

# Fluid Flow Research in Collaboration with Imperial College London

Vanessa Núñez-López

UTCCS-5 Meeting, January, 2020

Austin, Texas





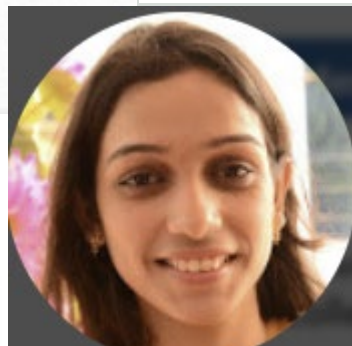
**DR. SAMUEL KREVOR**

/// Faculty of Engineering, Department of Earth Science & Engineering

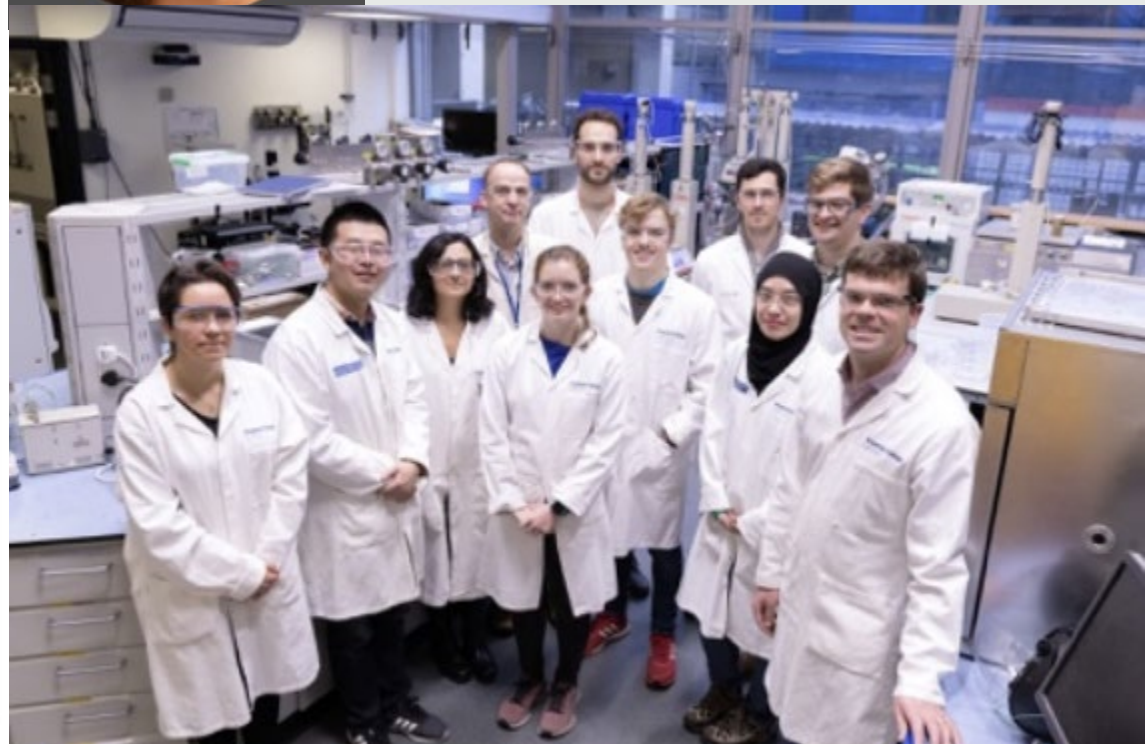
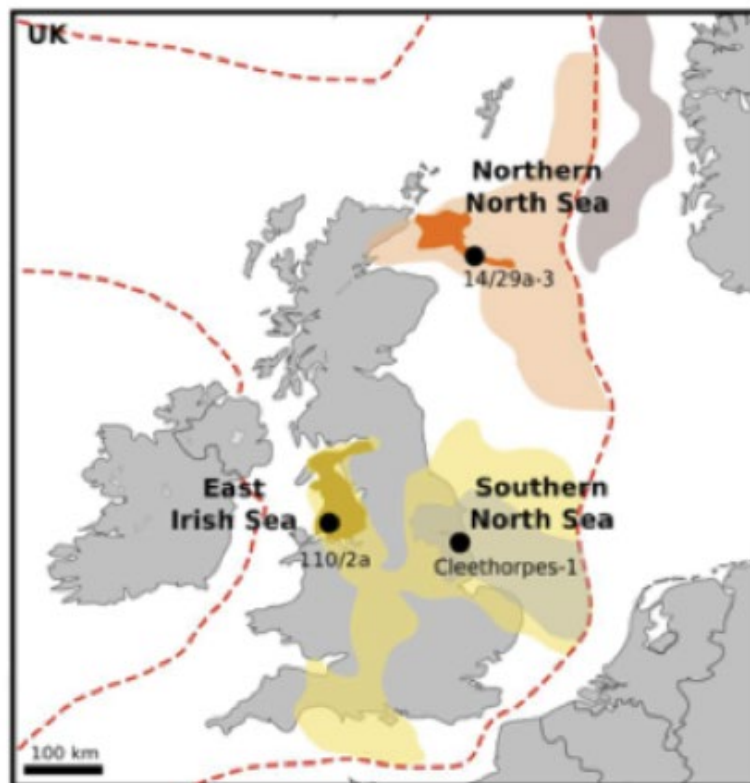
*Senior Lecturer*

**Imperial College  
London**

# SUBSURFACE CO<sub>2</sub>



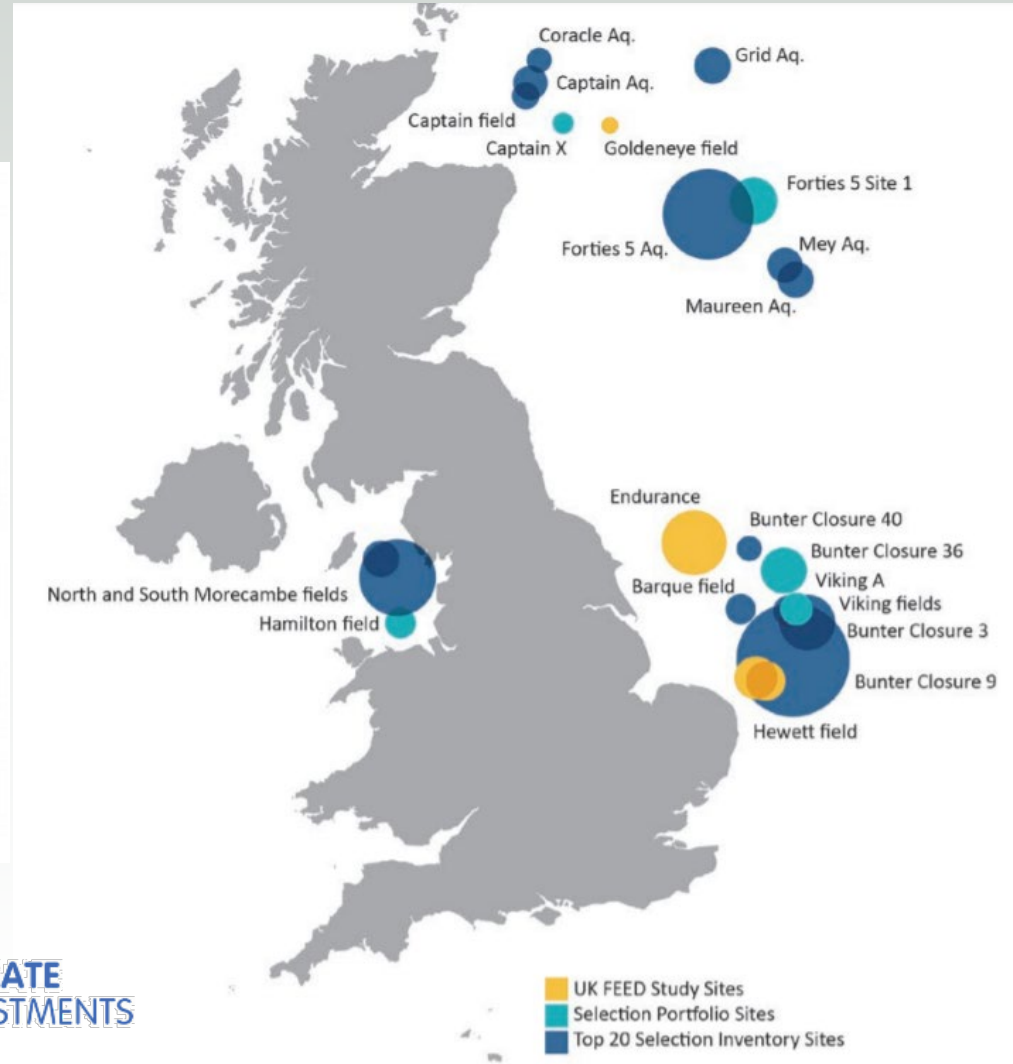
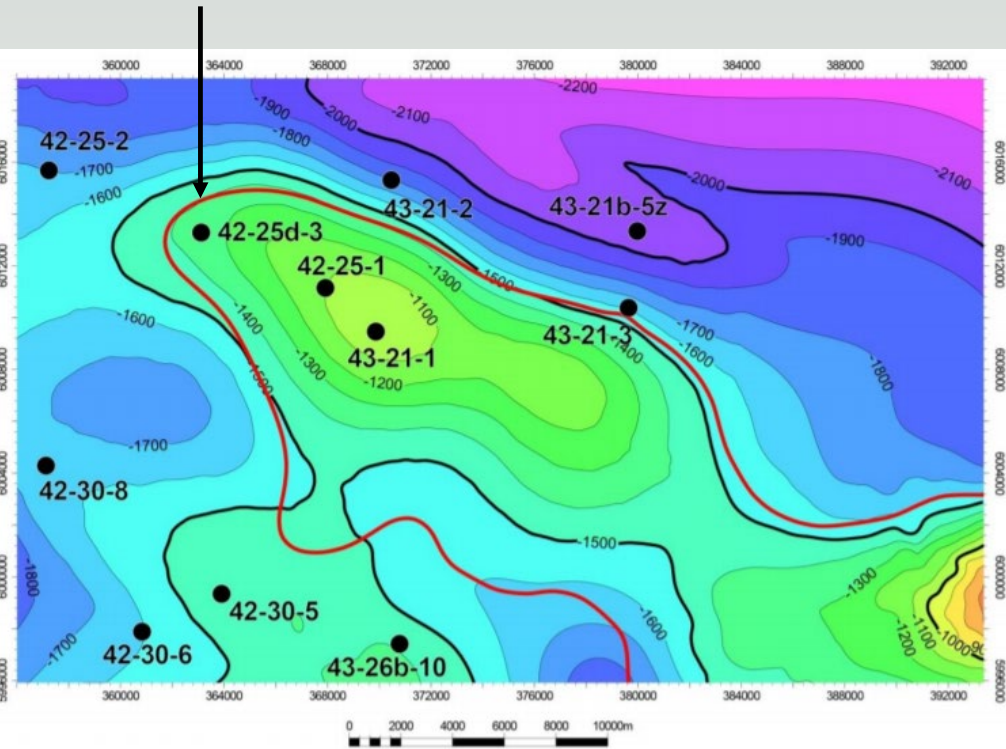
Sojwal Manoorkar: Postdoc





# Endurance Field: Bunter Sandstone

Appraisal Well with core



Stratigraphy	Reservoir/Seal Thickness
Top Lias	0-300m
Lias	Seal 800m
Top Triassic	
Haisborough Group	
Keuper Anhydrite	
Top Dudgeon Formation	
Top Dowsing Formation	Seal 117m
Muschelkalk Halite	
Dowsing Shale	Reservoir 274m
Rot Halite	
Rot Clay	Seal 1700m
~ 1000m depth	
Bunter Sandstone	Seal 1700m
Bunter Shale	
Zechstein Halite	

Note: areas of the circles are indicative of CO<sub>2</sub> storage resource potential.



# Qatar CCS Multiscale Imaging Laboratory

X-Ray CT Scan

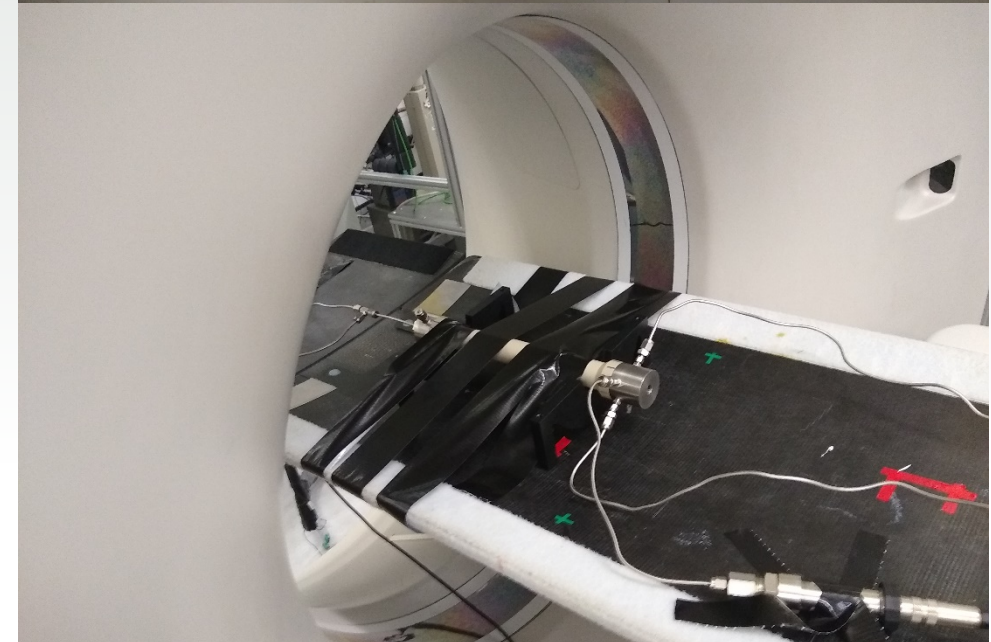
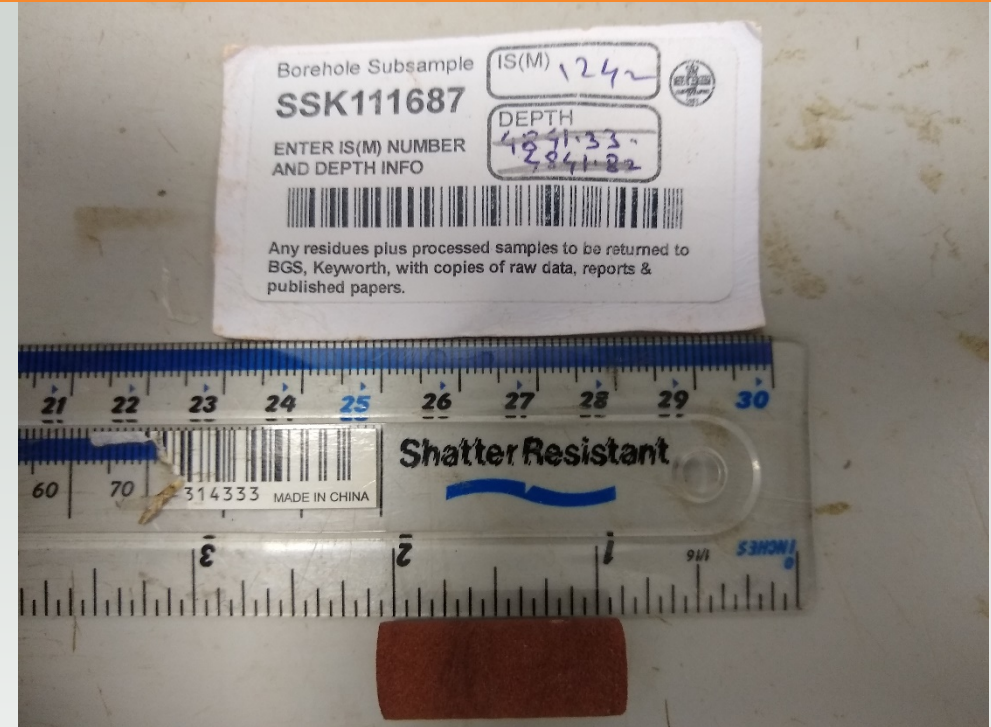




# Fractional Flow Core Analysis

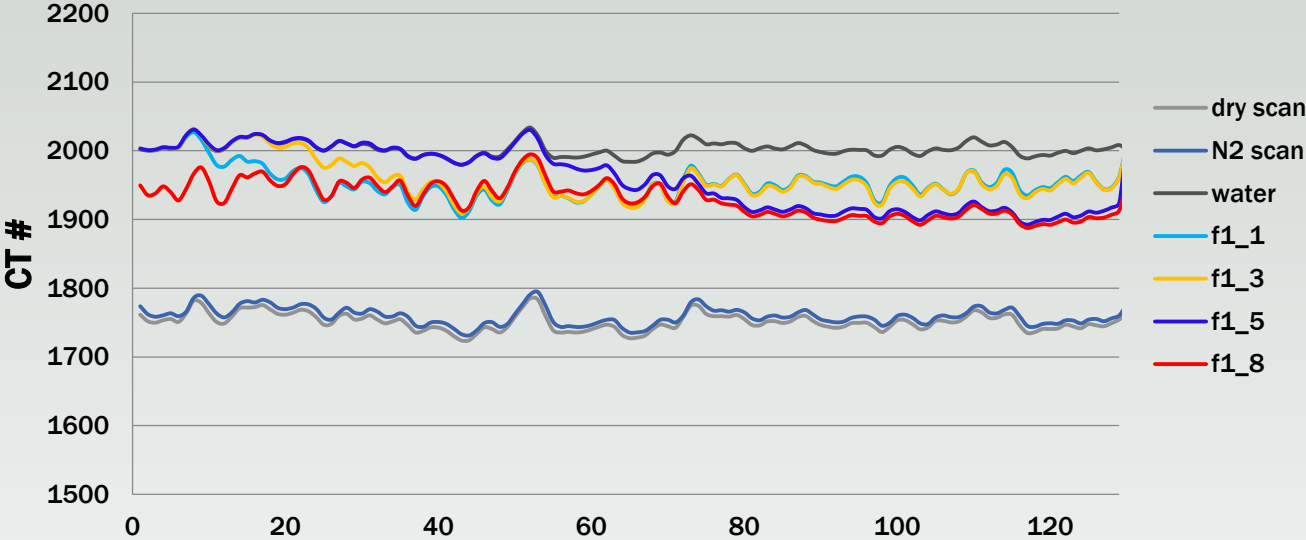


	N2 Pumps	Brine Pumps
Flow Rate (ml/min)	0.025	0.475
Pressure (Bar)	29.9	32.8

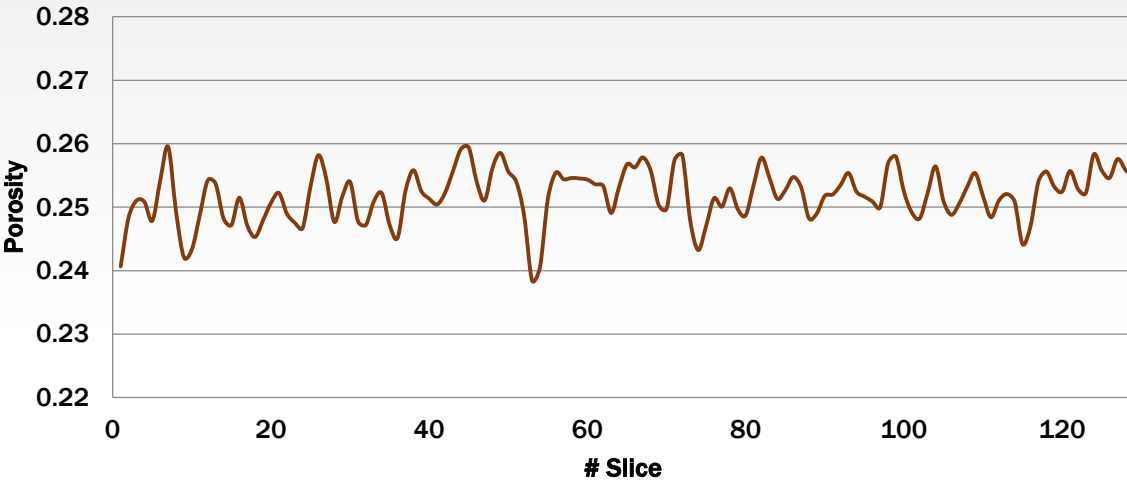


# CT Scan Direct Outputs

### Average CT Scan

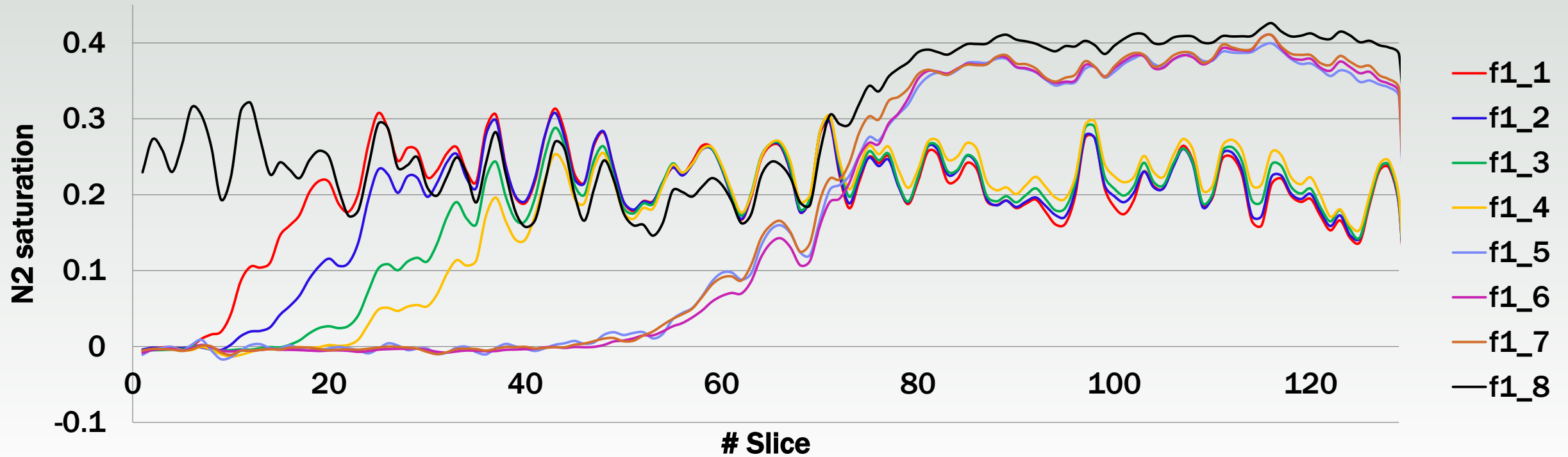


### Porosity



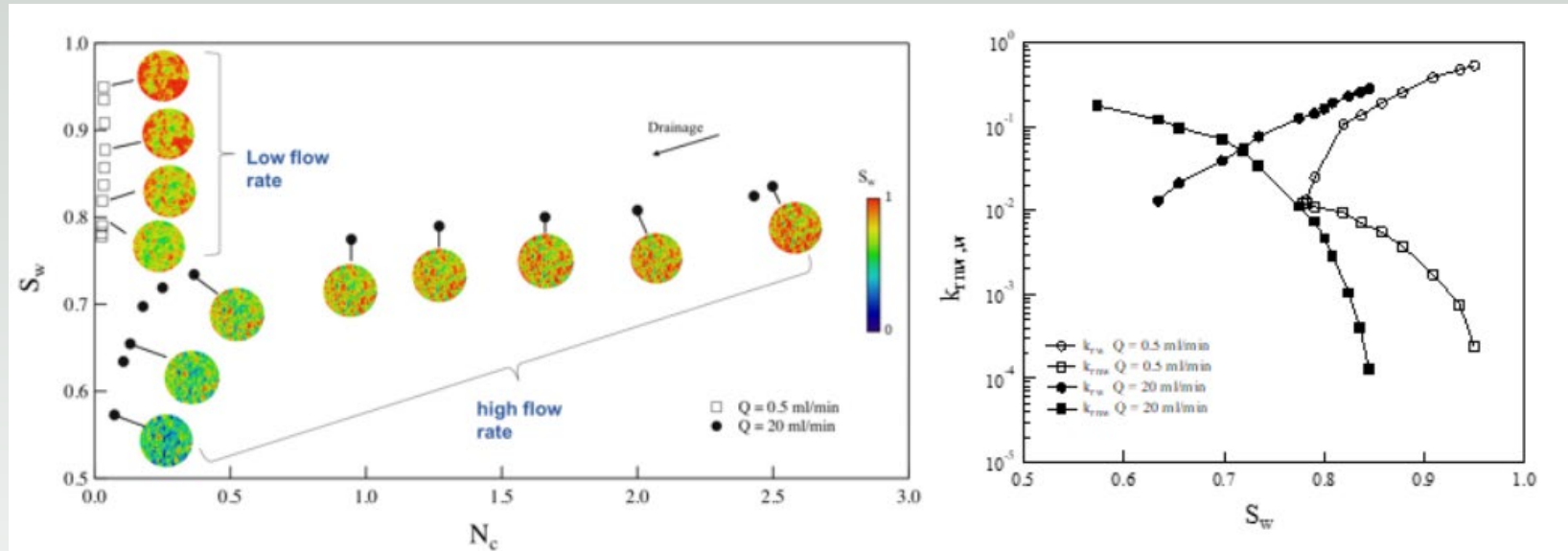
# CT Scan Direct Outputs

## Saturation

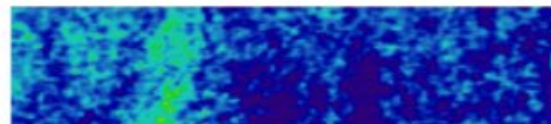




# Characterization of Multiphase Flow in Heterogeneous Sandstones

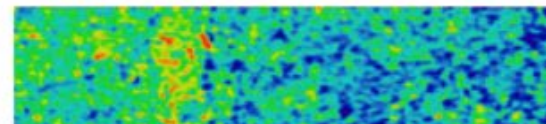


$Q = 0.5$  ml min<sup>-1</sup>



$f_{N_2} = 1$

$Q = 20$  ml min<sup>-1</sup>



$f_{N_2} = 0$

