Pre-launch SWOT capabilities & Cal/Val activities for land hydrology in Quebec

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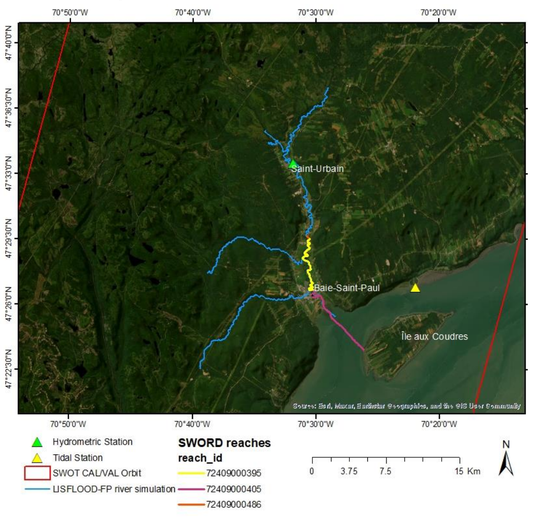
Main objectives

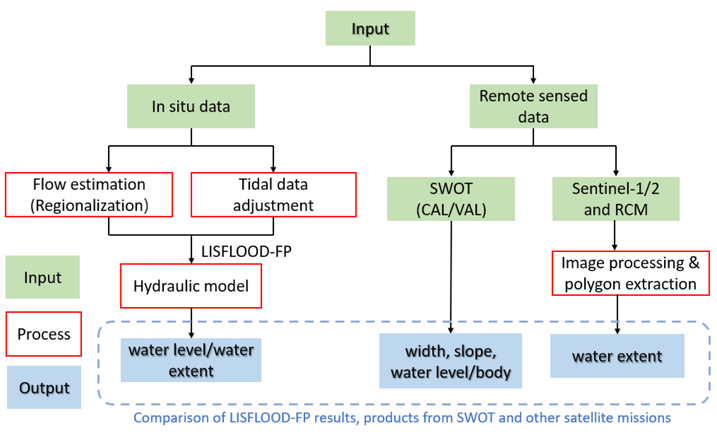
- Contribution to the SWOT ST
- Pre-launch evaluation of SWOT using available simulators from JPL and CNES
- Post-launch investigation of the real SWOT errors through comparison with in-situ data
- Study of errors that could be expected from different official SWOT products over rivers, lakes and reservoirs in Quebec, Canada.

How does SWOT capture very rapid flooding events?

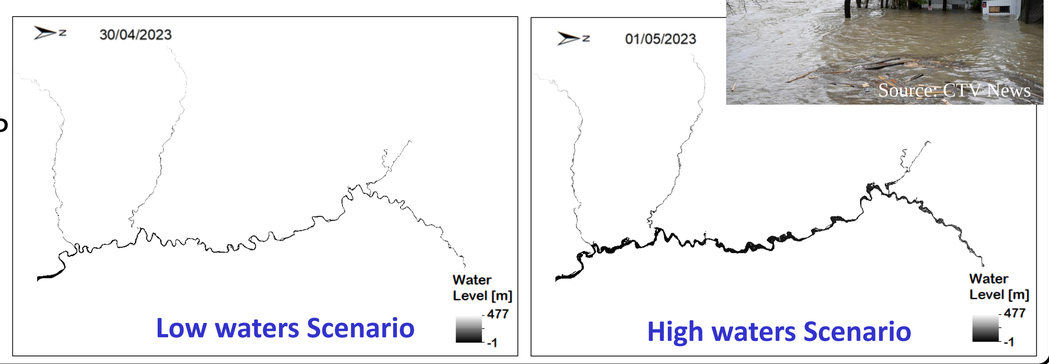
- Specific Objective: improving the performance of the LISFLOOD-FP model using the SWOT satellite products, particularly in a context of flooding.
- Study Area



- Methodology

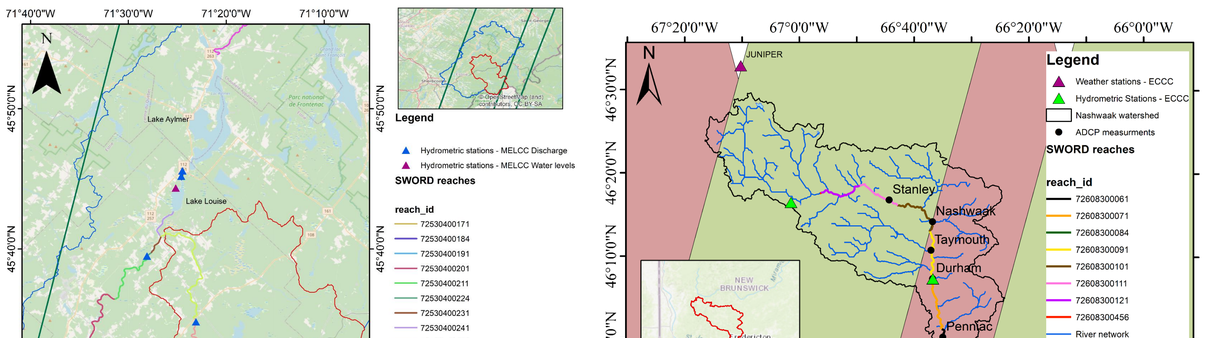


- Preliminary results: LISFLOOD - FP simulations for different scenarios



Integrating Hydrometric Data from SWOT into the HYDROTEL Hydrological Model

- Specific Objective: assessment of SWOT river vector products for enhancement of the river discharge estimation using the HYDROTEL hydrological model
- Study Areas



- Methodology

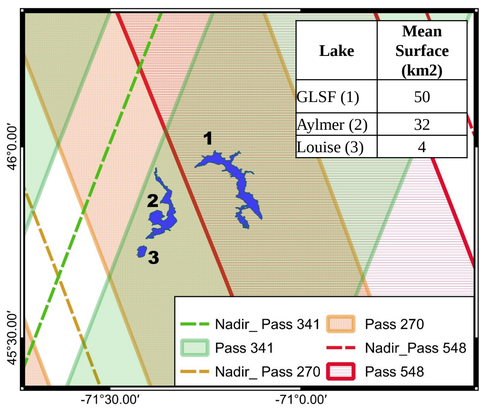
Conclusions

- Simulations demonstrated the pre-launch potential of SWOT for monitoring rivers, lakes and reservoirs in Quebec.
- A number of different in-situ measurements were collected that support calibration and validation of the SWOT data products
- Various projects are under development that contribute to the assessment of the official SWOT data and their integration into hydrological modelling

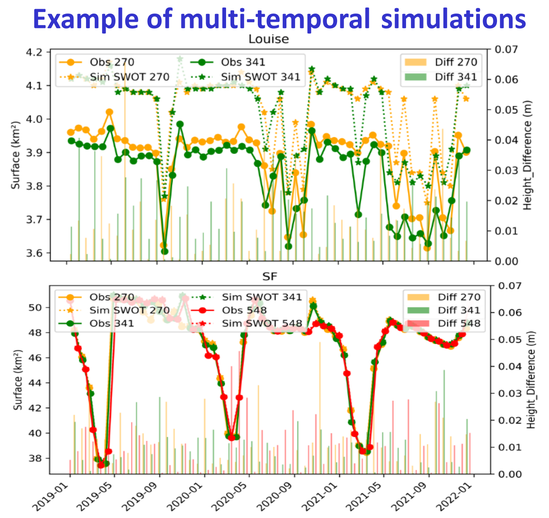
Pre-launch Activities

- Evaluation of SWOT products using the Large- Scale Simulator from the CNES

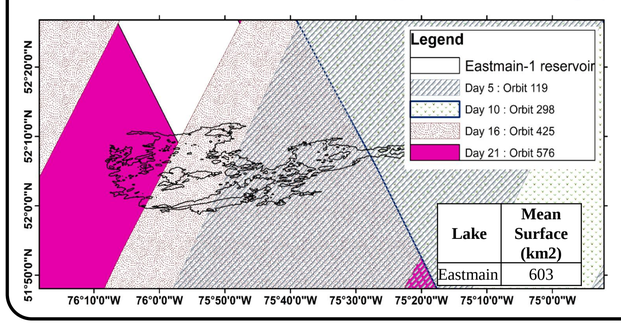
Lakes within SWOT orbit (complete coverage)



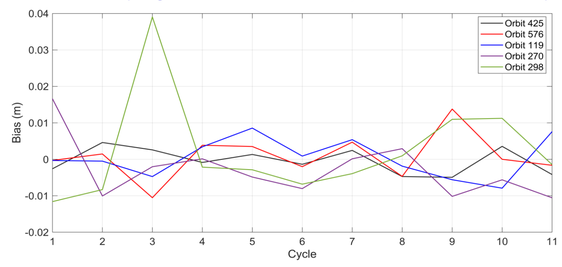
Example of multi-temporal simulations



Reservoir within SWOT orbit (partial coverage)

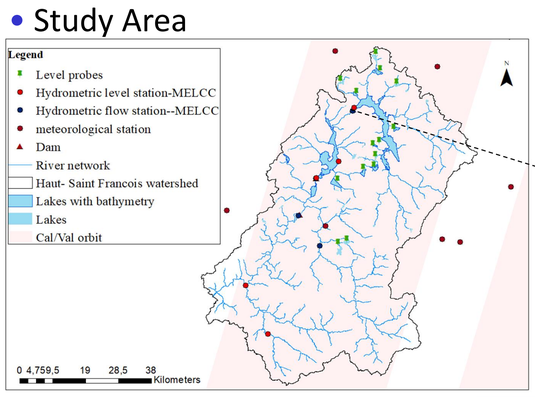


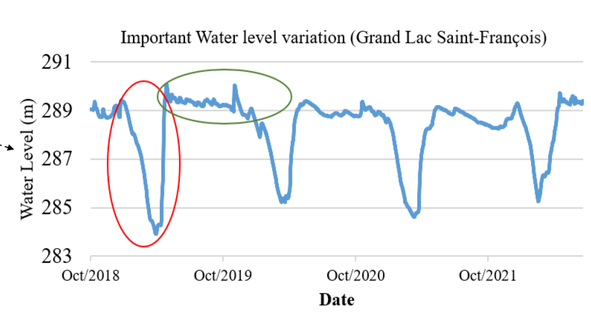
Bias analysis of SWOT simulated water levels (1 year simulation, Eastmain case)



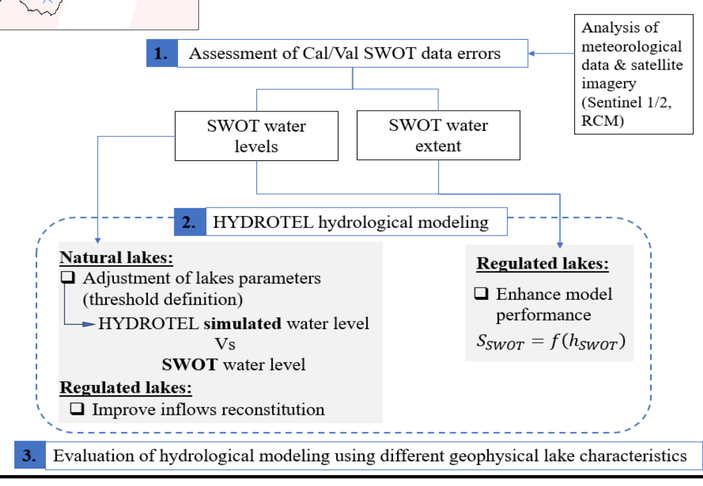
Contribution of the SWOT data to hydrological modeling of lakes and reservoirs

- Specific Objective: valorisation of SWOT lake and reservoir products in hydrological modelling to improve the water balance estimation
- Study Area



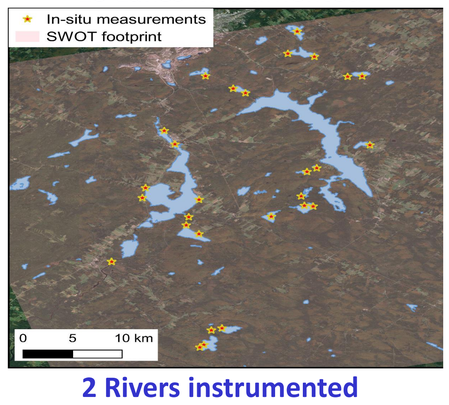


- Methodology



Post-launch activities : in-situ measurements

15 Lakes instrumented



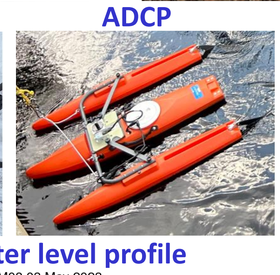
Type of measurements

GNSS Water level (profile & punctual)

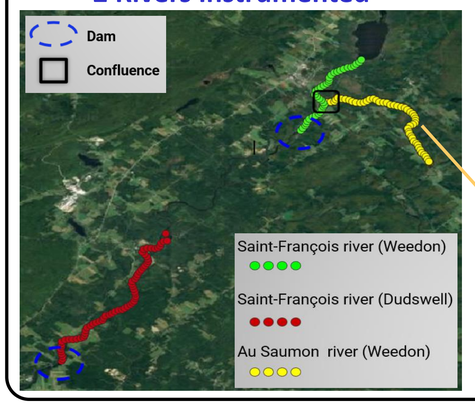
WL probe

Drone acquisitions

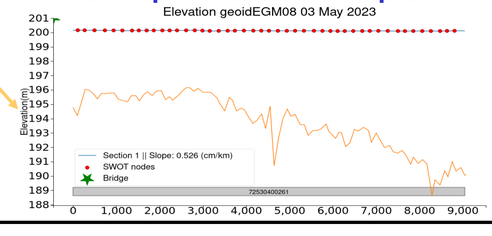
ADCP



2 Rivers instrumented



Example of water level profile



Acknowledgements

- Funding from Canadian Space Agency (CSA), Natural Sciences and Engineering Research Council of Canada (NSERC), Le Fonds de recherche du Québec – Nature et technologies (FRQNT) and Hydro-Québec