Research Networking Programmes

Science Meeting – Scientific Report

The scientific report (WORD or PDF file - maximum of seven A4 pages) should be submitted online within two months of the event. It will be published on the ESF website.

Proposal Title*: *Microstructural evolution during HT deformation: advances in the characterization techniques and consequences to physical properties

Application Reference N°: 5881

1) Summary (up to one page)

We organized a ***cross-disciplinary*** meeting in the framework of the ESF MicroDIce project between Earth, Material and Ice sciences with emphasis on the underlying physics of deformation processes that govern planetary dynamics from the core to the surface. The keynote speakers were carefully chosen to provide the ***state-of-the-art*** lectures of recently developed techniques that will aid young scientists in their research, focusing on quantifying microstructure, its evolution and influence on physical properties and rheology. The link between physical properties and rheology should provide the means of studying remotely via geophysical measurements the deformation field and the rheology of objects as diverse as the flow of glaciers on the surface of the planet to the solid inner core of the Earth. It is interesting to note that ice of glaciers and metallic iron in the inner core are both very close to their respective melting temperatures, and they both have hexagonal crystal symmetry.

We had 59 participants registered for this 3-day meeting, 38 also attending the MTEX 2-day training workshop, which provided tools for practically characterizing microstructure and calculating the associated physical properties. The majority of participants were first or second year PhD students coming from Europe. Some students came from as far as China. The organizers consider that the meeting fully reached the objectives presented in our ESF proposal in terms of the quality of keynote speakers, the number of participants, the practical training provided via MTEX and all this well below our initial budget due to generous contributions of CNRS, University de Montpellier and Géosciences Montpellier (UMR 5243 - CNRS), which provided amphitheatre, lecture rooms, and support personal free of charge,respectively.

Organization

Organizing Committee: David Mainprice (Montpellier), Andrea Tommasi (Montpellier) and Maurine Montagnat (Grenoble)

Assistance to organizing committee was provided by:
From Géosciences Montpellier (UMR 5243 - CNRS):
Bernadette Marie, Eliane Nadel, Karoly Hidas, Alain Vauchez and Benoit Ildefonse.
Laboratoire de Glaciologie et Géophysique de l'Environnement (UMR5183 - CNRS) :
Thomas Chauve and Baptiste Journaux.

Website: http://lgge.osug.fr/article920.html

2) Description of the scientific content of and discussions at the event (up to four pages)

The 3-day conference was divided into a *special theme for each day*. Given the large number of first and second year PhD students attending this meeting we decided to have an organised discussions at the end of each day, with the invited speakers for the theme of the day leading the discussion with help of the organizers. Given the dense nature of the 3-day meeting it was sometimes hard to keep the discussion going at the end of the day, but the invited speakers all did their best to simulate the audience.

Day 1 started with distributing the conference package including meal and tramway tickets. A brief welcoming announcements from David Mainprice followed, with practical details about the lunch arrangements and where the IceBreaker would be held that evening and an introduction of the science that would be presented in the 3 days. The theme for the first day was "*Microstructure, Texture and Evolution*". The scientific meeting was formally started with our first invited speaker Martyn Drury (Univ. Utrecht, Nederland) on "*Evolution of microstructures and textures during deformation and recrystallization*", which was very appropriate as Martyn is one of founding members of MicroDICE and scientist that illustrates the cross-disciplinary materials approach we wanted encourage the many young students and post-doc to adopt. Needless to say Martyn gave an excellent talk, which set the standard for the meeting. Our second invited speaker of the day, Michel Bornert (Univ. Paris-Est, France), gave a state-of-the-art presentation about "*Micro-macro tracking of the deformation field: Application to halite rock*". Although the subject was presented at a very advanced level and the information content very dense, the use of several short animations got the message across to a wide audience. Our third invited speaker of the day: Albert Griera (Univ. Autonoma de Barcelona, Spain), was one of youngest invited speakers, who gave a detailed talk about "*Modelling Evolving Microstructures*", where he used many colorful animations to illustrate the mathematically complex algorithms needed to capture the heterogeneity of microstructure at various scales. Highlights among the talks given by the other participants were the presentations of "*Modelling the effect of dynamic recrystallization on olivine texture evolution in simple shear*" present for the first time at meeting by Andrea Tommasi (Geosciences Montpellier, F) and "*Strain field evolution during creep on ice. Impact of dynamic recrystallization mechanisms*" presented by young PhD student Thomas Chauve (Grenoble, F). The first day was quite long and all presents were glad to make the short walk in the early evening to un-wind at the IceBreaker, some pictures can be see on the webpage.

Day 2 had the theme "*High resolution study of microstructures*", Claire Maurice (Ecole de Mines de St. Etienne, France) was our first invited speaker talking about "*High Resolution EBSD*", a technique central to the theme of the meeting. Claire's talk although very technical was very accessible to the young audience using all sorts of original illustrations to show the difficulties of implementing high resolution and its advantages. Highlights among the talks given in morning by the other participants was a presentation given by Claude Fressengeas (Metz, F), our oldest speaker, on "*Dislocation and disclination density fields from EBSD orientation mapping*", which provoked many questions from the audience. The rest of the morning was devoted short oral (3 minutes) presentations of the 15 posters. At the start of the afternoon session John Wheeler (Univ. Liverpool, UK) gave his talk on "*Characterization of the dislocation content of EBSD maps*". Much to the amusement of the audience, John had a very original teaching style with interactive demonstrations over the Internet of his software running in Liverpool and audience participation as seen with David Mainprice and Benoit Ildefonse playing the part of dislocations (also on the webpage). The rest of the day was devoted the poster sessions, which plenty of coffee to keep the discussions lively. The poster session was well attended with everyone present and discussion was intense around every poster. It was very hard to define a highlight to the poster session as the contributions were all well illustrated and very diverse in nature, probably the poster on "*Atomistic Modeling of Dislocations in MgSiO3 Post-Perovskite*" by Alexandra Goryaeva at second year PhD student from Lille, France was one of most original posters.

Day 3 had the theme "*Rheology: consequences of microstructure and texture evolution to large-scale flow*". This theme was in many ways the application of methods presented in the first 2 days, but also the challenge to bridge the scales from atomic to planetary. The day started with only non-European invited speaker: Brian Evans (MIT, USA), who talked about "*Non-stationary rheology and changing microstructure*". In some respects this talk was work in progress as the methodology is still in development and several new ideas were presented as avenues for future study. Our last speaker was **Fabien Gillet-Chaulet** (Grenoble, France), who presented a very complete panorama of the "*Impact of texture-induced anisotropy on glaciers flow*". Highlights among the talks given by the other participants were the presentations of "*Intermediate and Deep Earthquakes: from the Lab to the Field*" by a third year PhD student, Thomas Ferrand from ENS Paris and "*Anisotropic viscosity of olivine aggregates: A laboratory, field, and numerical approach*" by Lars Hansen (Oxford,UK), which simulated a great deal of discussion about simulations he presented. Final we could mention the presentation "*Physical properties of polycystalline materials: from the atomic to the planetary scale*" of David Mainprice (Montpellier,F), which tried to illustrate the various scales invoked during the meeting and their connections.

In this report we focused on the invited speakers, as their participation was critical to the success of the meeting. Of course there were many highlights from oral and poster contributions of the other participants that we could not highlight in this report.

MTEX training workshop Days 4 and 5

The object of MTEX training workshop was to provide tools for practically characterizing microstructure and calculating the associated physical properties. We had 38 participants for the workshop, which makes it the 2nd largest MTEX workshop of all

times. David Mainprice (Montpellier) gave all the lectures, provided all the worked example scripts and reference publications. Benoit Ildefonse and Karoly Hidas (Montpellier) assisted the participants for the practical sessions. Almost all the participants were young scientists, either first or second year PhDs or post-docs. It was an active group who wanted to learn. All the supporting material was given to all participants on the USB key in the conference package if they were coming to the workshop or not. Coffee breaks and lunch were provided in the same way as for the 3-day meeting.

We had a lecture room provided by University de Montpellier with 60 places all with several power sockets, which was ideal for a training course where the students arrived with their own laptops with Matlab already installed. The first exercise was to install the MTEX toolbox, which is very simple and posed no problems for participants. The advantage of this method of teaching is the students have Matlab, MTEX and their scripts already working, often with their own data, or data provided at workshop when the finish the course. After an overview presentation of the functions of MTEX the students ran example scripts. Example scripts avoid problems of the students trying the scripts themselves, as they are often slow to type as they do not know the MTEX syntax and they often create typing errors that can be hard to detect, which wastes everyone's time. Students that have their own data are strongly encouraged to the modify example scripts to run with their own data.

DAY 1	**Lecture** Introduction to Crystallography and Diffraction	**Lecture** Introduction to EBSD *Visit to Geosciences Montpellier EBSD facility*	**Lecture** Introduction MATLAB & MTEX	**PC Exercise** Pole-figures, Orientation Distribution Function (ODF)	**PC Exercise** Practical project using participant data
DAY 2	**Lecture** Grain modelling with MTEX, EBSD data analysis towards fabric analysis	**Lecture** Anisotropic physical properties	**Lecture** Physical property calculations of elasticity rank tensors using EBSD data and pole figure data with MTEX	**PC Exercise** Practical project using participant data	**PC Exercise** Practical project using participant data

3) Assessment of the results and impact of the event on the future directions of the field (up to two pages)

The meeting had a very ambitious theme of spanning the scales between atomic to planetary using the *state-of-the-art* methods recently developed in Materials science to capture the mechanical and microstructure evolution. With some of the very best placed invited speakers we got clear prospective on all the methods we could reasonably cover in 3 days. For the younger scientists that attended this meeting it was the opening of new window on all these subjects and only time will tell which methods they will use in their own research in the future. Certain themes like high resolution EBSD and characterizing EBSD maps using geometrically necessary dislocations are closely linked and are developing very quickly at the present time. Such methods have direct implications to characterizing mechanisms of recrystallization and plastic deformation. In-situ micro-macro tracking and new modelling tools that include microstructure can help us understand the microstructure and evolution in more quantitative way. The new

quantitative advances can then be incorporated at difference scales. MTEX provides all the tools necessary to characterize the microstructure and calculates the associated physical properties; MTEX is continuously adding new functions as new methods are developed.

Annex Financial support:

Support from ESF: 33 000 euros of which 22 000 euros was transferred to our CNRS account
We had generous support from the CNRS who gave us access to their 200 places amphitheatre on the CNRS campus free of charge for 3 days plus adjacent room for the poster session.
The University de Montpellier provided free of charge a 60 places teaching room with individual power sockets for MTEX training workshop for 2 days.

Géosciences Montpellier (UMR 5243 - CNRS) provided support for preparing the conference package including the folder and accounting assistance free of charge.

Ville de Montpellier provided free of charge 60 maps of the town.

Financial report further details:

Details of the financial reports are provided in a following table provided by our Géosciences Montpellier (UMR 5243 - CNRS) accounting department.

N.B. All participants paid their own travel and accommodation except those mentioned below.

Registration (2 208.33 Euros) = registrations fees provided by the participants

Travel (2734.84 Euros) = all individual reimbursement for invited participants, this includes the 5 of invited speakers (Martyn Drury, Michel Bornert, Albert Griera, Claire Maurice, John Wheeler, Brian Evans, Fabien Gillet-Chaulet) but plus autoroute and petrol costs for car used by group from Grenoble with Maurine Montagnat, Fabien Gillet-Chaulet, Thomas Chauve and Baptiste Journaux. The return train ticket for Baptiste Journaux as he attended the 2-day MTEX training workshop.

Accommodation (1693.15 Euros) = accommodation in the same hotel for all 6 of the invited speakers, plus Maurine Montagnat, Thomas Chauve and Baptiste Journaux involved with the local organisation**.**

Meals (5878.23 Euros) = fees for lunches, breaks, and IceBreaker included in the registration fees

Local meeting cost (1697.70 Euros) = "conference package"; name badge, printed book of abstracts, notebook, Montpellier map, tramway tickets, lunch tickets, USB 8 Go key with meeting programme and abstracts, tramway map, list of participants with e-mails, MTEX lectures, MTEX reference publications, MTEX worked example scripts)

ESF Advance 22000
Registration fees 2208.33

Payments

						Reserve	Facture
Travel							
	33108	EVANS	05/03/15	Vols Paris-Mtp A/R	CWT FRANCE	164.35	164.35
	33109	EVANS	05/03/15	Vols Boston-Paris A/R	CWT FRANCE	1 233.97	1 233.97
	33110	WHEELER	05/03/15	Vols Man.-Mtp A/R	CWT FRANCE	574.12	574.12
	33152	MAURICE	09/03/15	Train St Etienne-Mtp A/R	CWT FRANCE	93.70	93.70
	33158	DRURY	09/03/15	Train Utrcht-Mtp A/R	CWT FRANCE	436.40	436.40
	33169	JOURNAUX	10/03/15	Train Mtp-Grenoble R	CWT FRANCE	37.90	37.90
	33170	BORNERT	10/03/15	Train Paris-Mtp A/R	CWT FRANCE	77.00	77.00
	33491	MONTAGNAT	30/03/15	Car Grenoble-Montpellier Autoroute plus pertol	MONTAGNAT RENTIER	211.50	117.40
	33726	GRIERA	19/05/15	Car Barcelone-Montpellier Autoroute plus pertol	GRIERA ALBERT	231.2	231.2
						Total	2966.04
Accommodation							
	33187	MAINPRICE	12/03/15	Hotel Meeting all invited speakers & Grenoble or	HOTEL DU POLYGONE	1 693.15	1693.15
						Total	1693.15
Meals							
	33234	TOMMASI	17/03/15	Meeting IceBreaker	REST TRINQUE FOUGA	1 745.45	1 745.45
	33253	TOMMASI	19/03/15	Lunch + Coffee brakes Meeting	LANGUEDOC RESTAUR	2 439.26	2 439.26
	33256	MAINPRICE	20/03/15	Coffee brakes MTEX Workshop	REST SODEXHO CNRS	1 264.02	1 264.02
	33380	TOMMASI	01/04/15	Evening meal for invited speakers	REST L'ARTICHAUT	242.00	242.00
	33381	TOMMASI	31/03/15	Evening meal for invited speakers	REST PREMIERE CANT	187.50	187.50
						Total	5 878.23
Local meeting costs							
	33237	MARIE	18/03/15	Meeting name badge holder, notebook, USB 8G	LYRECO	598.68	598.68
	33279	MARIE	24/03/15	TRAMWAY Tickets for Meeting & Workshop	TAM MONTPELLIER	733.82	733.82
	33575	TOMMASI	21/04/15	Poster for Microdice Meeting	UNIVERSITE DE MONTP	25.20	25.20
	33644	TOMMASI	23/03/15	Printing of abstract booklet	UNIVERSITE DE MONTP	340.00	340.00
						Total	1697.70

Travel	2966.04
Accommodation	1693.15
Meals	5878.23
Local meeting costs	1697.7
Total Spent	12235.1
To return to ESF	9764.88

MDICE - Colloque MICRODICE – RECETTES
(Provided by Geosciences Montpellier UMR CNRS 5243)

				avance	22 000,00
				Inscriptions	2 208,33
				TOTAL	24 208,33
DEPENSES					Engagé
33108	EVANS	MicroDICE EVANS Vols Paris-Mtp A/R	05/03/15	CWT FRANCE	164,35
33109	EVANS	MicroDICE EVANS Vols Boston-Paris A/R	05/03/15	CWT FRANCE	1 233,97
33110	WHEELER	MicroDICE WHEELER Vols Man.-Mtp A/R	05/03/15	CWT FRANCE	574,12
33152	MAURICE	MicroDICE MAURICE Train Paris-Mtp A/R	09/03/15	CWT FRANCE	93,70
33158	DRURY	MicroDICE DRURY Train Utrcht-Mtp A/R	09/03/15	CWT FRANCE	436,40
33169	JOURNAUX	MicroDICE JOURNAUX Train Utrcht-Mtp A/R	10/03/15	CWT FRANCE	37,90
33170	BORNERT	MicroDICE BORNERT Train Utrcht-Mtp A/R	10/03/15	CWT FRANCE	77,00
33187	MAINPRICE	Hotel Meeting MicroDICE	12/03/15	HOTEL DU POLYGONE	1 693,15
33234	TOMMASI	Repas d'ouverture du workshop Micro-DICE	17/03/15	REST TRINQUE FOUGASSE	1 745,45
33237	MARIE	Fournitures pour congres	18/03/15	LYRECO	598,68
33253	TOMMASI	repas midi + pauses café Workshop	19/03/15	LANGUEDOC RESTAURATION	2 439,26
33256	MAINPRICE	Pauses café Workshop MicroDICE	20/03/15	REST SODEXHO CNRS	1 264,02
33279	MARIE	Carte et forfait TRAM Meeting MicroDICE	24/03/15	TAM MONTPELLIER	733,82
33380	TOMMASI	Repas avec les conférenciers MicroDICE	01/04/15	REST L'ARTICHAUT	242,00
33381	TOMMASI	Repas avec les conférenciers MicroDICE	31/03/15	REST MA PREMIERE CANTINE	187,50
33575	TOMMASI	impression posters MicroDice	21/04/15	UNIVERSITE DE MONTPELLIER	25,20
33644	TOMMASI	Impression livre abstracts MicroDice	23/03/15	UNIVERSITE DE MONTPELLIER	340,00
33491	MONT7644	MONTAGNAT RENTIER MAURINE MONTPELLIER 30	30/03/15	MONTAGNAT RENTIER MAURINE	117,40
33726	GRIE7721	GRIERA ARTIGAS ALBERT MONTPELLIER 01/03/	01/03/15	GRIERA ARTIGAS ALBERT	231,20
				TOTAL	12 235,10
				DISPONIBLE	11 973,23

Program for the Micro-DICE European Science Foundation networking Programme on the Mico-Dynamics of Ice Final conference

Microstructural evolution during HT deformation: advances in the characterization techniques and consequences to physical properties

Montpellier, France

30 March – 1 April 2015: Conference

2-3 April 2015: 2-day MTEX open source & free texture analysis training workshop

Organised by David Mainprice, Andrea Tommasi and Maurine Montagnat

The conference is held at the CNRS Amphitheatre at the délégation regionale de Languedoc Roussillon, 1919 route de Mende, 34293 Montpellier Cedex 05 France

The MTEX training workshop is held at the Université de Montpellier, Faculté des Sciences, Place Eugène Bataillon 34095 Montpellier Cedex 05 France

March 30th Day 1 Microstructure, Texture and Evolution
8h30-9h30: Welcome & pick-up of the Registration Package with coffee

Session 1: Evolution of microstructures and textures during deformation and recrystallization

9h30: Welcome speech: David Mainprice

9h40-10h40: Keynote 1: Evolution of microstructures and textures during deformation and recrystallization Martyn Drury (Utrecht University, NL)

10h40 – 11h10: Coffee break

11h10-12h30: 4 short talks (20')

11h10-11h30: Ductile strain localization assisted by fluids in the shallow subcontinental lithospheric mantle (Ronda massif, Betic Cordillera, South Spain) - Károly Hidas (Montpellier,F)

11h30-11h50: Quantifying strain distribution in shear zones using crystal preferred orientations - David Wallis (Oxford,UK)

11h50-12h20: Fabric variability and seismic velocities in the ocean crust from EBSD mapping of gabbroic rocks - Benoit Ildefonse (Montpellier,F)

12h10-12h30: Modelling the effect of dynamic recrystallization on olivine texture evolution in simple shear - Andrea Tommasi (Montpellier,F)

Lunch break 12h30-14h00

14h-15h: Keynote 2: Micro-macro tracking of the deformation field: Application to halite rock. Michel Bornert (Université Paris-Est, F)

15h00-15h40 : 2 short talks (20')

15h00-15h20: Strain field evolution during creep on ice. Impact of dynamic recrystallization mechanisms - Thomas Chauve (Grenoble,F)

15h20-15h40: Modelling the influence of air on the deformation and recrystallization mechanisms in polar firn and ice - Steinbach Florian (Tuebingen,D)

Coffee break 15h40-16h10

16h10-17h10: Keynote 3: Modelling Evolving Microstructures. Albert Griera (Barcelona,E)

17h10-17h30 Full-field modelling of strain heterogeneities during transient creep of polycrystalline ice using a FFT method. - Maurine Montagnat (Grenoble, F)

17h30-18h30: **Discussion** (Animators: *Maurine Montagnat*, Martyn Drury, Michel Bornert, Albert Griera)

19h30 Conference Ice-breaker Dinner at Trinquefougass

March 31st Day 2 – High-resolution study of microstructures

9h-10h: Keynote 4: Local strain analysis by High Angular Resolution Electron BackScatter Diffraction. Claire Maurice (Saint-Etienne, F)

10h00 – 10h30: Coffee break

10h30 - 11h50: 4 short talks (20')

10h30-10h50: Intra-grain orientation spreads in hot-deformed aluminium: Properties and relation to crystal plasticity – Romain Quey (Saint-Etienne, F)

10h50-11h10: Quartz exsolution topotaxy in clinopyroxene from ultrahigh pressure eclogite: An EBSD study and its implications - Haijun Xu (Wuhan,China)

11h10-11h30: Analysis of grain boundaries and subgrain structures in ice using optical characterization techniques - Binder Tobias (Bremerhaven ,D)

11h30-11h50: Dislocation and disclination density fields from EBSD orientation mapping - Claude Fressengeas (Metz, F)

11h50-12h30: *Short poster presentations - 3 min. for each poster*

Lunch break 13h00-14h30

14h00-16h00: Poster session with coffee break at 15h30

16h00-17h00: Keynote 5: Characterization of the dislocation content of EBSD maps. John Wheeler (Liverpool, UK)

17h00-17h30 **Discussion** (Animators: *David Mainprice*, Claude Fressengeas, John Wheeler)

April 1st Day 3 – Rheology: consequences of microstructure and texture evolution to large-scale flow

9h-10h: Keynote 6: Transients in strength and structure. Brian Evans, (MIT, USA)

10h00 – 10h30 Coffee break

10h30-12h30: 6 short talks (20')

10h30-10h50: Intermediate and Deep Earthquakes: from the Lab to the Field - Thomas Ferrand (Paris,F)

10h50-11h10: Rheology of phase A at high pressure-high temperature - Nadège Hillairet (Lille,F)

11h10-11h30: Investigating rheology in mantle minerals at very high pressure and temperature - Misha Bystricky (Toulouse,F)

11h30-11h50: Intracontinental deformation and strain-partitioning pattern in the oblique continental collision zone - Bo Zhang (Bejing,China)

11h50-12h10: Microstructures And Deformation Mechanisms In High-Temperature Mylonites From The Ribeira Belt, SE Brazil - Carolina Cavalcante (São Paulo, Brazil)

12h10-12h30: Anisotropic viscosity of olivine aggregates: A laboratory, field, and numerical approach - Lars Hansen (Oxford,UK)

Lunch break 12h30-14h00

14h-15h: Keynote 7: Impact of texture-induced anisotropy on glacier flow. Fabien Gillet-Chaulet, (LGGE ,Grenoble, F)

15h00 – 15h30 Coffee break

15h30 - 16h00 Physical properties of polycystalline materials : from the atomic to the planetary scale - David Mainprice (Montpellier,F)

16h00-16h30: **Discussion** (Animators: *Lars Hansen*, Brian Evans, Fabien Gillet-Chaulet)

16h30: Final remarks & Logistics for the MTEX training workshop - David Mainprice (Montpellier,F)

Annex 4b: Full list of speakers and participants

Name	First Name	Email	Organisme
Allen	Michael	mjallen@liverpool.ac.uk	Department of Earth Sciences, University of Liverpool (UK)
Aradi	Laszlo Elod	aradi.laszloelod@gmail.com	Budapest, Hungary (H)
Baiz	Sarah	sarah.baiz@ensam.eu	CNRS UMR8006 Laboratoire PIMM, Paris (F)
Barou	Fabrice	fabrice.barou@gm.univ-montp2.fr	Géosciences CNRS - Université de Montpellier (F)
Basch	Valentin	valentin.basch@gmail.com	DISTAV, Genova (I)
Binder	Tobias	Tobias.Binder@awi.de	Alfred-Wegener-Institut Helmholtz-Zentrum, Bremen (D)
Bornert	Michel	michel.bornert@enpc.fr	Laboratoire NAVIER, ENPC, Marne la Vallee (F)
Boullier	Anne-Marie	Anne-Marie.Boullier@ujf-grenoble.fr	ISTerre CNRS, Grenoble (F)
Bystricky	Micha	mbystricky@irap.omp.eu	IRAP, Université Paul Sabatier, Toulouse (F)
Cavalcante	Carolina	geanecarol@gmail.com	University of Sao Paulo, Brazil
Chauve	Thomas	thomas.chauve@lgge.obs.ujf-grenoble.fr	LGGE CNRS, Grenoble (F)
Currin Sala	Adriana Miriam	adri100ppm@gmail.com	Leibniz University, Hannover (D)
Deldicqued	Damien	deldicque@geologie.ens.fr	Laboratoire de Géologie, ENS, Paris (F)
Drury	Martyn	M.R.Drury@uu.nl	Utrecht University (NL)
El Messbahi	Hicham	h.geo@hotmail.fr	Geosciences Montpellier (F)
Escario	Sofia	sofia.escario@gm.univ-montp2.fr	UMR CNRS Géosciences Montpellier (F)
Evans	Brian	brievans@mit.edu	Mass. Inst. Technology, Cambridge (USA)
Fernandez Roig	Merce	merce.fernandez@uab.cat	Universitat Autonoma de Barcelona (E)
Ferrand	Thomas	ferrand@geologie.ens.fr	Laboratoire de Géologie, ENS, Paris (F)
Ferrando	Carlotta	carlotta.ferrando@gm.univ-montp2.fr	UMR CNRS Géosciences Montpellier (F)
Filippelli	Ernesto Francesco	ernesto.filippelli@emse.fr	Ecole des Mines de Saint-Etienne (F)
Fressengeas	Claude	claude.fressengeas@univ-lorraine.fr	Université de Lorraine, Metz (F)
Gardner	Joe	jgardner@liv.ac.uk	Department of Earth Sciences, University of Liverpool (UK)
Gillet-chaulet	Fabien	gillet-chaulet@lgge.obs.ujf-grenoble.fr	LGGE-CNRS, Grenoble (F)
Goryaeva	Alexandra	alexandra.goryaeva@ed.univ-lille1.fr	Université Lille1, UMET
Griera	Albert	albert.griera@uab.cat	Universitat Autonoma de Barcelona (E)
Hansen	Lars	lars.hansen@earth.ox.ac.uk	Department of Earth Sciences, University of Oxford (UK)
Hashim	Leila	leila.hashim@univ-orleans.fr	ISTO CNRS, Orleans (F)
Hidas	Karoly	karoly.hidas@gm.univ-montp2.fr	Géosciences CNRS - Université de Montpellier (F)
HIlairet	Nadege	nadege.hilairet@univ-lille1.fr	UMET, Université Lille 1 (F)
Ildefonse	Benoit	ildefonse@um2.fr	Géosciences CNRS - Université de Montpellier (F)
Incel	Sarah	sarah.incel@gmail.com	Laboratoire de Géologie, ENS, Paris (F)
Journaux	Baptiste	baptiste.journaux@lgge.obs.ujf-grenoble.fr	LGGE CNRS, Grenoble (F)
Kaercher	Pamela	kaercher@liverpool.ac.uk	Department of Earth Sciences, University of Liverpool (UK)
Kaercher	Pamela	p.kaercher@liverpool.ac.uk	Department of Earth Sciences, University of Liverpool (UK)
Klonowska	Iwona	iwona.klonowska@geo.uu.se	Department of Earth Sciences, Uppsala University (UK)
Kourim	Fatna	k.fatna@gmail.com	Earth Sciences, Université Jean Monnet Saint-Etienne (F)
Langrand	Christopher	christopher.langrand@ed.univ-lille1.fr	UMET, Université Lille 1 (F)
Liu	Shiran	hbhslsr@pku.edu.cn	School of Earth and Space Science, Peking University, P.R.Ch
Mainprice	David	David.Mainprice@gm.univ-montp2.fr	Géosciences CNRS - Université de Montpellier (F)
Maurice	Claire	maurice@emse.fr	Ecole des Mines de Saint-Etienne (F)
Michel	Vincent	vincent.michel@ensam.eu	Laboratoire PIMM, ENSAM (F)
Montagnat	Maurine	montagnat@lgge.obs.ujf-grenoble.fr	LGGE-CNRS, Grenoble (F)
Prigent	Cecile	cecile.prigent@ujf-grenoble.fr	Laboratoire ISTerre Grenoble (F)
Proietti	Arnaud	proiettiarnaud@gmail.com	IRAP, Université Paul Sabatier, Toulouse (F)
Quey	Romain	romain.quey@mines-stetienne.fr	Ecole des Mines de Saint-Etienne (F)
Reali	Riccardo	ricreali@gmail.com	UMET, Université Lille 1 (F)
Steinbach	Florian	florian.steinbach@uni-tuebingen.de	Eberhard Karls University, Tuebingen (D)
Tommasi	Andrea	deia@gm.univ-montp2.fr	Géosciences CNRS - Université de Montpellier (F)
Vauchez	Alain	alain.vauchez@um2.fr	Géosciences CNRS - Université de Montpellier (F)
Viegas	Gustavo	luis.ferreiraviegas@plymouth.ac.uk	Earth and Environmental Sciences, University of Plymouth (U
Violay	Marie	marie.violay@erdw.ethz.ch	Earth Sciences, ETH, Zurich (CH)

Wallis	David	davidwa@earth.ox.ac.uk	Department of Earth Sciences, University of Oxford (UK)
Wheeler	John	johnwh@liv.ac.uk	Department of Earth Sciences, University of Liverpool (UK)
Xu	Haijun	hj_xu@sina.com	China University of Geosciences, Wuhan, P.R.China
Yin	Congyuan	cyyin@pku.edu.cn	School of Earth and Space Science, Peking University, P.R.Ch
Yuan	Hao	hao.yuan@emse.fr	Ecole des Mines de Saint-Etienne (F)
Zhang	Bo	geozhangbo@pku.edu.cn	School of Earth and Space Science, Peking University, P.R.Ch
Zhe	William	wzhe@laurentian.ca	Laurentian University, Sudbury, Canada