

# INM News

The Integrated Noise Model

A publication of **HARRIS MILLER MILLER & HANSON INC.** for users of the Integrated Noise Model.  
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## FAA Releases INM 6.2

The FAA released Version 6.2 of the Integrated Noise Model (INM) on May 19, 2006. The new version is available at: [www.aec.faa.gov](http://www.aec.faa.gov). The Version 6 User Guide and Technical Manual are the current manuals for INM Version 6.2.

Version 6.2 contains new features, including:

- Database additions
- Line-of-sight blockage terrain modeling and additional terrain data capacity
- New noise metrics
- Export of MapInfo format
- Ability to disable lateral attenuation for some aircraft.

## Database Modifications

Version 6.2 contains modified data for the following five commercial aircraft to better reflect the current “in-service” fleet:

- 737-300 with CFM56-3B-1 engines (737300)
- 737-300 with CFM56-3B-2 engines (7373B2)
- 737-400 with CFM56-3C-1 engines (737400)
- 737-500 with CFM56-3B-1 engines (737500)
- 737-700 with CFM56-7B engines (737700)
- 747-400 with PW4056 engines (747400)
- 757-200 with PW2037 engines (757PW)
- 757-200 with RB211-535E4 engines (757RR)
- 777-200 with GE90-90B engines (777200)

One of the changes made to these aircraft is to distinguish between ICAO B and “Standard” profiles (the “Standard” profile was formerly the same as ICAO B). The new Standard profile assumes that the initial thrust cutback occurs after the aircraft has reached 1000' AGL; this results in slower climb performance. The bottom line: *noise levels for standard departure profiles for these*

*aircraft fleet will be greater farther out and under the flight path, but lower closer to the airport.*

Version 6.2 also contains new data for the following propeller aircraft:

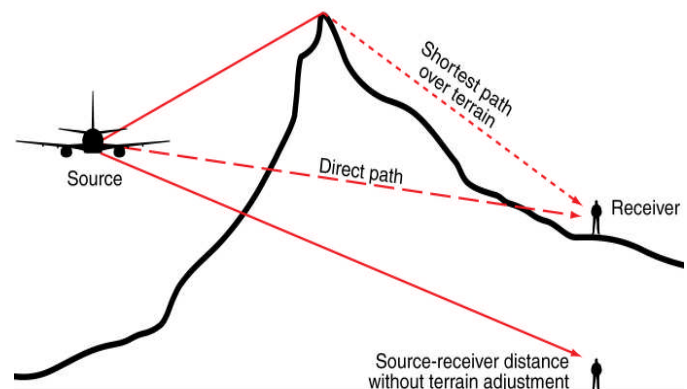
- Piper PA28-161 Warrior
- Piper PA30 Twin Comanche
- Piper PA31 Navajo
- Raytheon Beech 1900D
- Maule M-7-235
- Raytheon Beech 1900D

The following helicopters have been added to the HeloExample study distributed with the INM:

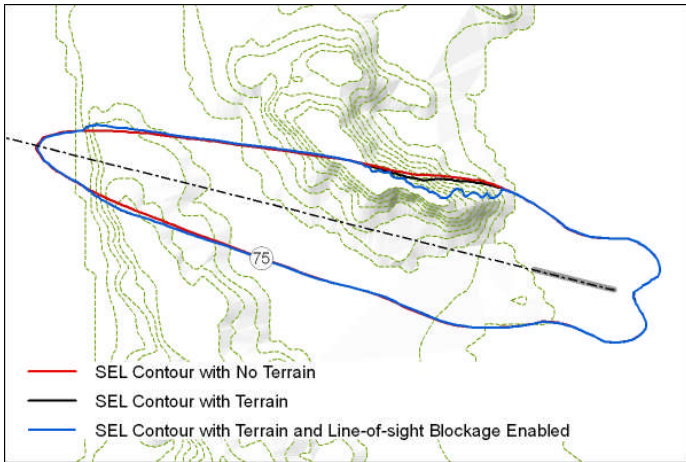
- Eurocopeter EC-130
- Robinson R-22
- MD600N

## Line-of-Sight Blockage

Prior versions of the INM utilized terrain input to adjust the source-receiver distance, but did not account for the attenuation due to intervening terrain. The line-of-sight (LOS) blockage calculation in Version 6.2 is based on the difference in path length between the direct path and the shortest path over the top of the terrain.



The INM will fill in missing terrain data with a user-defined values for cases where terrain data is not available (e.g., over water). This data can be in 3CD/3TX or Digital Elevation Model (DEM) format, both of which can be downloaded from the USGS at <http://seamless.usgs.gov>.



## New Noise Metrics

Version 6.2 includes new metrics that grew out of studies by the FAA to assess the substantial restoration of natural quiet to Grand Canyon National Park. These include Time Audible (TAUD), Percent Time Audible (%TAUD) and Delta Dose (DDOSE). TAUD is the amount of time that an aircraft is audible at a particular location to an attentive observer; %TAUD is the percentage of time audible for a given period. DDOSE is the arithmetic difference between the aircraft noise exposure and the ambient sound level.

Use of these metrics requires the collection of  $\frac{1}{3}$ -octave band ambient data, which is resource-intensive and should be performed in consultation with FAA and NPS. The ambient data is incorporated into your study through a binary file, which must be processed by FAA. In other words, *you must have FAA's pre-approval (and*

*processing) of your ambient data before initiating any TAUD, %TAUD, or DDOSE calculations.*

## Export of MapInfo Format

INM 6.2 exports graphics output layers to MapInfo Data Interchange Format files. Data associated with enabled layers such as noise at standard grid points and population at census centroids are also exported with the displayed graphics.

## Disabling Lateral Attenuation

INM 6.2 can disable the lateral attenuation for helicopter and propeller aircraft. This simulates the propagation of sound over acoustically hard surfaces such as rock or water. The current SAE-approved method for calculating lateral attenuation was developed primarily for jet aircraft. SAE A-21 is currently revising this AIR.

## INM Training Course Schedule

HMMH has developed all new training materials for the release of 6.2. Our training schedule for 2006 is as follows:

- September 2006, Copenhagen, Denmark
- October 4-6, 2006, Burlington, Massachusetts

For more information, please see our web site: [www.hmmh.com/inm.html](http://www.hmmh.com/inm.html).

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