Wave Energy-Power Density

Tags

Wave Energy, Assessment, WaveWatchIII Grids, Power Density, Energy Period, Significant Wave Height, Hindcast Direction, Study Water Depth, National Renewable Energy Laboratory, NREL, Electric Power Research Institute, EPRI, Virginia Tech, VT

Summary

This data is representing Wave Power Density. Bathymetric effects are known to have a large effect on wave characteristics at depths shallower than approximately 20m (~65 ft) on the Atlantic coast and 50 m (~160 ft) on the Pacific coast. A variance between depths exists due to the feature differences for each continental shelf. The methodology used in this resource assessment precludes providing site-specific information to such developers. Reliable site-specific information in shallow waters can only be produced using results from models with higher spatial resolution that include shallow-water physics. The wave resource assessment group acknowledges that its results will not be accurate in the shallower waters of the inner continental shelf. These shallow water regions are located within the dark gray boundaries on the map.

Description

Grids are derived from WaveWatch III grids. Near the coast of the lower 48 and HI, grids are squares, 4 minutes by 4 minutes (15 per degree). For the Alaska grids AK and BS, the grid is 4 minutes of latitude by 8 minutes of longitude (15 per deg by 7.5 per deg). EXCEPT: The area in the Bering Sea around the Pribilof (St Paul and St George) Islands is 10 min lat by 15 min lon. Limits: 55.666 to 58.000 N, -172.000 to - 168.000 E, 17 cols, 15 rows Farther offshore, the grid is 10 min by 10 min. (only seen in WM and PR)The 10 min by 10 min grid appears near the edge of a few grids: - SW corner of WM (off Mexican coast) - SE corner of WM (deep water) - PR - around edges (far from PR and US territory)

Credits

The Wave Energy Resource Assessment project is a joint venture between NREL, EPRI, and Virginia Tech. EPRI is the prime contractor, Virginia Tech is responsible for development of the models and estimating the wave resource, and NREL serves as an independent validator and also develops the final GIS-based display of the data. Website: http://en.openei.org/datasets/node/868

Use limitations

There are no access and use limitations for this item.

Extent

There is no extent for this item.

Scale Range

Maximum (zoomed in) 1:5,000,000
Minimum (zoomed out) 1:20,000,000

ArcGIS Metadata

Citation

TITLE Wave Energy Assessment for the United States and Puerto Rico
PUBLICATION DATE 2011-09-27 00:00:00

PRESENTATION FORMATS   * digital map

Citation Contacts

RESPONSIBLE PARTY
  ORGANIZATION'S NAME National Renewable Energy Laboratory
  CONTACT'S ROLE   owner

    CONTACT INFORMATION
     ADDRESS
      TYPE both
      DELIVERY POINT 1617 Cole Blvd.
      CITY Golden
      ADMINISTRATIVE
      AREA CO POSTAL CODE
      80401
      COUNTRY US

Resource Details

DATASET LANGUAGES   English
DATASET CHARACTER SET   utf8 - 8 bit UCS Transfer Format

SPATIAL REPRESENTATION TYPE   * vector

* PROCESSING ENVIRONMENT Microsoft Windows Vista Version 6.1 (Build 7601) Service Pack 1; ESRI ArcCatalog 9.3.1.3000

CREDITS
  The Wave Energy Resource Assessment project is a joint venture between NREL, EPRI, and Virginia Tech. EPRI is the prime contractor, Virginia Tech is responsible for development of the models and estimating the wave resource, and NREL serves as an independent validator and also develops the final GIS-based display of the data. Website: http://en.openei.org/datasets/node/868

Extents

Resource Points of Contact

POINT OF CONTACT
  ORGANIZATION'S NAME National Renewable Energy Laboratory
  CONTACT'S ROLE   point of contact

    CONTACT INFORMATION
     ADDRESS
      TYPE both
      DELIVERY POINT 1617 Cole Blvd.
      CITY Golden
      ADMINISTRATIVE
      AREA CO POSTAL CODE
      80401
      COUNTRY US

Spatial Reference

REFERENCE SYSTEM IDENTIFIER

Spatial Data Properties

VECTOR

* LEVEL OF TOPOLOGY FOR THIS DATASET   geometry only

GEOMETRIC OBJECTS
  FEATURE CLASS NAME wave_power_density
  * OBJECT TYPE   complex
  * OBJECT COUNT 42234

ARCGIS FEATURE CLASS PROPERTIES
  FEATURE CLASS NAME wave_power_density
  * FEATURE TYPE Simple
  * GEOMETRY TYPE Polygon
  * HAS TOPOLOGY FALSE
  * FEATURE COUNT 42234
  * SPATIAL INDEX FALSE
  * LINEAR REFERENCING FALSE

Distribution

DISTRIBUTOR
  AVAILABLE
   FORMAT
  * NAME Shapefile

  TRANSFER
  OPTIONS
  * TRANSFER SIZE 5.478

  ONLINE SOURCE
  * LOCATION
  * ACCESS PROTOCOL Local Area Network
  * DESCRIPTION   Downloadable Data

Fields
  DETAILS FOR OBJECT wave_power_density
  * TYPE Feature Class
  * ROW COUNT 42234
  DEFINITION
    Object ID

  FIELD FID
  * ALIAS FID
  * DATA TYPE OID
  * WIDTH 4
  * PRECISION 0
  * SCALE 0
  * FIELD DESCRIPTION
    Internal feature number.

  * DESCRIPTION SOURCE
    ESRI

  * DESCRIPTION OF VALUES Sequential unique whole numbers that are automatically generated.

  FIELD Shape
  * ALIAS Shape
  * DATA TYPE Geometry
  * WIDTH 0
  * PRECISION 0
  * SCALE 0
  * FIELD DESCRIPTION

Feature geometry.

* DESCRIPTION SOURCE
  ESRI

* DESCRIPTION OF VALUES Coordinates defining the features.

FIELD gid
  * ALIAS gid
  * DATA TYPE Number
  * WIDTH 10
  FIELD DESCRIPTION
    GID

  DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD join_count
  * ALIAS join_count
  * DATA TYPE Number
  * WIDTH 10
  FIELD DESCRIPTION
    Count

  DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD target_fid
  * ALIAS target_fid
  * DATA TYPE Number
  * WIDTH 10
  FIELD DESCRIPTION
    Target FID

  DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD id
  * ALIAS id
  * DATA TYPE Number
  * WIDTH 10
  FIELD DESCRIPTION
    ID

  DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD lat
  * ALIAS lat
  * DATA TYPE Number
  * WIDTH 24
  * NUMBER OF DECIMALS 15
  FIELD DESCRIPTION
    Latitude

  DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD lon
  * ALIAS lon

* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
  Longitude

DESCRIPTION SOURCE
  National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD depth_wef
* ALIAS depth_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
  Water Depth

DESCRIPTION SOURCE
  National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD jan_wef
* ALIAS jan_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
  Average January Wave Energy Flux

DESCRIPTION SOURCE
  National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD feb_wef
* ALIAS feb_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
  Average February Wave Energy Flux

DESCRIPTION SOURCE
  National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD mar_wef
* ALIAS mar_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
  Average March Wave Energy Flux

DESCRIPTION SOURCE
  National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD apr_wef
* ALIAS apr_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
  Average April Wave Energy Flux

DESCRIPTION SOURCE
National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD may_wef
* ALIAS may_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
Average May Wave Energy Flux

DESCRIPTION SOURCE
National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD jun_wef
* ALIAS jun_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
Average June Wave Energy Flux

DESCRIPTION SOURCE
National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD jul_wef
* ALIAS jul_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
Average July Wave Energy Flux

DESCRIPTION SOURCE
National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD aug_wef
* ALIAS aug_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
Average August Wave Energy Flux

DESCRIPTION SOURCE
National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD sep_wef
* ALIAS sep_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
Average September Wave Energy Flux

DESCRIPTION SOURCE
National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD oct_wef
* ALIAS oct_wef

* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
    Average October Wave Energy Flux

DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD nov_wef
* ALIAS nov_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
    Average November Wave Energy Flux

DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD dec_wef
* ALIAS dec_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
    Average December Wave Energy Flux

DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

FIELD ann_wef
* ALIAS ann_wef
* DATA TYPE Number
* WIDTH 24
* NUMBER OF DECIMALS 15
FIELD DESCRIPTION
    Average Annual Wave Energy Flux

DESCRIPTION SOURCE
    National Renewable Energy Laboratory, Electric Power Research Institute, Virginia Tech

Metadata Details

* METADATA LANGUAGE English
METADATA CHARACTER SET   utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA   dataset
SCOPE NAME   * dataset

* LAST UPDATE 2012-12-20

ARCGIS METADATA PROPERTIES
    METADATA FORMAT ArcGIS 1.0
    METADATA STYLE FGDC CSDGM Metadata
    STANDARD OR PROFILE USED TO EDIT METADATA FGDC

    CREATED IN ARCGIS FOR THE ITEM 2012-12-14 11:32:00
    LAST MODIFIED IN ARCGIS FOR THE ITEM 2012-12-20 11:03:09

AUTOMATIC UPDATES
HAVE BEEN PERFORMED Yes
LAST UPDATE 2012-12-20 11:03:09

Metadata Contacts

METADATA CONTACT
INDIVIDUAL'S NAME Kevin Hlava
ORGANIZATION'S NAME Argonne National
Laboratory CONTACT'S POSITION GIS
Assistant/Specialist CONTACT'S ROLE
originator

CONTACT INFORMATION
PHONE
VOICE 1-630-252-0060

ADDRESS
TYPE both
DELIVERY POINT 9700 South Cass Avenue, EVS/Bldg 240
CITY Argonne
ADMINISTRATIVE
AREA IL POSTAL CODE
60439
COUNTRY US
E-MAIL ADDRESS khlava@anl.gov

Metadata Maintenance

MAINTENANCE
UPDATE FREQUENCY   unknown

Thumbnail and Enclosures

THUMBNAIL
THUMBNAIL TYPE   JPG

FGDC Metadata (read-only)