



IS18/21: Regional Seismic Depth Imaging Across Ireland's Atlantic Frontier Basins

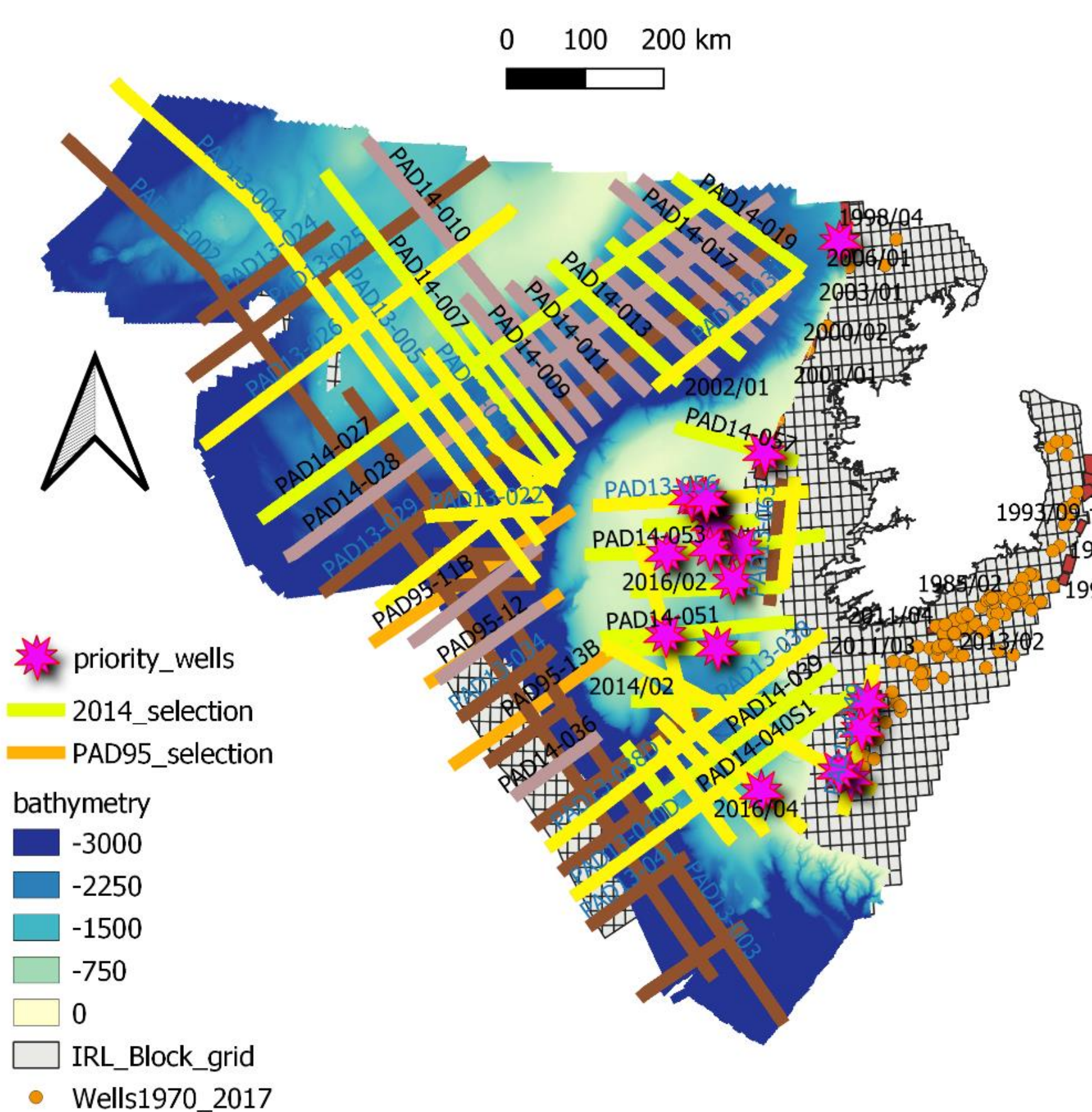


Rob Hardy¹, Arwin Anantan, Merigon Steiger-Jarvis, Soumya Roy, Arindam Kanrar, Lok Lee, Rich Hunter
(1)Tonnta Energy Limited, Ireland (2) WesternGeco, Gatwick, UK

1 OVERVIEW

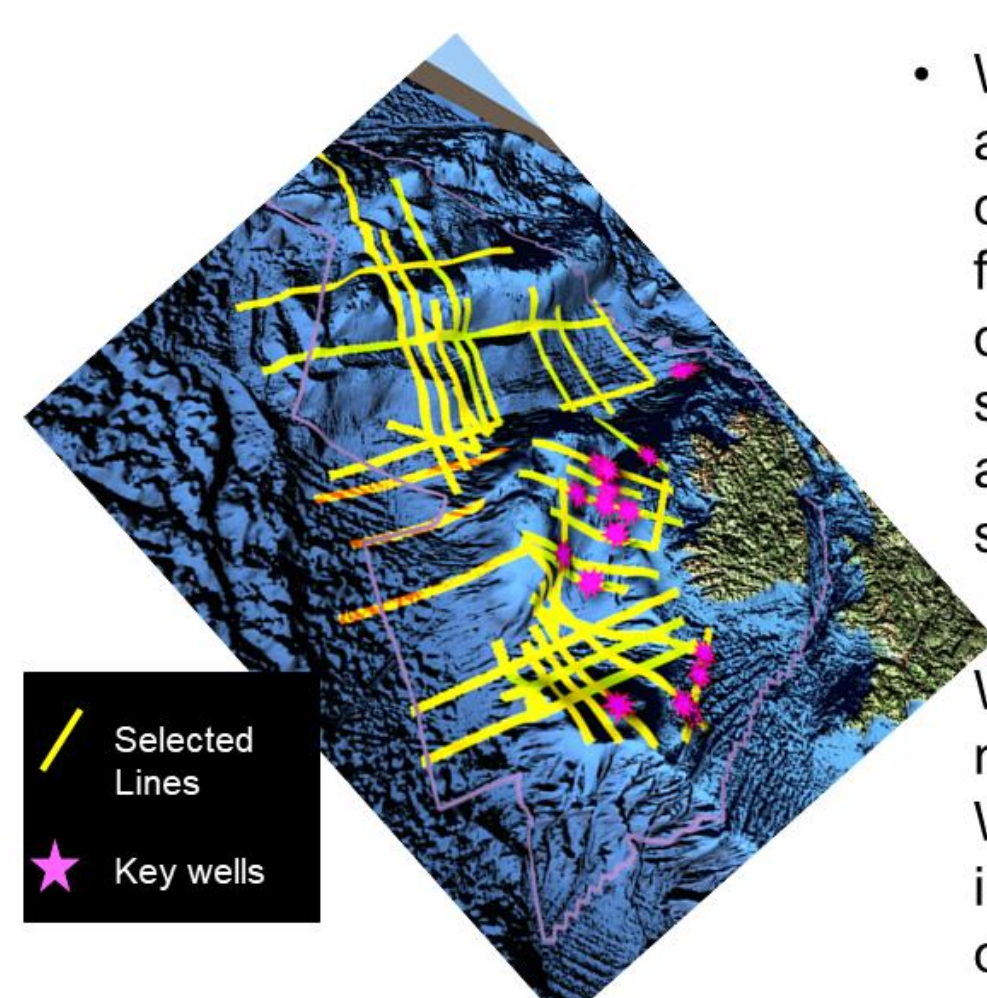
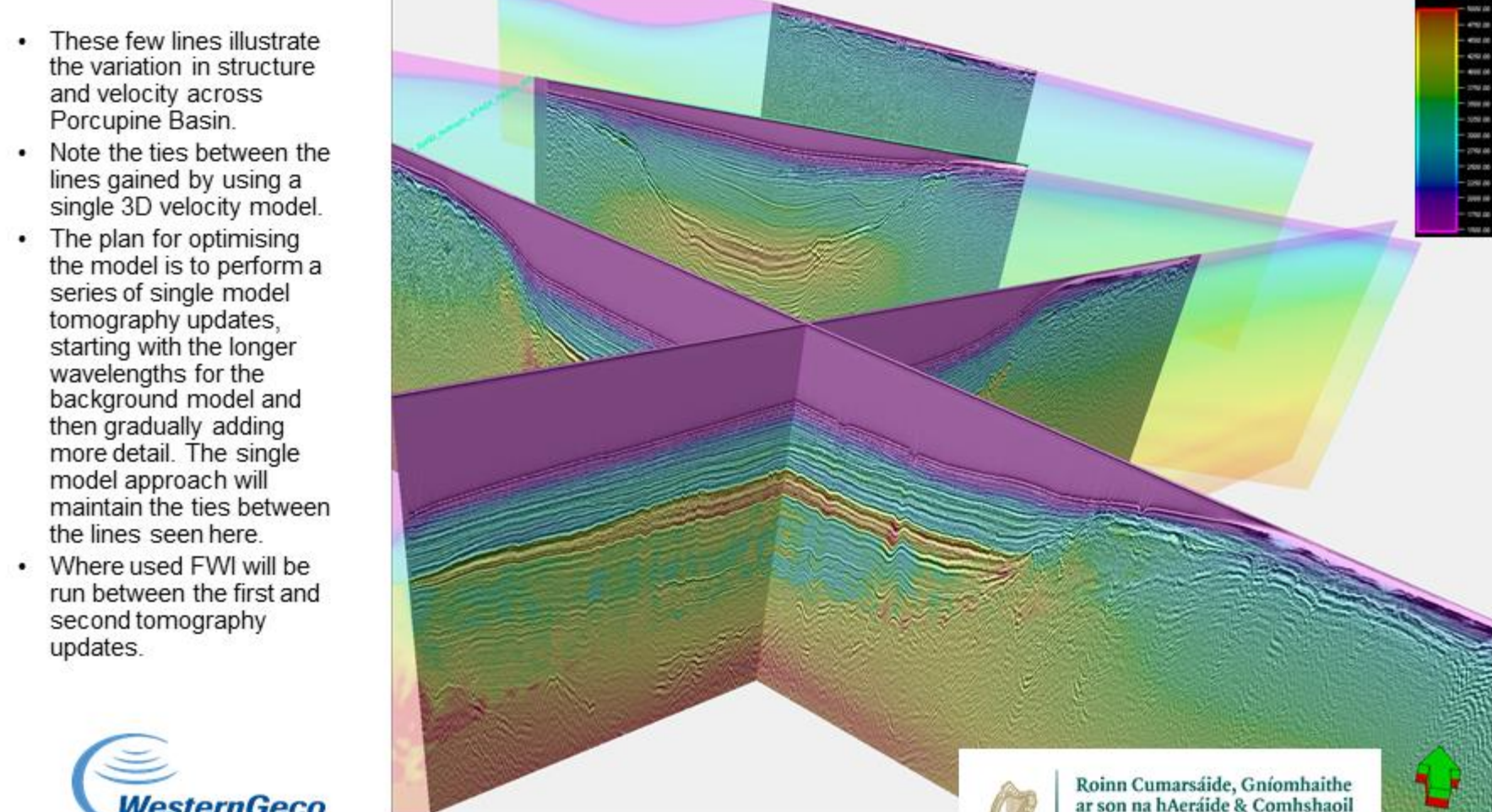
- PIP has funded a major regional 2D seismic re-processing exercise based around the modern re-imaging of the PAD 2013/2014 regional seismic survey.
- The project commenced in June 2019 with chosen contractor WesternGeco and will complete in April 2020. **This poster presents an interim update only.**
- Water depth varies from 100m to 4,800m throughout the project area
- Basin related subsets of data have been selected for re-processing to address specific research issues which affect PIP members and academic groups.
- An advanced broadband PSDM solution was chosen to address geophysical problems identified during the tendering stages.

2 DATA SELECTION



3 VELOCITY MODEL BUILDING

- Initial velocity model building will be conducted in a 3D manner using as much available data as possible from academia and industry.



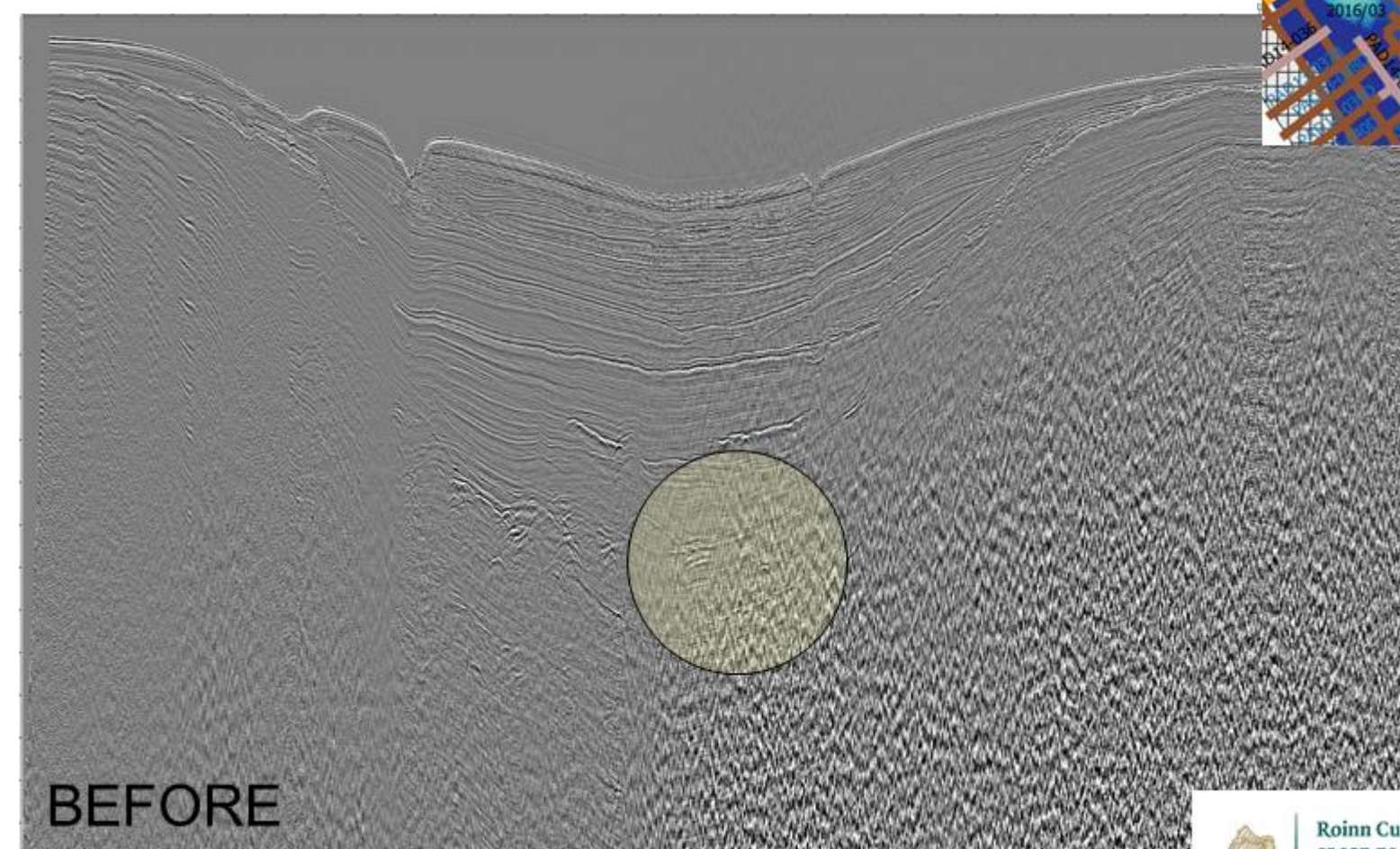
We wish to thank PAD for allowing publication of the data, and PIP for project funding and approval to deliver this presentation. PIP secretariat and PAD are additionally thanked for their significant input to this project.

We would like to acknowledge many colleagues from WesternGeco, Schlumberger, iCRAG, DIAS and University of Birmingham who have contributed to this project.

BEFORE

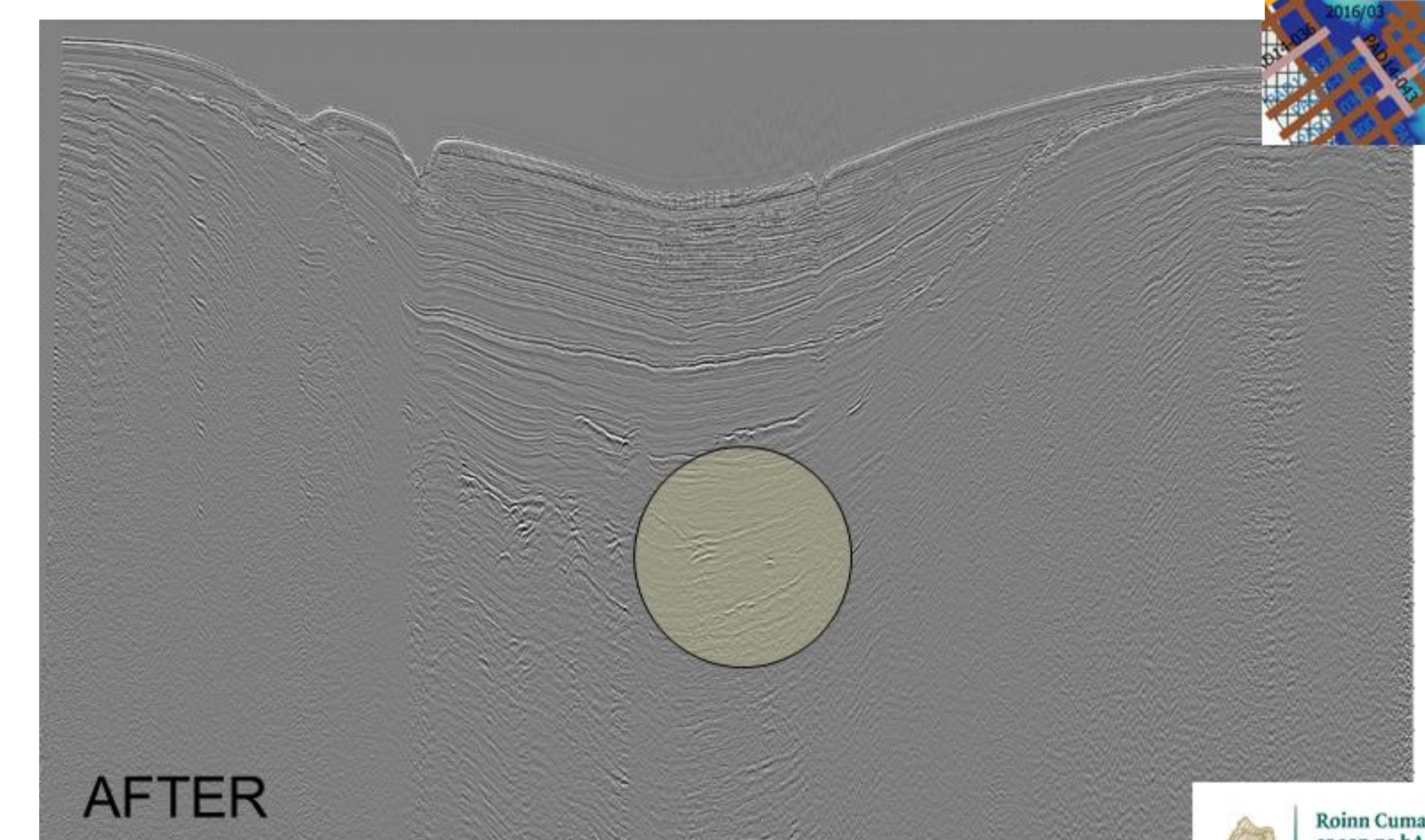
4 DENOISE: BEFORE

- Some lines have high levels of swell and other noise.



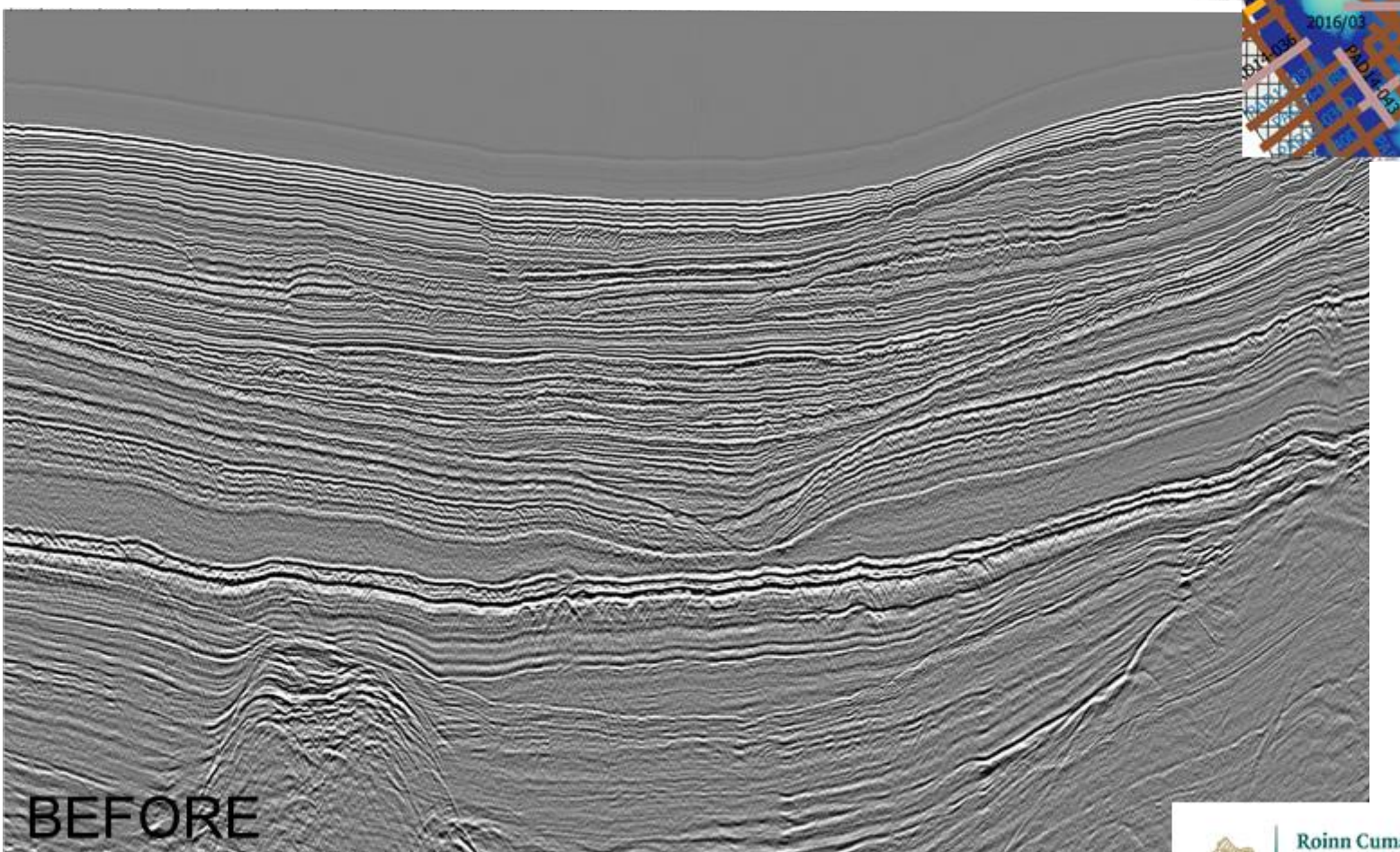
AFTER

DENOISE: AFTER

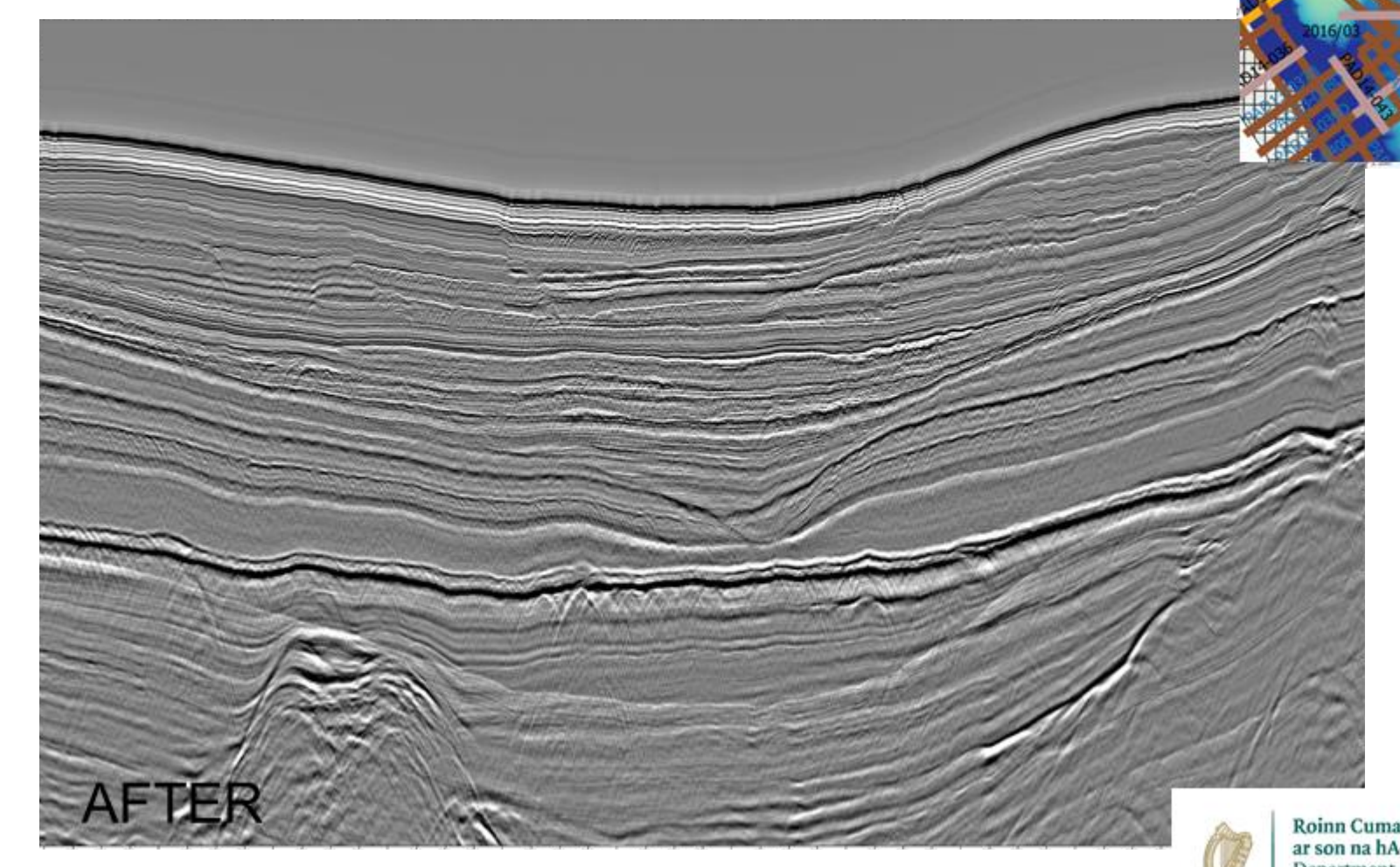


5 DEGHOSTING: BEFORE

- Modern broadband processing such as deghosting to focus on lower frequencies and deeper syn-rift imaging to help to understand basin geometry.

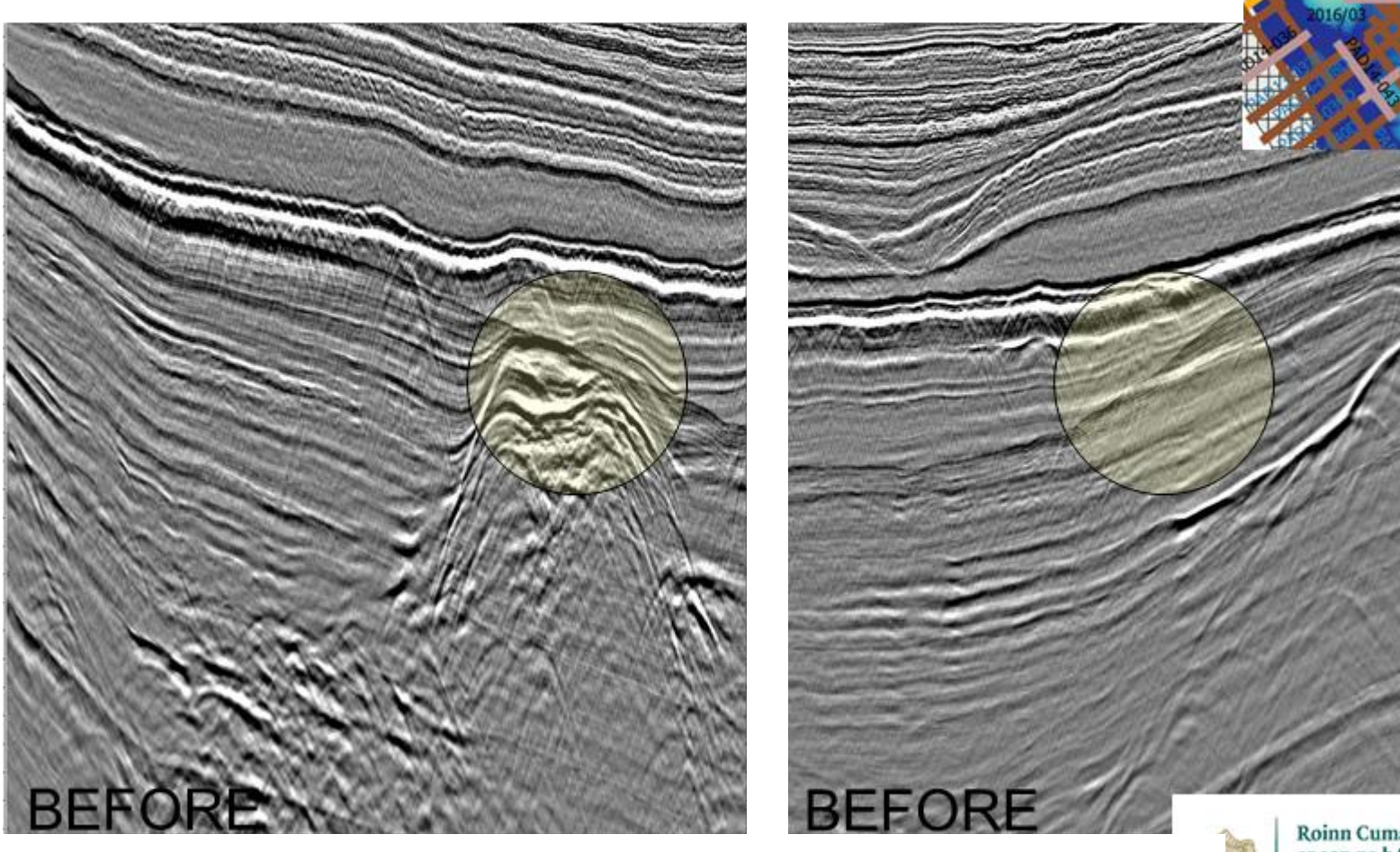


DEGHOSTING: AFTER

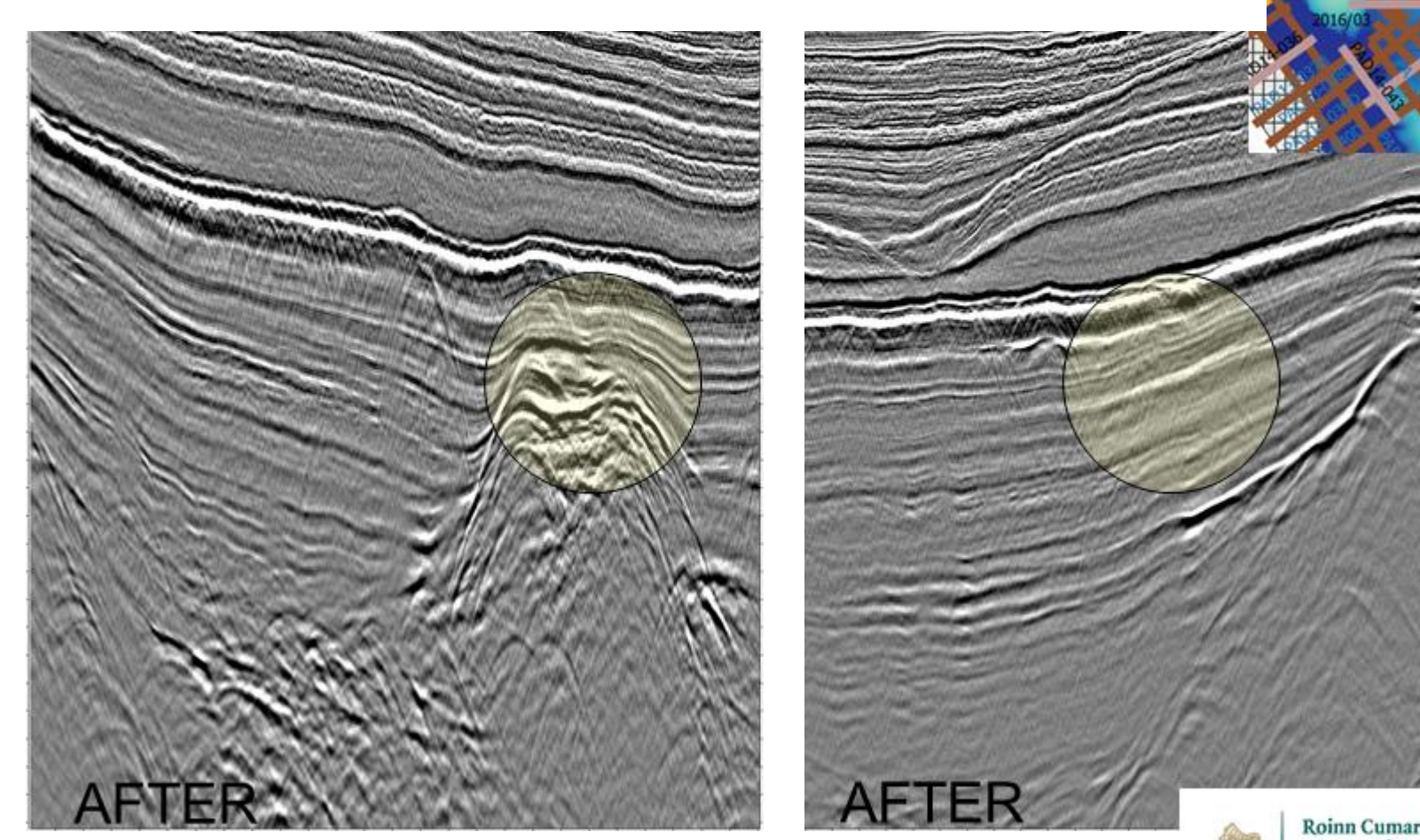


6 Multiple Suppression: deep water: BEFORE

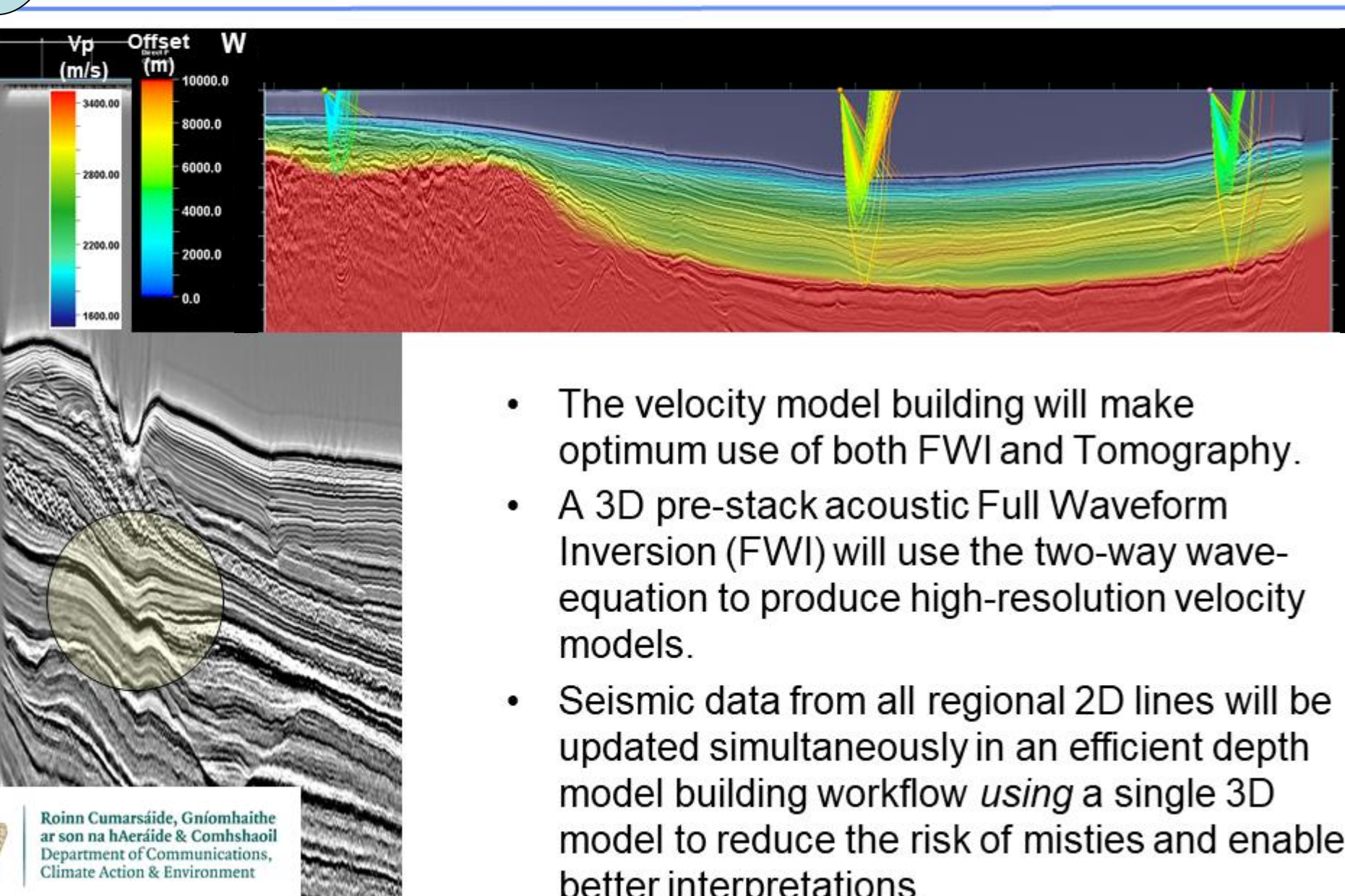
- Utilise state of the art multiple suppression for deeper water sections



Multiple Suppression: deep water: AFTER

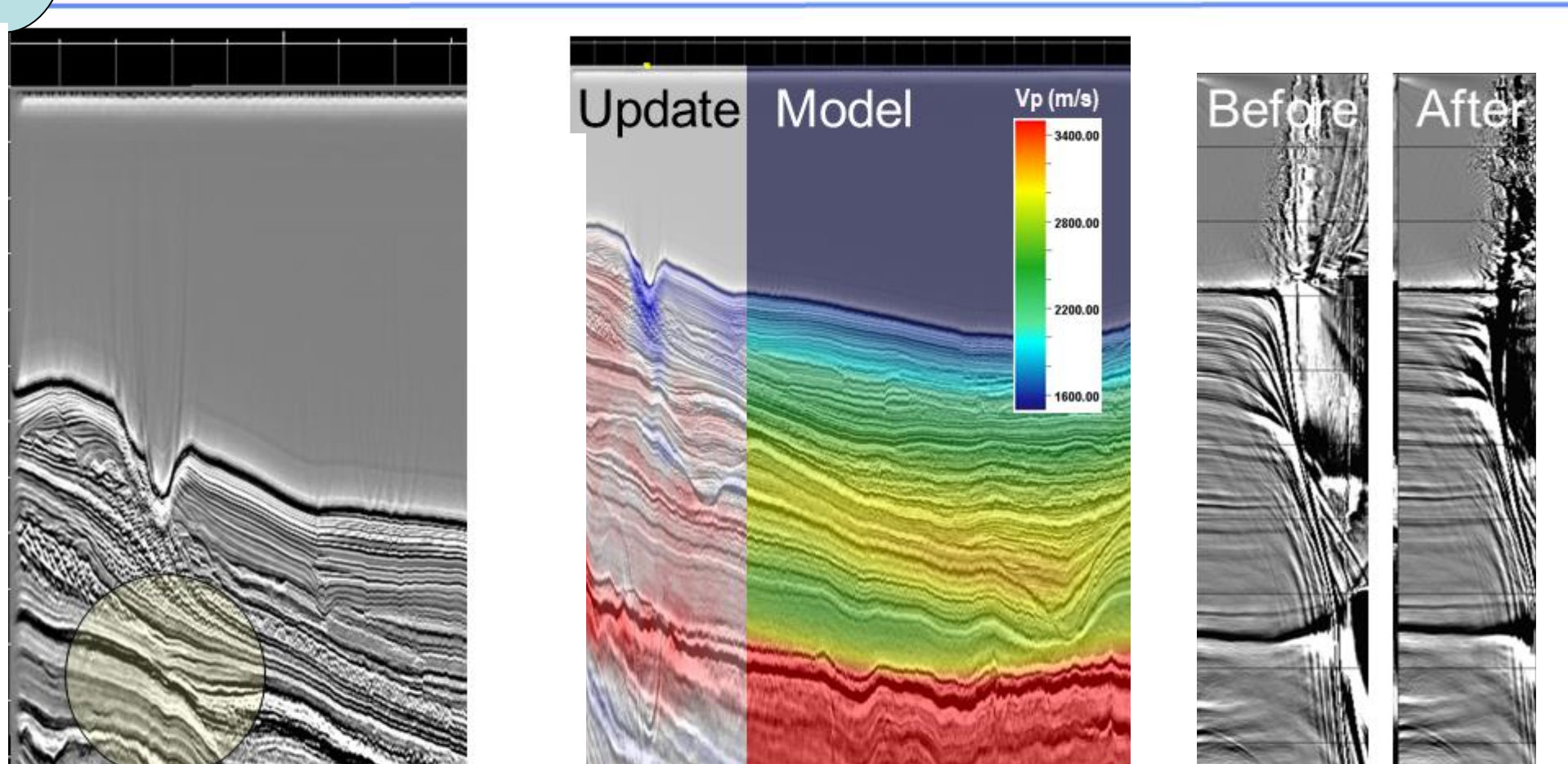


7 DEPTH IMAGING: BACKGROUND



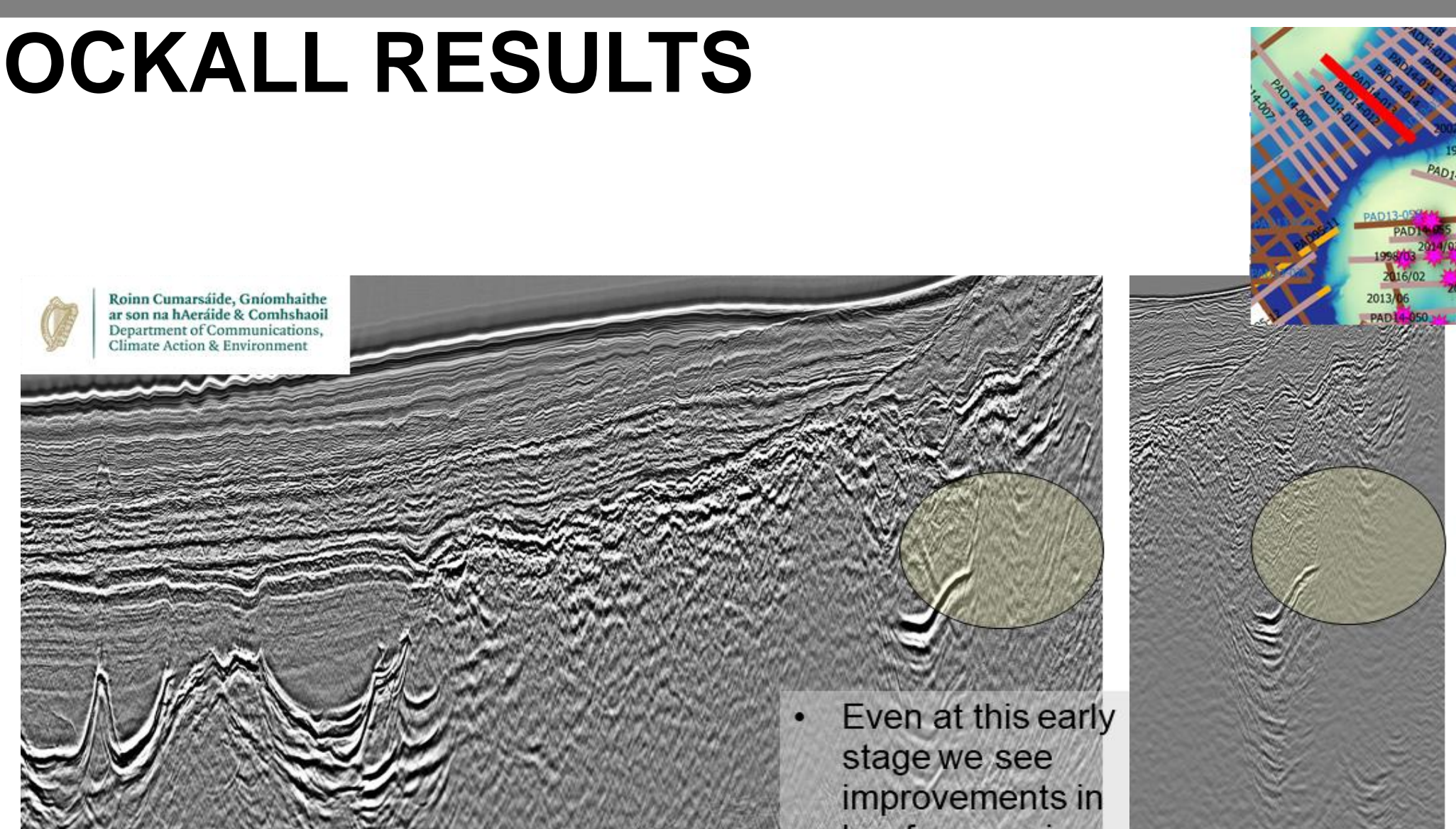
- The velocity model building will make optimum use of both FWI and Tomography.
- A 3D pre-stack acoustic Full Waveform Inversion (FWI) will use the two-way wave-equation to produce high-resolution velocity models.
- Seismic data from all regional 2D lines will be updated simultaneously in an efficient depth model building workflow using a single 3D model to reduce the risk of misties and enable better interpretations.

DEPTH IMAGING: FWI UPDATED KPSPDM



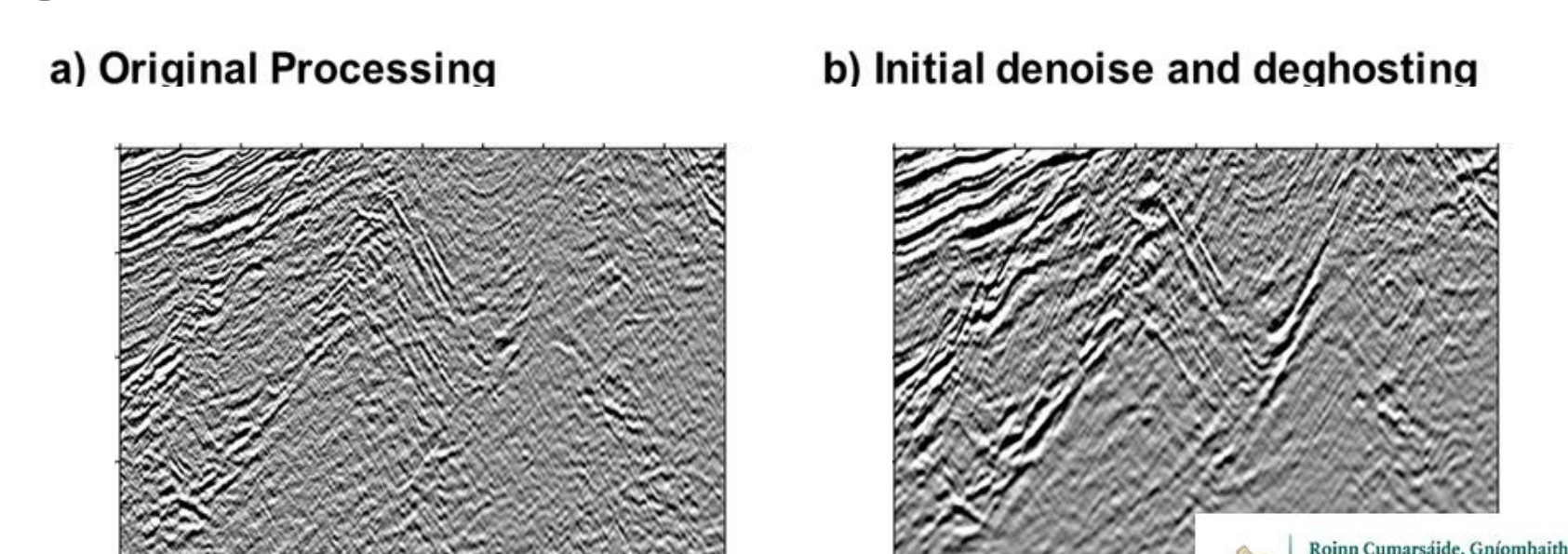
- Velocity model, updates and PSDM gathers around channel area

8 ROCKALL RESULTS



- Even at this early stage we see improvements in low frequencies and deep imaging.

9 PORCUPINE RESULTS



- Project on schedule for March 2020
- Porcupine is prioritised over Rockall
- Basin-scale depth model building and updates will continue over the next few months.

Contact: Robert Hardy (rob@tonnta-energy.com), Tonnta Energy Limited, Ireland