Multi-basin modelling using World-Wide HYPE (WWH) at the local/regional scale

THEMES:

- Improving the existing WWH model setup for a part of the world (your area of interest will be delivered by SMHI)

- Include your own data (river flow observations, catchment delineation, routing, land use, water bodies, forcing data P/T)

- Calibration strategies and stepwise parameter estimation using multi-source data (provided by SMHI)

*NOTE: You should bring **your own data to the course (** e.g. time-series of river flow observations, catchment delineation, routing, land-cover, waterbodies, regulation/irrigation, forcing data P/T) to be able to make QA of the received model and perhaps add your own observations etc.*

Course format:

This year's course will be held online due to global travel restrictions. In order to accommodate participants from different time zones, course sessions are held between 11:00 and 15:00 CEST in a web-based video conferencing system. During mornings and late afternoons (CEST), course participants work individually on exercises, with web-based chat support by SMHI lecturers. Participants to choose morning or afternoon exercise times according to what works best with their time zones.

The video conferencing system used is Pexip Atea-MeetU. Connect to the virtual meeting room (**VMR**), preferably with Chrome browser through:

- https://my.meetu.se/meet/15539462
- PIN code: 2020

The chat system used is **Discord**. Connect through:

- https://discord.gg/ct8VPAt
- 5 chat channels, open to all participants
    - General/Admin
    - HYPE processes
    - HYPE calibration
    - HYPE technical questions (setup, files, etc.)
    - HYPE tools
- 3 voice/video channels for individual discussion

Tuesday 8th of September

Room: VMR/SMHI meeting room for lecturers

Time CEST	Task	Location	Lead
11:00	**Welcome and introduction to HYPE**, **examples of HYPE applications, Open Source Community.**	**VMR**	**RC, LL, BA**
11:20	**Presentation round.**	**VMR**	**RC, all participants**
11:40	**HYPE model introduction** (3 Sections, 15 + 5 minutes each)	**VMR**	**GL**

Time	Task		
12:40	*COFFEE/LUNCH BREAK*		
13:00	**Basic HYPE model exercise with a very simple model – introduction** (1 Section 15 + 5 minutes, 10 minutes on-screen HYPE run) - Getting familiar with the input files and how the model setup is represented by the different files incl. output files. - How to run HYPE	**VMR**	**DG, JS**
13:30	**HYPE process description** (2 Sections, 15 + 5 minutes each)	**VMR**	**GL**
14:10	*COFFEE BREAK*		
14:20	**HYPE tools: HYPE processing tools, installation and use (HYPEtools, AnalysQ, modelview)** (2 Sections, 15 + 5 minutes each)	**VMR**	**RC, AB**
15:00	*SOCIAL SESSION: Quiz*		**LL**
15:20-17:30	**Individual exercise and technical installation, with support through Discord and VMR**	**Discord**	**AB, DG, RC, JS**

Wednesday 9th of September

Time CEST	Task	Location	Lead
9:00-11:00	**Individual exercise support**	**Discord**	**CP, JM, ME, RC**
11:00	**Plenary discussion session on HYPE model exercises.** Use frequent questions from afternoon/morning exercise support to start discussion.	**VMR**	**RC, DG**?
11:20	**World-Wide HYPE** - Introduction, set up, performance, future (2 Sections, 15 + 5 minutes each)	**VMR**	**RC**
12:00	**Introduction to course model files (WWHYPE submodel)**	**VMR**	**RC**
12:10	*COFFEE/LUNCH BREAK*		
12:30	**Question session on HYPE model files. Check your own model files and discuss how to proceed using and developing it** (i.e how many stations, what kind of time series, is routing fine? How should I set the simulation period according to station data? Are the most important hydrological features there?)	**VMR**	**RC,** KI
12:50	**WHIST introduction**	**VMR**	**RC**
13:10	*SOCIAL SESSION: Present your river basin*		**LL**
13:50	*COFFEE BREAK*		
14:00	**Improving large scale HYPE models through stepwise process refinement. (**2 Sections, 15 + 5 minutes each)	**VMR**	**JA**
14:40	**Exercise introduction: analysing large-scale HYPE model performance** (in the individual domains selected by participants)	**VMR**	**JA,** RC

Time CEST	Task		Lead
15:00-17:30	Individual exercise support	Discord	**AB, DG, JR, KI, <mark>JA?</mark>**

Thursday 10th of September

Time CEST	Task		Lead
9:00-11:00	**Individual exercise support**	**Discord**	**CP, JM, JA, RC**
11:00	**Automatic Calibration in HYPE (**2 Sections, 15 + 5 minutes each)	**VMR**	**JA**
11:40	**Exercise introduction: automatic calibration in practice** in the individual domains or template	**VMR**	**JA**, RC, JS, JM, CP
12:00	*COFFEE/LUNCH BREAK*		
12:30	**Short introduction to some individual exercises:** - Return periods for high flows - Duration curves - Plot Runoff maps etc.	**VMR**	AB, RC
12:50	**Individual work on exercises with open plenary discussion channel**	**VMR, Discord**	**ALL**
13:30	*COFFEE BREAK*		
14:30	**Wrap-up and closing remarks** - Course feedback and open discussion of potentials for the WW-HYPE community, HYPE spring conference	**VMR**	**LL, RC**
15:00-17:00	**Individual exercise support**	**Discord**	**AB, GL, JS, ME**

Lecturers and coordinators:

AB: Dr Alena Bartosova	JM: Dr Jude Musuuza
	JR: MSc Jörgen Rosberg
BA: Dr Berit Arheimer	JS: MSc Johan Strömqvist
CP: Dr Lotta Pers	KI: MSc Kristina Isberg
DG: Dr David Gustafsson	LL: Dr Lorna Little
GL: Lic Göran Lindström	ME: Dr Maria Elenius
JA: Dr Jafet Andersson	RC: Dr René Capell