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Summary

The natural and scenic views of marine and coastal seascapes can contribute to the well-being of local communities in a number of ways. Scenic augmenting local economies by attracting visitors who support local businesses. The value of local property partially depends on attributes of its lo property values (Sanders and Polasky 2009, Bourassa et al. 2004, Benson et al. 2004). Local communities and their residents often become stron opposition to new development that has the potential to threaten the integrity of existing views and diminish the benefits drawn from those views (L 2011). The InVEST scenic quality model allows users to determine the locations from which new nearshore or offshore features can be seen. It ge identify the visual footprint of new offshore development and calculates the value of the impacted visibility. Inputs to the viewshed model include: t offshore facilities of interest, and the locations of viewers (e.g. population centers or areas of interest such as parks or trails). The model does not viewshed, but it can be adapted to compute viewshed metrics for use in a more detailed valuation study. A key limitation of the model is that it doe vegetation or land-based infrastructure may constrain land areas that are visually affected by offshore development.

Introduction

Coastal ecosystems are increasingly dominated by human activities. This rise in human activities can compromise the unique scenic qualities ass coastline and 'seascape' is an important economic asset that attracts visitors for tourism and recreation and contributes to the general quality of lif offshore development projects often raise considerable concern within the local communities that value the natural seascape for its inherent beaut unless measured and accounted for, do not factor into the calculus of weighing the costs and benefits of new coastal development. Applications us of aquaculture facilities to minimize spatial competition with tourism activities (Perez 2003) to seascape and shoreline visibility assessment of offsh Research 2006). Because scenic beauty is an attribute generally considered to be important to people living near the coast and for those who visit marine environment, coastal planners can incorporate measures of visual amenities and/or disamenities into broader policy deliberations and plan viewshed analysis involve examining the negative impacts of new facilities, language within the InVEST scenic quality model assumes the objects However, positive interpretation of viewing these objects can be included with interpretation of model results.

The InVEST scenic quality model provides users with a simple way to provide information about potential tradeoffs between nearshore and offsho impacts of those projects. The viewshed maps produced by the model can be used to identify coastal areas that are most likely to be directly affec serve as valuable input into broader analyses that consider a range of services provided by the marine environment.

This model can be used to compute the costs associated with offshore visual impacts, these costs are likely to decrease as the location of facilities installing and operating offshore facilities generally increase with distance from the shoreline. The few valuation studies that explore the economic from offshore development projects show a complex picture. One recent study found that individuals living along the coast have external costs ran disamenity of an offshore wind project (Krueger et al. 2010). In contrast, Firestone et al. (2009) found that public acceptance for offshore renewabl contentious than previously anticipated.

The Model

The scenic quality model provides information about the visibility of offshore objects from the surrounding landscape or seascape. Offshore and ne renewable wave energy facilities or aquaculture facilities, have the potential to impact the visual amenities that are an important feature of many c will be useful for decision-makers who would like to identify areas where visual impacts may be an important factor to incorporate into planning.

The model inputs are divided into two groups: **General** has all the entries necessary to run the viewshed computation such as the location of a DE locations of sites that contribute to visual impacts. **Valuation** allows the user to select the functional form of the valuation function and its paramete over a user-defined area of interest (AOI).

The model will create three outputs that can be used to assess the visible impact of any type of facility added to the marine environment:

- *vshed.tif* is a raster containing the sum of how many viewpoints are visible from each pixel. If a *WEIGHT* column is provided in the s visibility sum is weighted. If the valuation and weights are all set to 1, this raster reduces to merely a count of the number of sites tha
- *vshed_value.tif* is the sum of all individual valuation rasters calculated for each site. If a *WEIGHT* column is provided in the sites vec accordingly.
- *vshed_qual.tif* is a raster representing the visual quality of a given pixel. The cells of *vshed_Value.tif* are classified according to the f

    1. Unaffected
    2. Low visual impact / High visual quality (< 25th percentile)
    3. Moderate visual impact / Medium visual quality (25-50th percentile)
    4. High visual impact / Low visual quality (50-75th percentile)
    5. Very high visual impact / Poor visual quality (> 75th percentile)

Additional files are created for each feature *X* at each step of the computation:

- *visibility_X.tif* indicates which pixels are visible from feature *X*
- *auxiliary_X.tif* is an intermediate raster written as part of the viewshed algorithm. Pixel values indicate the minimum height that must