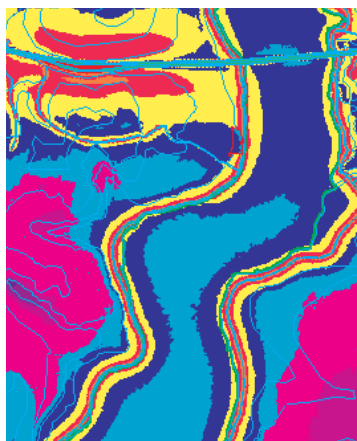


# MITHRA

## Environmental Noise Prediction Software



### Overview

MITHRA is a prediction software package dedicated to sound propagation modelling. It considers the most important variables for a given site such as building layout, topography, noise barriers, ground type, meteorological effects, etc.

By selecting the appropriate modules, MITHRA is directly configured for road traffic, railway aircraft and industrial noise prediction, as well as aircraft noise.

The topography can be easily defined with a digitising tablet, by importing DXF or GIS files, or even by on-screen digitising over raster files using an optional dedicated module.

MITHRA represents the culmination of 20 years of methodological research, lead by the CSTB\* in France, and has been fully functional as a software program since 1987. The results provided by MITHRA have been validated by many field measurements.

Noise prediction calculations integrate the NMPB method and the ISO 9613-2 method, including meteorological parameters. Fully compatible with Windows 98, ME, NT and 2000, MITHRA is a fast user-friendly prediction tool for noise impact studies.

\* National Laboratory for Environmental and Building Acoustics

### Main functions

#### Data entry

- Digitiser tablet interface (integrated digital topography module)
- MIF/MID and DXF file import
- INM flight path file import
- Direct on-screen digitising option (GEO-DGT, raster files)
- Road and rail traffic database
- Meteorological database

#### Noise level calculations

- LAeq levels calculated by frequency bands
- L10 statistical index for road traffic noise
- Lden calculations
- Scenario comparison
- Meteorological effects calculation
- Ray path display
- Acoustical contributions expressed by noise sources and areas
- Time histories of mobile noise sources

#### Results

- Results tables
- Vertical, horizontal and building façade noise maps
- Isophones
- Noise labels
- Source identification
- Automatic noise barrier design
- Export at DXF and MIF formats
- Superposition of noise map to raster file for printing

#### Minimum computer configuration

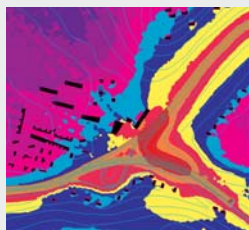
Windows	3.x, 95, 98, NT 4.0 or 2000
Processor	Pentium 133
RAM	16MB for Windows 3.x, 95 or 98 32MB for Windows NT 4.0 and 2000
Hard disk	10MB
Graphics	VGA or higher
Digitiser (option)	A3 format, 4 button cursor or on-screen digitising module
Printer	Any Windows compatible printer



# MITHRA Modules

## ■ Road Module

The module allows the user to predict the noise emitted by the road traffic. All relevant parameters such as vehicle flow and speed, percentage of trucks, road surface, road slope, traffic flow type, are taken into account to compute the noise levels. The user also has the possibility to design the noise barriers himself or to use the automatic noise barrier design module, which is supplied with the road module.



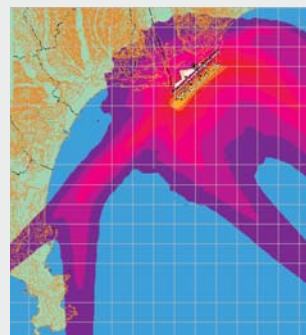
## ■ Industrial Noise Prediction Module

The sound power levels and the directivity pattern of the point and surface noise sources are fully defined within this module. The "source identification" module can be very useful when the emission spectrum is unknown and when the user has access to the field measurement results.



## ■ Aircraft Module

MITHRA Aircraft Module helps to compute the noise contours around airports. As in all other modules, the topography, the ground effect, the reflections and diffractions and the meteorological effects are taken into account. The flight path information is imported from the INM software.



Altimeter data from IGN TOPO © Database © IGN - Paris 2001

## ■ Railway Module

The user can input the railway traffic from a train database which includes the noise emission spectrum depending on the train type. This module computes the noise levels taking into account the multiple reflections between a noise barrier and the train body.



## Specifications

### ■ Noise sources

Point, line and surface sources.

Road: polyline sources, daily traffic flow and distribution, speed, surface, traffic flow type.

Railway: polyline source, number and type of train per period, user-defined train database, speed/type of train.

Aircraft flight paths: imported from an INM model.

### ■ Noise barriers

Height, slope angle, height of absorbing surface, absorbing material database.

### ■ Display properties

Zoom, cross-section, 3D view, topographical maps in BMP format.

### ■ Calculations

Based on the inverse ray tracing method, adapted for predicting noise levels in both urban and rural areas.

## Benefits

- User-friendly
- Fast algorithm
- GIS, DXF import
- ISO9613, NMPB
- INM compatible
- Reference software



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