HIRLAM/HARMONIE community position on SODA and surface DA
(*after a discussion at FMI, 25.02.2014 and circulation with Management Committee*)
for SURFEX SC, Toulouse, 19 March 2014.

- We support the idea of flexibility being basic for SURFEX. It allows keeping together operational and research environment and makes operational tests and implementation easier. We believe this philosophy may be continued also in DA part.

- The price for flexibility is additional manpower. When manpower is limited, the solution is to have one interface for different applications with technical maintenance provided. Below this interface, a person (or a team) developing the scientifically new part, is also responsible for technical solutions.

- SODA interface developed by T. Aspelien gives these possibilities. T. Aspelien will continue the development with more user-friendly input-output and other technical solutions.

- The main concern of HARMONIE community is operational practice, most of the research is also operationally-oriented. Currently we use OI in operational surface DA for nature tile. We use EKF for research and are going to keep it in medium-range perspective. To understand, if it is reasonable to replace OI by EKF for nature tile in operational, more tests are needed.

- We are interested in the developments for different patches (at least, to divide low and high vegetation, as it was in HIRLAM). SODA will be continued in this direction.

- Possibilities to apply other than T2m and RH2m observations (LAI, albedo, etc.) should also be kept, although this is far from operational implementation. T. Aspelien will assist A. Barbu with technical implementation for LAI.

- For other tiles (lakes, ocean, urban), new DA schemes will be developed and implemented. For lake tile, the EKF-based algorithm already exists, in the context of stand-alone FLake, still technically outside SODA. Its implementation will give a good opportunity to test SODA interface, to reveal problems and to understand perspectives.

- Snow DA is a special case, it should be studied more. Only few tests of EKF for snow were done (Richard Essery), several problems were revealed (e.g. too weak response of the model to perturbations, atmospheric forcing appeared to be crucial). The snow data assimilation should be targeted to a specific snow scheme available in SURFEX. Presumably the further development (of snow EKF) could be tied to one of the explicit snow schemes (3L ES, Crocus). Another problem is different snow schemes applied for different tiles.

- All above-mentioned developments are included into HIRLAM plan.