HOW TO TAKE INTO ACCOUNT THE IMPACT OF REGIONAL PROCESSES AT A LOCAL SCALE?
APPLICATION ON PRESSURE PREDICTION USING THE WINDOWING FEATURE IN TEMIS3D: WORKFLOW & RESULTS

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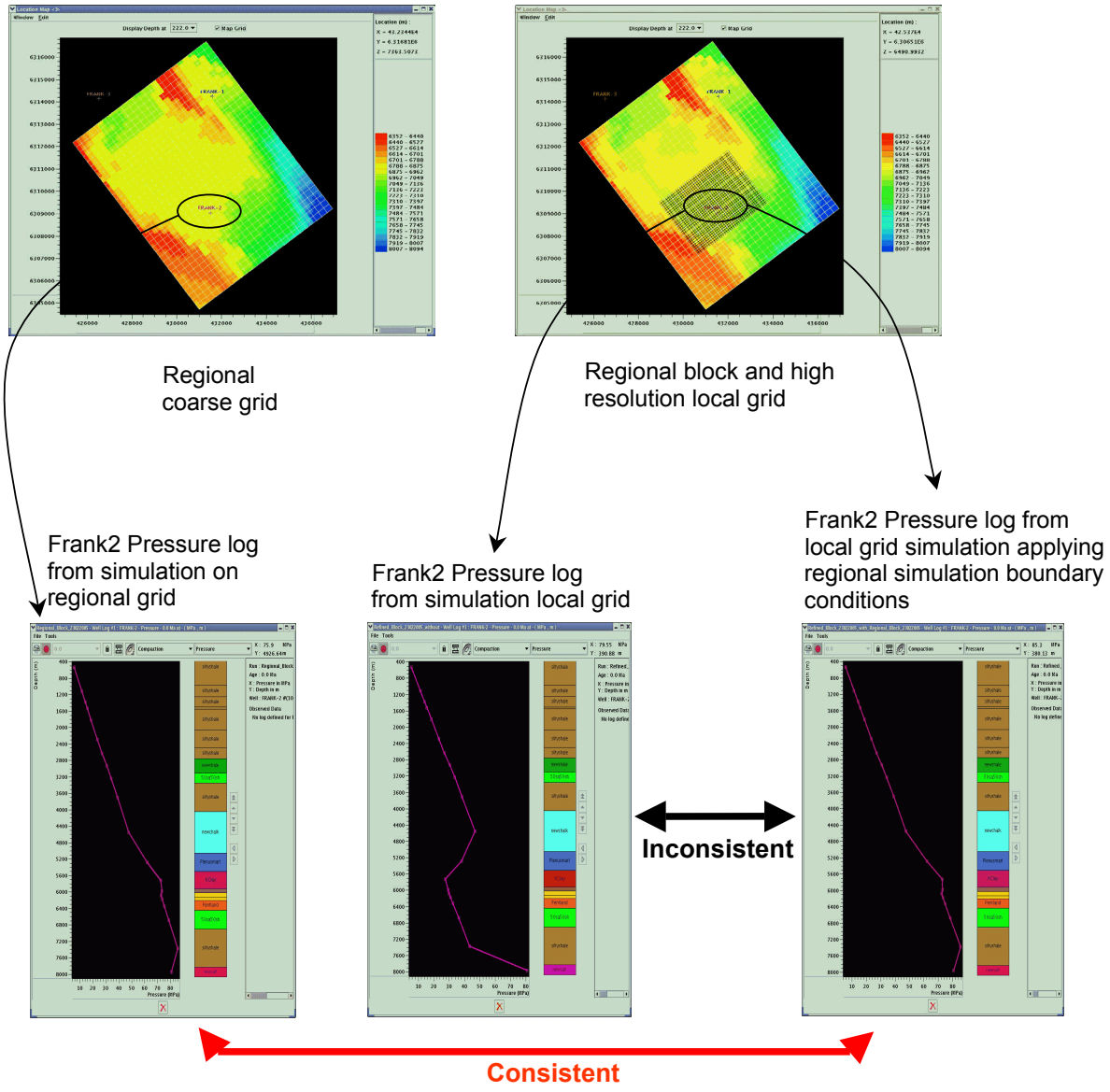
When studying a local prospect in a large sedimentary basin, the basin modeler needs to conciliate two diverging approaches. **Understanding the regional processes** requires a large block covering the entire basin with unavoidable discrepancy of details. On the other hand, the local prospect requires the highest possible level of details. And of course, **focusing on the local prospect must be done without discarding the regional processes that are bound to impact locally**.

Ideally, one would run a single block covering the entire basin while keeping all the necessary details in the prospect area. A well accepted solution to this problem is called local grid refinement (LGR). This technique consists into using small cells in the areas where the level of detail must be high and large cells elsewhere to minimize the total number of cells and speed up calculations. This requires a special grid where the side of large cells can be interfaced with several smaller ones. It also requires a special grid builder and of course a calculator that can handle the increased complexity of the grid topology.

Although LGR is well known in reservoir modeling, it is not yet available in basin modeling. To answer the current need rapidly, **BeicipFranlab and BP have worked together to provide a pragmatic solution** that is now offered to the entire Temis3D community. It is called the ***Windowing*** feature. Its purpose is to ensure that one can focus on a local prospect without discarding the local effect of a regionally driven field of overpressure.

The principle of the windowing is **to apply a regional overpressure field along the borders of a local block**. This is done with two successive simulations. The first simulation is made on the entire basin with a low precision grid. Its purpose is to provide the history of the regional field of overpressure. The second simulation is done on a local block with the

maximum amount of detail possible. The link between the regional and the local simulation is ensured by applying the regional overpressure field around the boundaries of the local block.



Consistency with the regional simulation and improvement of the vertical resolution for pore pressure prediction is illustrated by the application of the windowing on a high resolution local grid refined along the X, Y and Z axes.

On the other hand, the simulation on the same refined local grid without applying the windowing option emphasizes the importance of taking into account the regional fields to avoid inconsistent results.