ALBERT-LUDWIGS-
UNIVERSITÄT FREIBURG

FRIAS
FREIBURG INSTITUTE
FOR ADVANCED STUDIES

Workshop on Environmental Forecasting:

Causes and Consequences of Forecasting Cultures

6-10 October 2019 | FRIAS, University of Freiburg, Germany

Research Focus Environmental Forecasting @ FRIAS

Background

Environmental models are the main tool through which our understanding of natural processes is transferred into practice in a human dominated world: weather forecasts, flood warnings, carbon balances of forests, landslides, recycling budgets are computed using environmental models along a range of complexity. Such environmental models comprise representations of the natural processes as well as human impacts, and include economic models, such as those simulating trade and environmental impacts at local to global scales.

Environmental disciplines have evolved strikingly divergent modelling cultures, of different scientific credibility. The aim of the proposed Research Focus at the FRIAS is to understand modelling cultures as reflecting distinct goals, distil a best practice from disciplinary experiences that makes environmental forecasts credible across environmental disciplines, and to formulate a research agenda for those areas where we can identify deficits without an existing solution.

The workshop will explore the mind sets behind forecasting practice in different fields within environmental science, and under which paradigms and attitudes the scientists operate.

The workshop will discuss in particular:

- scientific ideals of forecasting,
- constraints on meeting such ideals,
- normative elements in forecasts,
- conflicts between narratives and knowledge.

More information, background and references can be found in the 12-page document linked at the FRIAS "Environmental Forecasting" site (https://www.frias.uni-freiburg.de/en/funding-programmes/foci/environmental-forecasting?set_language=en).

Format

The workshop brings together a focused group of approximately 25 participants in a stimulating environment for an intensive and fruitful discussion leading to a publication with interdisciplinary appeal.

Aims and Scope

The workshop aims at (1) taking stock of the variety how forecasting is practiced in environmental science; (2) understanding why different forecasting cultures and traditions exist; and (3) exploring the consequences for scientific practice and credibility.

The workshop results will be disseminated as scientific publication.

Keynote Speakers

To be confirmed!

We are currently inviting scientists from many different fields of environmental science (from weather over hydrology and forest growth to economics and epidemiology, plus philosophy and history of science.

Venue

The workshop will take place at the Institute of Advanced Studies in Freiburg, which is beautifully situated at the foot of the Black Forest, roughly one hour from both France and Switzerland. The idyllic old city is in easy walking distance from the FRIAS itself, which is set in the natural science campus of the University of Freiburg.

Participants will be accommodated in a nearby hotel and an optional evening programme will allow you to see some of the city's highlights.

https://www.frias.uni-freiburg.de

Program

Sunday, 6 October 2019

6:00 pm	arrival and check-in welcome reception
7:00 pm	dinner

Monday, 7 October 2019

full day	scientific program,

Tuesday, 8 October 2019

full day	scientific program, visit to a vineyard in nearby Kaiserstuhl,

Wednesday, 9 October

full day	scientific program,

Thursday, 10 October

after breakfast	wrap-up and check-out

Hosts

The workshop is organized by FRIAS' Research Focus *Environmental Forecasting*, coordinated by Prof. Dr. Carsten Dormann (*Biometry and Environmental System Analysis*), Prof. Dr. Kerstin Stahl (*Environmental Hydrological Systems*) and Prof. Dr. Stefan Baumgärtner (*Environmental Economics and Resource Management*).

Contact

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Travel

By plane:

The closest international airport is EuroAirport Basel (EAP=MLH=BSL), connected with a 1 hour bus service. Both Frankfurt and Zurich airport are a good two hours by train.

Detailed travel information will be provided later.

Acknowledgement

The workshop is funded through FRIAS as part of the Research Focus "Environmental Forecasting" .

Workshop on Environmental Forecasting:

Causes and Consequences of Forecasting Cultures

7–10 Oct 2019, FRIAS, University of Freiburg, Germany

The following questions motivate and inspire the workshop. They also provide a guide for preparing presentations to the workshop, and to structure the program of the workshop. In the discussions at the workshop we aim to address these questions explicitly.

Definition

- What is a forecast? What distinguishes a forecast from other systematic procedures of looking into the future, such as e.g. prediction, scenario, speculation, hypothesis, …?
- Who can or should make a forecast? About what? And for whom?

Elements and process

- Forecasting the mean or single events: what do we want, and what do we think we get?
- Models typically elicit blind faith or blind rejection: why does that not seem to be the case for forecasts made with these models?
- Do we actually need precise forecasts (i.e. with low prediction error), as adaptation strategies and responses will be diversified anyway to cope with uncertainty?

Uncertainty

- What elements of the forecast are uncertain? And of what type is the uncertainty?
- How to technically accommodate different types of uncertainty in a forecast?
- Should forecasters factor in the (sometimes irrational) way how decision-makers make decisions? Or should forecasters leave that to the "decision theory"-part of science, or to the decision-maker?

Normativity

- How do societal norms (such as e.g. economic efficiency, social justice, environmental sustainability) influence the method of a forecast, and the communication of forecast results?
- How to make, and how to communicate, forecasts such that they can effectively inform decision-makers who act norm-oriented?

Quality assessment and control

- What are the criteria according to which one can assess *ex ante* the quality of a forecast?
- Why do real forecasts deviate from the ideal?
- What is the effect of a low forecasting standard? Does poor forecasting have costs for the forecaster (financial, job, reputation)?

Workshop “Forecasting Cultures”, 7-9 Oct 2019

Preliminary schedule

Sunday (6 Oct 2019)

18:00 Icebreaker (optional), in a local restaurant

Monday: Introduction

9:00 - 9:15 Welcome (FRIAS, Organisers)
9:15 - 9:45 Round of Introduction
9:45 - 10:30 Introduction to Workshop Intentions and Setup (Carsten Dormann)
--- *Coffee break* ---
11:00 - 12:30 Presentations: based on an example from your work, refer to the questions
Chair: Stefan Baumgärtner
--- *Lunch* ---
14:00 - 15:30 Presentations by participants
--- *Coffee break*---
16:00 - 17:30 Presentations by participants
17:30 - 18:00 Organisation of break-out groups

Tuesday: Taking Stock

9:00 - 10:30 Two parallel break-out groups: Block 1
- Elements and processes (scope and practice)
- Uncertainty

--- *Coffee break* ---
11:00 - 12:30 Two parallel break-out groups: Block 1 continued
--- *Lunch* ---
14:00 - 20:00 Excursion to the Kaiserstuhl (hike of approx. 3 hours), followed by local wine tasting and dinner

Wednesday: Taking Stock & Condensation

9:00 - 10:30 Two parallel break-out groups: Block 2
- Normativity
- Quality Assessment and Control

--- *Coffee break* ---
11:00 - 12:30 Two parallel discussion groups: Block 2 continued.
--- *Lunch* ---
14:30 - 16:00h Plenary: reports from the break-out groups 1-3
Chair: Kerstin Stahl
--- *Coffee Break* ---
16:30 - 16:30 Plenary: reports from the break-out group 4
Chair: Kerstin Stahl
17:00 - 17:30 Plenary: round of final remarks and ideas
Chair: Carsten Dormann
17:30 - 18:00 Further steps, incl. publication ideas

Participant list

Name	First name	Chair	Institution
Augustin	Nicole	Statistics	Uni Bath, UK
Baumgärtner	Stefan	Environmental Economics and Resource Management	Uni Freiburg
Bausman	William	Philosophy	Uni Wilsonsin, Madison, USA
Bugmann	Harald	Forest Ecology	ETH Zurich, CH
Clark	Martyn	Computational Hydrology	Uni Saskatchewan, Canmore, CAN
Cuntz	Matthias	Tree- and Ecosystem-level Integrative Ecology and Ecophysiology	AgroParistech, Uni Lorraine, F
De Graaf	Inge	Environmental Hydrological Systems	Uni Freiburg
Dietze	Michael	Ecological Forecasting Lab	Uni Boston, USA
Dormann	Carsten	Biometry & Environmental System Analysis	Uni Freiburg
Harfoot	Mike	Ecosystem Modelling	UNEP-MCMC, Cambridge, UK
Hartig	Florian	Theoretical Ecology	Uni Regensburg
Hauenstein	Severin	Biometry & Environmental System Analysis	Uni Freiburg
Jakisch	Conrad	Landscape Ecology & Environmental System Analysis	TU Braunschweig, D
Käber	Yannek	Forest Ecology	ETH Zurich, CH
Keller	Klaus	Geosciences	Penn State Uni, USA
Mittelstädt	Christian	Environmental Economics and Resource Management	Uni Freiburg
Oberpriller	Johannes	Theoretical Ecology	Uni Regensburg
Pauliuk	Stefan	Industrial Ecology	Uni Freiburg
Quaas	Martin	Biodiversity Economics	iDIV & Uni Leipzig, D
Schack-Kirchner	Helmer	Soil Ecology	Uni Freiburg
Seibert	Jan	Hydrology and Climate	Uni Zurich, CH
Stahl	Kerstin	Environmental Hydrological Systems	Uni Freiburg
Starrfelt	Jostein	Evolutionary Ecology	Norwegian Scientific Committee for Food and Environment, Oslo
Stölzle	Michael	Environmental Hydrological Systems	Uni Freiburg
Wagener	Thorsten	Water and Environmental Engineering	Uni Bristol, UK
Weber	Heike	History of Science	TU Berlin, D
Weiler	Markus	Hydrology	Uni Freiburg