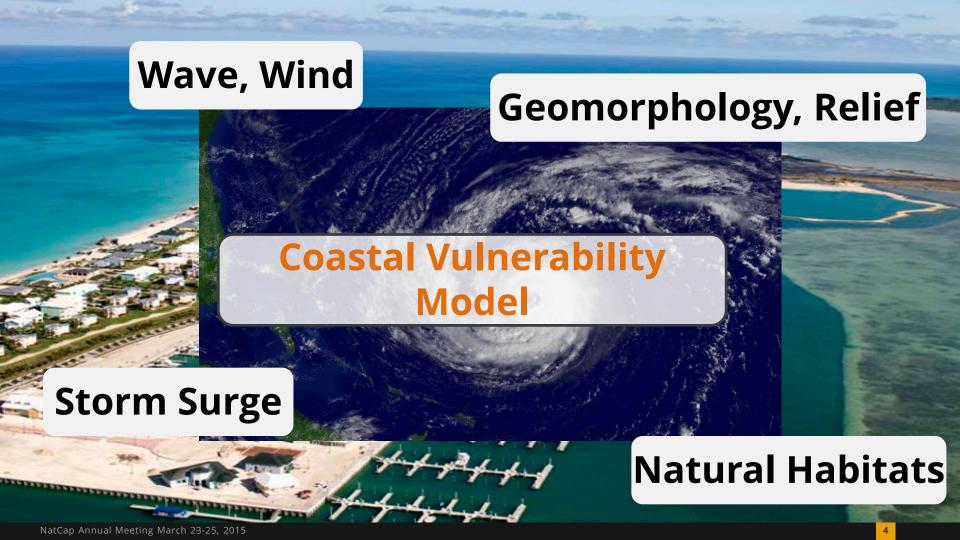
COASTAL VULNERABILITY MODEL

Natural Capital Project Annual Meeting, Tuesday March 24, 2015

AGENDA

- 9:00-9:15 (15 mins) Get settled
- 9:15-9:45 (30 mins) A brief introduction to model theory and application
- 9:45-10:30 (45 mins) Guided run of the model and discussion of the inputs
- 10:30-11:00 BREAK
- 11:00-11:30 (30 mins) Review model outputs and sneak-peek at visualization web app
- 11:30-12:10 (40 mins) Hands-on exercise
- 12:10-12:30 (20 mins) Open discussion





QUESTIONS

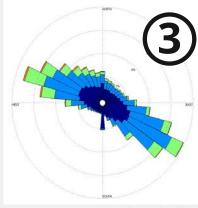
Are there areas in my region that are more exposed to impacts of high waves and winds than other areas?

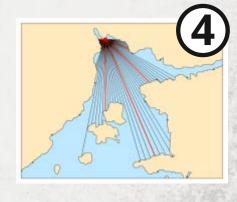
Where are people and infrastructure most exposed to coastal hazards in my region?

Are there natural factors that can reduce these impacts?

COASTAL EXPOSURE INDEX







GEOMORPHOLOGY



HABITATS

WIND EXPOSURE

6

RELIEF

WAVE EXPOSURE



SEA-LEVEL RISE

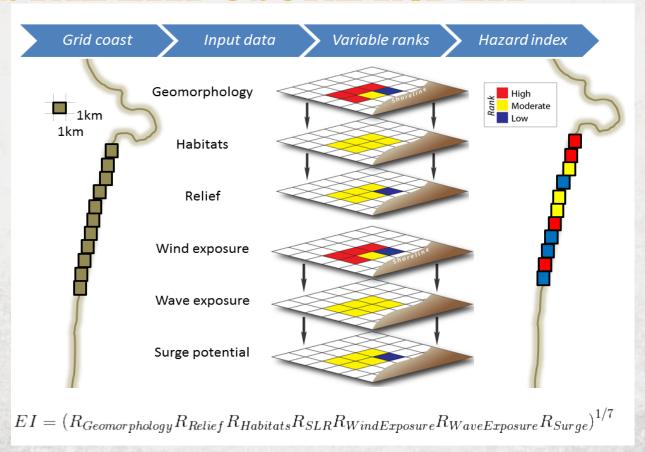
COASTAL EXPOSURE INDEX

ſ	Rank	Very Low	Low	Moderate	High	Very High
		1	2	3	4	5
	Geomorphology	Rocky; high cliffs; fiord; fiard	Medium cliff; indented coast	Low cliff; glacial drift; alluvial plain	Cobble beach; estuary; lagoon; bluff	Barrier beach; sand beach; mud flat; delta
	Relief	> 90th Percentile	> 75th Percentile	Average value	< 25th Percentile	< 10th Percentile
		Coral reef:				

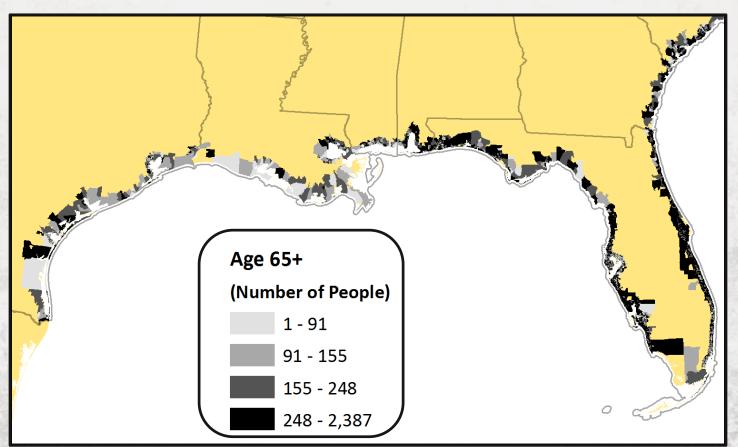
Qualitative assessment of vulnerability based on mixture of relative and absolute rankings

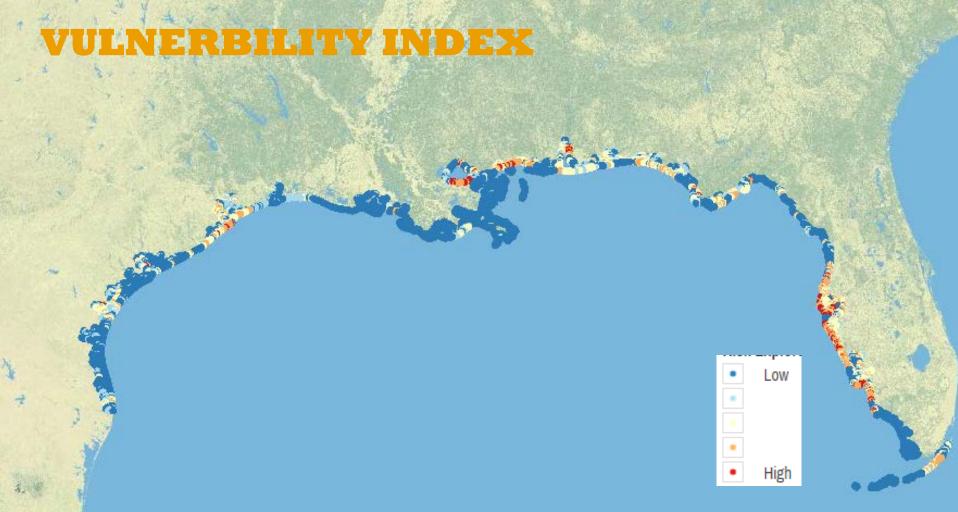
	Wind Exposure	< 10 th Percentile	< 25 th Percentile	Average value	> 75 th Percentile	> 90 th Percentile
SALE PET	Wave Exposure	< 10 th Percentile	< 25 th Percentile	Average value	> 75 th Percentile	> 90 th Percentile
0.000	Surge Potential	No exposure	< 25 th Percentile	Average value	> 75 th Percentile	> 90 th Percentile

COASTAL EXPOSURE INDEX

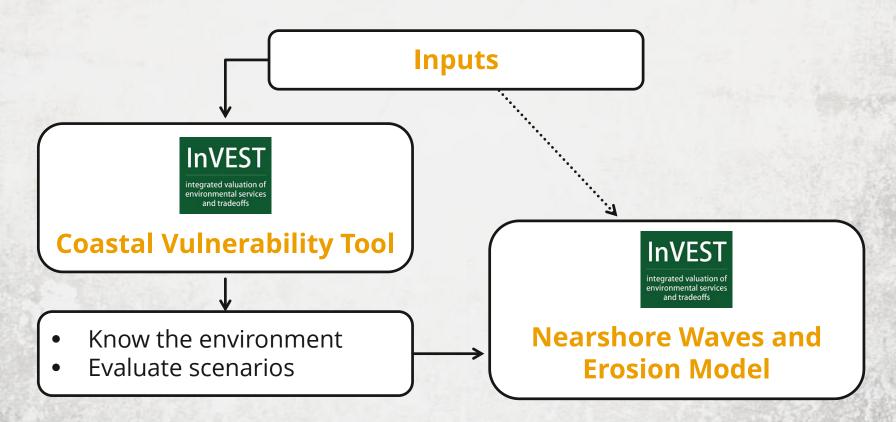


LINK TO SOCIAL METRICS





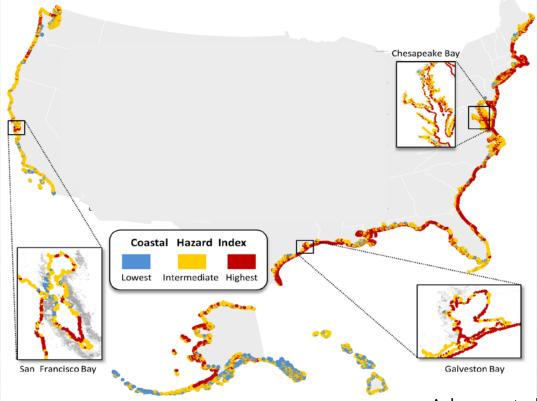
COASTAL PROTECTION TOOLBOX



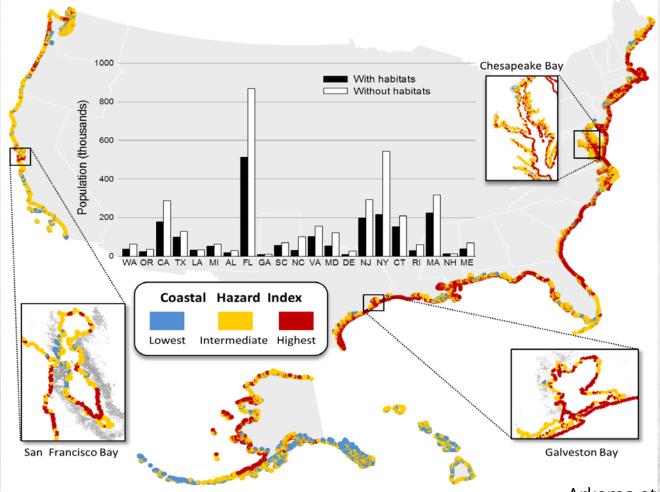


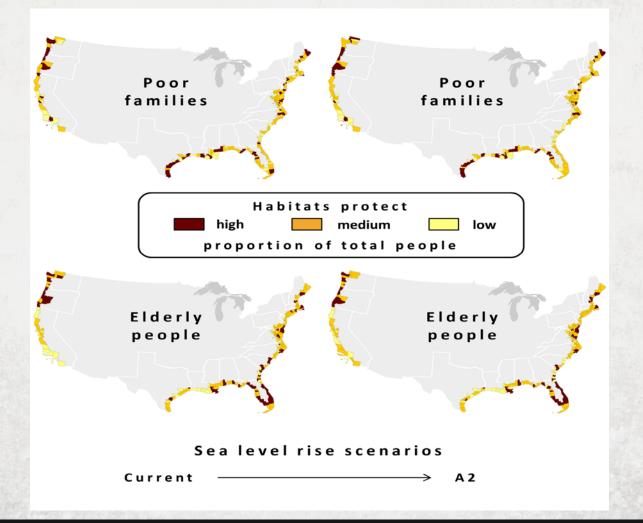
CLIMATE ADAPTATION AND COASTAL RESILIENCE

WHERE AND TO WHAT EXTENT DO EXISTING HABITATS REDUCE RISK OF PEOPLE AND INFRASTRUCTURE TO COASTAL HAZARDS NOW AND IN THE FUTURE?



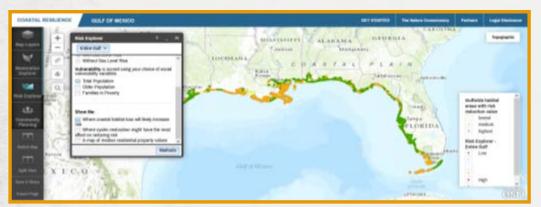
Arkema et al. 2013, Nature Climate Change

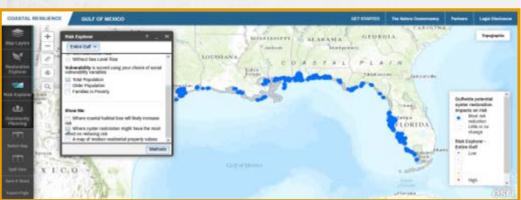




INFORMING HABITAT RESTORATION

AT REGIONAL AND LOCAL SCALES







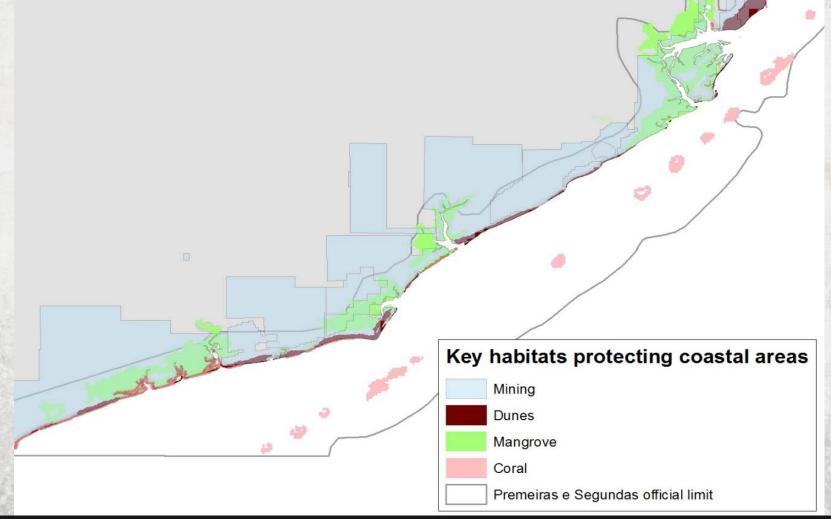




DEVELOPMENT PLANNING: HEAVY SANDS MINING IN A MULTI-USE PROTECTED AREA

HOW COULD LOCATING MINING INFRASTRUCTURE AND OPERATIONS STRATEGICALLY REDUCE IMPACTS TO ECOSYSTEMS AND REDUCE RISK TO INVESTMENTS?





MODEL RESULTS

COASTAL VULNERABILITY: 'UNFETTERED MINING' SCENARIO

Vulnerability to coastal hazards 'current' scenario



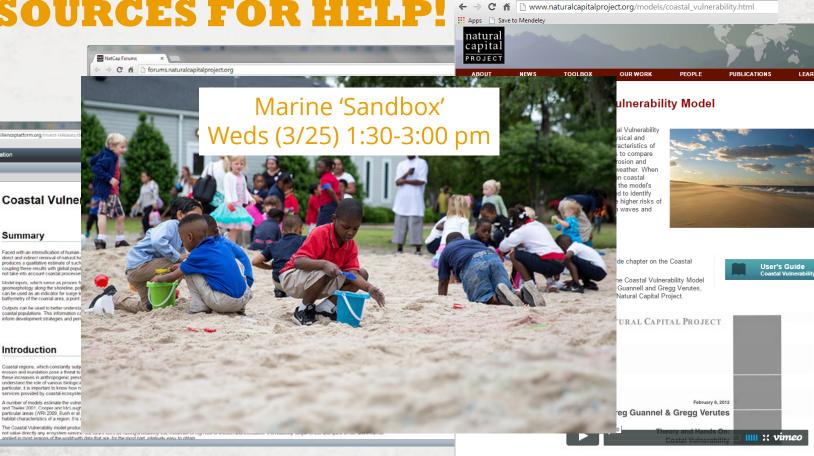
Vulnerability to coastal hazards 'unfettered mining' scenario



CAN WE AVOID HEAVY SANDS MINING WHERE IT MAY INCREASE RISK TO COASTAL HAZARDS?



RESOURCES FOR HELP! (Apps () Save to Mendeley



Natural Capital Project - C x

NatCap Annual Meeting March 23-25, 2015

Coastal Vulner

Faced with an intensification of human direct and indirect removal of natural ha

produces a qualitative estimate of such

not take into account coastal processes

can be used as an indicator for surge le

coastal populations. This information call

inform development strategies and pen

Coastal regions, which constantly subje

erosion and inundation cose a threat to these increases in anthropogenic press

understand the role of various biological

particular it is important to know how n

services provided by coastal ecosyster

A number of models estimate the vulne and Thieler 2001. Cooper and McLauch

particular areas (WRI 2009, Bush et al. habitat characteristics of a region. It is

The Coastal Vulnerability model produc

Introduction

bathymetry of the coastal area, a point

geomorphology along the shoreline, politic

Summary

Coastal Vulnerability Mod ×

Coastal Vulnerability Model

Coastal Vulnerability Model

Exposure Index Table 4.1

Geomorphology

Natural Habitats

Net Sea-Level

Wave Exposure Surge Potential

Wind Exposure

Social Exposure Limitations and

Setting up Workspace

and Input Directories

data directory

Creating a run of the

Interpreting results

Model outputs

astal Vulnerability Model

Exploring a project

workspace and input

Relief

Change

Data Needs Running the Model

v Table of Contents

Introduction The Model How it Works

Main Page

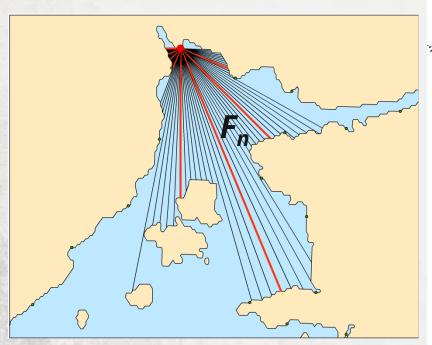
← → C fi ata.naturalcapitalandresilienceplatform.org/invest-release.

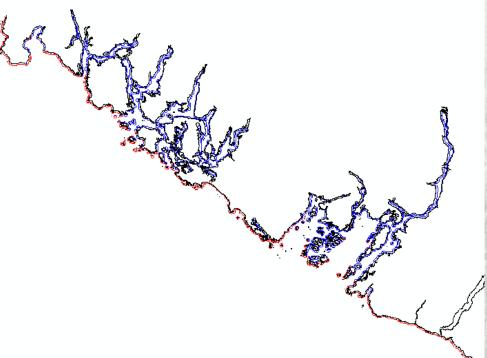
InVEST +VERSION+ documentation

@ Stanford Woods Institute for the Environment, University of Minnesota's Institute on the Environment, The Nature Conservancy, World Wildlife Fund.

MODEL DEMO

FETCH DISTANCE





EXPLORING MODEL OUTPUTS

DEMO OF A WEB VISUALIZATION TOOL

http://vulpes.sefs.uw.edu/ttapp/cv-dash.php

