

# Straightforward Modeling of Carbonate Platform Stratigraphy

## The Challenge

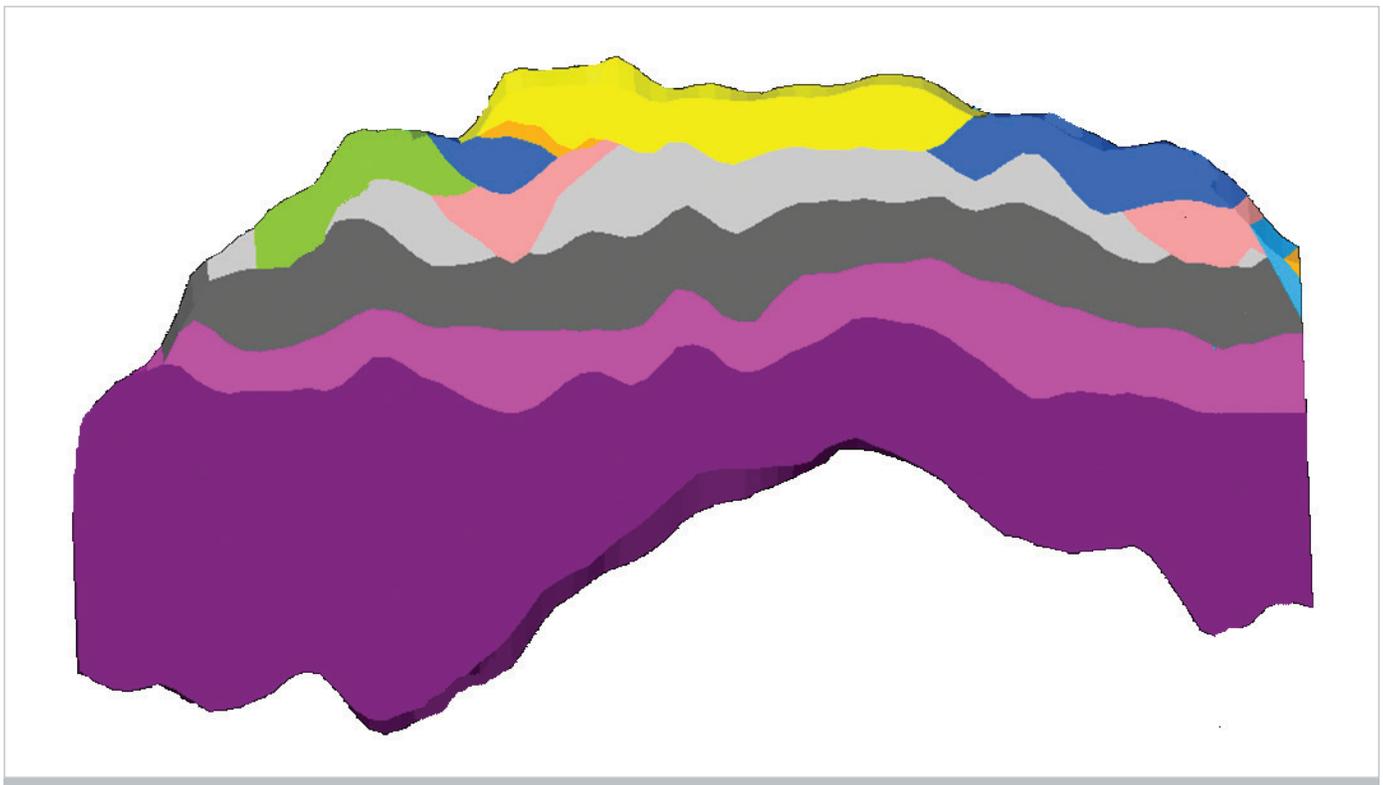
An independent oil company in the United States encountered problems in creating a geological model for a carbonate platform reservoir in the Atlantic passive margin. An initial attempt to create this model took six months with unsatisfactory results.

## The Assessment

Due to multiple erosions or lack of deposition in the carbonate structure, the interpretation of the stratigraphic columns proved

difficult, and the lateral stratigraphic variations were extremely challenging to model using traditional reservoir modeling applications.

The data sources for the area included seismic interpretation of horizons and discontinuities, well markers, and petrophysical logs. The asset team realized that they needed innovative technology that would make use of all the available information, incorporating it into a geological and structural model which they would feel confident using to make business decisions.



▲ Vertical cross-section showing the reservoir units through the carbonate platform.

## The Solution

The customer used Paradigm™ SKUA® to represent the complex carbonate platform stratigraphy through an automated workflow:

1. Create the stratigraphic column
2. Select relevant petrophysical and seismic data
3. Build horizons, including all discontinuities and erosional surfaces
4. Simultaneously create two 3D cellular models
  - a. Geological grid for detailed petrophysical modeling
  - b. Flow simulation grid

## The Results

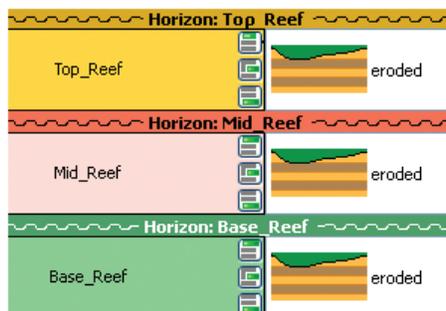
The unique SKUA technique removes the constraints of traditional modeling applications and can provide an automated workflow

regardless of stratigraphic complexity. As a result, the customer was able to:

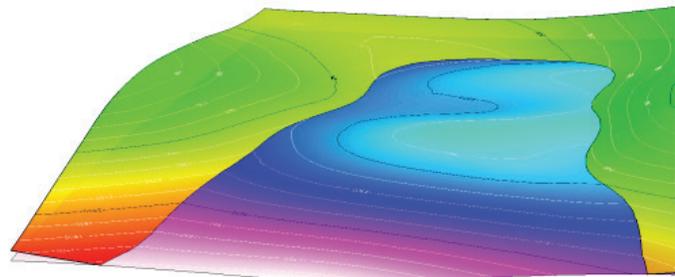
- Create a stratigraphic column that represented the various formations of the platform, including the erosive relationships at some contact between formations
- Integrate all available data into two consistent 3D models

Furthermore, SKUA enabled a single geoscientist to build a comprehensive 3D model in just 4 days compared to the initial 6-month attempt by multiple geoscientists that ended with unacceptable results.

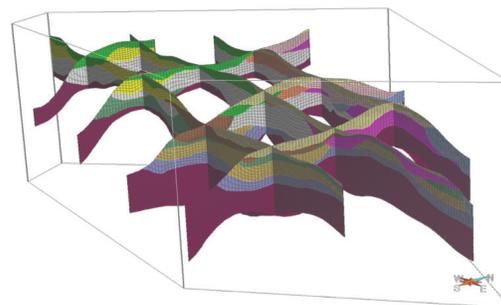
Beyond the obvious savings related to a workflow requiring an order of magnitude less labor to deliver, the increased confidence in the result is the true measure of this technology's impact on prospect generation activities.



1. Create stratigraphic column
2. Select relevant petrophysical and seismic data



3. Build all erosive horizons



4. Create 3D geological model