2nd Microscale Modelling Workshop 16th December 2003, 9:00am to 3:30pm

Schedule

9:00: Start *(coffee available at 8:30)* Talks and discussion

10:15 to 10:45: Coffee

12:15 to 1:00pm lunch

15:00: General discussion and next meeting agenda and timing

15:30: Finish for 16:30pm at Leeds Railway Station

Programme

Stephen Mobbs: Introduction.

Alan Gadian : Brief Review.

Ian Castro: Building / Surface Scale code developments

Bob Plant : UWERN Mesoscale modelling

Mike Cullen: Various Issues for fine scale algorithms

Simon Vosper and Thomas Allen / Alan Gadian: Aspects of Blasius

John Thuburn: Different vertical grids and choices of thermodynamic i variable.

David Woodhead : Calculations using a terrain intersecting grid.

David Marshall: Provisional title. Ocean Modelling.

Luca Boneventura, MPI Hamburg: Efficient semi-implicit discretizations on terrain intersecting grids for high resolution atmospheric models

UWERN Microscale Model

Nov 04 14:39:42

UWERN Microscale Model

Background

The microscale modelling project started on 1st January 2003. It was set up and approved as an integral part of UWERN to develop a new microscale model for the UWERN community. The aim was to resolve physical and dynamical scales down to a few metres, and enable resolution of flow over steep terrain and other atmospheric high resolution processes in the atmosphere. It is envisaged that this is a eight plus year project, with a useful lifetime of not less than fifteen years. An objective is to promote input from a wide cross section of the UK community, including other UWERN funded research as well as participation from the Met Office and other research institutes.

Workshop 2 Objectives

The objectives of this workshop are to discuss current developments, grid structures, pressure solvers, current achievements, short term plans, discussion of other relevant approaches, and future developments.

Progress (very briefly!).

See http://www.uwern.ac.uk/uwern/microscale for further details of scientific studies completed on the project. (full details in the uwern newsletter)
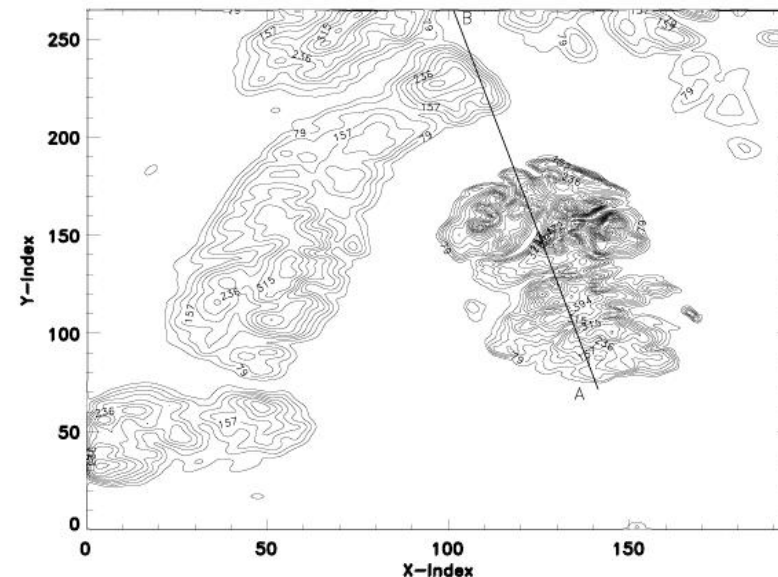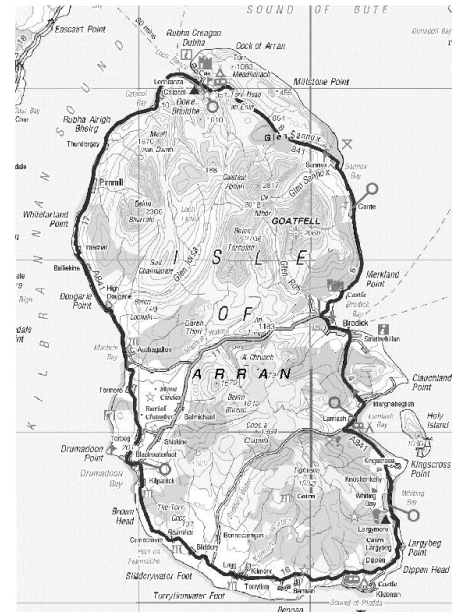
- Workshop1 produced a detailed discussion of fine scale models. It recommended development of a code which is consistent with the UM equation set, further analysis of numerical techniques including, grid structures, pressure solvers etc….

- A comparison of different models was completed.

- Following a mid-session report to the UWERN management group, 22/10/03, a short term development is to insert microphysics into the Blasius model and to examine the pressure solver aspects of this code.

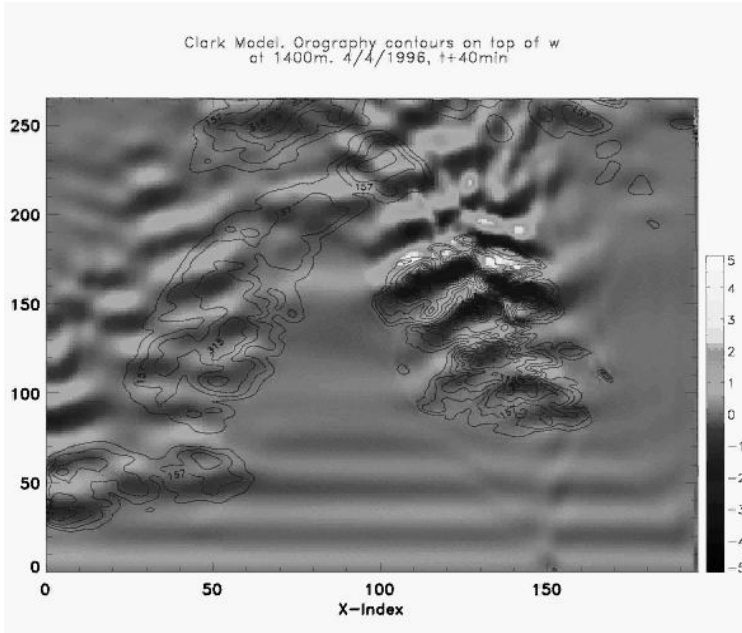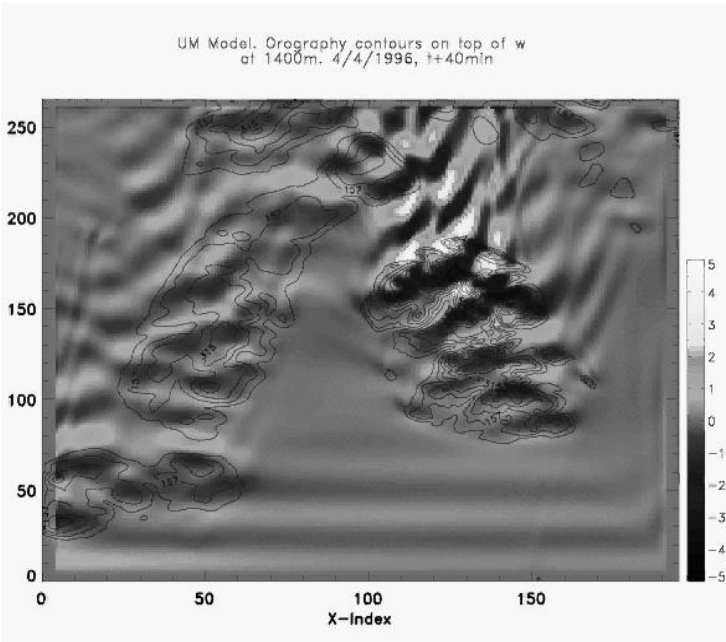- Meetings and discussions with European groups who are developing new techniques.
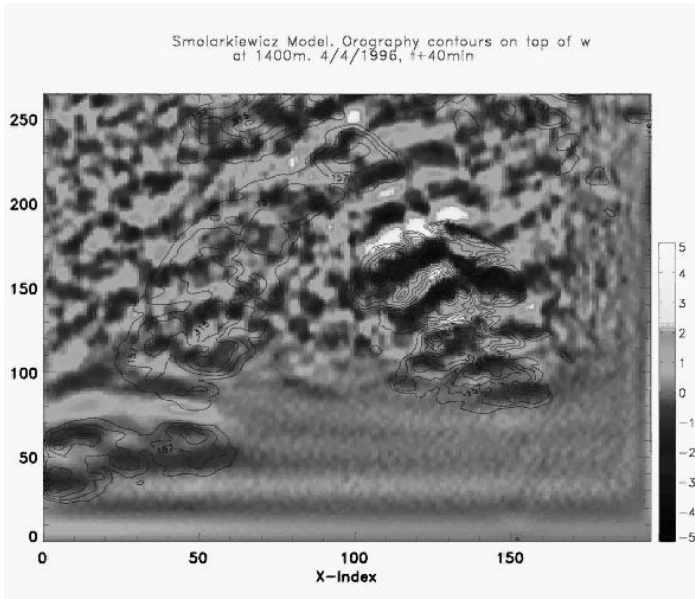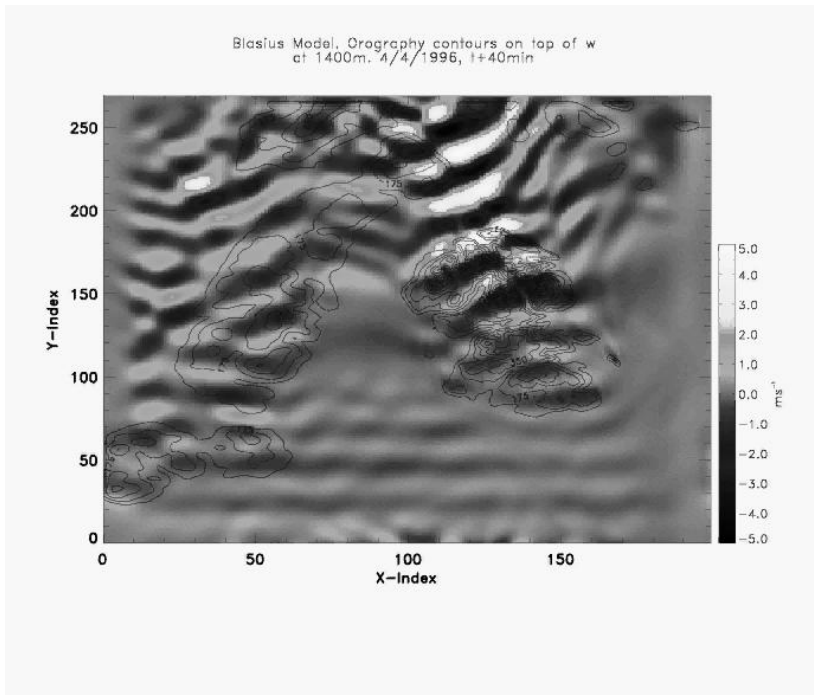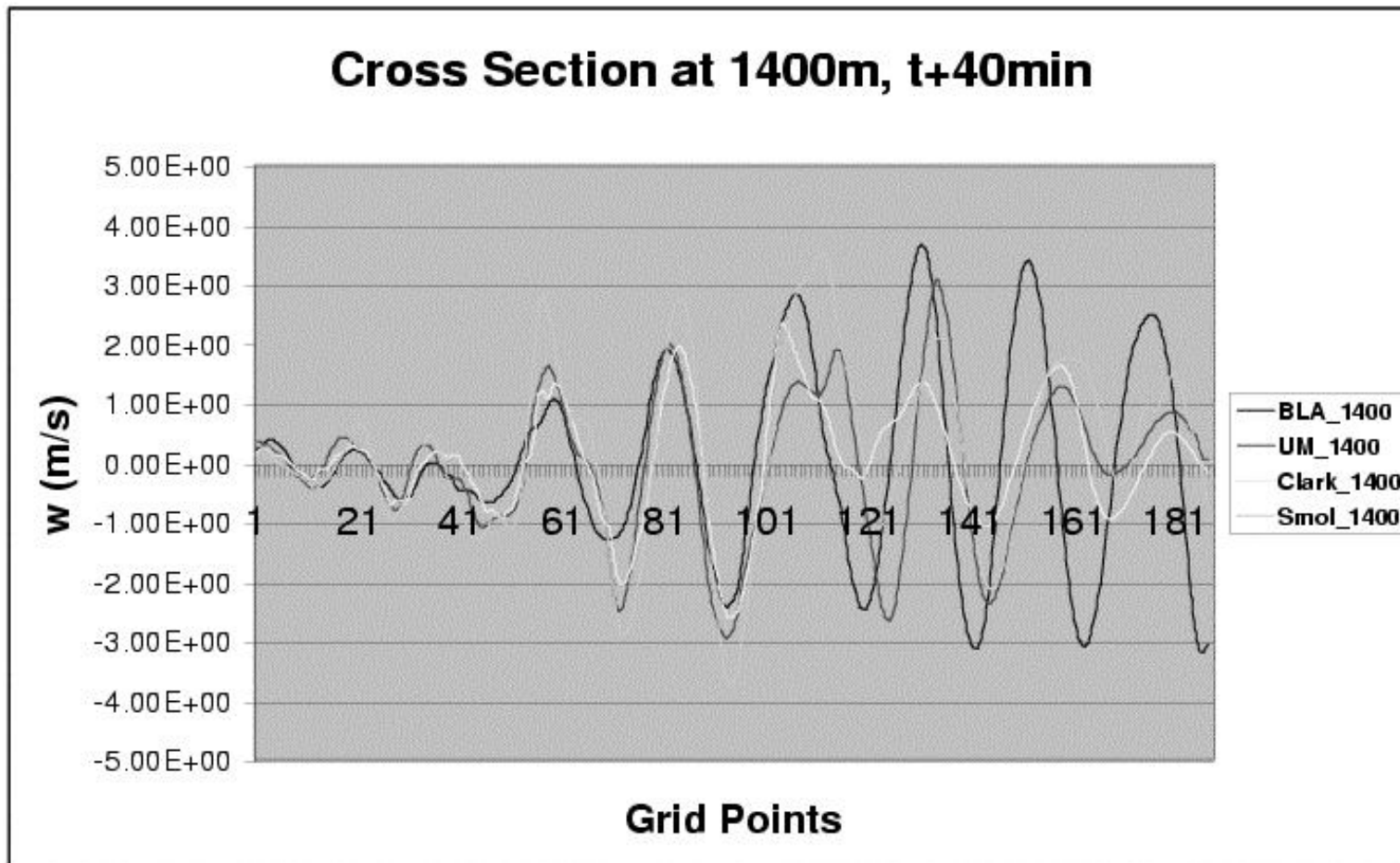
Model test simulations.

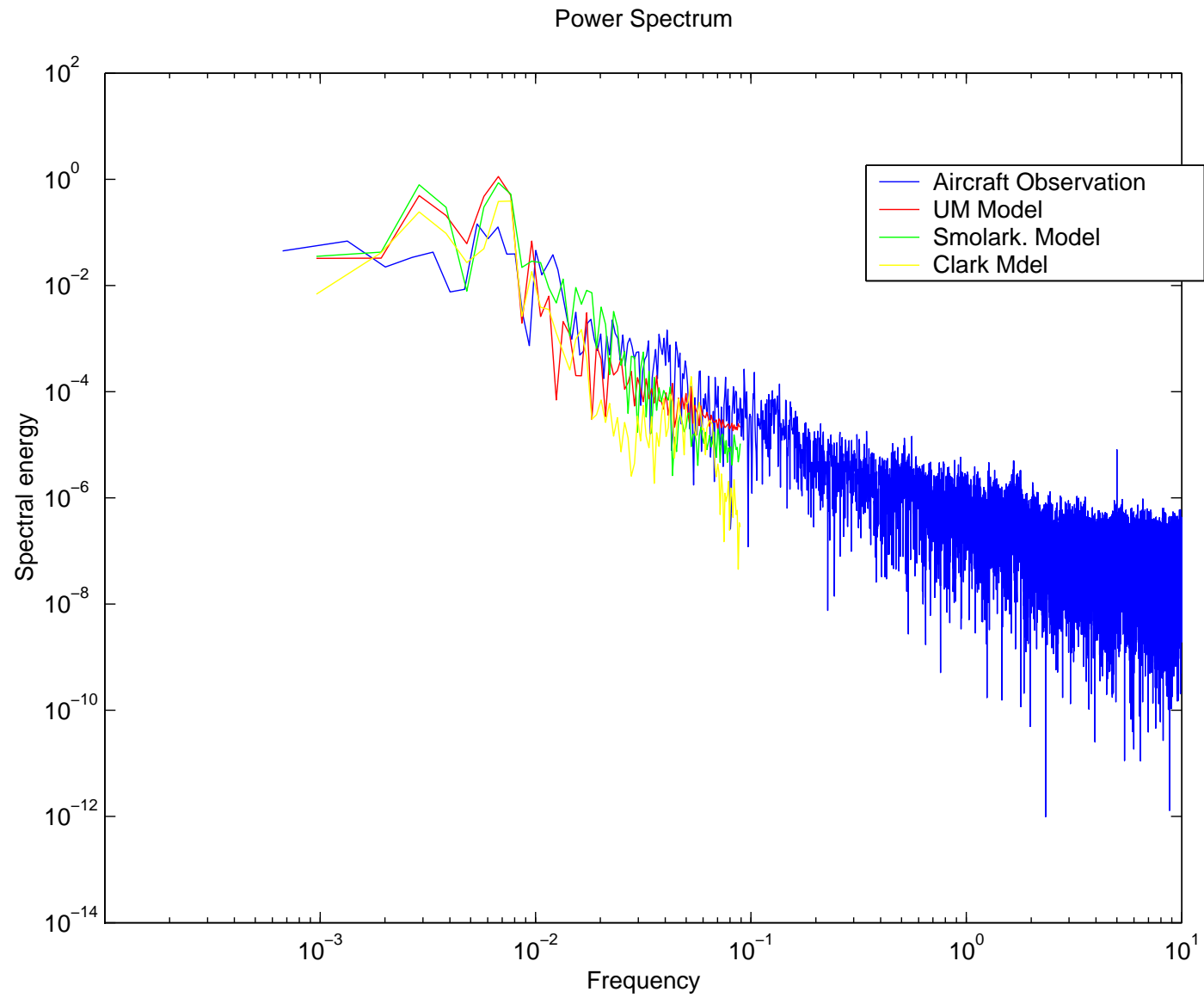A model inter-comparison has been completed.

Observational studies from a project over the Isle of Arran, Scotland has

Using a simple model setup, grid resolution of 280m, and no grid stretching and initialised with an aircraft and radiosonde profile.

Blasius Model. Orography contours on top of w at 1400m. 4/4/1996, t+40min

Smolarkiewicz Model. Orography contours on top of w at 1400m. 4/4/1996, t+40min

UM Model. Orography contours on top of w at 1400m. 4/4/1996, t+40min

Clark Model. Orography contours on top of w at 1400m. 4/4/1996, t+40min

UWERN Microscale Model

6

Cross Section at 1400m, t+40min

Power Spectrum

Power Spectrum
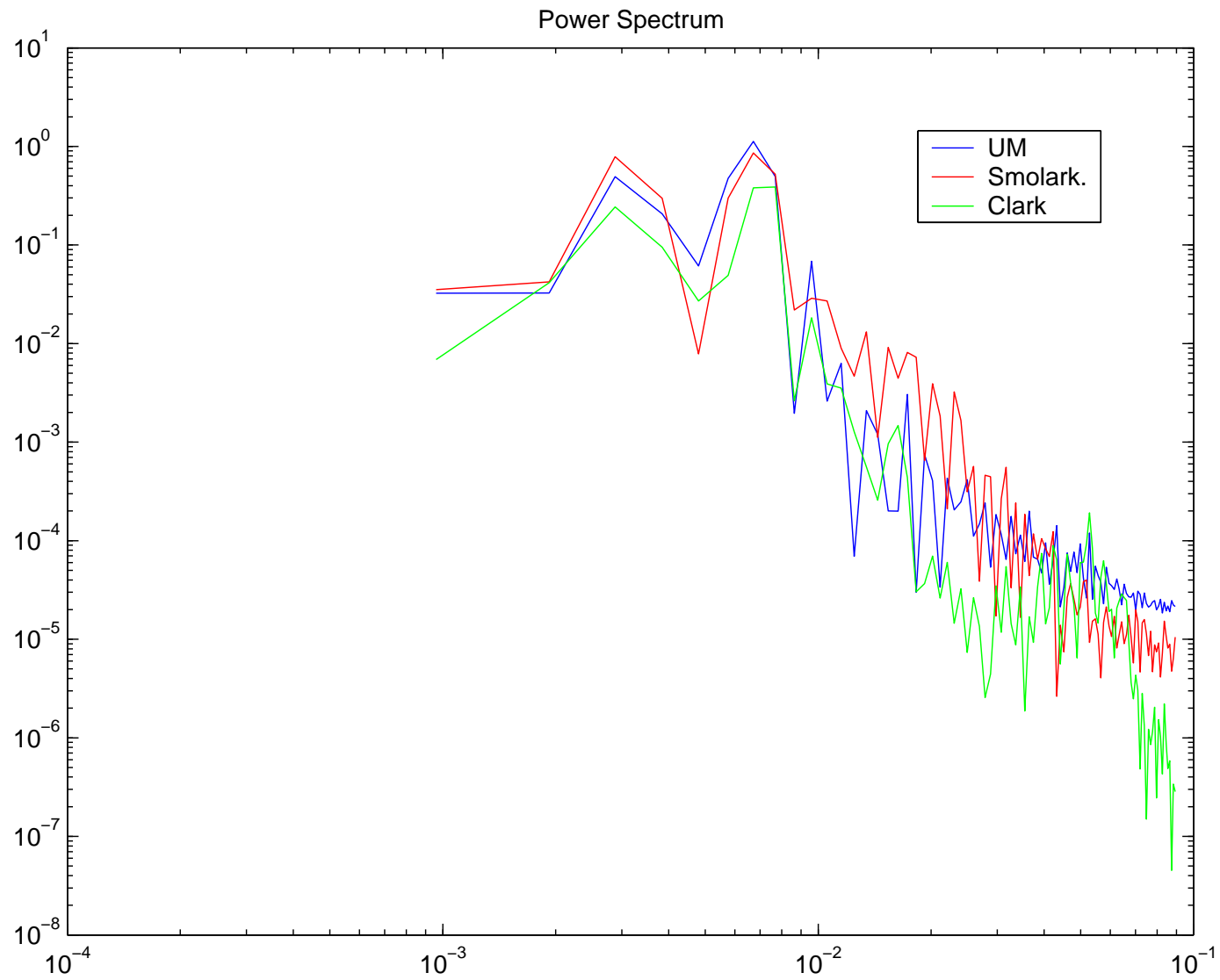
Current developments.

Short term

- *Development of microphysics modules for Blasius (Alison Coals and Andy Ross).*

- *Development / analysis of pressure solvers etc. (Alan Gadian and Andy Ross)*

- *Decision on the preferred mode / way forward for the model.*

Longer term

- *Development of ideas which will form the basic structure of the microscale model.*

- *Facilitate the introduction of new microscale "modules" into the new core.*

- *Liaison with developments in the meso-scale and building scale UWERN groups.*

2nd Microscale Modelling Workshop 16th December 2003, 9:00am to 3:30pm

Schedule

9:00: Start *(coffee available at 8:30)* Talks and discussion

10:15 to 10:45: Coffee

12:15 to 1:00pm lunch

15:00: General discussion and next meeting agenda and timing

15:30: Finish for 16:30pm at Leeds Railway Station

Programme

Stephen Mobbs: Introduction.

Alan Gadian : Brief Review.

Ian Castro: Building / Surface Scale code developments

Bob Plant : UWERN Mesoscale modelling

Mike Cullen: Various Issues for fine scale algorithms

Simon Vosper and Thomas Allen / Alan Gadian: Aspects of Blasius

John Thuburn: Different vertical grids and choices of thermodynamic i variable.

David Woodhead : Calculations using a terrain intersecting grid.

David Marshall: Provisional title. Ocean Modelling.

Luca Boneventura, MPI Hamburg: Efficient semi-implicit discretizations on terrain intersecting grids for high resolution atmospheric models

UWERN Microscale Model