

**Heat and Fluid Flow Modelling & Petroleum Systems  
COST-FLOWS Training School  
Hallsannary Hall, Bideford, UK  
May 9 – May 13, 2017**

**A very successful and enjoyable week in Hallsannery, Devon (UK)**

The FLOWS Fluid and heat flow modelling took place in Hallsannery, Devon (UK) from May 9<sup>th</sup> to 13<sup>th</sup>. It was organised within the FLOWS network by IGI Ltd, and taught by scientists from the academia (Geomar, Kiel, Germany; University of Bremen, Germany and University of Cardiff, UK) and from the industry (Ophir Energy, UK; UK Earthmoves Ltd, UK and IGI Ltd, UK) with the aim to provide an overview of modelling practice and challenges in both realms.

Eighteen participants from across Europe (but also Canada, Australia and Pakistan!) attended the course which was a great success thanks the wonderful spirit and motivation of the participants and to the excellent lectures/workshops given by Dr Ewa Burwicz-Galerne, Dr Helen Doran, Prof. Heiner Villinger, Dr Tiago Alves, Prof. Ian Davison, Dr Tiago Cunha and Dr Marianne Nuzzo.

The week ended with a fantastic structural geology field trip led by Prof. Ian Davison to visit the case study chevron folds of the Carboniferous cliffs of North Devon and Cornwall (group photo Pablo Rodriguez-Salgado).



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**May 9 – May 14, 2017**

**Program**

**Day 1 (Tuesday 9<sup>th</sup> May)**

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9:00	9.15	Introduction & logistics (Marianne Nuzzo)
9:15	10:30	Presentations from participants
10:30	11:00	<i>Break</i>
11.00	13.00	Mathematical concepts to model diffusion and advection processes (Ewa Burwicz and Heiner Villinger)
13.00	14.00	<i>Lunch</i>
14.00	15.00	Rock and fluid physics (Ewa Burwicz and Heiner Villinger)
15.00	15.30	<i>Break</i>
15.30	17.30	Introduction to Modelling (Ewa Burwicz and Heiner Villinger)

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**Day 2 (Wednesday 10<sup>th</sup> May)**

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8.30	10.00	Group A: Workshop on modelling of solute diffusion (Ewa Burwicz)
8.30	10.00	Group B: Workshop on modelling of heat diffusion (incl. salt dome modelling) (Heiner Villinger)
10.00	10.30	<i>Break</i>
10.30	12.00	Group B: Workshop on modelling of solute diffusion (Ewa Burwicz)
10.30	12.00	Group A: Workshop on modelling of heat diffusion (incl. salt dome modelling) (Heiner Villinger)
12.00	13.00	<i>Lunch</i>
13.00	15.00	Group A: Workshop on modelling of fluid advection (Ewa Burwicz)
13.00	15.00	Group B: Workshop on modelling of heat advection (Heiner Villinger)
15.00	15.30	<i>Break</i>
15.30	17.30	Group B: Workshop on modelling of fluid advection (Ewa Burwicz)
15.30	17.30	Group A: Workshop on modelling of heat advection (Heiner Villinger)

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**Affiliations**

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Dr. Marianne Nuzzo	Integrated Geochemical Interpretation Ltd, The Granary, Hallsannary, Bideford, UK
Dr. Ewa Burwicz	GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
Prof. Dr. Heiner Villinger	University of Bremen, Dept. Geosciences, Bremen, Germany
Dr. Tiago Cunha	Integrated Geochemical Interpretation Ltd, The Granary, Hallsannary, Bideford, UK
Prof. Dr. Tiago Alves	University of Cardiff, School of Earth and Ocean Sciences, Cardiff, UK
Dr. Helen Doran	Ophir Energy, London, UK
Prof. Dr. Ian Davison	Earthmoves Ltd, Camberley, UK

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### Day 3 (Thursday 11<sup>th</sup> May)

9.00	10.00	Introduction to basin & petroleum systems modelling (Tiago Cunha)
10.00	11.15	Generation and expulsion of hydrocarbons (Marianne Nuzzo)
11.15	11.30	<i>Break</i>
11.30	12.30	Introduction to basin modelling – Methods (back-stripping) a practical class (Ewa Burwicz)
12.30	13.30	<i>Lunch</i>
13.30	14.30	Data required for building a basin model (part 1): Seismics & stratigraphy (Tiago Alves)
14.30	15.30	Data required for building a basin model (part 2): Well logging and Heat flow measurements (Heiner Villinger)
15.30	16.00	<i>Break</i>
16.00	17.30	Barent Sea project workshop (1) – Creating 1D-models in Genesis (burial history & lithosphere thermo-mechanical properties) (Tiago Cunha)

### Day 4 (Friday 12<sup>th</sup> May)

9.00	10.30	Barent Sea project workshop (2) – 1-D model calibration & source rock maturity (Tiago Cunha)
10.30	11.00	<i>Break</i>
11.00	12.00	Discussions
12.00	13.00	<i>Lunch</i>
13.00	14.00	Frontier hydrocarbon provinces in the distal domain (Helen Doran)
14.00	15.00	Hydrogeology of the oceanic crust (heat-flow) (Heiner Villinger)
15.00	15.30	<i>Break</i>
15.30	16.30	Petroleum systems in the Gulf of Mexico and Caribbean Sea (Tiago Alves)
16.30	17.30	Heat flow and fluid flow around salt bodies (Ian Davison)
17.30	18.00	Discussion

### Day 5 (Saturday 13<sup>th</sup> May)

Field trip to the North Devon coast led by Ian Davison. Departure at 8:00, return by 16:00.

Sites to visit:

- Upton (Bude)
- Milford
- Hartland

