
# Surface: Summary and plans for the future

Patrick Samuelsson, 2021-04-16, All Staff Workshop video conference

# Surface session Tuesday morning

- **ECOCLIMAP 2nd generation experiences**
  **Leads to improvements but not without problems to tackle (e.g. too homogeneous covers)**
- **Results from DiffSoil/ExplSnow/MEB + SEKF over AROME-Arctic**
  **Outperforms ForceRestore/D95 + OI in spring time also without surface assimilation**
- **Implementation of roughness sublayer in SURFEX is under testing**
  **Should help with current unrealistic roughness and energy exchange over tall vegetation**
- **Assimilation of satellite SEVIRI land-surface temperature in AROME/SURFEX**
  **Improvements are seen in temperature and humidity forecasts. Paper by Sassi et al. on its way**
- **Problems with mix of binary and fractional land-sea masks in our systems**
  **They have problematic impact on assimilation near edges (land-sea) but solution is on its way**
- **Implementation of drip irrigation, and a plastic mulch layer on top, within SURFEX**
  **Simulated air temperature and latent heat flux compare better with observations**
- **AROME-NEMO-WW3 coupling at Météo-France**
  **Many interesting sensitivity and impact studies, including effects on precipitation patterns**

# Surface side meeting Tuesday afternoon

- **Comparison of SURFEX versus non-SURFEX-ISBA behaviour in ALARO CSC is ongoing**
  **A number of significant code differences are identified**
- **Plan for Snow Analysis in ACCORD Consortium**
  **A good and detailed complement to RWP. Will inspire corresponding actions for other subjects**
- **Long term atmosphere-surface coupling strategy**
  **Discussions need to go on. E.g., how can we make steps now that also fulfil long-term goal**
- **Recent results about Ecoclimap-SG and DIF in AROME**
  **Promising results but needed modifs of e.g. heat capacity and roughness are identified**
- **SEKF issues in the Alps**
  **Unfortunately no time left for this presentation… return to this at later surface meeting**

# ACCORD strategy for Surface

**The ACCORD strategy for 2021-2025 was discussed during winter-spring 2020 and approved by General Assembly and Council in June 2020. For Surface it includes three main areas:**

- **surface model**
- **physiography**
- **data assimilation**

**Details were presented and partly discussed during the Tuesday afternoon Surface side meeting...**

# ACCORD Surface plans and organisation of work

**Also, ACCORD is big!**

**We have 73 people listed as active in Surface work only.**

**So, how to organise ourselves?**

# ACCORD Surface plans and organisation of work

**Currently the use of different SURFEX versions in different CSCs, and slow exchange of development via SURFEX updates and cycling phasing, hamper overall ACCORD surface development. To improve the situation it is suggested to...**

**Coordinate SURFEX/SODA CSCs development in a common ACCORD NWP branch in the SURFEX git repository. Some technical challenges need to be looked into to reach a smooth setup.**

**The aims are to**

- **first of all, increase the ability of code exchange between NWP SURFEX developers both for near-operational setups and for new development**
- **make it easier to apply the NWP SURFEX version also for offline tests and setups**
- **utilize the SURFEX testbed environment for new development**
- **contribute better to official SURFEX updates and releases**
- **keep closer to development by the SURFEX team and non-NWP developers**

# ACCORD Surface plans and organisation of work

## Create subject teams as a complement to the RWP

**Why? The RWP is not specific, nor wide, enough to describe all aspects of the complexity of our work.**
**Subjects also span over several RWP WPs and items, or are not yet seen in the RWP.**
**Possible subject teams:**

- **Snow Analysis:** Draft plan by Ekaterina Kurzeneva to be shared in May already exists.
- **Urban:** First of all, activate TEB! How to validate TEB? Urban observations!? Also connects to assimilation of the TEB tile. How can TEB be optimized for NWP needs? Urban physiography!
- **Multi-layer ISBA physics:** What should it include (namelist settings)? How to validate it (fluxes)? How to assimilate it (control variables and time scales). What needs to be developed?
- **Satellite products/radiances for surface assimilation:** Framework for pre-processing of satellite observations (together with UA assimilation)?
- **Stable boundary layers, Wetland parameterization, Irrigation, Offline applications (Crocus ...), Physiography and machine learning, ...**

# ACCORD Surface plans and organisation of work

**List exists of surface members with emails and specifications of area of expertise**

**Monthly surface web meetings where we e.g.**

- **share own development results/problems**
- **share review of interesting journal papers**

**Training:**

- **A NWP-oriented SURFEX/SODA training week is being discussed**

**Annual plan of Scientific visits**

**Working weeks**


**Thanks and wish for good work together!**