"Capacity Building and Strengthening Institutional Arrangement"

Workshop: "Environmental Impact Assessment (EIA) (for Assessors)"

Environmental Impact Assessment Models: Introduction

Mr. Vincenzo Cammarata

APAT

Agency for Environmental Protection and Technical Services

Qualitative vs quantitative evaluations

Independent Evaluations

The need of using model
for a better understanding of the impacts effect

Importance of data used to run the models

It is important the use of best available analytic and forecasting techniques

Use of models must take into account the following consideration:

- Justify their use: it often requests a specific expertise and is time consuming (except for expeditive models)
- Priority is to be given to well known and recognized models
- Models have to be tested prior to its use in the EIA
- Reference to the developer and documentation must be available
- Specification of the application field, assumptions and limitations must be provided for.

An example of characterization form of a model

REFERENCE GROUP: PHYSICAL AGENTS

General characteristics	
Model Name	SoundPLAN 5.00
Acronym	**SoundPLAN 5.00**
Reference Component	Noise
Main Object	Road traffic noise, railway noise, airport noise, industrial noise
Aim of the model	Evaluation of noise effects of: road traffic noise, railway noise, airport noise, industrial noise, internal industrial noise; façade noise; Calculation of acoustic barriers with optimization in presence of parking and atmospheric pollution.
Type of model	
Cost	
Keyword	
Author	BRAUSTEIN UND BERNDT – D-71397 LEUTENBACH - Germany
Description of the model	As above. Applicable to all types of orography, without limitations
Bibliography	

An example of characterization form of a model

Tecnical characteristics	
Operating System Source Code	Microsoft Windows
Dimensions	
HW Requirements Manuals	PC
Use of libraries	
Input Data	Road traffic noise source with direct entry of characteristic values; Railway traffic source with direct entry of characteristic values; Linear sonorous sources characterized by linear power density or by power level
Output Data	Band width of sonorous pressure levels; Pressure levels in dB(A); All type of weighting (ABCDLin); For single receptor: directional details and entity of either direct and reflected energy.
Validation Validation Body	
Date of last validation Application examples	

Type of models (I)

Atmoshere

- Diffusion models of punctual source atmospheric pollutants
- Parametric models for traffic emission estimation
- Diffusion models of mobile source atmospheric pollutants
- Ground fallout models of pollutants emitted into atmosphere
- Local microclimate alteration models

Type of models (II)

Hydrology

- Water stream flow alteration models
- Flood flow estimation models
- Global water balance estimation models
- System hydrodynamic alteration models
- Parametric models for estimation of expected pollutant loads in water
- Estimation models of water stream minimum vital flow

Type of models (III)

Hydrology

- Dilution models of pollutants in groundwater bodies
- Diffusion models of thermal discharges in groundwater bodies
- Abatement models of microbiological load in groundwater bodies
- Diffusion models of pollutants in underground waters

Type of models (IV)

Geology

- Global geomorphological configuration evolution models
- Slope stability alteration models
- Land subsidence alteration models

Natural environment

- Estimation models of eutrophication expected levels
- Estimation models of habitat variation for concerned animal species
- Estimation models of ecological value variation
- Ecomosaic configuration evolution models

Type of models (V)

Others

- Noise diffusion models
- Ecotoxicological models of contaminant allocation
- Virtual reality models simulating internal part of new project works
- Multi-criteria analysis

List of models

SOIL	WATER	PHYSICAL AGENTS	ATMOSPHERE
ACCESS-I	MIKE 11	ARTEMIS	BPIP
ACCESS II	QUAL2E	Cadna A 2.00	ADAM
CRITERIA	WEST	CARTOBRUIT 03/'99 - 8	ADMS-3
CropSyst	WODA	CRTN	AFTOX
ELBA		DISIA - 2.0	ASPEN
EPIC		ELITRA 1992	AVACTA II
GLEAMS		ENM 3.06	BLP
LEACHM		IMMI for Windows - 5.0	CAL3GHC/CAL3GHCR
MACRO DB 1.0 MACRO 4.0		IMPACT 1080	CALINE3
MASQLE 1.0		INM - 6.0	CALMPRO
PELMO 3.00		ISO 9613-1/2	CAMx
PERSIST		LIMA 3.86	CDM2
PESTLA 3.3		LIMA Light 3.86	CHAVG
PESTRAS 3.1		Makarewicz 1997	CMAQ
PLM3		MAPB - H, -F, -C 1997	COMPLEX1
RUSLE		Metodo C.N.R.	CONCOR
SHELD 1.0		MITHTRA 4.0	CRSTER
SIMULAT		Modello a reti neurali 1993	CTDMPLUS
SOILFUG 1.2		NFA	CTSCREEN
SOILN 8.0		NMPB - Routes 96	DEGADIS
SuSAP		Predictor mod. 7310 2.0	EKMA
VARLEACH		RLS 90	ERT
WAVE 2.0		SAL II LIMA 3.86	HGSYSTEM
WEPP 95.7		SimNoise 2.0	HOTMAC/RAPTAD HOTMAC
		SoundPLAN 5.00	ISC3
		SPM9613 2.0	LONGZ

List of models

SOIL	WATER	PHYSICAL AGENTS	ATMOSPHERE
		TNM 2.0	MESOPUFF II
			MILDOS
			OBODM
			OCD
			OZIPR
			PAL-DS
			Panache an Eulerian
			PLUVUEII
			PPSP
			RAM
			REMSAD
			RPM-IV
			RTDM3.2
			SCIPUFF
			SCREEN3
			SOSTER
			SDM
			SHORTZ
			Simple Line Source Model
			SLAB
			TSCREEN
			UAM-IV
			UAM-V
			VALLEY
			VISCREEN
			WYNDVALLEY