

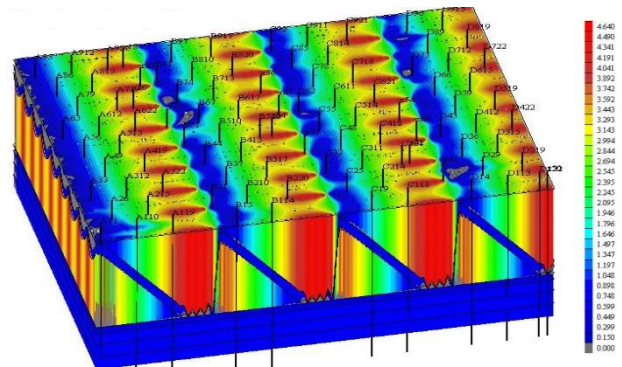


# PreSL 3D Geological Modeling Software

PreSL is a practical and mature software system developed through years of modeling experience. It consists of six main modules: geological data input, geological modeling, reservoir simulation, graphical switching, graphical editing, and auxiliary functions. It is particularly well-suited for detailed geological modeling in the mid to late stage of oilfield development.

**Software Functions :** PreSL facilitates the handling of various complex geological situations, such as intricate faults, lithofacies pinch-outs, facies changes, and stratigraphic gaps, as well as complicated oil-gas-water relationships. It accurately reflects the geological characteristics of the reservoir.

Using research results from seismic, well logging, geological statistics, and sedimentary facies, PreSL combines deterministic and stochastic methods to create 3D geological models. These models are integrated with fluid property parameters and field performance to provide input files directly for streamline modeling (3DSL).

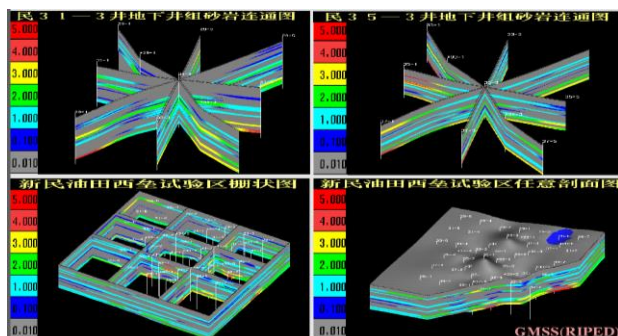
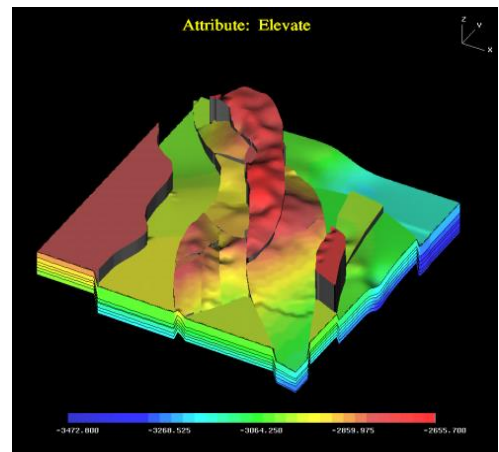


1、Geological Data Input Module: Allows users to input raw data needed for modeling, such as grid parameters, layers and micro-layers, well data, fault data, sedimentary facie data and model boundaries. It supports data loading, detection and model correction.

2、Geological Modeling Module: Constructs well models, structural models, and property models.

3、Reservoir Simulation Module: Inputs both static and dynamic reservoir parameters, providing files ready for direct input into numerical models.

4、Graphical Switching Module: Enables vertical layering display of well connections and point-to-point cross-sections.

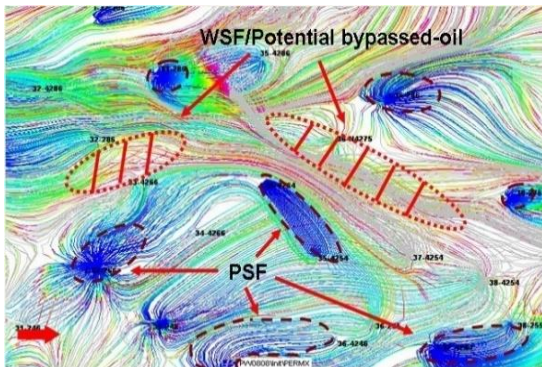


5、Graphical Editing Module: Takes into account structural inheritance relationships between layers, where the top surface structural map can softly constrain the structural shapes of other layers.

6、Auxiliary Functions Module: Equipped with a powerful digitalization function that converts images into input data files.

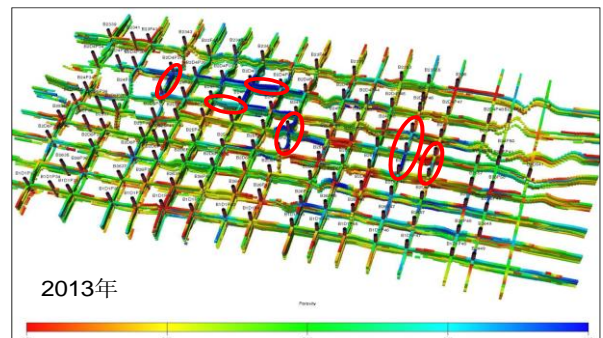
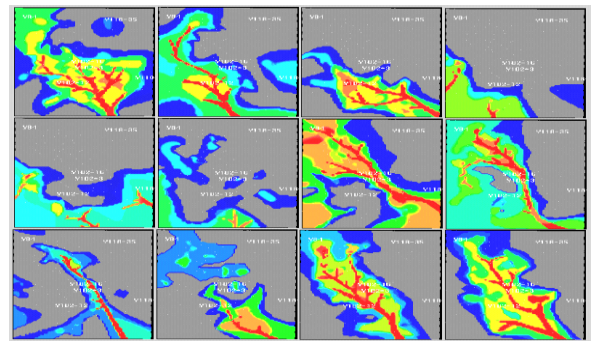
## Technical Advantages :

In the development of high-water-cut mature oilfields, particularly in stabilizing oil production, controlling water, and identifying predominant channeling zone, we have developed an effective technical system, supported by patented technologies. This system applies a comprehensive set of analytical and calculation techniques, based on



streamline numerical simulation methods and extended computational results. Through this process, we have identified several key quantitative parameters for characterizing predominant channeling zone, establishing a complete identification methodology for these channels. It allows for the three-dimensional spatial distribution of predominant flow to be accurately represented, includes descriptions of permeability time variability and dominant channels in spatial and temporal dimensions.

This system has been successfully applied in many domestic oilfields and blocks, particularly in areas such as residual oil analysis, predominant channeling zone identification, water shutoff, profile control optimization, effective injection volume quantification, and tertiary oil recovery (EOR) design simulation and performance evaluation. The results have been significant, leading to the publication of several papers at international conferences such as the SPE and International Petroleum Technology Conference (IPTC), including SPE-130134, IPTC-16693, and IPTC-16963, etc.



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