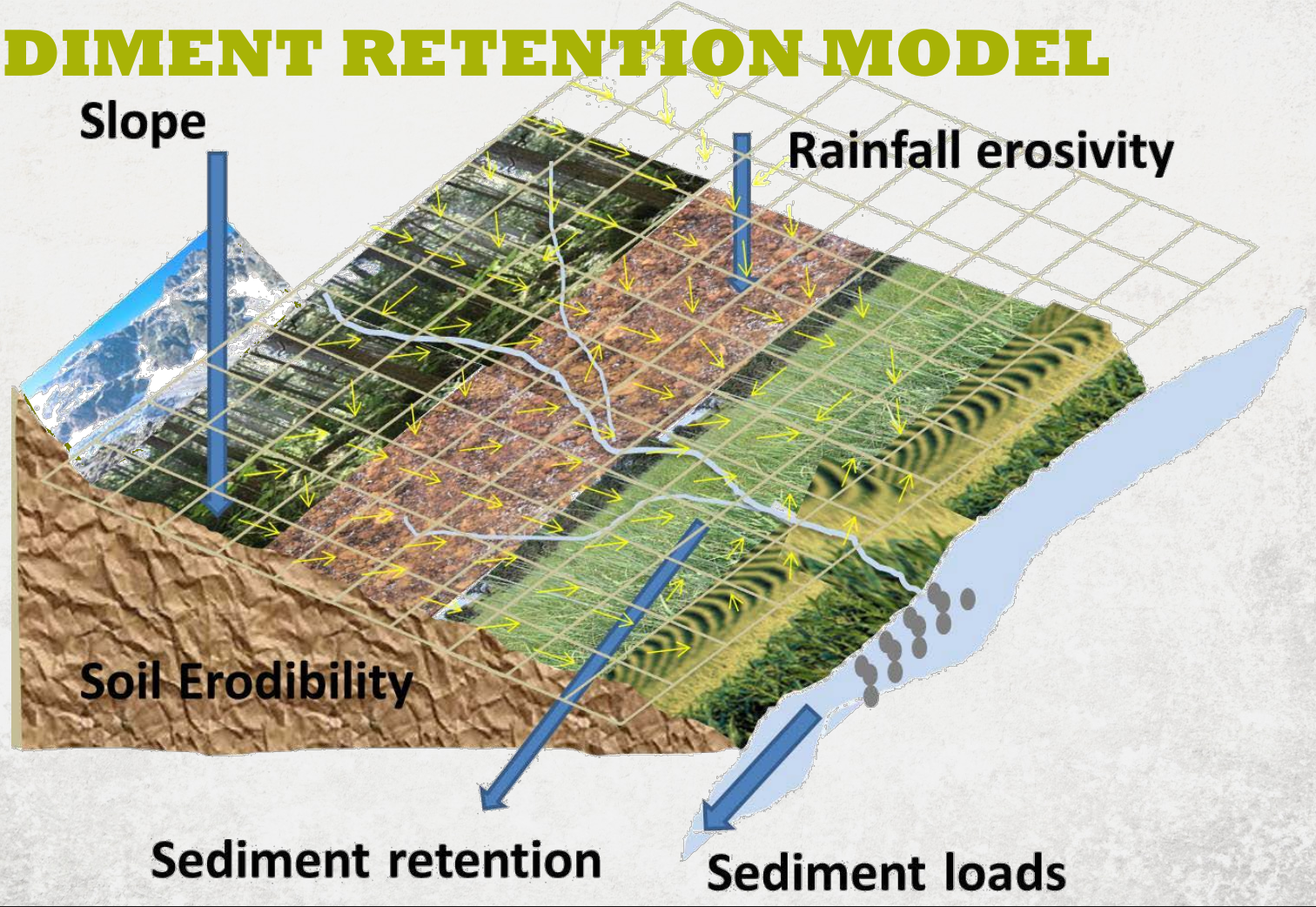
Soil erodibility

Streams

Watersheds

Sediment thresholds
(of reservoirs or water quality requirements)

SEDIMENT RETENTION MODEL



SEDIMENT – SUPPLY, SERVICE, VALUE

Sediment retained

Avoided sedimentation
(beyond sediment thresholds)

SEDIMENT EXAMPLE: OUTPUT

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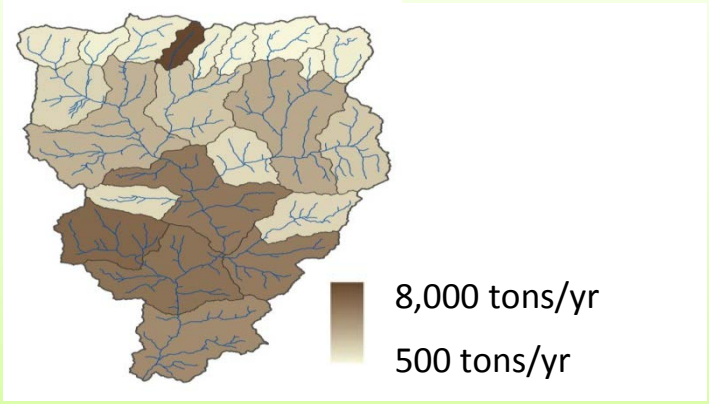
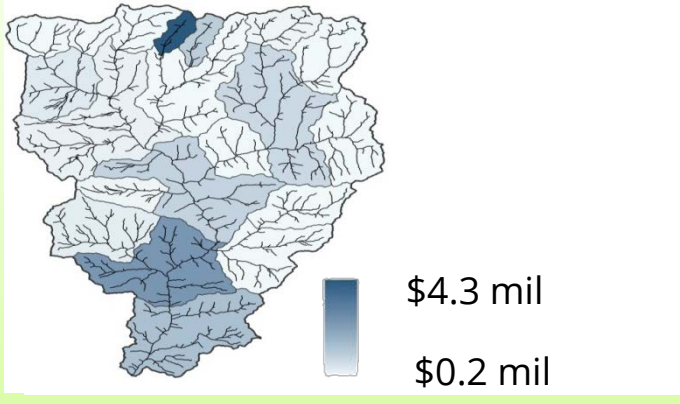
AVOIDED SEDIMENTATION PER SUBWATERSHED



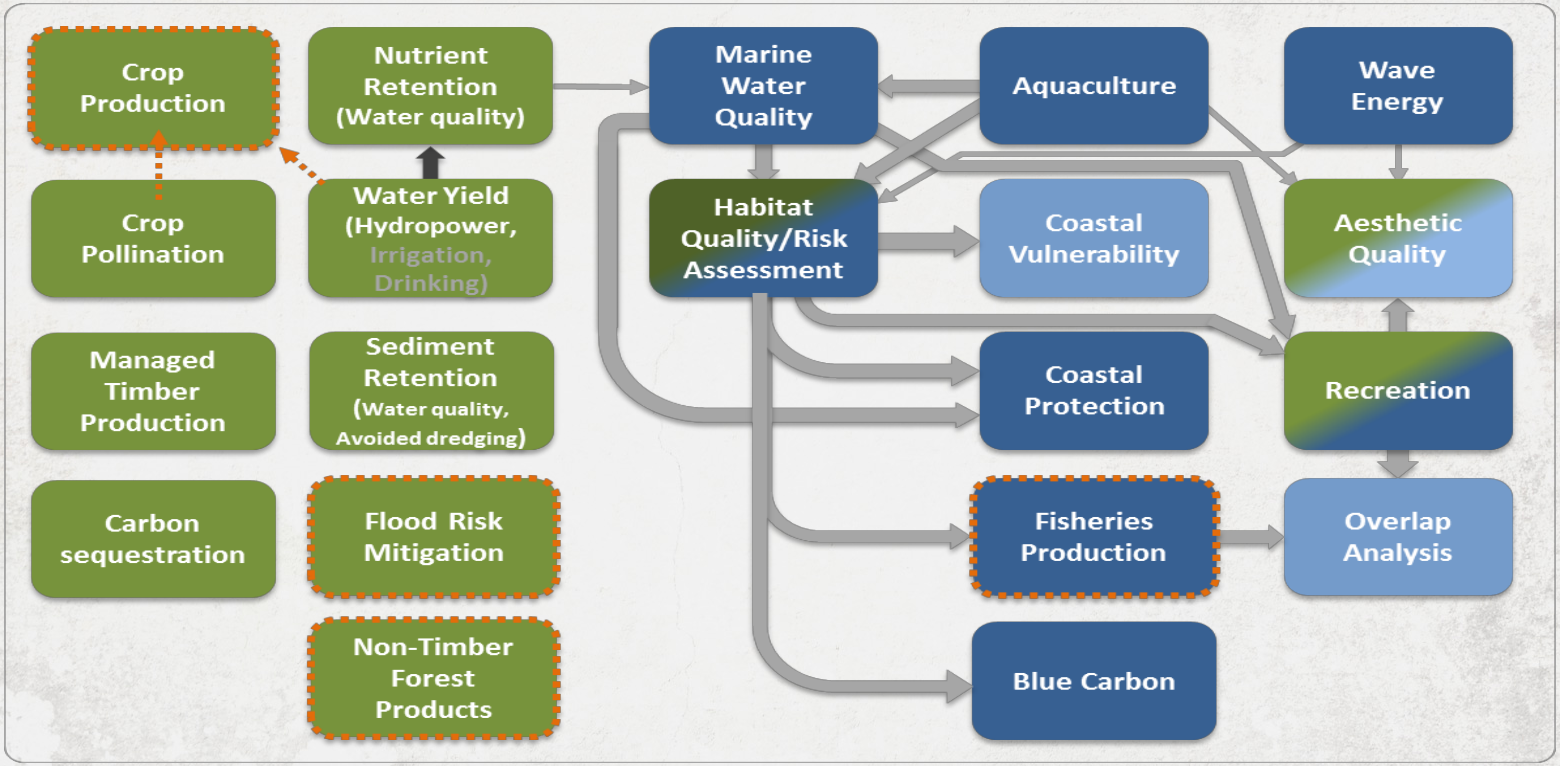
- Where are the sediment sources?
- Where is sediment retained?
- How much is retained?

AVOIDED TREATMENT COST PER SUBWATERSHED



- What is the value of this retention?
- How does this differ between scenarios?

InVEST Models & Linkages



WHY INVEST?

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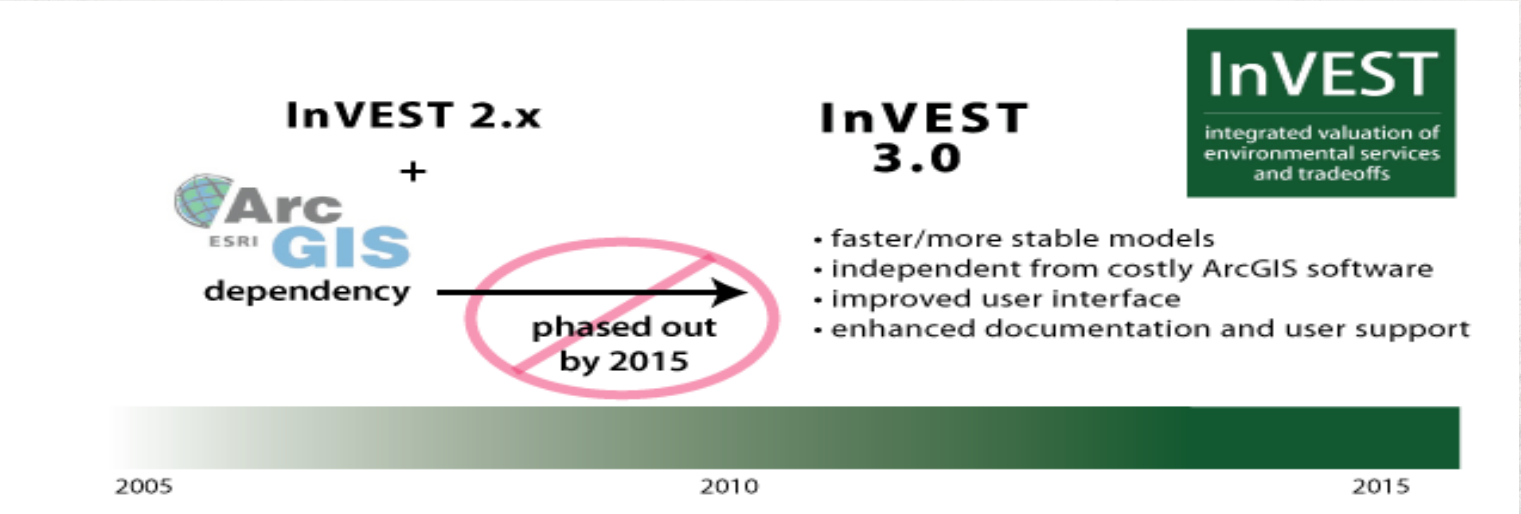
- Flexible scale
- Applicable globally
- Scenario based
- Relevant to many kinds of decisions
- Biophysical and economic
- Multi-services comparisons
  (synergies and tradeoffs)
- Interchangeable and comparable with other model outputs

InVEST PROGRESSION



PREPARING & VISUALIZING DATA

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www.arcgis.com
License required

www.qgis.org
Free

LAUNCHING InVEST

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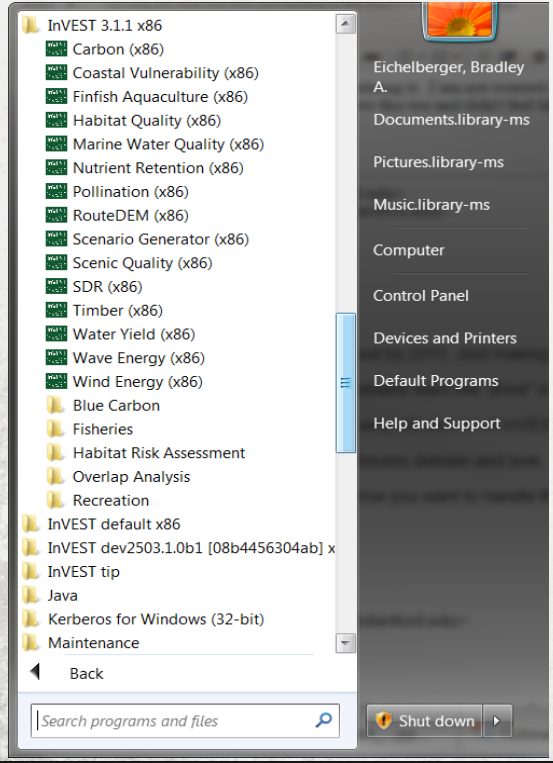
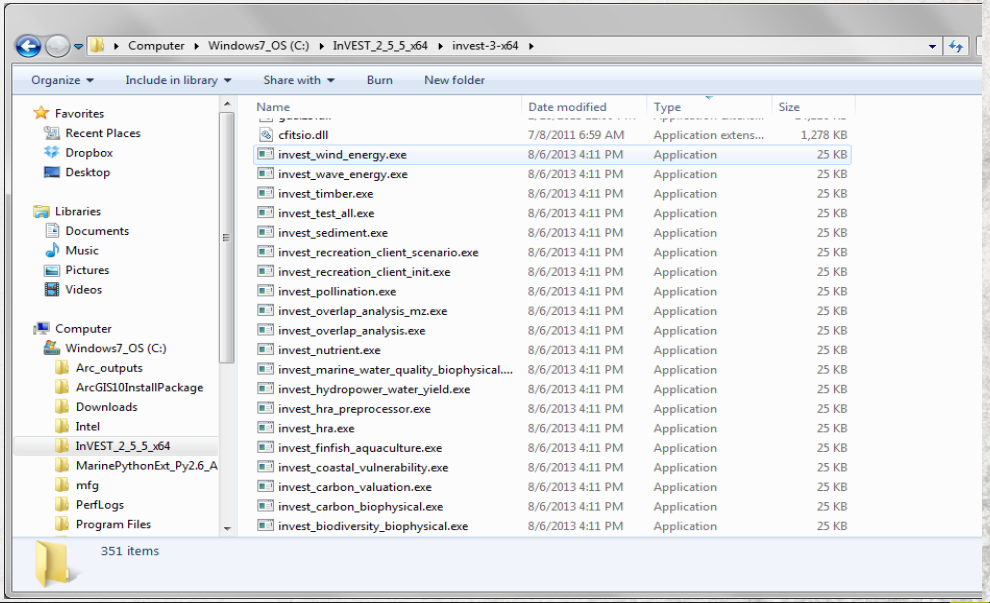
Access InVEST through your Windows Start menu...



-or-

...through your hard



InVEST FILE STRUCTURE

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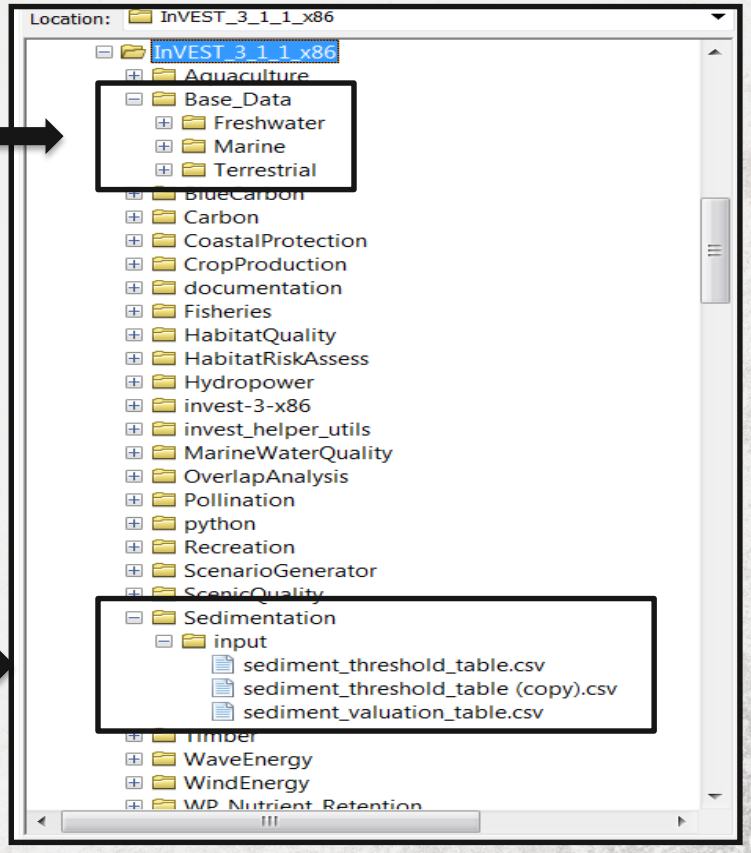
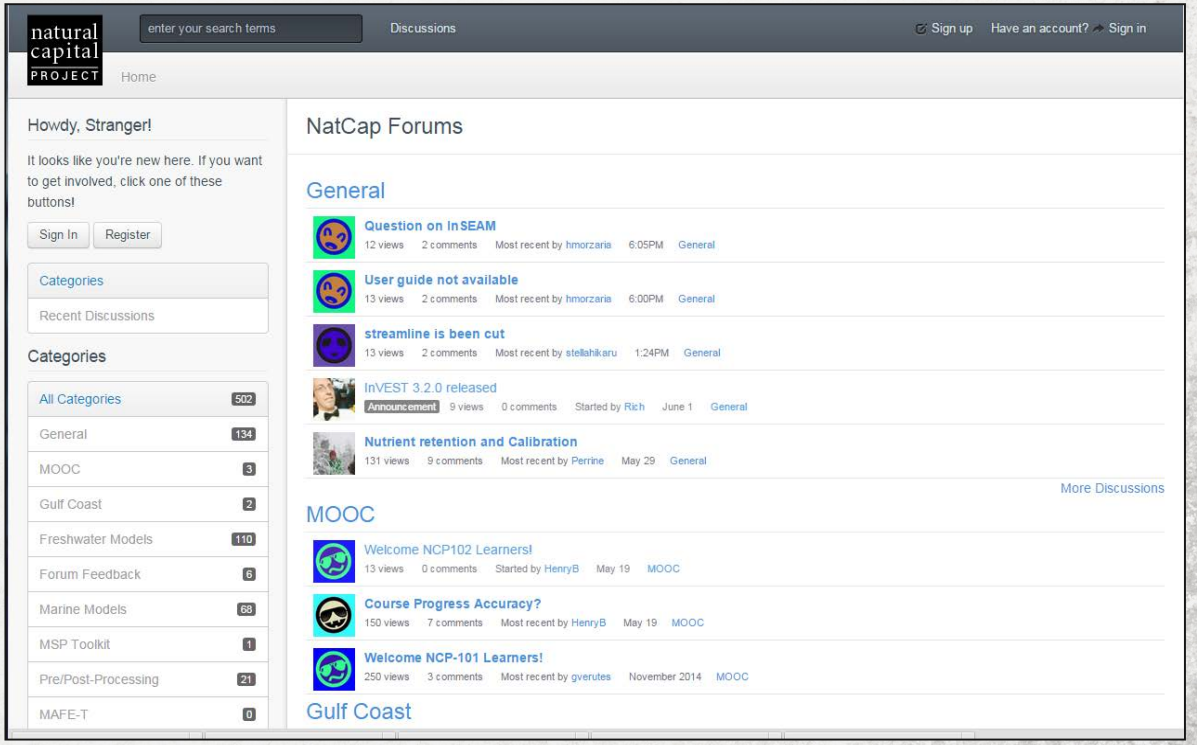
Base data (common layers) for each toolset

Sample data for each model



USER FORUM

- Ask any question
  - Model troubleshoot
  - Trainings
  - Project support
  - etc.
- Monitored daily by our scientists, analysts, and engineers!



RESOURCES AVAILABLE TO HELP:

- InVEST Trainings (you're here! Great start.)
- Annual Meeting @ Stanford
- InVEST User Guide
- InVEST Model Training Videos
- Online training resources (NCP101 MOOC)
- Virtual InVEST User Community
- NatCap Forums
- Newsletter
- Social Media (Twitter: @NatCapProject, Facebook, Google+)
- Email : invest@naturalcapitalproject.org

www.naturalcapitalproject.org

What we'll be doing next:

- **Q&A**
- **Case studies using InVEST from the Department of Defense**