



TA Services

Institute for Telecommunication Sciences (ITS)



- **Broad application in telecommunication system design and evaluation of broadcast, mobile, and radar systems.**
- **Industry and government agencies have easy access to cost effective models and databases.**
- **Standardized method of system analysis for comparing competing designs for proposed telecommunication services.**

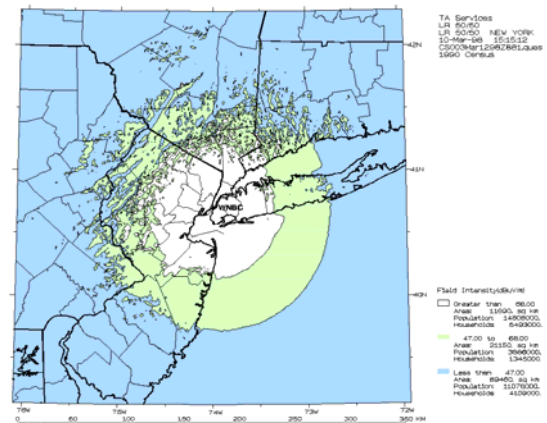
Telecommunications Analysis Services (TA Services) provides the latest engineering models and research data developed by ITS to industry and other Government agencies via a web-based interface (<http://tas.its.bldrdoc.gov>). TA Services is designed to be both user-friendly and efficient. It offers a broad range of programs that allow the user to design or analyze the performance of telecommunications systems. Currently available are: on-line terrain data with some 1-arc-second (30 m) and 3-arc-seconds (90 m) resolution for much of the world and GLOBE (Global Land One-km Base Elevation) data for the entire world; 2000 US census data (also 1990 and 1997 updated); Federal Communications Commission (FCC) databases; and geographic information systems (GIS) databases (ARCINFO). TA Services has developed models which predict communication system coverage and interference for many broadcast applications. New models in the GIS environment for Personal Communications Services (PCS) and Local Multipoint Distribution Services (LMDS) have been developed. The TA Services computer was recently upgraded and is now ten times faster than before with about 210 gigabytes of storage capacity (three times the previous capacity). Recently obtained 1-arc-second (30 m) terrain data for CONUS with some data at 10 m resolution will become available later in FY02. The following is a brief description of some programs available through TA Services.

HAAT – Calculates Height Above Average Terrain for an antenna at a specified location.

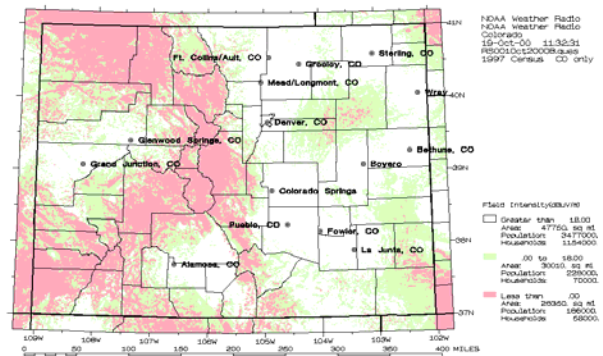
PCS/LMDS – Allows the user to create or import surfaces which may include terrain, buildings, vegetation, and other obstructions in order to perform Line of Sight and diffraction studies.

FCCFIND, FMFIND, TVFIND, AMFIND, and TOWERFIND - Allows the user to search the FCC database for particular stations or by search radius around a point of interest.

PROFILE – Extracts path profiles according to user-specified input parameters. After the data is extracted, either the individual elevations or an average elevation along the profile can be obtained. A user can also receive plots of the profiles adjusted for various K factors. For microwave links, Fresnel zone clearance can be determined so that poor paths can be eliminated from a planned circuit or network.



A CSPM analysis of TV coverage from WNBC in New York.



coverage produced by TA Services.

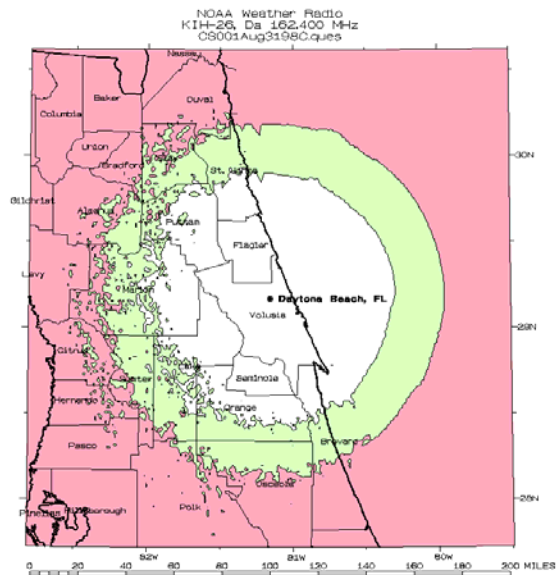
SHADOW – Plots the radio line-of-sight (LOS) regions around a specified location in the United States using digitized topographic data. It shows areas that are LOS to the base of the antenna, areas that are LOS to the top of the antenna, and areas that are beyond LOS to the antenna.

COVERAGE – Calculates the receive signal levels along radials that are spaced at user-defined intervals of bearing around the transmitter. The program lists the contours of signal coverage of the transmitter along each radial and lists distances to user-specified contours for each radial. Either the FCC broadcast rules or the ITS Irregular Terrain Model can be chosen for calculations.

CSPM – Determines the system performance of mobile and broadcast systems in detailed output plots of signal intensity. Plotted outputs can be faxed to the user, plotted on clear plastic for overlaying on geopolitical maps, or downloaded to the user site (in HPGL, GIF, or TARGA format). This program uses ITS's Irregular Terrain Model in a point-to-point mode or other user chosen algorithms for path loss calculation.

HDTV – Allows the user to analyze interference scenarios for proposed new DTV stations. The model contains current FCC and MSTV allotment tables and maintains the catalogs created by all users of the program. The user can create new stations by hand, or by importing station information directly from the FCC database. Analyses may be performed using the existing FCC database and allotment assignments, or the user can replace a station with one created and maintained in the user's catalog.

PBS – An analysis model similar to the HDTV model, but specialized for Public Broadcasting System (PBS) Stations. Typical outputs may consist of composite plots showing Grade A and B coverage of several stations or "overlap" plots which show areas covered by more than one station.



Example of TA Services output using ITM to calculate radio propagation coverage.

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