AirSWOT/SWOT contributions to the hydrodynamic study of the Garonne River

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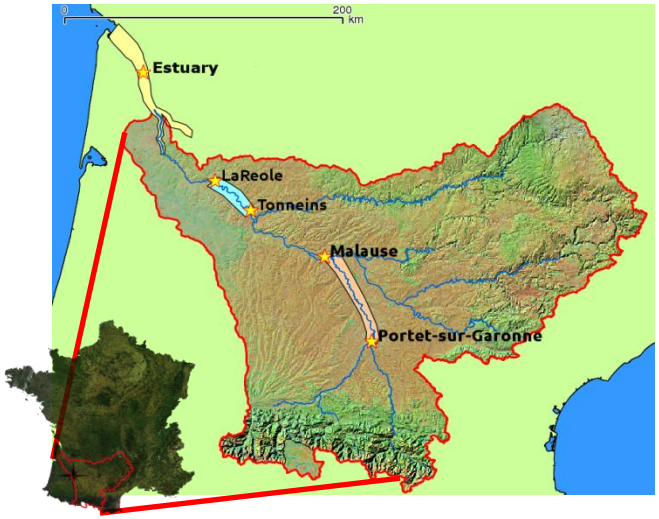

- The Garonne River is the 4th longest river in France.
- Total drainage area = 55,930 km^2.
- River width upstream Portet ~ 100m
- Well instrumented.

- Need to know discharge variation for economic and agricultural needs.
- Test SWOT/AirSWOT discharge retrieval methods for 2 reaches (Portet - Malause 100 km reach and Tonneins - La Reole 50km reach) and the estuary.

Specific objectives and approach

- Compute discharge by assimilating virtual AirSWOT/SWOT observations in Garonne river reaches hydrodynamic models (sequential assimilation) to correct model parameters and the hydraulic state.
- Use first 1D model, then 2D models.
- Do sensitivity tests and parameters estimation (roughness coefficient and bathymetry) using variational assimilation.
- Assimilation of real AirSWOT data when available.
- Test different SWOT data format and processing.

Link with key Phase-A SWOT issues

- Link with the following key Phase-A issue:
  (5) What kind of data are needed by the hydrology community?
  (6) How will discharge and storage change be characterized and/or validated?
- Link with hydrological mission objectives (ROSES SDT call):
  - Discharge algorithms
  - Water and energy balance modeling
- Project funded by the CNES TOSCA program.