

THE CUAREIM/QUARAI BASIN

The Cuareim River, tributary of the Uruguay River on its left margin, is located at the extreme south of the Federative Republic of Brazil (Campanha physiographic region, which includes the Municipalities of Santana de Livramento, Quarai, and Uruguayana) and to the northeast of the Oriental Republic of Uruguay (Artigas Department) (64° West Longitude; 33°52' South Latitude).

The Cuareim River Basin is therefore a bi-national river basin, with a drainage area of approximately 14.800 km², of which 6.600 km² (44 %) is in Brazilian territory and 8.200 km² (56%) in Uruguayan territory.

The main channel of the Cuareim River has a total length of 351km, with a difference in altitude between its source and mouth of 326m; and an average altitude of 200m (Datum Torres-SGE Brazil). Its average slope is 0.93 m/km, occurring the steepest slopes at the first quarter of its path.

The basin has a variety of lithology units. In the upper and medium basins basalt igneous rocks frequently show up among sedimentary rocks. Their shallow soils (depth up to 0.5m) determine low soil water-storage capacity, which consequently generates fast-response run-off that may cause flooding in the cities of Artigas and Quarai. Downstream the situation changes: deeper soils with high soil fertility are found with high contents of clay. These soils are marginal for dry land agriculture but very fit for paddy rice.

The average annual precipitation varies between 1300-1500 mm. This one is characterized by a high month variability index (above 80%) and low annual variability index (less than 30%). The average annual pan evaporation is on average approximately 1800 mm.

The area has a subtropical humid temperate climate. Daily thermal amplitudes are big (during the coldest month daily temperatures may vary from 3°C up to 18 °C and in the hottest month temperatures frequently are above 35°C). The average annual temperature is 19.7 °C.

The statistical analysis of the flows at Concordia Bridge in Artigas/Quarai (twin binational city), shows a maximum flow of 4.813 m³/s, a minimum flow of zero, and an average flow of 95.6 m³/s. Most of the water available in the basin is water generated in storm events.

The whole Cuareim river basin lies above the Guaraní Aquifer System. The aquifer is a group of sandy rocks that were deposited between 245 and 144 million years ago. Successive lava spills of basalts on the aquifer arrive at thicknesses of 1500m in certain areas.

TWINLATIN PROJECT

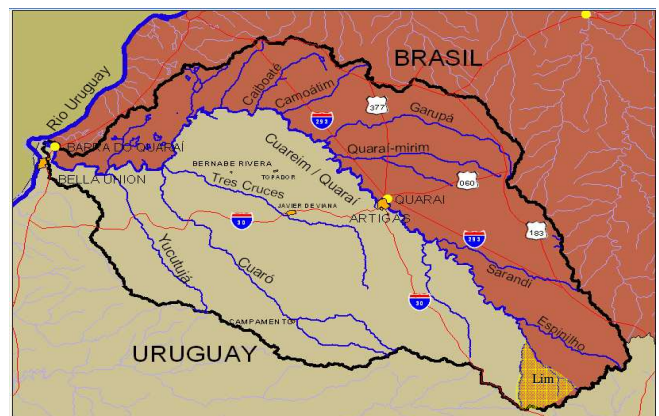
The Latin American and Caribbean region is highly heterogeneous in terms of climate zones, hydro-ecology, socio-political systems etc. Numerous problems in relation to water quality and water availability arise. Flooding occurs frequently and erosion and pollution pressures have also become major problems. Management strategies, legal framework and stakeholder involvement needs to be improved. Activities and research tasks will be conducted within several fields of IWRM; hydrology, modelling of pollution flow, impact assessment, socio-economic impacts, climate change effects, scenario analysis and action efficiency.

The project addresses the goals of the EU Water for Life, and builds on the methods and guidelines developed for the EU WFD.

The most urgent issues to be addressed by the TWINLATIN project are thus:

- Flooding (early warning system)
- Pollution from urban wastewater discharges
- Erosion
- Dry season water availability

(ADDITIONAL INFO ON [HTTP://TWINLATIN.IVL.SE/INDEX.HTML](http://TWINLATIN.IVL.SE/INDEX.HTML))



ABOUT TWIN2GO

Twin2Go reviews, consolidates, and synthesises research on adaptive and integrated water resources management in basins around the world. The aim is to draw insights relevant to policy and research on issues around adaptive water governance in the context of climate change, and to make them transferable to other basins. Twin2Go further promotes sharing of research results with practitioners and high level decision makers through effective dialogue.