

## **CURRICULUM VITAE**

Name: Mogens Rene Flindt  
Place and date of Birth: Ringsted, 17<sup>th</sup> of March 1957  
Nationality: Danish  
Occupation: Associate professor (Ph.d).  
Environmental technology, Institute of Biology  
University of Southern Denmark, Odense.

### **Educational background.**

1981. Bachelor in data science at the University of Copenhagen.  
1987. Master sc. (cand. scient) in biology at the University of Copenhagen.  
Aquatic ecology: Microbial activity and production in aquatic sediments: Methods and field study, 150 p..  
1994. Ph.d. in aquatic ecology at the University of Copenhagen:  
Turnover of organic matter, nitrogen and phosphorus in estuarine sediment examined experimental and by mathematical modelling.

### **Employment.**

1980-1984: Research programmer at Danish Geological Survey.  
1985-1988: Research senior programmer at Danish Geological Survey.  
1988-1989: Research associate and teacher at University of Copenhagen,  
Freshwater Biological laboratory.  
1990-1991: Development of ecological modelling tool for estuarine waterquality modelling.  
1991-1993: Ph.d. study at University of Copenhagen.  
1994-1996: Assistant research professor at Freshwater Biological Laboratory. University of Copenhagen.  
1997-1998: Post doc. at the Institute of Marine Research, University of Coimbra, Portugal.  
1998-1999: Associate research professor at Freshwater Biological Laboratory, University of Copenhagen, Denmark.  
1999- : Associate professor at Institute of Biology, SDU, University of Odense.

### **Scientific key qualifications.**

Aquatic ecology.  
Modelling of water quality and eutrophication processes in aquatic areas.  
Nutrient dynamics and mineralization of organic matter in the aquatic environment.  
Feedback mechanisms between hydrodynamic, sedimentology and ecology.  
Measurement of microbial activity and production in aquatic sediments.  
Growth, loss and transport processes for macrophytes in aquatic systems.

### **International scientific activities.**

Studies in:

England	1983	Mathematical modeling of ground reservoir-data from wells. Two weeks.
England	1984	Database management and design using DEC's DBMS-system. Two weeks.
Norway	1987	Epifluorescence microscopy. University of Blindern, Oslo. Two weeks.
USA	1991	RFA-autoanalyzer techniques. Portland, Oregon, 1 week.
Italy	1995	Field campaign: Nutrient dynamics and growth, loss and transport of macro algae in the Lagoon of Venice. University of Padova. 2 month.
Portugal	1997	Nutrient dynamics and plant ecology in the Mondego Estuary. IMAR, University of Coimbra. 1.5 year.
Italy	1998	Feedback mechanisms between hydraulics, sedimentology and plant components in the Lagoon of Venice. MAST 3 project. 1.5 month.
Italy	1999	Feedback mechanisms between hydraulics, sedimentology and plant components in the Lagoon of Venice. MAST 3 project. 1 month.
Portugal	1999	Nutrient dynamics and plant ecology in the Mondego Estuary. IMAR, University of Coimbra. Two weeks.
Thailand	2000	Nutrient and hydraulic dynamics in mangrove systems. PMBS in Phuket. Three weeks.
Portugal	2000	Guest professor on an advanced course "Mass balances in Estuaries. University of Coimbra. Two weeks.
England	2000	Feedback mechanisms between hydraulic and benthic macrophytes. Southampton Oceanographic Center. Two weeks.
Thailand	2001	Nutrient and hydraulic modelling of a mangrove systems. PMBS in Phuket. Two weeks.
Portugal	2001	Guest professor on an advanced course "Mass balances in Estuaries. University of Coimbra. Two weeks.
England	2001	Feedback mechanisms between hydraulic and benthic macrophytes. Southampton Oceanographic Center. Two weeks.
Portugal	2002	Guest professor on an advanced course "Mass balances in Estuaries. University of Coimbra. Two weeks.
England	2003	Feedback mechanisms between hydraulic and benthic macrophytes. Southampton Oceanographic Center. One week.
Portugal	2003	Guest professor on an advanced course "The use of GIS in evaluating environmental cases". Two weeks.
Portugal	2004	Guest professor on an advanced course "The use of GIS in evaluating environmental cases". Two weeks.

### **International Scientific positions.**

In the evaluation board in the Portugise National Science Foundation.

Referee for the English National Science Foundation.

Referee for the Italian National Science Foundation.

Referee for DANIDA.

Referee for a suite of international journals: L&O, MEPS, Ecological Modelling,

Hydrobiologia, Acta Oecologica, Estuarine, Coastal and Shelf Science.

## Publications

### Refereed publications in international journals.

- Flindt, M.R.** & J. Nielsen. 1992. Heterotrophic bacterial activity in Roskilde Fjord sediment during an autumn sedimentation peak. *Hydrobiologia* 235/236: 283-293.
- Kamp-Nielsen, L. & **M.R. Flindt**, 1993. On-line recording of porewater profiles from in situ dialysis. *Verh. Internat. Verein. Limnol.* 25: 151-156.
- Flindt, M.R.**, 1994. Measurements of nutrient fluxes and mass balances by on-line in situ dialysis in a *Zostera marina* bed culture. *Verh. Internat. Verein. Limnol.* 25: 2259-2264.
- Flindt, M.R.** & L. Kamp-Nielsen. 1997. Modelling an estuarine eutrophication gradient. *Ecological Modelling.* 102: 143-154
- Flindt, M.R.**, M. Carrer, J. Salomonsen, M. Bocci & L. Kamp-Nielsen. 1997. Loss, growth and transport dynamics of *Chaetomorpha aerea* and *Ulva rigida* in the Lagoon of Venice during an early summer field campaign. *Ecological Modelling.* 102: 133-142
- Flindt, M.R.**, J.C. Marques, M.R. Partal, M. Bocci, G. Bendoriccho, L. Kamp-Nielsen, S.N. Nielsen & S.E. Jørgensen. 1997. Description of the three shallow estuaries : Mondego River (Portugal), Roskilde Fjord (Denmark) and the Lagoon of Venice (Italy). *Ecological Modelling.* 102: 5-16
- Salomonsen, J., **M.R. Flindt** & O. Geertz-Hansen. 1997. Significance of advective transport of *Ulva lactuca* for a biomass budget on a shallow water location. *Ecological Modelling.* 102: 129-132
- Flindt, M.R.** & L. Kamp-Nielsen. 1998. The influence of sediment resuspension on nutrient metabolism in the eutrophic Roskilde Fjord, Denmark. *Verh. Internat. Verein. Limnol.* 26: 1457-1461.
- Flindt, M.R.**, Pardal, M.A., Lillebø, A.I., Martins, I. & Marques, J.C. 1999. Nutrient cycling and plant dynamics in estuaries: A brief review. *Acta Oecologica.* 20 (4) 237-248.
- Lillebø, A.I., **Flindt, M.R.**, Pardal, M.A. & Marques, J.C. 1999. The effect of macrofauna, meiofauna and microfauna on the degradation of *Spartina maritima* detritus from a salt marsh area. *Acta Oecologica.* 20 (4) 249-258.
- Martins, I., Oliveira, J.M., **Flindt, M.R.** & Marques, J.C. 1999. The effect of salinity on the growth of *Enteromorpha intestinalis* (Chlorophyta) in the Mondego estuary (west Portugal). *Acta Oecologica.* 20 (4) 259-265.
- Salomonsen, J., **Flindt, M.R.**, Geertz-Hansen, O. 1999. Modelling advective transport of *Ulva lactuca* in the sheltered bay, Møllekrogen, Roskilde Fjord, Denmark. *Hydrobiologia.* 397: 241-252.
- Christiansen, C., Lund-Hansen, L.C., Bendtsen, S.Å., **Flindt, M.R.**, Kamp-Nielsen, L. & Runge, E. 2000. Hydrografiens betydning for transport og omsætning af næringssalte. in: Havmiljøet ved årtusindskiftet. Editor : Bente Lomstein Aarhus, Denmark. Olesen & Olesen.
- Pardal, M.J., Marques, J.C., Metelo, I., Lillebø, A.I. & **Flindt, M.R.** 2000. Impact of macroalgae blooms due to eutrophication. Life cycle, population dynamics and production of *Ampithoe valida*. *Marine Ecology Progress Serie.* Vol. 196: 207-219.
- Martins, I, Pardal, M.A., Lillebø, A.I., **Flindt, M.R.** and Marques, J.C.. 2001. Hydrodynamics as a major factor controlling the occurrence of green macroalgal blooms on the influence of precipitation and river management. *Estuarine, Coastal and Shelf Science.* 52: 165-177.
- Lillebø, A.I., J. M. Neto, M. A. Pardal, **M. R. Flindt** & J. C. Marques. 2002. The role of

- Spartina maritima* and *Scirpus maritimus* to sediment pore-water profiles, and possible implications to the Mondego estuary nutrient dynamics. In Aquatic Ecology of the Mondego River Basin. Global importance of local experience. Ed. Pardal, Marques & Graca. 325-338.
- Flindt, M.R.**, Pardal, M.A., Lillebø, A.I., Martins, I. & Oliveira, J.M. 2002. Nutrient dynamics in the intertidal pools of the Mondego Estuary. I. Nutrient sediment profiles, nutrient status and phosphorus adsorption. In Aquatic Ecology of the Mondego River Basin. Global importance of local experience. Ed. Pardal, Marques & Graca. 243-256.
- Lillebø A.I, **M. R. Flindt**, M. A. Pardal, I. Martins & J. C. Marques. 2002. Nutrient Dynamics in intertidal pools of the Mondego estuary. II - Seasonal efflux of PO<sub>4</sub>-P and NH<sub>4</sub>-N in bare bottom and vegetated pools. In Aquatic Ecology of the Mondego River Basin. Global importance of local experience. Ed. Pardal, Marques & Graca. 257-272
- Martins, I., **Flindt, M.R.**, Pardal, M.A., Lillebø, A.I, Oliveira, J.M., & Marques, J.C. 2002. Nutrient dynamics in the intertidal pools of the Mondego Estuary. The importance of nutrient effluxes to macroalgae growth (*Enteromorpha sp.*). In Aquatic Ecology of the Mondego River Basin. Global importance of local experience. Ed. Pardal, Marques & Graca. 273-286.
- Lillebø, A.I, M. A. Pardal, **M. R. Flindt**, J. M. Neto, F. Macedo, I. Martins & J. C. Marques. 2002. Nutrient dynamics in the intertidal pools of the Mondego Estuary. IV. Possible contribution to dissolved inorganic phosphorus loading. In Aquatic Ecology of the Mondego River Basin. Global importance of local experience. Ed. Pardal, Marques & Graca. 287-300.
- Pardal, M.A., Marques, J.C., Metelo, I, Lillebø, A.I & **Flindt, M.R.** 2002. Impact of Eutrophication on amphipods *Melita palmata* and *Ampithoe Valida* in the Mondego Estuary. In Aquatic Ecology of the Mondego River Basin. Global importance of local experience. Ed. Pardal, Marques & Graca. 457-473.
- Flindt, M.R.**, Pedersen, C.B & Nielsen, J.B. 2002. Konsekvenser af overløbshændelser i kystnære områder. Vand & Jord. Vol: 1: 36-39.
- Suraswadi, P., Kristensen, E. & **Flindt, M.R.** (2002). Hydrodynamics of the Bangrong mangrove estuary, Phuket, Thailand. Phuket Mar. Biol. Ctr. Res. Bull. 64: 89-98.
- Bergamasco, A., De Nat, L., **Flindt, M.R.** & Amos, C.L. 2003. Feedback effects between biotic factors and physical processes in estuarine environments: from science to management. Submitted to Estuarine, Coastal and Shelf Science.
- Amos, C., Cappucci, S., Bergamasco, A., Umgiesser G., Bonardi, M., Cloutier, D., **Flindt, M.R.**, De Nat, L. & Cristante, S. 2004. The stability of tidal flats in Venice Lagoon – the results of in situ measurements using two benthic annular clumes. Estuarine, Coastal and Shelf Science. In Press.
- Quaresma, V. da S., Amos, C.L., **Flindt, M.R.** 2004. A method to determine the influences of varying treatment and consolidation time on cohesive beds. Submitted to Estuarine, Coastal and Shelf Science.
- Flindt, M.R.**, Amos, C.L, Pedersen, C.B, Bergamasco. 2004, A. Plant transport – a neglected part of the nutrient mass balance – in estuaries. Submitted to Estuarine, Coastal and Shelf Science.
- Lillebø, A.I, Neto, J.M., **Flindt, M.R.**, Marques, J.C. & Pardal, M.A. 2004. Phosphorus dynamics in a temperate intertidal estuary. Estuary, coastal and shelf science. In Press.
- Flindt, M.R.**, Neto, J., Amos, C.L., Pardal, M.A., Bergamasco, A., Pedersen, C.B & Andersen, F.Ø. 2004. Plant bound nutrient transport. Mass transport in estuaries and

lagoons. In (Nielsen, Banta & Pedersen (Eds.)): The Influence of Primary Producers on estuarine Nutrient Cycling 40 p. In press

**Flindt, M.R.** & Lillebø, A.I. 2004. Determination of total nitrogen and phosphorus in leaf litter. Book chapter in Kluwer Academic Publishers. In press.

### **Other publications.**

**Flindt, M.R.** & J.B. Nielsen. 1987. Bacterial activity and production in coastal sediments; Methods and field study. Master thesis - Freshwaterbiological Lab.. Published by University of Copenhagen. 149p.

**Flindt, M.R.**, Sørensen, P.S & Madsen, M. 1992. Modelsystem for fjorde og bugter. Miljøstyrelsens Hav-90 forsknings serie. No. 9, 79 p. (In danish).

**Flindt, M.R.** & S. Christensen. 1993. Physical, chemical and biological measurements in. A Laboratory and field guide for students in environmental chemistry (in danish). Published by the University of Copenhagen. 63 p.

**Flindt, M.R.** & S. Christensen. 1994. Course notes in ecology for environmental chemistry students. Published by the University of Copenhagen. 49 p.

Rasmussen, E.K., Dørge, J. & **M.R. Flindt**. 1995. Modelundersøgelse af Roskilde Fjord. DHI-Pupl. 753523, 77 p.

**Flindt, M.R.** 1997. Projects in Ecology for environmental chemistry students. Published by the University of Copenhagen. 24 p.

**Flindt, M.R.**, Pedersen, C.B & Salomonsen, J. 1998. Felt- og modelundersøgelse af plantetransport i Kalveboderne. Rapport til Miljøkontrollen i Københavns Komune. 20 p.

**Flindt, M.R.**, Pedersen, C.B., Hansen, L.R. & Hedal, S. 1999. Vandflux og Næringsstoftransport i Roskilde Fjord, NOVA-rapport 6 p.

Salomonsen, J., Pedersen, C.B. & **Flindt, M.R.** 1999. Modelundersøgelse af Isefjorden 50 p.. Rapport til Roskilde og Frederiksborg Amter.

**Flindt, M.R.**, & Pedersen, C.B. 2003. Notat: Konsekvensen af overløbshændelser fra Avedøre Spildevandscenter. Notat til Københavns Amt. 39 p.

## **Participation in scientific programs.**

### **EU MAST2: MUST. Mathematical modeling of structural dynamic in estuaries.**

Granted: 1993  
Duration: 3 years.  
Keywords: Mathematical modeling of competition between plant components in estuarine systems dependent on nutrient dynamics and light availability.  
Partners: University of Padova, Inst. of Chemical Engineering, Italy. (G. Bendoricchio)  
University of Coimbra, Inst. of Marine Research, Portugal (J. Marques)  
Royal School of Pharmacy, Inst. Environmental chemistry (S.E. Jørgensen).  
Status: Finish.

### **EU TMR-project: WET. Wetland Ecology and Technology.**

Granted: 1996  
Duration: 3.5 years.  
Keywords: Field campaigns, laboratory experiments in marine wetlands. Nutrient dynamics in tidal estuaries.  
Partners: University of Lund, Inst. of Limnology, Sweden. (L. Leonardson).  
University of Padova, Inst. of Chemical Engineering, Italy. (G. Bendoricchio)  
University of Coimbra, Inst. of Marine Research, Portugal (J. Marques)  
University of Kiel, Inst. of Ecosystem Research, Germany (K. Dierssen)  
University of Utrecht, Inst. of Physical Geography (W. Bleuten)  
Royal School of Pharmacy, Inst. Environmental chemistry (S.E. Jørgensen).  
Status: Finish

### **EU-project: F-ECTS. Feedback mechanisms between estuarine circulation and transport of sediments on phytobenthos.**

Granted: 1998  
Duration: 3 years.  
Keywords: Complex feedback mechanisms exist between the establishment of phytobenthic communities depending on sedimentology, waterquality and hydrodynamic. An accurate understanding of these mechanisms will improve the environmental management capabilities, particularly allowing a reliable forecasting of the evolution of phytobenthic ecosystems and their reactions to man-generated disturbances. Field campaigns in Venice Lagoon, River Formosa and Roskilde Fjord.  
Status: Completed.

**EU-project: BIOFLOW.**

Granted: 2001  
Duration: 3 years.  
Keywords: International scientific collaboration between scientist that works with flumes.  
Status: Ongoing.

**EU-project: PUMPSEA. Low technological waste water treatment in Africa.**

Granted: 2004  
Duration: 3 years.  
Keywords: In Tanzania, Kenya and Mozambique waste water runs untreated from huge point sources to rivers that drains to mangrove forest. This affects the environment in the mangroves which else is an economically favorable area where mussel- and shrimp-production has become the economically lifeline for local people. The aim of project is to treat the waste water so it before it is connected to rivers has passed sedimentation tanks and further has been filtered by running through constructed wetlands.  
Status: Starts in 2004.

**National project (HAV-90): Development of a dynamic ecological modelling for fjords and estuaries based on hydrodynamic (MIKE 11).**

Granted: 1989  
Duration: 2 years  
Keywords: Mathematical description of biological processes in the watercolumn and in the sediment. Programming these into the MIKE 11 frame as a submodel. calibrating and validating the model on the danish Roskilde Fjord.  
Partners: Danish Hydraulic Inst. (Anders Malmgren Hansen, Mads Madsen)  
Waterquality Institute. (Per S. Sørensen, Erik K. Rasmussen)  
Status: Finish.

**National (SMP): Interactions between resuspension, sedimenttransport and macrophyte coverage in estuaries.**

Granted: 1993  
Duration: 3 years  
Keywords: Field campaigns (turbidity, sediment traps, sediment settling pattern, inorganic/organic content, nutrients, plant coverage)  
Modeling hydrodynamics (MIKE 21) and sedimenttransport.  
Partners: Danish Hydraulic Inst. (Anders Jensen, John Johnson)  
Waterquality Inst. (Erik K. Rasmussen, Job Baretta)  
University of Copenhagen, Inst. of physical geography (Morten Pejrup)  
Status: Finish

**National project: Ecological evaluation of Isefjorden, based on mathematical modeling.**

Granted: 1998  
Duration: 1.5 year.  
Partners: Vestsjællands County (J. Strømberg).  
Roskilde County (S. Hedal).  
Frederiksborg County (M. Jepsen).

Topic: Will it be possible for the rooted macrophytes to return to the deeper broads of the fjord if the nutrient loadings continue to decrease ? And additional at what loading level will the light climate be sufficient ?

Calibration of hydrodynamic, transport dispersion, waterquality on 1992 data.  
Verification of hydrodynamic, transport dispersion, waterquality on 1993 data.

Senaries: Reduced nutrient loading from point sources.  
National water action plan.  
Local county plan.  
Reduced nutrient loading of the diffusive runoff.  
Series of successive reduction related to reduction in agriculture based runoff.  
Natural loading (background)  
Status: Finished.



**National Project:**

**Modeling nutrient fluxes at the outer boundary of Roskilde Fjord.**

Granted: 1999.  
Duration: 1 year.  
Keywords: Hydrodynamic and transport dispersion modeling, mass balance on the outer boundary of water, salt, nitrogen, phosphorus.  
Partners: Roskilde County (S. Hedal)  
Frederiksborg County (L.R. Hansen)  
Status: Finished.

**National Project:**

**Ecological evaluation of Kalveboderne, the shallow coastal water between Sealand and Amager, Denmark.**

Granted: 1999  
Duration: 1 years.  
Keywords: Field measurements of macrophyte coverage, loss and growth processes, nutrient pools and fluxes (external and internal nutrients loading).  
Partners: The Environmental section of Copenhagen County (J. Brøns Hansen)  
The Environmental section of the Municipality of Copenhagen (J.B. Nielsen)  
Status: Completed.

**National Project: Development of a 2-d mathematical model for simulation of TBT dispersion and fate in the Danish estuary: Isefjorden.**

Granted: 1999  
Duration: 1 years.  
Keywords: Based on hydrodynamics and transport dispersion 2-D simulations will verify potential TBT-sedimentation areas in the estuary as well as the fate of TBT. These time series of dispersion plumes will be implemented in a GIS tool together with fauna maps from the area. In relation to the GIS tool there will be developed an ecotox model which include specific dose-response evaluations of different sub-areas.  
Partners: Frederiksborg County  
Status: Completed.

**National Project:**

**Modeling nutrient fluxes at the outer boundary of Roskilde Fjord.**

Granted: 2000.  
Duration: 1 year.  
Keywords: Hydrodynamic and transport dispersion modeling, mass balance on the outer boundary of water, salt, nitrogen, phosphorus.  
Partners: Roskilde County (S. Hedal)  
Frederiksborg County (L.R. Hansen)  
Status: Finished.

**National Project:**

**Modeling benthic nutrient fluxes in Roskilde Fjord.**

Granted: 2001.

Duration: 1 year.

Keywords: Verification of the measured sediment nutrient fluxes in Roskilde Fjord. Based on official loading, hydrodynamic and transport dispersion the Mike 11 eutrification model was used to verify if the measured internal loading (sediment fluxes) was representative for the Fjord area.

Partners: Roskilde County (S. Hedal)  
Frederiksborg County (L.R. Hansen)

Status: Ongoing.

**National Project:**

**Modeling nutrient fluxes at the outer boundary of Roskilde Fjord.**

Granted: 2001.

Duration: 1 year.

Keywords: Hydrodynamic and transport dispersion modeling, mass balance on the outer boundary of water, salt, nitrogen, phosphorus.

Partners: Roskilde County (S. Hedal)  
Frederiksborg County (L.R. Hansen)

Status: Finished.

**National Project:**

**Modeling nutrient fluxes and mass balances in Lake Damhus.**

Granted: 2002.

Duration: 1 year.

Keywords: Development of a calibrated and validated mass balance model for lake Damhus, that makes nutrient loading scenarios possible.

Partners: The Municipality of Copenhagen, Dep. of freshwater (K. Michelsen)

Status: Finished.

**National Project:**

**Modeling loading and nutrient turnover and transport in the Northern part of Roskilde Fjord.**

Granted: 2002.

Duration: 1 year.

Keywords: To what extent will loading from a new waste water treatment plant in Hillerød affects the water quality in Roskilde Fjord in general and in the broad where the outlet is situated.

Partners: The Municipality of Hillerød, Dep. of waste water treatment.  
COWI consult.

Status: Finished

**National Project:**

**Modeling nutrient loading, nutrient turnover and transport in Roskilde Fjord and Isefjorden.**

Granted: 2003.

Duration: 1 year.

Keywords: To what extent will a reduced nutrient loading (N + P) from from diffusive sources, tributaries and waste water treatment plant affects the water quality in Roskilde Fjord in general and will the rooted vegetation be able to return to the deeper broads.

Partners: Vestsjællands County (J. Strømberg).  
Roskilde County (S. Hedal).  
Frederiksborg County (M. Jepsen).

Status: Ongoing.

**National Project:**

**Modelling the phosphorus loading and turnover in the inner lakes of Copenhagen.**

Granted: 2004.

Duration: 1 year.

Keywords: A huge lake restauration program is in progress, where biomanipulation through fish removal has been fulfilled. Based on these changes a phosphorus model will be developed to simulate the changes among primary producers.

Partners: Københavs Energi (K. Michelsen).

Status: Ongoing.