List of 10 Posters
DAWG Session

This DAWG session: Thu, Oct 16 2025, 14:00 - 15:30

Posters session: Thu, Oct 16 2025, 17:30 - 18:30 - **Poster session part 3**

Remarks

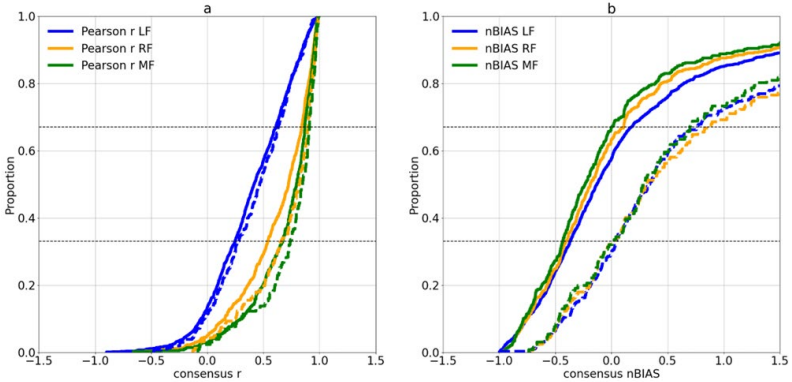
Just 10 posters, and not 12 as indicated in the initial program, since 2 have been shifted to oral presentation (Estimating Discharge–Depth Relationships and Improving Rating Curves in Texas Rivers Using SWOT Data and Machine Learning (Timilsina et al.) & Discharge Algorithm Working Group Update (Durand et al.))

- Here the 10 posters can be briefly introduced with a summary of 1 page each. The objective is to invite people to come and see your poster this afternoon at the poster session 3 (17:30-18:30)
- This summary will be presented by one co-author of the poster in a maximum of 1 minute
- All 10 presenters will be invited on stage at the beginning of the session and will present this in quick sequence so as not to lose time, and keep it for discussions
- Thanks!

ST2025HS4_002 - Typological drivers of SWOT discharge accuracy

Steve Coss, Michael Durand (School of Earth Sciences, Ohio State University, Byrd Polar and Climate Research Center, Columbus, OH, USA)

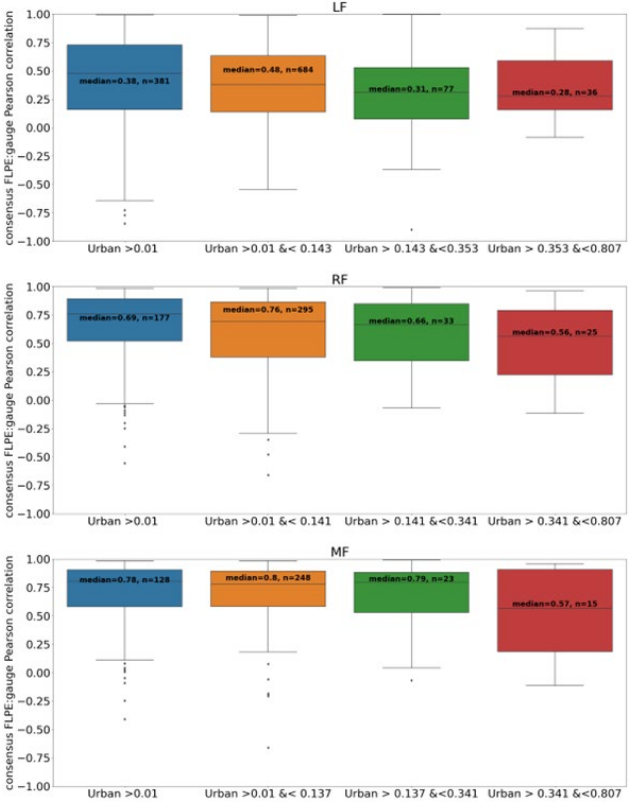
- Bias controlled by prior
- River size (facc/width) not predictive of Q accuracy
- Urban land cover and extreme topography detrimental
- Filtering urban and high DEMstd can improve Pearson r (8%) and reduce |nBIAS| by 7%



•Andreadis et al.,2025 => 11,289 RF reaches ('HQSD')

•Now => 50,048 with 41,614 in MF ('HC')

•~31% and ~26% of the 158,942 reaches we generated files for 83% of RF data qualify as MF

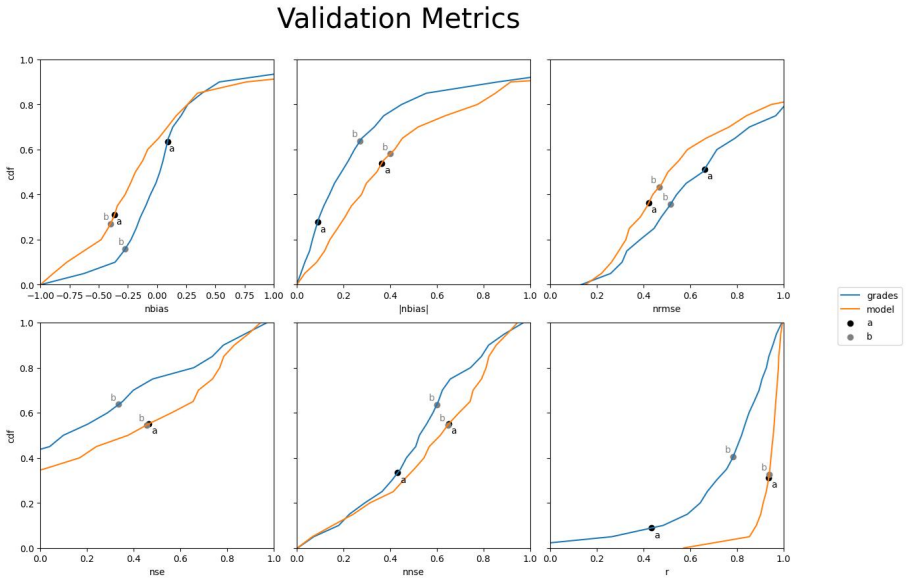


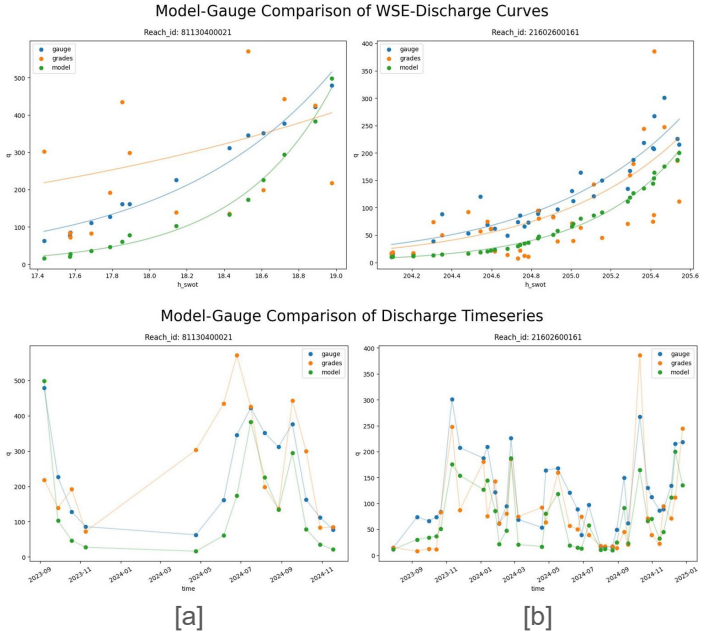
LF(1193/308),RF(537/162)
MF(417/131)(Unconstrained/Constrained)

ST2025HS4_003 - [Predicting rating curves for global river reaches]

Izzy Probyn, Jeff Neal (University of Bristol), Stephen Chuter (Fathom), Paul Bates (University of Bristol)

- Minimum viable discharge prediction method.
- Non-extreme rating curves that are globally consistent.
- Sensitivity analysis of a minimum exceedance probability we can model from SWOT suggests p=0.05.
- Results suggest we can make a big improvement to discharge dynamics, even if it introduces some bias: median NSE increase of 0.19 over validation sites.





ST2025HS4_004 - Using an ML prior to improve SWOT discharge estimation

Heejin An, Colin J. Gleason (University of Massachusetts Amherst)

Discharge estimation branches:

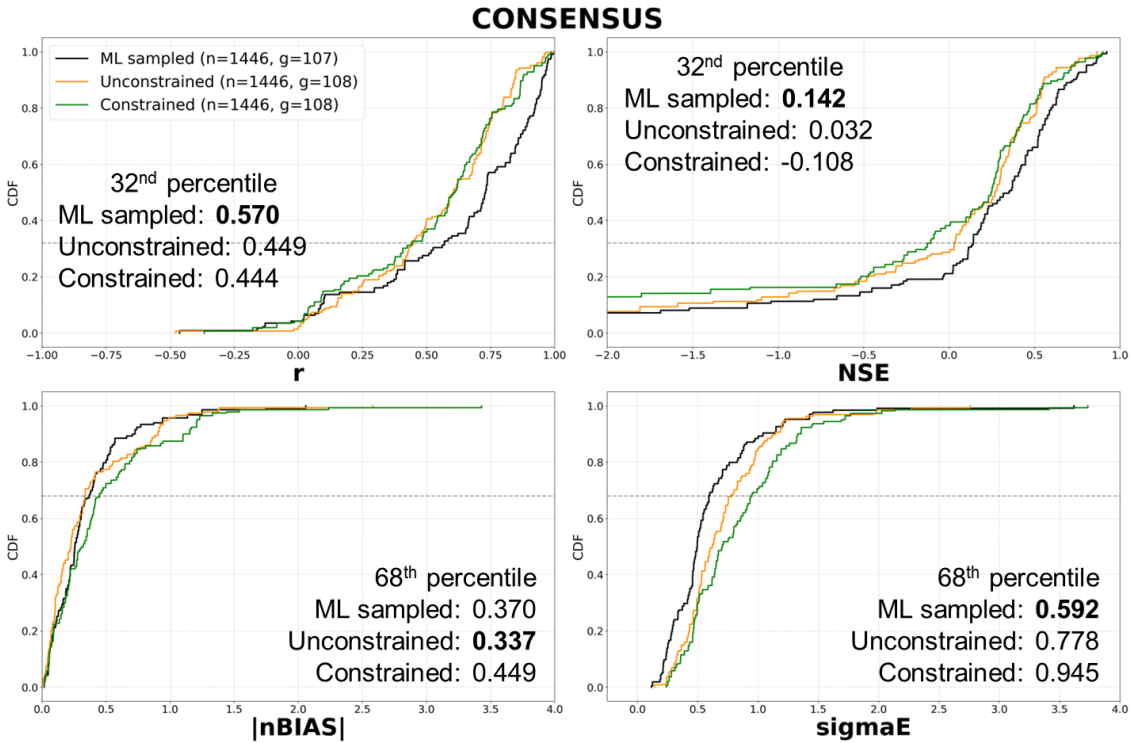
- **Gauge-Constrained** - prior from GRADES
- **Unconstrained** - prior from WBM

+ Machine Learning Results → prior!

Test ML priors for Ohio basin

As a result id comparing them,

ML prior improves SWOT Q accuracy

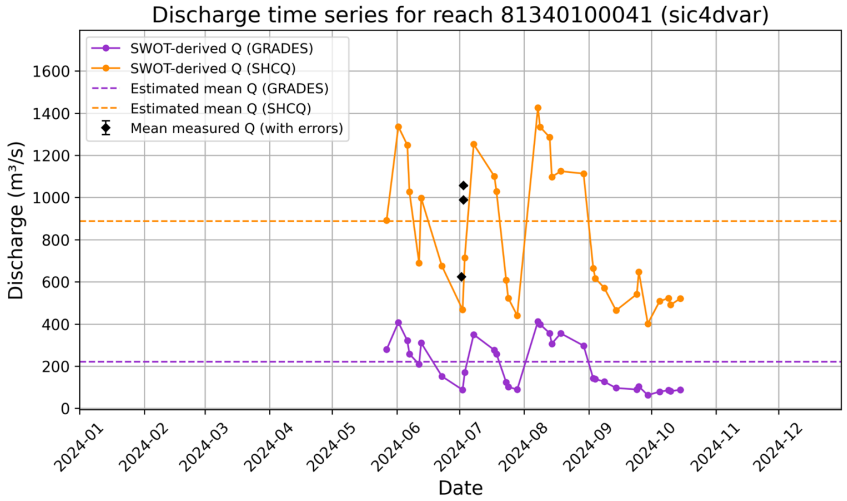


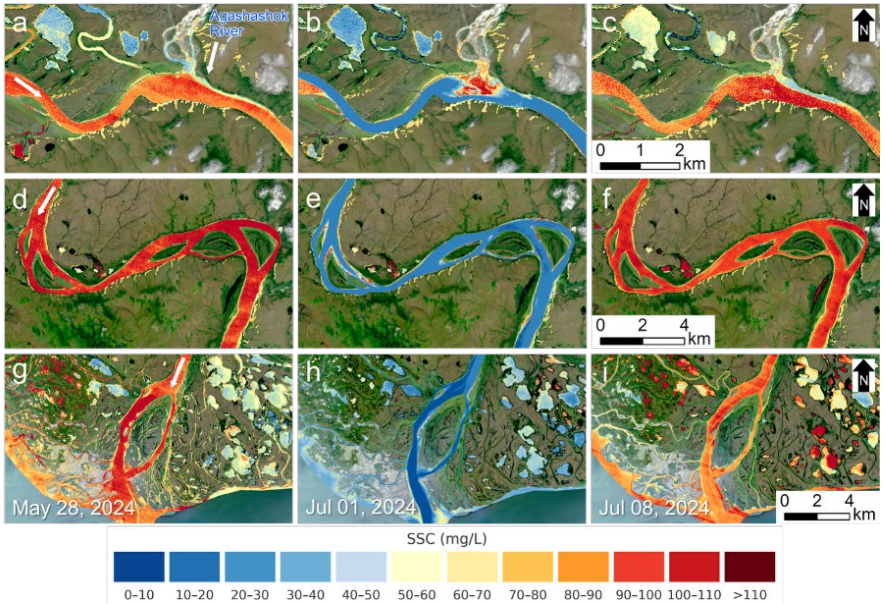
ST2025HS4_005 - Variability in Arctic river discharge, suspended sediment transport, and turbidity

Anastasia Piliouras, Xiwei Guo, Sinead Lyster, Ben Crosby, Nynaeve Phillipson

Key takeaways/poster highlights:

- Arctic rivers sensitive to warming, many ungauged - opportunity for SWOT river discharge
- In situ measurements necessary to reduce uncertainty - new data repository!
- In situ turbidity and sediment measurements also help calibrate imagery, explore temporal variability

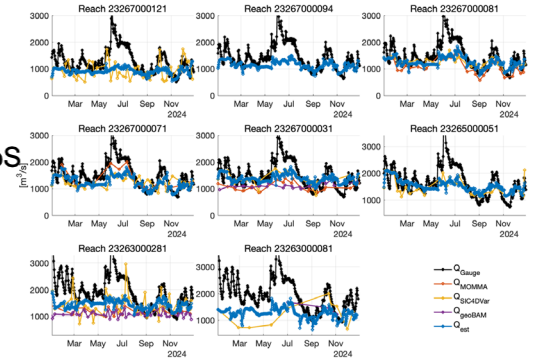




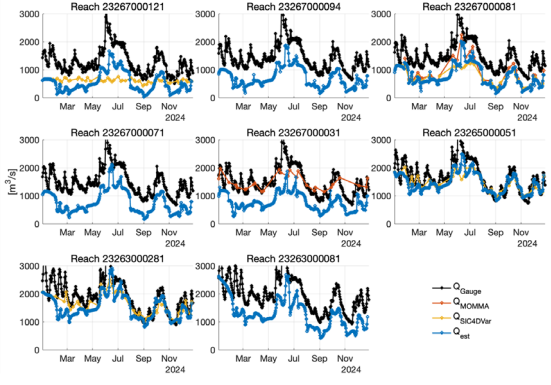
ST2025HS4_006 - [Estimating Daily Discharge Using SWOT Data]

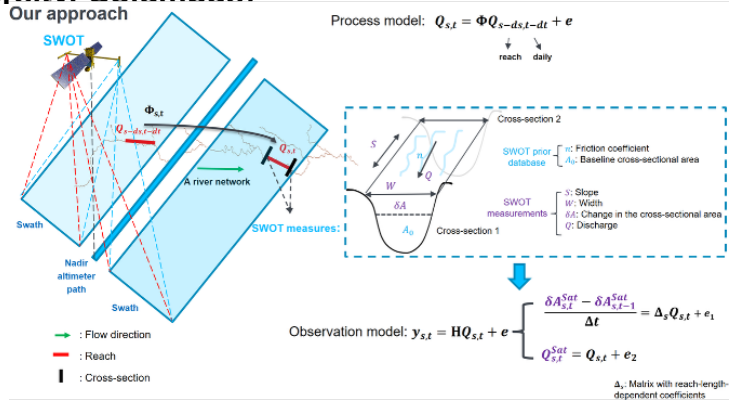
Siqi Ke, MJ Tourian (Institute of Geodesy, University of Stuttgart), Pierre-Olivier Malaterre (INRAE, UMR G-eau, Montpellier), Colin Gleason (Dept of Civil and Environmental Engineering, Univ of Massachusetts Amherst), Michael Durand (School of Earth Sciences, Ohio State University, Columbus)

Using unconstrained SoS

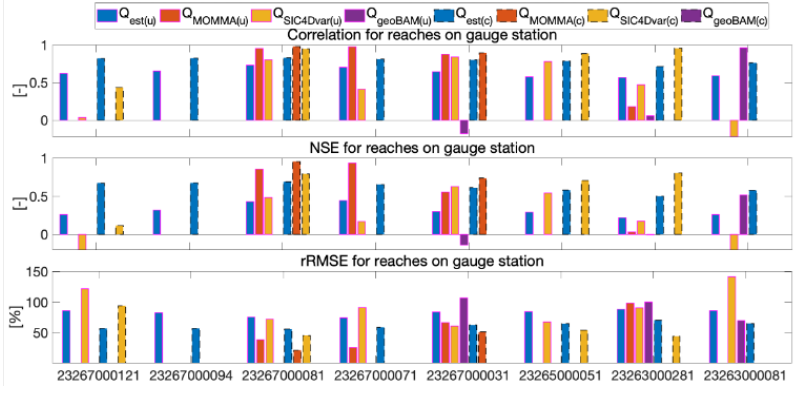


Using constrained SoS





Validation

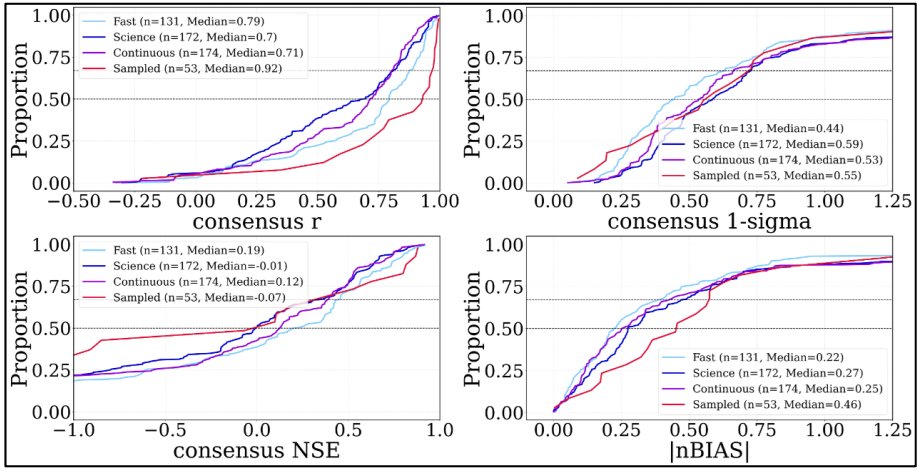


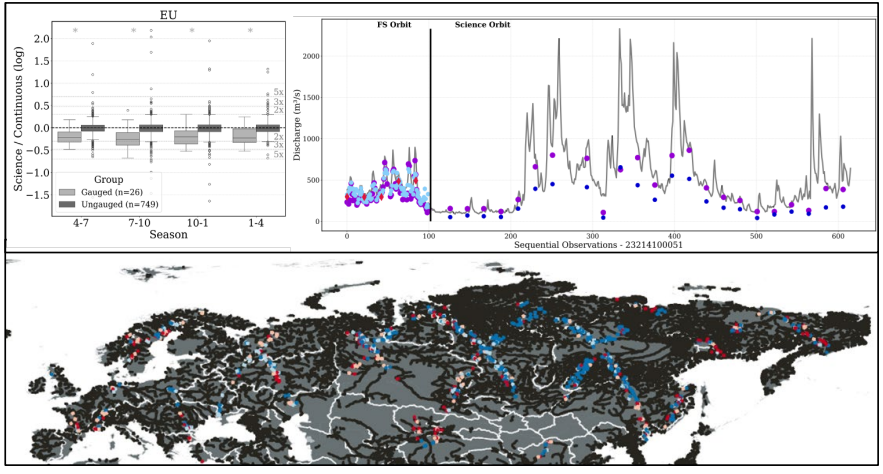
ST2025HS4_007 - [Assessing SWOT River Discharge Performance Between Fast Sampling and Science Orbits]

Elisa Friedmann, Colin Gleason (UMass Amherst), Cécile Cazals (CNES, CS, INRAE), Michael Durand, Stephen Coss (The Ohio State University), Jonathan Flores, Fiona Bennitt (UMass Amherst), Merritt Harlan (USGS), Angelica Tarpanelli (CNR)

Reaches that overlap the FSO *and* SO (~15%) can produce fundamentally different discharge results than the reaches in the SO alone

1. Including the FSO improves overall discharge skill at these reaches but remains an underestimate
2. Adding the daily FSO orbit significantly alters 53.8% of reach discharge flow duration curves mostly as bias which differs by region and algorithm but not by season
3. Additional notes on consensus discharge improvement and current SWOT discharge hydrologic capture





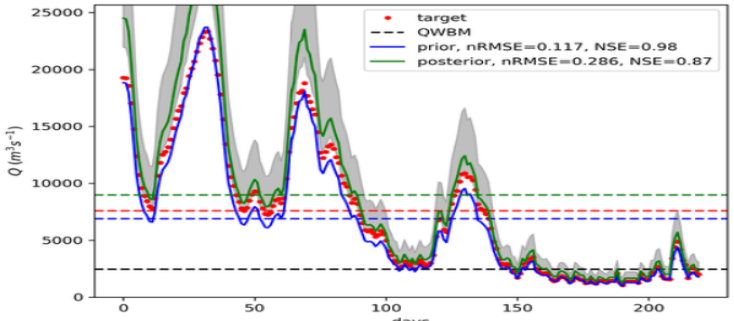
ST2025HS4_008 -Simulating rivers using the HiVDI algorithm

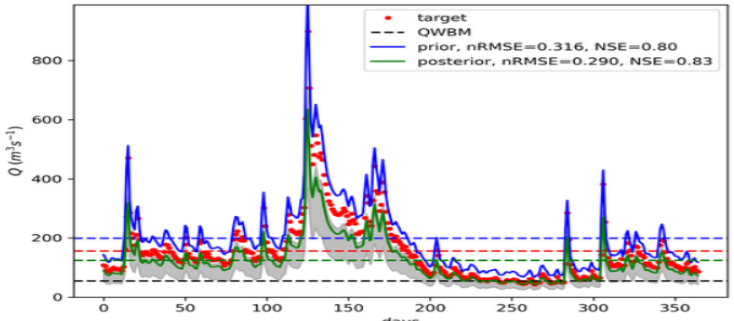
J. Monnier (INSA - Math Institute), K. Larnier (Hydro-Matters), O. Roustant (INSA), P.A. Garambois (INRAe Aix)

▷We present the new version of the HiVDI discharge,
a modular algorithm featuring :
- discharge estimation with uncertainty quantification (UQ) ;
- hierarchical hydrodynamics models, calibrated using SWOT / multi-source data.

▷We return to the central mathematical problem of ill-posedness to discuss how it can be circumvented.
↪ The algorithm can rely on independent bathymetry estimation, like those we have developed in complement [see our other poster on this topic].
↪ We relate the approach to the construction of *H&H* models [see our other poster / talk on this topic].

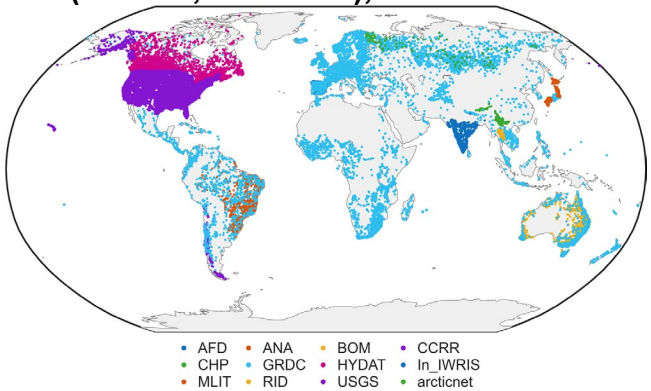
Come to discuss these topics :)

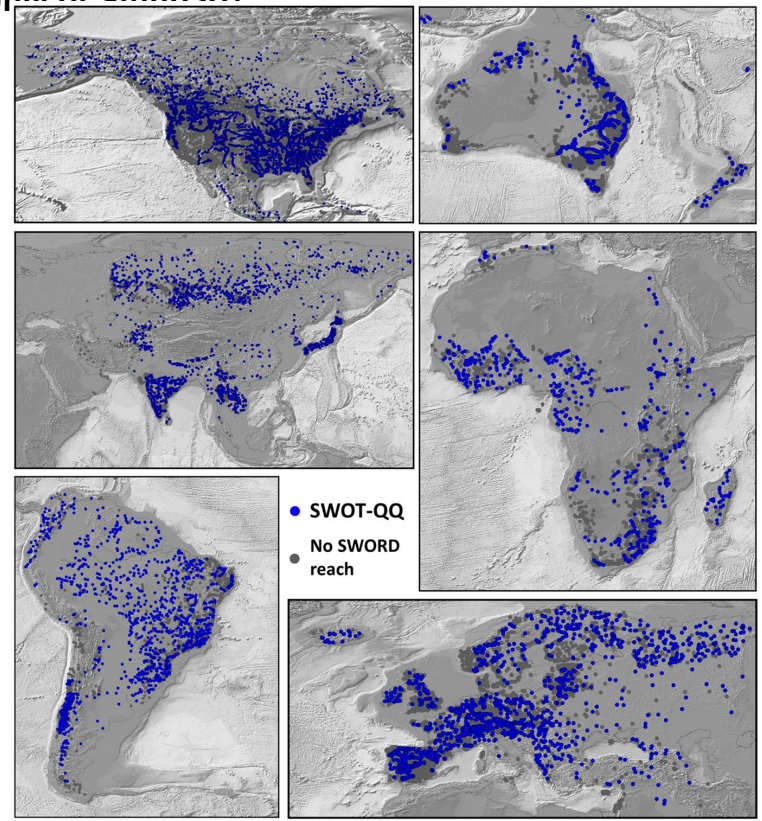


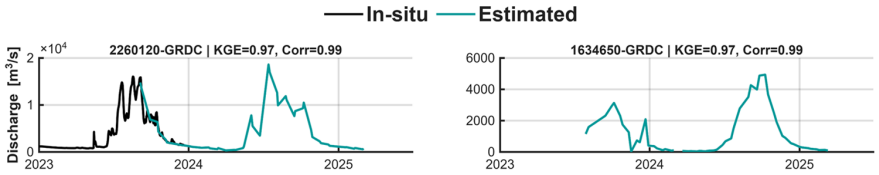


ST2025HS4_009 - [Global River Discharge from SWOT at Gauging Stations: A Complementary Perspective]

Peyman Saemian, Siqi Ke, Omid Elmi, Benjamin M. Kitambo (Inst. of Geodesy, Univ of Stuttgart), Fabrice Papa (LEGOS, Toulouse), Mohammad J. Tourian (Inst. of Geodesy, Univ of Stuttgart)



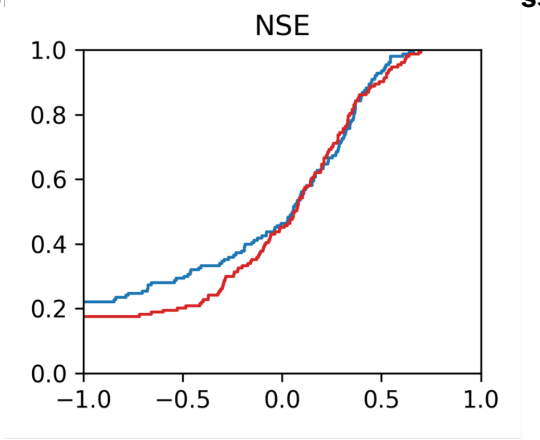


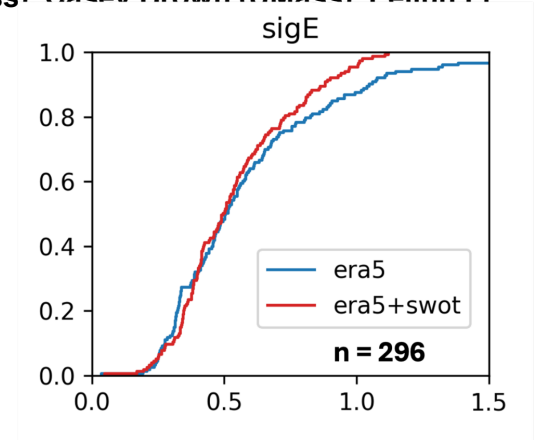


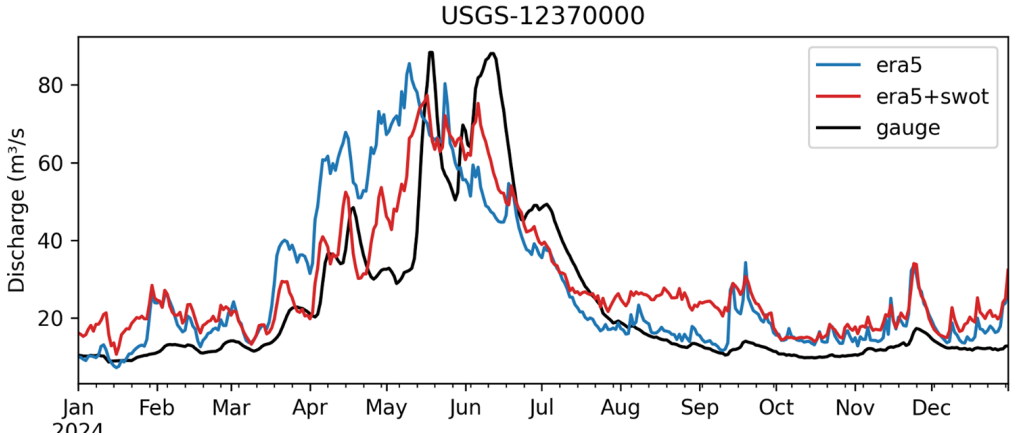
ST2025HS4_0010 - Incorporating SWOT into a deep learning framework of global river discharge.

Theodore Langhorst (UMass), Colin Gleason (UMass), Konstantinos Andreadis (UMass), Casey Brown (UMass), Peijun Li (Penn State), Chaopeng Shen (Penn State)

- We use a **recurrent graph neural network (RGNN)** to simulate and route discharge (230 basins, ~8000 gauges).
- Mainly driven by ERA5 met. inputs, with SWOT river and lake data assimilation.
- Most improvement seen at gauges that perform poorly- minimal improvement at gauge that already perform well with ERA5 data alone.







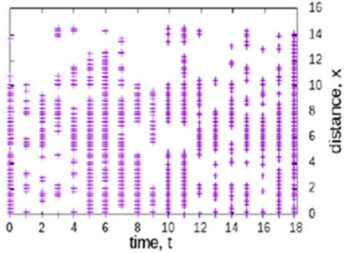
ST2025HS4_0012 - [HYdraulic retrievals from Data assimilation: River Observation with Swot (HYDROS Project)]

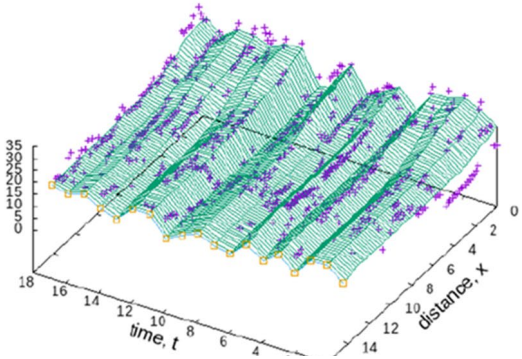
Hind Oubanas (INRAE), Sophie Ricci (Cerfacs), Pierre-Olivier Malaterre (INRAE), Cassan Ludovic (Cerfacs), Igor Gejadze (INRAE), Piacentini Andrea (Cerfacs), Cécile Cazal (INRAE, CS Group), Dylan Quittard (INRAE)

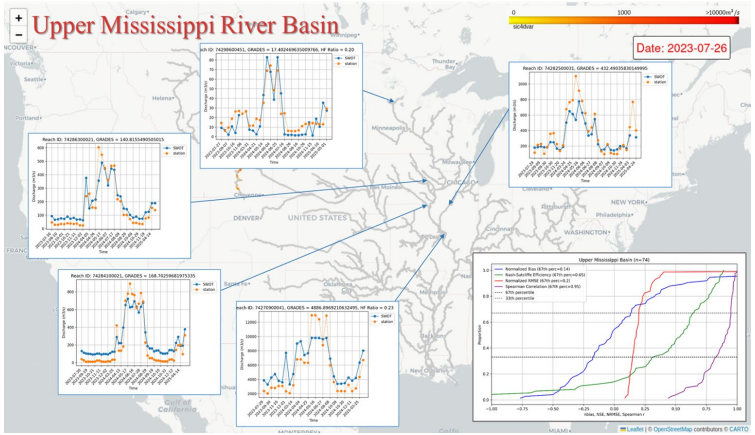
Preprocessing of SWOT observations

Generation of bathymetry (dry & wet)

Discharge calculation (SIC4DVar)







Bathymetry: case br4ri3sr2160260125