

# COP 2014 Geospatial Model Overview

*November 10, 2015*

## Background/Overview

The purpose of this document and accompanying “COP 2014 Geospatial Model Overview” diagram is to provide a high-level document that outlines (not in full detail) the structure and composition of how this REA was completed. This document serves as a ‘cliff notes’ version for a GIS person to re-trace steps taken by the REA contractor (CBI) and reviewed by BLM. Further documentation is available within the three specific modeling packages (Climate/Aquatic/Terrestrial).

## Change Agents

### Climate

None of the climate related models or input/intermediate datasets are distributed for direct download through the BLM’s GeoPortal. This was done because the sheer volume of climate data related to the COP 2014 REA refresh/step-down. This data and models are available upon contacting the BLM REA Data Team at the National Operations Center. See the overview diagram for contact details.

- High Climate Exposure:
  - Inputs: Minimum Temperature Change, Maximum Temperature Change, Precipitation Change, and Aridity Change
  - Details: Uses EEMS Fuzzy logic to derive High Climate Exposure.
- High Climate Impacts:
  - Inputs: High Site Sensitivity, High Climate Exposure
  - Details: Uses EEMS fuzzy logic to derive High Climate Impacts.
- High Site Sensitivity:
  - Inputs: Water & Wind erodibility, Soil pH and salinity, depth to bedrock, potential evapotranspiration, and soil water capacity
  - Details: Uses EEMS fuzzy logic to derive High Climate Impacts.

## Conservation\_Elements

### Aquatic Intactness

Aquatic Intactness is the average of the lowest two combinations of the following three interim products.

- Low Hydrologic Alteration:
  - Inputs: EPA water demand, NLCD/LandFire/Urban coverage to derive impervious surfaces, density of railroad and roads near streams. Diversions, alterations, presence of reservoirs & dams, and inundation zones
  - Details: Density of inputs are calculated and combined to create 1.) Low Water Use, 2.) Low Impervious Surfaces, and 3.) Low Water Control. These three datasets combine to create Low Hydrologic Alteration.
- High Water Quality:
  - Inputs: Macro-invertebrate samples, EPA 303d streams & waterbodies, % of perennial streams, lakes & reservoirs, NPDES discharge points, Superfund sites, mines, oil & gas wells, treatment ponds presence, and NLCD impervious/urban coverage. Landfire agricultural coverage, NHD density, EnviroAtlas coverage of Manure and Synthetic Nitrogen coverage.
  - Details: Density per HUC units are calculated for all inputs and combined to create 1.) Low Impaired Waters, 2.) Low Non-Ag Pollution, 3.) Low Salinity, and 4.) Low Ag Nitrogen Pollution areas. The lowest of these four are averaged to create areas of High water quality.
- High Habitat Quality:
  - Inputs: Landfire ag coverage, Tiger roads, NHD Hydro flowlines, railroads, Landfire riparian/NatureServe invasive & tamarisk coverage. NatureServe and Landfire upland invasives, Early Season Invasives, GEOMAC fire perimeters.
  - Details: Density per HUC units are calculated for all inputs and combined to create 1.) Low Upland Human Impacts, 2.) High Vegetation Conditions

### Terrestrial Intactness

High Terrestrial Intactness is the lowest two average of the following three interim products.

- Low Development:
  - Inputs: Treatment ponds, EPA polluted point counts, mines, oil & gas wells, geothermal wells, wind turbine counts, com. Tower counts, urban development areas, road, utility lines, pipelines, and railroads.
  - Details: Density per HUC units are calculated for all inputs and combined to create 1.) Low development.
- Low Natural Habitat Fragmentation:
  - Inputs: From Fragstats: Mean Percent Natural Core Area, Mean Number of Patches, and Mean Nearest Neighbor. It is unclear from the documentation, models, and diagrams what the input into Fragstats was.

- Details: Combined to create Low Natural Habitat Fragmentation
- Low Vegetation State Impacts:
  - Inputs: Vegetation Departure, Invasives, Agricultural development
  - Details: Converted to Fuzzy space to create low vegetation state impacts