

Jeppesen Terrain and Obstacle Data Services



Challenge

Most of today's available terrain models lack the necessary accuracy and resolution to be usable for aviation applications beyond Terrain Awareness and Warning Systems (TAWS). Continuing advances in air navigation applications require a more accurate and resolute terrain model coupled with worldwide obstacle data.

Solution

The Jeppesen Terrain Database was developed as a new worldwide terrain database providing a consistent terrain model that can be used by current TAWS and future applications, including 2D moving maps, vertical situation displays, and synthetic vision systems. The basis for the Jeppesen Terrain Database is the Shuttle

Radar Topography Mission (SRTM) data from the National Geospatial Intelligence Agency (NGA) that provides a more resolute, accurate and consistent worldwide terrain model.

The SRTM dataset has areas with no data ("voids") in the peak and valley regions, deserts, and very flat areas due to irrecoverable data capture issues. Jeppesen used proprietary algorithms and processes to infill areas of voids. Smaller voids were interpolated, while larger voids were replaced with other reliable, comparable data sources. The SRTM data has a resolution of 3 arc-seconds (90m) and 16 meter vertical accuracy. The 3 arc-second SRTM data quality factors satisfy the current TSO-C151b Terrain Awareness and Warning System requirements as well as the DO-276A Area 1 requirements for a worldwide terrain model

(50m horizontal accuracy, 30m vertical accuracy at the 90% confidence level). Supplemented by the Jeppesen Obstacle Database, end users will have a worldwide dataset that meets their requirements.

Integrated Services

Jeppesen has experience delivering electronic terrain and obstacle data for ground proximity warning systems (TAWS) and several other positional awareness systems and displays, including flight simulators and aircraft operating runway analysis software. For many years, Jeppesen has used electronic terrain and obstacle data for instrument procedure design and evaluation of obstacle restrictions on or near aerodromes and heliports. Jeppesen terrain and obstacle databases also reside in the computers of many of the world's aircraft.

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Terrain Data

The Jeppesen Terrain Database provides the latest generation of terrain data for prevention of controlled flight into terrain and terrain avoidance warning systems to be used by pilots, dispatch, and other flight operations planners. The benefits offered by the Jeppesen Terrain Database are many:

- Provides a global, uniform high quality terrain data source
- Base terrain layer resolution meets the basic accuracy requirements of US FAA Technical Standard Order C151b, Terrain Awareness and Warning Systems, and Area 1 under ICAO Annex 15
- Voids in SRTM data filled by Jeppesen proprietary topography algorithms
- Users of the Jeppesen Terrain Database are able to trace any elevation value back to its original source data via graphical “metadata” that is delivered with the data
- Jeppesen terrain data is produced, maintained and distributed in accordance with the data process assurance level 3 requirements established by RTCA Document DO-200A, Standards for Processing of Aeronautical Data.

Obstacle Data

Jeppesen has built the world’s most complete database of obstacles relevant to aviation. The worldwide database contains man-made and certain natural obstacles extracted from

digital and paper (graphic and tabular) sources provided by governmental civil aviation authorities and military agencies worldwide. The data includes significant US Federal Aviation Regulation (FAR) Part 77 and ICAO Annex 4 obstacles. The obstacle database accommodates discrete obstacles and line obstacles, such as power lines. Jeppesen has designed its production processes to comply with RTCA DO-200A, Standards for Processing Aeronautical Data.

Obstacles in the Jeppesen database contain the following attributes:

- Obstacle type
- Geographic coordinates (latitude/longitude)
- Elevation MSL
- Coordinate datum (if known)
- Height AGL
- Number of structures per obstacle (if known)
- Lighting (if known)
- Vertical and horizontal accuracy (if known)

Data License Agreement

Jeppesen supplies terrain and obstacle data under a data license agreement for a specified period of mutual commitment. Under this arrangement, Jeppesen provides to the customer a database of terrain and obstacles for the selected geographic area, monitoring changes to source material on a continual basis and updating the information as it is received.

Contact Us Today!

Western Hemisphere

Tel: 800.353.2108 | 303.328.4422

Fax: 303.328.4114

E-mail: airlineservices@jeppesen.com

Eastern Hemisphere

Tel: +49 6102 5070

Fax: +49 6102 508283

E-mail: FRA-CASales@jeppesen.com

www.jeppesen.com

