

DEMETER to ENSEMBLES

The Transition for Application Groups

Impact Modelling at Seasonal to Decadal Timescales

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for
the DEMETER WP5 Expert Users

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Brief Overview

Ensemble prediction system from seasons to centuries

5 year project

72 partners

9 Research Themes divided into Workpackages
approx 4 to 6 WP per RT

Cross cutting themes

12 application groups – seasonal to decadal impacts modelling –
similar scale to DEMETER!!

Regional Climate Modelling

Downscaling and other ‘application model support’ – major activity

Training elements – earmarked Ph.D. student RT8

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Seasonal to Decadal Application Groups Tasks

RT6 Assessment of impacts of climate change

WP6.4 Years 1 to 3

Methodological development – integration of models in probabilistic modelling system, development of bias correction and downscaling techniques, ongoing development of application models, cross cutting to achieve R&D aims.

RT5 Independent comprehensive evaluation of the ENSEMBLES simulation-prediction system against observations/analysis

WP5.5 Year 4

Evaluation of application models – models driven by ERA-40, ENSEMBLE hindcasts and gridded data, evaluation of forecast quality (validation at scales appropriate to application group e.g. seasonal rainfall onset) and forecast skill required in hindcasts to achieve skilful and cost effective application model prediction.

Year 5 unfunded further report and publication output

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Seasonal to Decadal Application Groups Areas of Expertise

- Health modelling for disease risk forecasting and epidemic hindcasting, dissemination of applications of health modelling systems
- Temperate (European) crop and agri-environmental modelling
- Tropical crop modelling
- Water stress mapping
- Electricity demand, wind power industry and applications for seasonal tourism
- Weather risk management and weather related insurance risk
- Statistical methodologies for modelling system integration

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Seasonal to Decadal Application Groups 18 month deliverables

RT6 WP6.4

Seasonal-to-decadal application models running as part of an integrated probabilistic ESM based on DEMETER hindcasts

Research and development tasks for downscaling and bias correction of DEMETER seasonal hindcasts and ERA-40 reanalysis for each application models

RT5 WP5.5

(application groups not funded until year 4 partly input to methodological development and continuation of year 4 DEMETER activity)

Prototype forecast verification system for key variables at scales used by application groups, working initially with DEMETER hindcasts, limited initial validation of application forecasts driven by DEMETER hindcasts

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Seasonal to Decadal Application Groups Issues and Experiences from DEMETER

- Data analysis and processing:
 - i. Data pre-processing for ENSEMBLES forecasts and reanalysis for use with application models
 - ii. Bias correction and downscaling appropriate to application model
 - iii. Validation of reanalysis and hindcasts at scales and for variables appropriate to application model
- Project Planning:
 - i. Variable selection and archiving
 - ii. Forecast length and start dates
- Key deliverables:
 - i. Integration of models, assessment of required skill and cost benefits
- Communication and co-ordination:
 - i. Scale of project and need for effective interaction and communication
 - especially on cross cutting themes (formal and informal)

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Seasonal to Decadal Application Groups Interactions with other RTs

RT1 Development of the ENSEMBLE prediction system

RT2 a. Production of hindcasts b. Climate Scenarios

RT3 Production of vhrRCM for Europe

RT4 'Science' of variability, predictability and extreme events

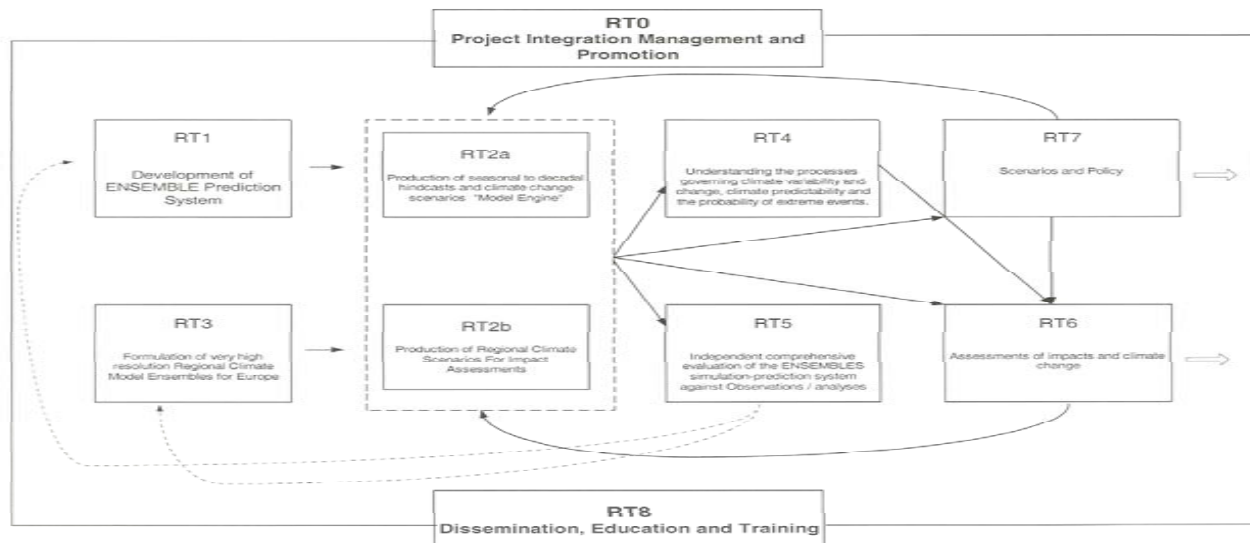
RT5 Evaluation

RT6 Impacts

RT7 Scenarios and Policy

RT5 links to RT1, RT3 links from RT2

RT6 link to RT2 feeds links from RT2 and RT7



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Seasonal to Decadal Application Groups Within RT Interactions and Cross Cutting

RT5

WP

- 5.1 Development of high resolution observational datasets for Europe
- 5.2 Evaluation of model processes and phenomena
- 5.3 Assessment of forecast quality
- 5.4 Validation of RCM, downscaled products and ERA-40
- 5.5 Evaluation of impacts models

RT6

WP

- 6.1 Global changes in biophysical and biogeochemical processes
- 6.2 Impacts due to changes in extreme events
- 6.3 Thresholds and risks issues related to scale
- 6.4 Impact models

Cross cutting themes

RT5 interactions of different temporal and spatial scale, analysis of extreme events

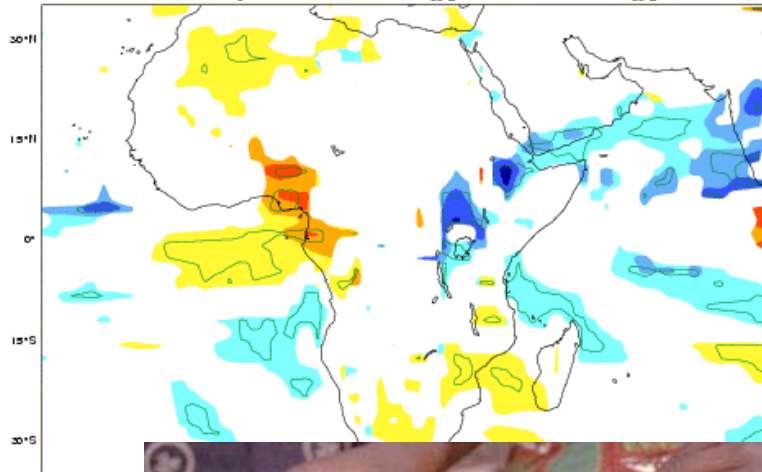
RT6 Impacts – i. alternative climate scenarios, iii. different temporal and spatial scales, iii. critical thresholds

ECMWF

ECMWF Seasonal Forecast Mean precipitation anomaly

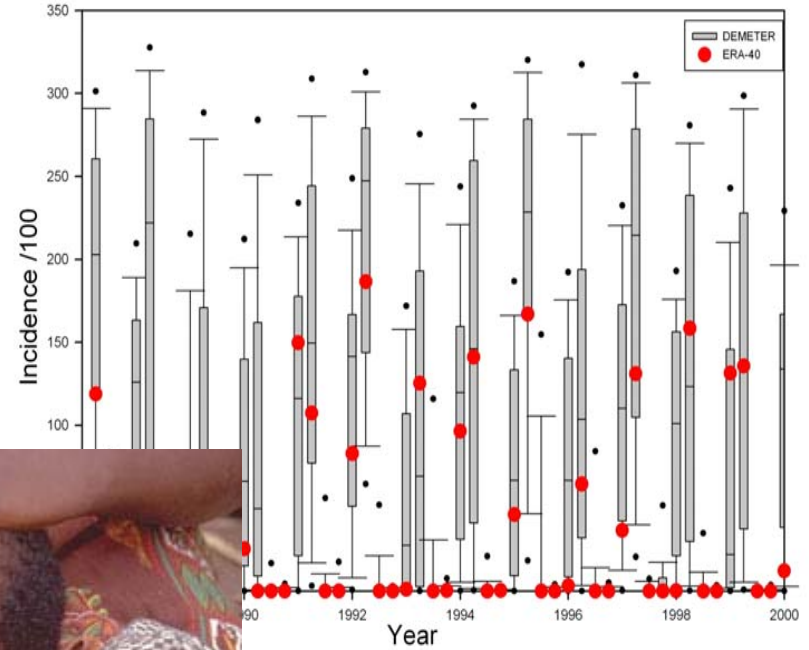
Forecast start reference is 01.06.03
Ensemble size = 40, climate size = 75

System
ASO 2003
Shaded areas significant at 10% level



Forecast production date

Malaria incidence - DEMETER vs. ERA-40 - Seasonal



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