

# Notes from a discussion on Carpe Diem Area 1

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29 January 2002

## 1 Issues raised by members of the TSC

The question of horizontal resolution of the NWP models to be applied in the project was raised by one member of the TSC. These "Carpe Diem NWP models" will have a grid resolution of the order of 10 km, resolving atmospheric phenomena with spatial scales  $\approx 30$  km or larger. This is probably not sufficient for direct precipitation forecasts as input to flood forecasting for catchments of the order  $100 \text{ (km)}^2$  or for direct forecasting of storm-scale atmospheric phenomena. Storm-scale NWP models with a grid resolution of a few km would be needed for these purposes. Such models are not yet available to participants in Carpe Diem. Post-processing by means of statistical downscaling of results from available NWP models will be applied instead.

It was stressed by one member of the TSC that a good treatment of the synoptic scales is crucial for the simulation and forecasting of mesoscale phenomena. It was responded by representatives of the Carpe Diem NWP groups, that the best possible treatment of the synoptic scales is guaranteed by the application of appropriate model chains. As an example, SMHI and FMI will use ECMWF analysis or forecast lateral boundaries for a synoptic scale HIRLAM model applied on an area including the North Atlantic, and using 3D-Var or 4D-Var data assimilation. This synoptic scale HIRLAM will provide lateral boundaries for a mesoscale HIRLAM model (double-nested-models).

## 2 Further collaboration and proposal for joint papers

It was considered that a faster progress and improved results from Carpe Diem would be possible through extended collaboration between partners and through early identification of joint papers to be written within the framework of the project. For this purpose, the following was agreed upon:

- The super-observations of radial wind vectors, produced by SMHI, will be compared to the corresponding pre-processing of radial wind vectors by volume averaging at ARPA/SMR. (WP2)
- The dual doppler wind retrieval of University of Essex in collaboration with ARPA/SMR will be compared to direct variational assimilation of radial wind vectors from overlapping radars by SMHI and FMI. David Bebbington U. Essex is the contact person for a joint paper on this subject. (WP2 and WP3)
- Radar VAD wind profiles are already retrieved routinely by SMHI and FMI in areas with only clear air radar echoes. The results of the DLR efforts to examine retrievals from clear air radar echoes will be compared to these routinely available clear air radar data. (WP2)
- Data assimilation based on 3D-Var/4D-Var (SMHI and FMI), nudging (U. Barcelona) and VSRF (ARPA/SMR) will be compared for a case study in the Po Valley with severe weather. Pier Paolo Alberoni ARPA/SMR is the contact person for a joint paper on this subject. (WP3 and WP5)
- The collaboration between PROGEA, SMHI and U. Barcelona on assessment of NWP uncertainty including model errors is well-defined in the Carpe Diem plan. Magnus Lindskog SMHI is the contact person for a joint paper on this subject.