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| **Radiocommunication Assembly (RA-15) Geneva, 26-30 October 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| **PLENARY MEETING**  Source: Resolution ITU‑R 40  Subject: Update to Resolution | **Document RA15/PLEN/10-E** |
| **15 September 2015** |
| **Original: English** |
| ATDI[[1]](#footnote-1) | |
| draft Revision of Resolution ITU‑R 40 | |
| Worldwide databases of terrain height and surface features | |

(1997-2003-2007-2012)

Background

The terrain data is important to be dealt in coverage and interference studies. Methods, involving terrain data, take into account the additional propagation loss due to topography and obstacles. Worldwide and regional databases of terrain height and surface improve the efficient use of the RF spectrum. Terrain database assists the national spectrum management, as more RF stations can be licensed at the same operating area, without mutual RF interference. Terrain data also optimizes the frequency reuse and coordination between countries.

For international and regional coordination and national inter-service studies, 1 arc second of Digital Elevation Model (DEM) or Digital Terrain Mapping (DTM) is needed. A nautical mile is approximately one minute of arc, measured along any meridian; it has been set at 1 852 metres exactly, about 6 076 feet; therefore, 1 arc second (2.78 10−4 degrees) is roughly 30 metres. The needed calculation’s accuracy determines the terrain resolution. The use of terrain data of 30‑90 metres (1 to 3 seconds) latitude and longitude depends on factors such as: terrain roughness, coverage and frequency range. For smaller coverage and higher frequencies, better accuracies (smaller resolution) are needed.

Resolution ITU-R 40 was originally established to encourage administrations to make terrain data available on a global basis. There is a real need and desirability of having sufficiently good terrain height databases, so as to encourage administrations and organizations involved in the production of terrain maps to make databases available. New mapping and computer tools facilitate the introduction of more accurate digital terrain maps.

Israel (the same contact person, as this contribution) contributed twice on the data accuracies, to revise Resolution ITU R 40:

1) [Proposed revision to Resolution ITU-R 40 - Worldwide databases of terrain height and surface features](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=R00-RA.2003-C-0024) RA03/PLEN/24, 3 May 2003;

2) [Draft Revision of Resolution ITU-R 40-2 Worldwide databases of terrain height and surface features](http://www.itu.int/md/R12-RA12-C-0033/en) RA12/PLEN/33, 3 January 2012.

The contribution is submitted to the Radiocommunication Assembly for consideration.

The attachment proposes a revision to Resolution ITU-R 40. It includes change in the title and inserts new “*noting*” with public websites, offering digital maps, with their limits; some of the maps are developed to protect the environment. The document details the accuracies and borders of the maps.

**Attachment:** 1

ATTACHMENT

DRAFT rEVISION OF resolution ITU‑r 40-3[[2]](#footnote-2)\*

Worldwide and regional databases of terrain height and surface features

(1997-2003-2007-2012)

The ITU Radiocommunication Assembly,

*considering*

*a)* that there is a requirement for planning purposes for improved worldwide methods of predicting field strength which take account of terrain height and surface features (including ground cover such as buildings, vegetation, etc.);

*b)* that digital maps of terrain height are now widely available with various data formats and resolutions, and that maps with 1 arc second resolution in latitude and longitude are available on a global or regional basis;

*c)* that propagation predictions are improved by the inclusion of more detailed information on terrain heights and surface features and suitable digital maps are becoming available nationally;

*d)* that the availability of digital maps of terrain height and surface features would be of considerable benefit to developing countries in the planning of their existing and newly introduced services;

*e)* that the use of terrain height data may optimize technical studies and assist national spectrum management;

*f)* that Radiocommunication Study Group 3 has an active work programme concerning the development of improved prediction methods,

noting

that these links provide databases of terrain height

*a)* U.S. Geological Survey (USGS) <http://gdex.cr.usgs.gov/gdex/> global, 1 arc sec; some countries are missing;

*b)* National Aeronautics and Space Administration (NASA) <http://gcmd.nasa.gov/records/GCMD_DMA_DTED.html>, between 60 degrees North and 56 degrees South latitudes; 1 to 3 arc second;

*c*) European Environment Agency EEA <http://www.eea.europa.eu/data-and-maps/data/eu-dem#tab-european-data>, all Europe; 1 arc second;

*d)* View Finder Panorama   
<http://www.viewfinderpanoramas.org/Coverage%20map%20viewfinderpanoramas_org1.htm>,

1 arc sec (North Europe), and 3 arc second (including North of Latitude 60 degrees);

*e)* ATDI [www.atdi.com/cartography](http://www.atdi.com/cartography) 1 to 3 arc sec,

resolves

1 that a terrain database with a 1 arc second horizontal resolution in latitude and longitude is suitable for worldwide methods of propagation prediction in the frequency range above 30 MHz;

2 that administrations should review the terrain data available in this format, and should provide additional data with more information on surface features and with regular updates as necessary to account for development, so as to complete the worldwide extent of the database;

3 that administrations should be encouraged to make these terrain databases freely available for ITU purposes;

4 that administrations should encourage organizations involved in the production of terrain maps to produce databases of terrain height and surface features with a resolution equal to or better than currently available;

5 that administrations are encouraged to use terrain height for radio propagation prediction and national spectrum management;

6 that terrain heights should be used according to ITU‑R Recommendations.

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2. \* This Resolution should be brought to the attention of Radiocommunication Study Group 1 for consideration of the use of a terrain database for national spectrum management purposes.

   This Resolution should also be brought to the attention of the Telecommunication Development Sector. [↑](#footnote-ref-2)