NWP-Seminar

Date: 20 April 2023
Time: 10:00 – 11:30
Place: MeteoSwiss, Zurich Airport, OPC 1, Room 5-331
Online: see Microsoft Teams link at the bottom of this text

Tobia and Ronan will present findings from their Master theses supervised by A) Stephanie Westerhuis (APN) & Brigitta Goger (ETH) as well as B) David Leutwyler (APN):

A) Tobia Lezuo: Along-valley winds in ICON (10:00-10:45)

In this process-based evaluation, we assessed the ability of the ICON model to resolve the valley wind system in the Inn Valley (AT) by comparing the model to 3D observations from the CROSSINN campaign. At 1km horizontal grid spacing, ICON can successfully simulate the daytime up-valley flow. However, the model struggles in simulating interactions of the along-valley winds with synoptic forcing and the complex thermodynamic structure of the valley boundary layer.

B) Ronan McCormack: Exploiting Code Generation Techniques for Verification of Weather and Climate Models (10:45 – 11:30)

This work focuses on simulating the associative re-arrangement of operations, using Python AST manipulation and the GT4Py toolchain. The goal was to replicate the operation re-arrangement "optimizations" performed by FORTRAN compilers, which can re-arrange A = (B + C) + D to A = B + (C + D). This operation is not equal in finite precision due to rounding of intermediate results and leads to non-bit reproducible code across compilers, machines, and programming languages, posing a painful challenge when porting codes to GPUs. When testing ported code for ICON, Monte Carlo-style input perturbation is used to estimate an uncertainty range for the outputs. During the test we then check if the results from ported code falls within that range. However, our assessment of the 1-M microphysics scheme using Python AST manipulation suggests that the current approach may not provide a representative range. This work underscores the usefulness of code-generation tools for developing and testing weather and climate models.

External guests: If you wish to attend, please send a short note as a reply to this mail. Please arrive at the reception desk at the Operations Center 1 Entrance A no later than 10 minutes before the start of the seminar and ask for Stephanie Westerhuis. You will be picked up at the entrance.
We are looking forward to seeing many of you!
Numerical Prediction division of MeteoSwiss

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To be added to (or deleted from) the distribution list of the seminar announcements, please send an e-mail, depending on your institution:
MeteoSwiss: mail to Saskia.Willemse@meteoswiss.ch asking to be added to (or deleted from) the mailing list .f_fe_seminar
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