

GEOCEAN

Geodynamic processes and biochemical interactions at seafloor spreading ridges
Symposium Jean Francheteau & Summer School
Brest - August 27-31, 2012

Monday August 27, 2012 (Amphi A, IUEM)

8h30 **Welcome & Registration**

Session 1: In memory of our colleague and friend Jean Francheteau

9h00 **Jean-Yves Royer, Pascal Gente (Univ. Brest), Jean-François Stéphan (INSU CNRS) and Sarah Francheteau-Berman**
Welcome address

9h30 **Xavier Le Pichon (Collège de France, Aix-en-Provence)**
From Paleomagnetism to Plate tectonics, the contribution of Jean Francheteau to the discovery of finite Plate tectonics

10h00 **W. Jason Morgan (Princeton Univ.)**
Jean Francheteau and plate reconstructions

10h30 **Coffee Break**

11h00 **Pierre Choukroune (Univ. Aix-Marseille)**
When did Plate Tectonics start ?

11h30 **Richard Hey (Univ. Hawaii), Fernando Martinez, Asdis Benediktsdóttir & Armann Höskuldsson**
Jean Francheteau & Seafloor Spreading Reorganizations: Microplates, Propagators, Overlappers & Iceland

12h00 **Claude Rangin (CEREGE, Aix-en-Provence)**
"Déchirures": Continental Break-up & Tear-off

12h30 **Lunch Break at IUEM**

Session 2: Plate tectonics: kinematics and thermo-mechanical evolution of plates

14h00 **Robert Ballard (URI Center for Ocean Exploration), live from E/V Nautilus**
Dr. Jean Francheteau's Contribution to the Study of the Earth

14h30 **Richard Gordon (Rice Univ.) & Jay K. Mishra**
Current global plate motions: Shrinking plates & transform faults

15h00 **Claude Jaupart (Institut de Physique du Globe de Paris)**
Thermal Structure and Stability of Thick Continental Lithosphere

15h30 **Michel Diamant (Institut de Physique du Globe de Paris)**
Intraplate volcanism in the South Pacific, what have we learned from satellites ?

16h00 **Coffee Break**

16h30 **Emile Okal (Northwestern Univ.)**
T-waves: guardians of hidden ocean processes

17h00 **Louis Géli (Ifremer)**
Earthquake precursors and supercritical fluids at oceanic fracture zones

17h30 **Yossi Mart (Univ. Haifa)**
The life cycle of back-arc basins: an experimental approach

18h00 **End of Session**

Transportation to Oceanopolis

19h00 **Dinner at Oceanopolis**

Tuesday August 28, 2012 (Amphi A, IUEM)

Session 3: Processes at seafloor spreading centers

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| 9h00 | Thierry Juteau (Univ. Brest)
<i>Ophiolites and oceanic crust : the permanent dialog</i> |
| 9h30 | Catherine Mével (Institut de Physique du Globe de Paris)
<i>Drilling the oceanic lithosphere</i> |
| 10h00 | Mathilde Cannat (Institut de Physique du Globe de Paris)
<i>Axial-valley bounding faults and the exhumation of mantle-derived rocks at slow spreading ridges</i> |
| 10h30 | Coffee Break |
| 11h00 | Alessio Sanfilippo (Univ. di Pavia) & Riccardo Tribuzio
<i>Building of the deepest gabbroic crust at a fossil slow spreading centre (Pineto gabbroic sequence, Alpine Jurassic ophiolites)</i> |
| 11h30 | Lily Muller (PhD, Univ. Oxford) & Anthony Watts
<i>Seamount morphology and structure of the Southwest Indian Ridge (40°E - 60°E)</i> |
| 12h00 | Michael Perfit (University of Florida, Gainesville)
<i>Mid-Ocean Ridge Volcanism on the East Pacific Rise: Integrated Volcanologic, Geophysical and Geochemical Studies</i> |
| 12h30 | Lunch Break at IUEM |
| 14h00 | Jason Phipps Morgan (Univ. Cornell)
<i>A dynamic theory for the morphology of Overlapping Spreading Centers</i> |
| 14h30 | Lars Rüpke (Helmholtz Center for Ocean Research, Kiel), Sonja Theissen-Krah, Karthik Iyer & Jason Phipps Morgan
<i>Crustal accretion and hydrothermal convection patterns at fast-spreading ridges</i> |
| 15h00 | Anne Deschamps (Institute for Marine Studies, Brest), Morgane Le Saout, Adam Soule, Pascal Allemand, Brigitte Van Vliet Lanoe & Christophe Delacourt
<i>Submarine and aerial inflated lava flows</i> |
| 15h30 | Poster presentations
<i>5 minutes / poster</i> |
| 16h30 | Coffee Break & Poster session |
- Cécile Grigné (Institute for Marine Studies, Brest), Chantal Tisseau, Manuel Combes, Marc Parenthoën, Sébastien Le Yaouanq & Jacques Tisseau**
Multi-agent modeling of Earth's dynamics
- Hailong Bai (PhD, Univ. Maryland, College Park), Laurent Montesi & Laura Hebert**
Origin of Crustal Thickness Anomalies at Oceanic Transform Faults
- Briais Anne (Obs. Midi-Pyrénées, Toulouse), Olga Gomez & Raymond Lataste**
Off-axis seamounts on the flanks of the Southeast Indian Ridge. Implications for mantle dynamics east of the Australia-Antarctic Discordance.
- Morgane Le Saout (PhD, Univ. Brest), Anne Deschamps, Adam Soule, Pascal Allemand & Pascal Gente**
Lava flows morphologies at the intersection of the East-Pacific Rise with the Mathematician hot-spot, 16° N.
- Christine Andersen (PhD, Univ. Kiel), Lars Rüpke & Sven Petersen**
Tectono-magmatic controls on hydrothermal activity at the Mid-Atlantic Ridge vent fields Logatchev and 5°S
- Thibaut Barreyre (PhD, IPG Paris), Javier Escartin, Rafael Garcia & Mathilde Cannat**
Structure and temporal variation in fluid outflow at the deep-sea Lucky Strike hydrothermal field (Mid-Atlantic Ridge) from seafloor imagery and temperature records

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Rosa-Maria Prol-Ledesma (PhD, UNAM Mexico) & Marco Antonio Torres-Vera

Large scale hydrothermal flow in a sedimented spreading center in the northern gulf of California, Mexico

Guy Evans (PhD, MIT/WHOI) & Margaret Tivey

Geochemical and Morphological Diversity of Vent Deposits from the Lau Back-arc Basin Arising from Variations in Igneous Rock Composition and Volcanic Arc Influence

Bleuenn Gueguen (PhD, Univ. Brest), Olivier Rouxel & Yves Fouquet

Ni isotope in ferromanganese crusts and deep-sea-clays: hydrogenetic and authigenic precipitation of Mn-oxides

Stéphane Rouméjon (PhD, IPG Paris) & Mathilde Cannat

Tectonic initiation of serpentinization: mesh-texture development, in exhumed peridotites, at slow and ultraslow-spreading ridges

Margaret Tivey (WHOI) & Anna-Louise Reysenbach

Use of thermocouple arrays for study of microbial colonization in very young (days to weeks old) vent deposits

Pauline Henri (PhD, IPG Paris), Céline Rommevaux-Jestin, Bénédicte Menez & Françoise Lesongeur

Basalt alteration by endemic microorganisms of hydrothermal vents

Maria-Cristina Ciobanu (Ifremer)

Microbial diversity of marine sediments from the Canterbury Basin, New Zealand (IODP Leg 317)

18h00

End of Symposium

Summer School

Wednesday August 29, 2012 (Amphi B, IUEM)

8h30 **Olivier Rouxel & Jean-Yves Royer**
Welcome at IUEM and logistics

9h00 **Debbie Milton (NOC)**
InterRidge

Session 1: Geodynamics & petro-geochemical processes at seafloor spreading ridges and ridge flanks

9h30 **Michael Perfit (Univ. Florida, Gainesville)**
Crustal accretion and petro-geochemical processes at seafloor spreading ridges

10h30 **Coffee Break**

11h00 **Benoit Ildefonse (Geosciences, Montpellier)**
Formation and evolution of the oceanic lithosphere

12h00 **Wolfgang Bach (University of Bremen)**
Alteration of the Oceanic Lithosphere and Implications for Seafloor Processes

13h00 **Lunch Break at ENSTB**

14h00 **TRAINING SESSION A (2 groups) PC rooms; IUEM**
A1: Geodynamic modeling: Anne Deschamps (IUEM, Brest)
A2: Logging techniques: Louise Anderson (University of Leicester)

16h00 **TRAINING SESSION B (2 groups) IUEM; LDO conference room (include coffee break)**
B1: Petrological description / Macro description: W. Bach / B. Ildefonse
B2: Petrological description / Microscope: G. Chazot (IUEM, Brest)

18h00 **End of day**

Thursday August 30, 2012 (Salon de l'océan, Ifremer)

8h30 **Welcome at Ifremer and program of the day**

Session 2: Fluid-rock interactions & geochemistry of seafloor hydrothermal systems

8h40 **Yves Fouquet (Ifremer)**
Seafloor hydrothermal systems and mineral resources at the seafloor

9h30 **Margaret Tivey (WHOI)**
Geochemical modeling of vent environments

10h30 **Coffee Break**

11h00 **TRAINING SESSION C (2 groups)**
Crustal accretion and petro-geochemical processes at seafloor spreading ridges
C1: Sulfide/mineral deposits at seafloor: Yves Fouquet (Ifremer)
C2: Geochemical techniques : C. Hémond (IUEM, Brest) & Dan Asael (IUEM, Brest)

13h00 **Lunch Break at Ifremer**

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14h00 **Brian Glazer (Univ. Hawaii)**

14h45 **Brandy Toner (U. Minnesota)**

15h30 Coffee Break

16h00 **TRAINING SESSION D (2 groups)**

D1: Spectroscopy: Brandy Toner (Univ. Minnesota), at La Pérouse Library

D2: In-situ measurements: Brian Glazer (Univ. Hawaii)

18h00 End of day

Friday August 31, 2012 (Amphi B, IUEM)

Session 3: Geobiological interactions in extreme environments

8h30 **Stefan Lalonde (IUEM, Brest)**

Introduction to geobiology

9h30 **Katrina Edwards (Univ. Southern California)**

Habitat characterization: rocks and bugs

10h30 Coffee Break

11h00 **Anne Godfroy (Ifremer)**

11h45 **Pierre-Marie Sarradin (Ifremer)**

12h30 Lunch Break at ENSTB

Session 4: Concluding session

14h00 *Roundtable: Restitution on each theme (3) following specific questions:*

- What are your overall "big-picture" scientific questions in this theme ?

- What are the most significant future research directions in this theme ?

- What technological/methodological advances will most improve our understanding in this theme ?

Discussion leaders: O. Rouxel and S. Lalonde

15h30 Coffee Break

16h00 **Lucie Roa (Cellule Europe UBO)**

Research opportunities for students and postdocs in Europe

16h30 Final address and end of GEOCEAN Summer School