REVISIONS:

6Feb2006: Revised by Alberto
12Apr2006: Revised by Alberto
24May2006: Revised by Alberto

SEASONAL-TO-INTERANNUAL CLIMATE PREDICTION AND ITS BENEFITS TO SOCIETY

CLIMATE AND SOCIETY

CONTENTS

Journal Information

EXECUTIVE SUMMARY (1 PAGE)

Bullets to summarise the conclusions with the aim to attract the attention of busy people

ALBERTO TROCCOLI & DAVID L.T. ANDERSON
ECMWF

MIKE HARRISON
UK Met Office

- **Looking forward**

  - MODEL IMPROVEMENTS
  - INITIALIZATION
  - ENSEMBLE METHODOLOGY
  - POST-PROCESSING
  - USERS
  - COMMUNICATION ISSUES

PART 1

TITLE?

Introduction (~6/7pp) and Role of seasonal forecasting in decision making (~30pp) (including climate variability –climate change interaction)

CH 1 – INTRODUCTION (~6/7 PAGES)

An overview of the roadmap from model to user

MIKE HARRISON
UK Met Office

ALBERTO TROCCOLI & DAVID L.T. ANDERSON
ECMWF

CH 2 - SEASONAL FORECASTS IN DECISION MAKING (~ 30 PAGES)

MIKE HARRISON
UK Met Office

MICHAEL COUGHLAN
Australian Bureau of Meteorology

JIM WILLIAMS
Independent Consultant

ALBERTO TROCCOLI
ECMWF

How society could take advantage of seasonal predictions- this is the more introductory part – the applications are dealt with in a separate chapter.

1. **Climate variability and change: the overlaps and the differences (Mike C.)**

2. **History and current status of applications (Mike H.)**

3. **Climate-related decision making under uncertainty (Alberto)**

4. **The importance of climate in key development sectors – similar to section in "Is the climate right?" (Jim)**

PART 2

THE FORECASTING PROBLEM

Overview to the forecasting problem (~15pp), The nature of the climate system (~25pp), Initialisations (~40pp), Coupled models (~40pp) and Empirical modeling (~25pp)

CH 3 - OVERVIEW TO THE FORECASTING PROBLEM (~ 15 PAGES)

Initialization, coupling of models, ensemble forecasting & empirical models

DAVID L.T. ANDERSON
ECMWF

CH4 - THE NATURE OF THE CLIMATE SYSTEM (~20 PAGES)

Relevant aspects of the climate on the seasonal-to-interannual timescale

BRIAN HOSKINS
University of Reading

PAUL SCHOPF
GMU/COLA

ANTONIO NAVARRA
INGV

1. **Overview (David)**

2. **Role of the Atmosphere (Brian)**

3. **Role of the Ocean (Paul)**

4. **Role of the Coupled System (Antonio)**

CH 5 - INITIALISATION OF THE COUPLED SYSTEM (~40 PAGES)

JOE TRIBBIA
NCAR

ALBERTO TROCCOLI
ECMWF

1. **Data assimilation overview (Joe & Alberto, 6-8 pages)**

2. **Data assimilation in the atmosphere (Joe, 3-4 pages)**

3. **Data assimilation in the ocean (Alberto, 3-4 pages)**

4. **Data assimilation in the coupled system (Joe & Alberto, 2-3 pages)**

CH 6 - COUPLED MODELLING (~40 PAGES)

BRIAN HOSKINS
University of Reading

PAUL SCHOPF
GMU/COLA

ANTONIO NAVARRA
INGV

1. **Atmospheric Modelling (Brian)**

2. **Ocean Modelling (Paul)**

3. **Coupled Model Forecasts (Antonio)**

CH 7 - EMPIRICAL MODELLING (~25 PAGES)

Empirical models

OMAR BADDOUR
Moroccan Met Service

SIMON MASON
IRI

Abstract. An alternative approach to seasonal predictions is to use empirical modelling.

1. Empirical Model Forecasts (Omar)

2. Advanced Empirical Modelling (Simon)

PART 3

COMBINING, CORRECTING & ASSESSING FORECASTS

Combination & Downscaling (Simon, ~40pp), Calibration & Verification (David, ~40pp).

CH 8 - COMBINATION AND DOWNSCALING (~40 PAGES)

Subtitle

SIMON MASON
IRI

Abstract.

1. **One-tiered vs two tiered forecasting**
2. **Systematic model error correction**
3. **Introduction to downscaling**
4. **Multi-model ensembling**

CH 9 - CALIBRATION AND VERIFICATION (~40 PAGES)

Subtitle

DAVID STEPHENSON
University of Reading

Abstract.

1. **Introduction to probability forecasting**

2. **Bayesian calibration and verification**

3. **Verification of probability forecasts**

PART 4

DEVELOPING SUCCESSFUL APPLICATION STRATEGIES (BETTER TITLE?)

Strategies for Developing Successful Applications (~30pp) and The Scientific, Cultural and Institutional Contexts of Applications (~50pp)

CH 10 - STRATEGIES FOR DEVELOPING SUCCESSFUL APPLICATIONS (~ 30 PAGES)

Subtitle

MIKE HARRISON
UK Met Office
JIM WILLIAMS
Independent Consultant

Abstract.

1. **S-I Forecasts: An overview of its role in decision making (Mike H.)**
2. **The management and social background to applications of seasonal to interannual forecasts**
3. **Delivery of forecasts to users**
4. **Learning to manage climate risk – similar to section in "Is the climate right?" (Jim W.)**

CH 11 - THE SCIENTIFIC, CULTURAL AND INSTITUTIONAL CONTEXTS OF APPLICATIONS (~ 50 PAGES)

Subtitle

ABADALLAH MOKSSIT
Moroccan Met Service

PAUL LLANSO
ex-WMO

JOHN BELLOW
FSU

JAMES O'BRIEN
FSU

YAHYA ABAWI
Department of Primary Industries and Fisheries, Australia

Abstract.

1. **Regional Approach and its evaluation (Abdallah)**

2. **Applications of S-I forecasts to the health sector (Paul)**

3. **Mitigating ENSO effects in Florida for agriculture and wild fires (John Bellow and Jim O.)**

4. **Application of Seasonal Climate Forecasting in Water Resources Management – Bridging the Gap between Climatologists, Water Resource Managers and Users (Yahya Abawi)**

PART 5

Conclusions

Conclusions (~15pp)

CH 12 - CONCLUSIONS (15 PAGES)

Conclusions based on Mike Coughlan's lecture with input from Mike Harrisons's D4 lecture. It might be worth adding part of the outcome of last panel session.

DAVID L.T. ANDERSON & ALBERTO TROCCOLI
ECMWF

MIKE HARRISON
UK Met Office

MICHAEL COUGHLAN
Australian Bureau of Meteorology

JIM WILLIAMS
Independent Consultant

1. Looking forward

1.1. MODEL IMPROVEMENTS

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1.7. PANEL SESSION OUTCOME

2. Future of services incorporating seasonal to interannual forecasts (Mike H.)

APPENDICES

Glossary of terms, Glossary of notations & Practical problems

GLOSSARY OF TERMS

Define more "problematic" terms: e.g., climate drift, systematic error, background, adaptation, mitigation, verification, validation, assessment, prediction, forecast …PLEASE ADD YOUR PICK

ALBERTO TROCCOLI (TO ASSEMBLE VARIOUS CONTRIBUTIONS)
ECMWF

GLOSSARY OF NOTATIONS

Define main notations used in the book (WMO,)

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