

Phase Congruency for Image Understanding with Applications in Computational Seismic Interpretation







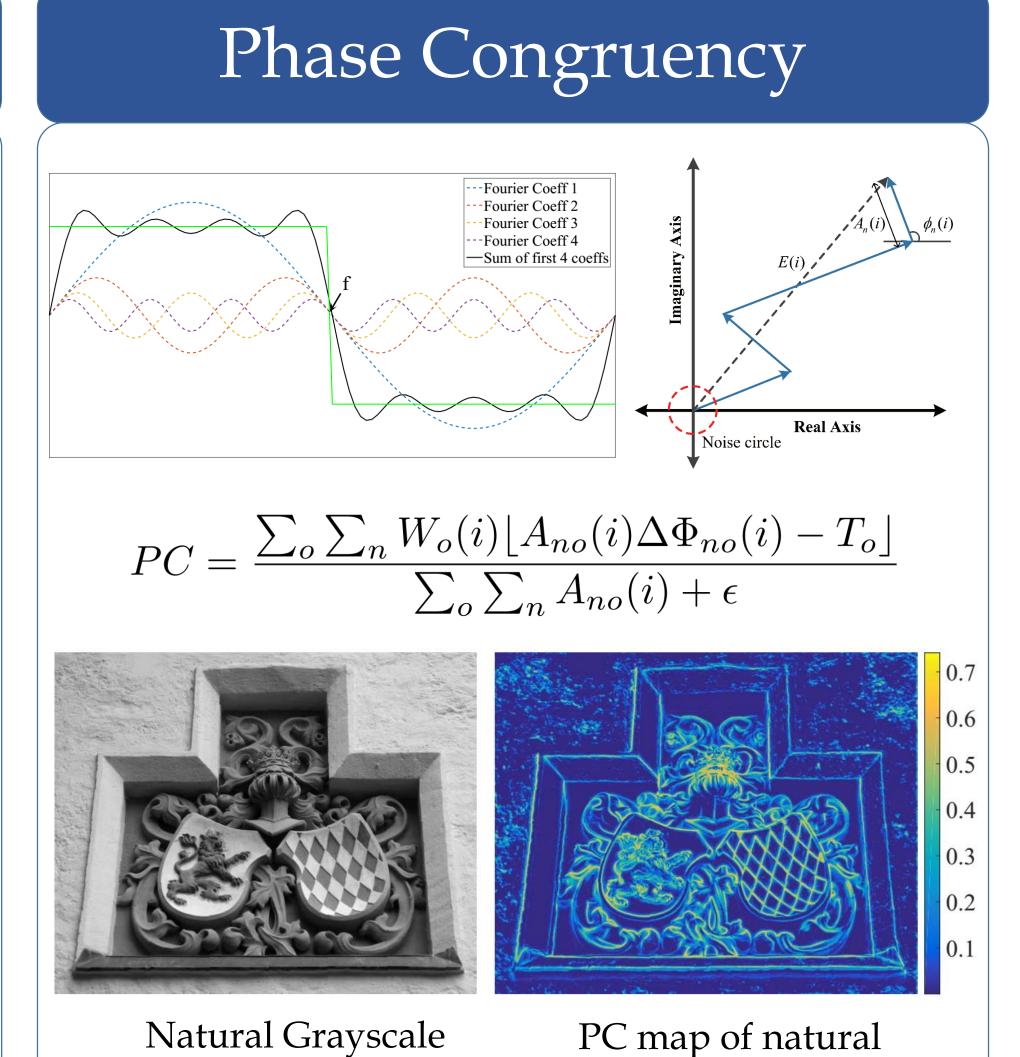


Muhammad Amir Shafiq, Yazeed Alaudah, Ghassan AlRegib, and Mohamed Deriche amirshafiq@gatech.edu, alaudah@gatech.edu, alregib@gatech.edu, and mderiche@kfupm.edu.sa

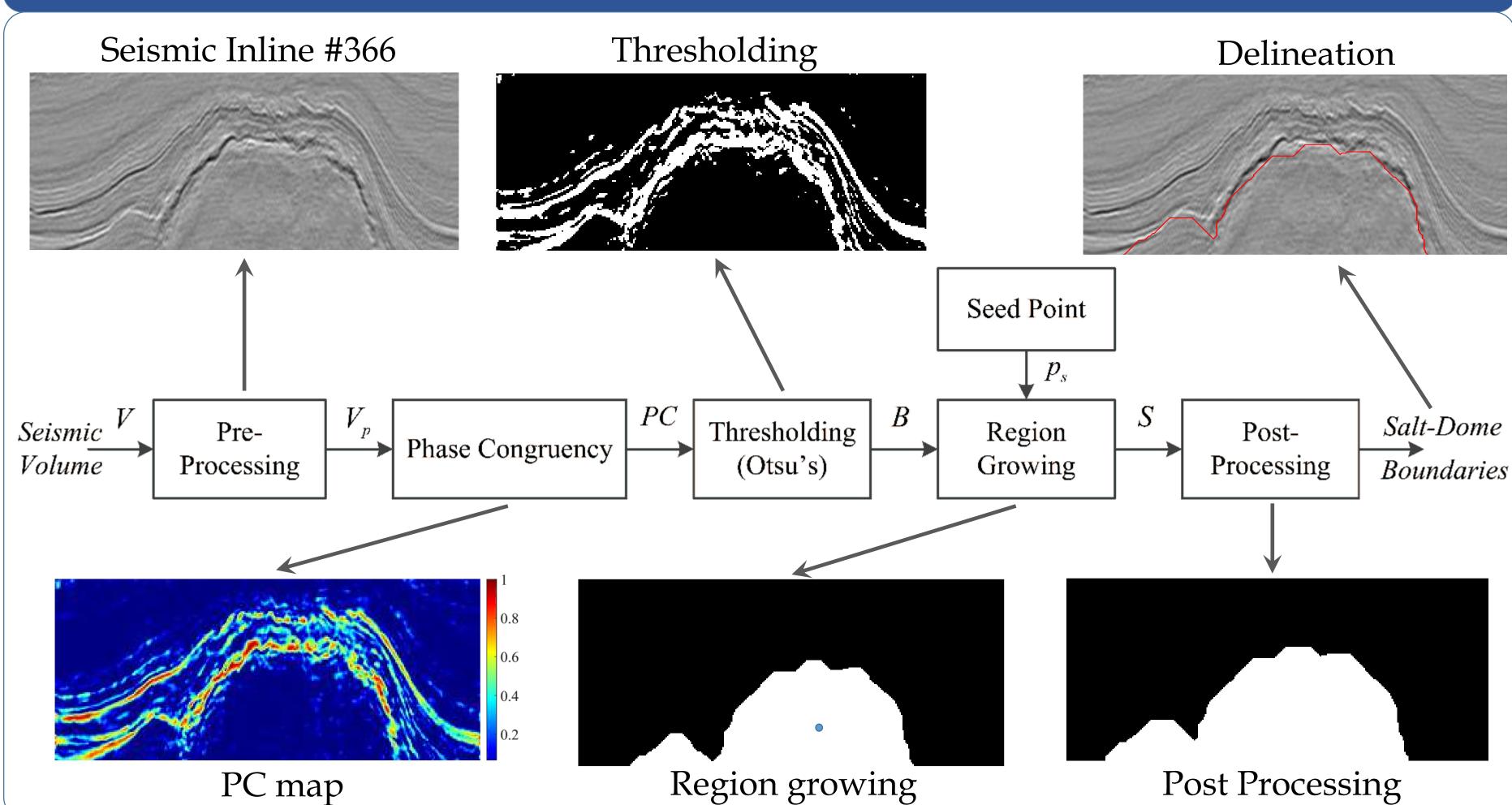
Georgia Institute of Technology

Motivation Salt domes are important geological structures spanning over several kilometers under Earth subsurface. Because of their impermeability, they form traps for large hydrocarbon reservoirs. Therefore, accurate localization and delineation of salt domes is one of the important steps in seismic data interpretation. Acquisition Interpretation Labelled Salt dome

3D Salt Dome



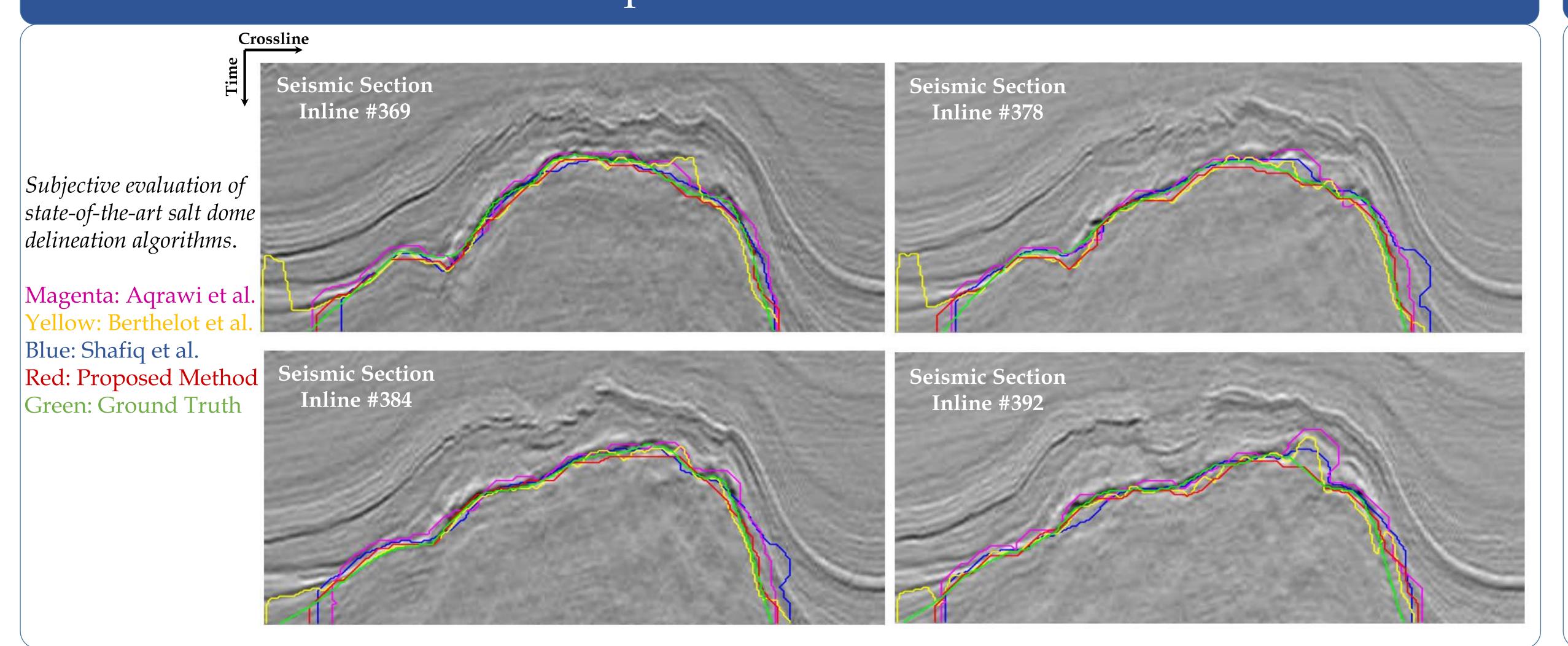
image



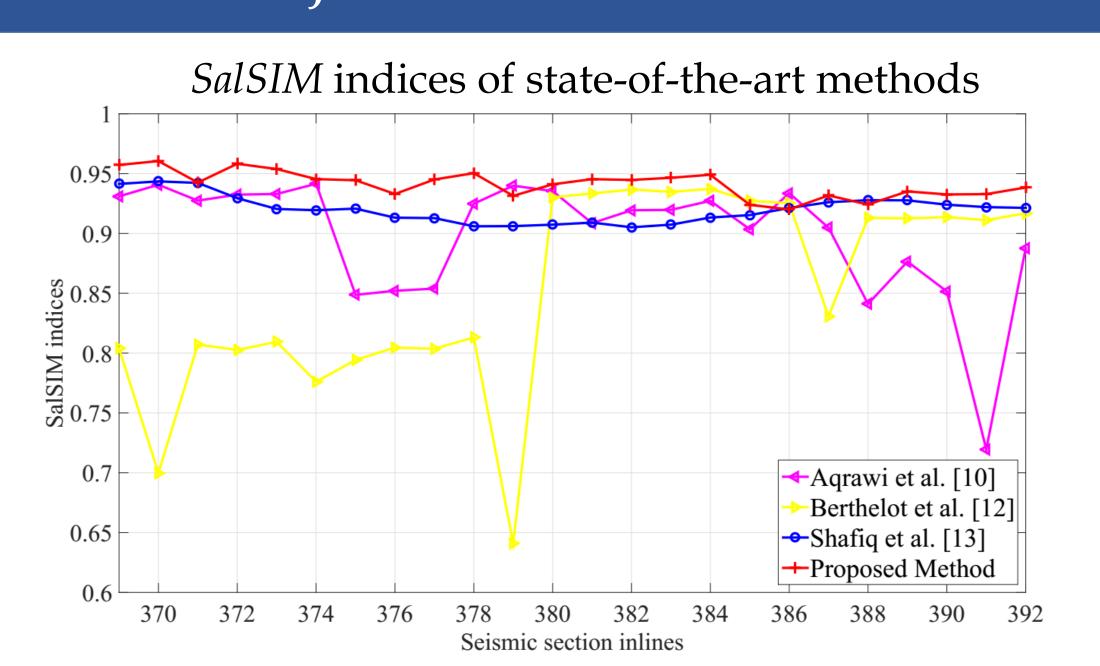
Proposed Method for Salt Dome Delineation

Experimental Results

Image



Objective Evaluation



Objective Assessment of state-of-the-art methods

Delineation M	[ethods]	Mean	Std. Dev.	Time (s)
Aqrawi et al.	. [10]	0.8981	0.0509	0.2464
Berthelot et a	<i>l</i> . [12]	0.8533	0.0823	33.5447
Shafiq et al.	[13]	0.9201	0.0114	63.3162
Proposed Me	ethod (0.9412	0.0110	0.2408