Marine Coastal and Delta Sustainability for Southeast Asia

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ENVIRONMENTAL MODELLING

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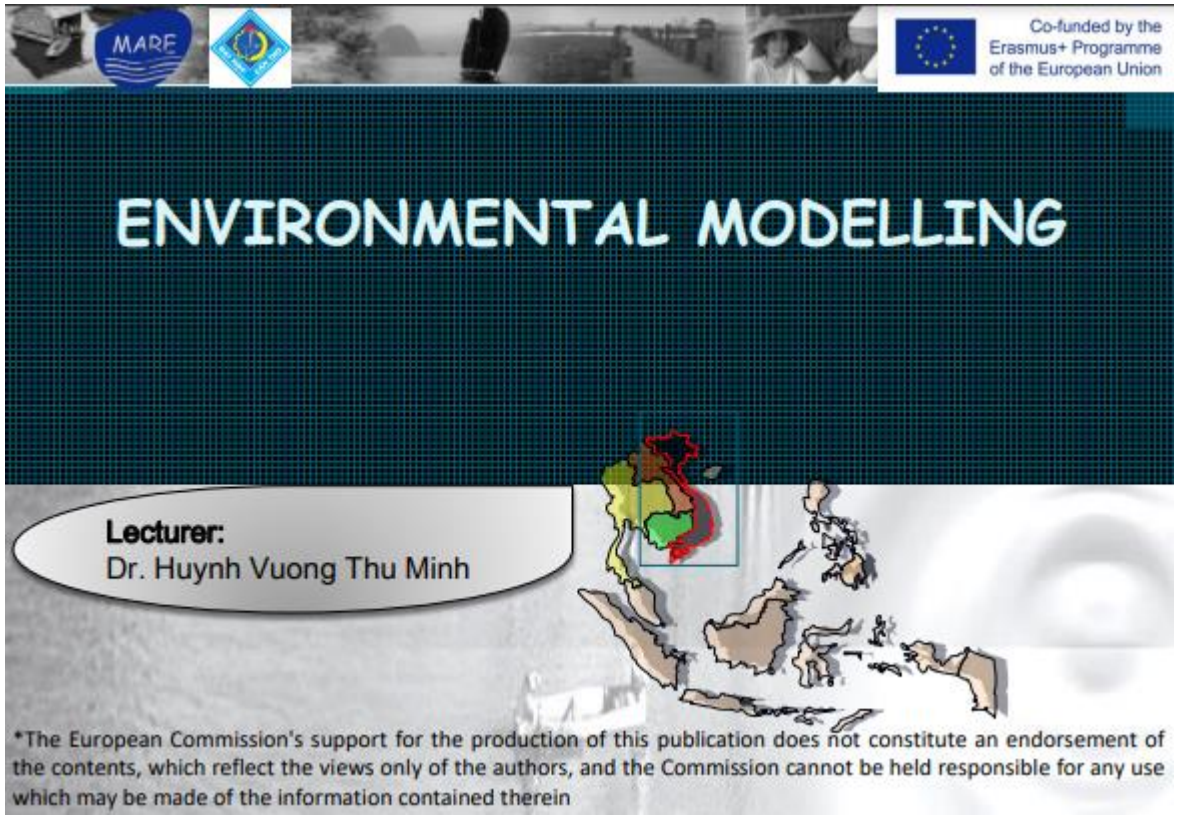
LECTURE NOTES



- Level Doctor
- This document in available in English
- Target student audiences Environment and Natural resources field

SUMARY

This course belongs to the specialized knowledge block, providing students with in-depth knowledge about environmental modelling, application of modeling tools and computer models, forecasting of service pollution. for the assessment of environmental impacts and control, prevention of pollution and environmental protection. To apply knowledge of the model in the process of developing a decision support system in the management of environment and natural resources.

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LECTURE NOTE CONTENTS

Topic 1 : Basic concept

1.1. Some basic concepts of modelling

1.2. The role of modelling in environmental management

1.3. Basic processes in modelling

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LECTURE NOTE CONTENTS

Topic 2- Surface water quality model

2.1. Overview of the surface water quality modelling

2.2. Introduction of mathematical modelling software that can simulate water quality

2.3. Surface water quality modeling (hydrodynamics modelling, pollutant transport and diffusion, pathogenic organism variation modelling)

2.4. Lake water quality model (water balance, thermal stratification, eutrophication and nutrient loading such as, N and P)

2.5. Estuary water quality modelling (estuarine hydrodynamics modelling, diffusion coefficient and estuary stratification)

2.6. Introduction several modelling (WASP, BASIN, MIKE 11)

LECTURE NOTE CONTENTS

Topic 3 - Groundwater quality model

3.1. Groundwater flow equation
3.2. Mathematical model of transport of pollutants
3.3. Boundary conditions in the model
3.4. Solution method
3.5. Introduction and application of software PMWIN, MODFLOW

LECTURE NOTE CONTENTS

Topic 4: Hydrometeorological model

4.1. Introduction to the application of meteorological modelling in the field of environment

4.2. Overview of the meteorological modelling

4.3. Evaluation of meteorological models (Evaluation criteria: Evaluation based on number theory, Evaluation based on observation data, Evaluation based on synoptic maps)

4.4. Meteorological model mesoscale MM5

- Introduction of model MM5
- Input data of the model
- Run model MM5
- Exploiting and using the outputs of the model.

LECTURE NOTE CONTENTS

Topic 5- Air quality model

5.1. Air quality and air quality parameters

5.2. Atmospheric chemistry and chemical mechanisms in air quality modelling

5.3. Classification of air quality models

- Dispersion model
- Photochemial model

Introduction and application of air quality modelling system MM5-CMAQ, MM5-CAMx

- Input data of the model

THANK YOU

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