



## KronosFlow™

### 2D Kinematic Restoration

Unlocking basin modeling in complex geological settings, KronosFlow is the mandatory tool to easily and efficiently produce 2D kinematic scenarios for petroleum system assessment.

#### New technology for new challenges

When it comes to assess tectonically complex basins featuring listric, reverse, strike slip faults, thrust folds and/or salt movements, conventional basin models are not sufficient. The vertical shear backstripping method commonly used for basin reconstruction through time reaches its limits and does not allow to properly model the basin deformation history. This type of basins requires a step by step restoration.

KronosFlow stands out from other restoration packages through its ability to honor the structural restoration of a basin without compromising the quality of the petroleum system modeling. Featuring a unique and innovative geo-mechanical deformation engine, KronosFlow is indeed able to provide geologically accepted scenarios while preserving the deformation of the internal mesh for accurate mass balance. This mesh deformation is critical to take into account properly porous medium deformation, heat transfer, hydrocarbon generation and fluids migration through geological times. It allows in the end quantitative predictions on pressure generation and hydrocarbon accumulations.

#### Ease of use, interactivity and efficiency

KronosFlow aims at finding the perfect balance between structurally acceptable kinematics and productivity. Structural geologists often restore few paleo-sections when in a logic of balancing sections while basin modeling requires many more time steps to be accurate. Ergonomics is thus a critical aspect of this new kind of workflows and KronosFlow is a real step-change in terms of user-friendliness and productivity for section restoration.

With ergonomics close to drawing software solutions, KronosFlow offers the possibility to derive interactively multiple scenarios, perform backward and forward deformations as well as redrawing when necessary. Most important, tracking every change brought to the model as long as restoration progresses, KronosFlow drastically speeds up the work with the possibility to replay a full structural scenario after minor modifications.

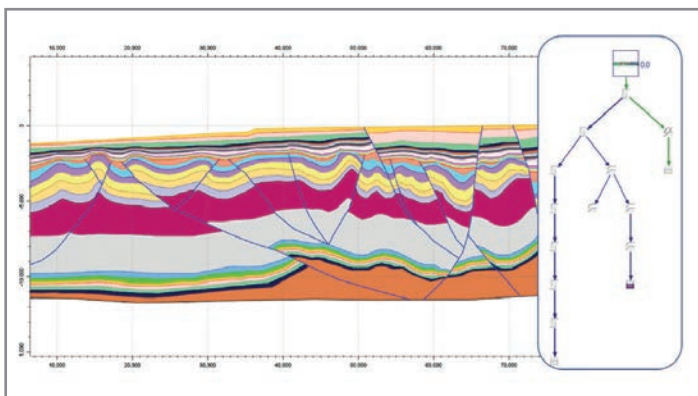
This innovative methodology is a major step forward as basin modeling is a discipline involving a lot of uncertainties, structural interpretation and tectonic history being major ones.

#### Seamless link to TemisFlow

Developed on the same OpenFlow platform, KronosFlow is by nature integrated to TemisFlow for basin and petroleum system assessment.

TemisFlow features all necessary tools to manage lithologies, kerogens and fluids information of KronosFlow models, to define faults behavior through time and eventually launch temperature, pressure, expulsion and migration simulations with its new generation simulator ArcTem able to model fluid flow across and along fault planes. All processing tools have been adapted to KronosFlow meshes, from log and cell history extractions to the creation of zones of interest and associated reporting.

At last, restoration and simulator are no longer at both extremities of the workflow and iterations between kinematics and simulation results are simplified and straightforward. Combined with TemisFlow, KronosFlow offers a complete solution for basin modeling in complex geological settings, gathered into one single platform.



Example of 2D line from Gulf of Mexico treated with KronosFlow. A kinematic tree records all steps performed along the restoration process.

### Key Benefits

- A kinematic and interactive tool
- A robust and innovative deformation engine
- Integrated to TemisFlow for basin and petroleum system assessment in complex structural geometries



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