



EUROPEAN COMMISSION
RESEARCH & INNOVATION DG
HUMAN RESOURCES AND
MOBILITY

Periodic Report

Project No: 215353

Project Acronym: CRYSTAL2PLATE

Project Full Name: How does plate tectonics work: From
crystal-scale processes to mantle convection with self-consistent
plates

Periodic Report

Period covered: from 01/04/2009 to 31/03/2011

Date of preparation: 30/05/2011

Period number: 1st

Date of submission (SESAM):
30/05/2011 15:25:38 CET

Project coordinator name:
Dr. Andrea Tommasi

Project coordinator organisation name:
UNIVERSITE MONTPELLIER 2

Version: 1

Periodic Report

PROJECT PERIODIC REPORT

Grant Agreement number:	215353
Project acronym:	CRYSTAL2PLATE
Project title:	How does plate tectonics work: From crystal-scale processes to mantle convection with self-consistent plates
Funding Scheme:	FP7-MC-ITN
Period report:	1st
Period covered - start date:	01/04/2009
Period covered - end date:	31/03/2011
Project co-ordinator:	
Organisation PIC:	999875322
Organisation legal name:	UNIVERSITE MONTPELLIER 2
Person in charge of scientific aspects:	
Title:	Dr.
First name:	Andrea
Name:	Tommasi
Tel:	+33 467144912
Fax:	+33 467143603
E-mail:	deia@gm.univ-montp2.fr
Project website address:	http://www.gm.univ-montp2.fr/CRYSTAL2PLATE/home.html

DECLARATION BY THE PROJECT COORDINATOR

I, Dr. Andrea Tommasi, as co-ordinator of the project (215353, CRYSTAL2PLATE), hereby confirm that:

- The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;
- The project has fully achieved its objectives and technical goals for the period;
- The project Website is up to date.
- To my best knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project and if applicable with the certificate on financial statement.
- All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organisations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 5 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

PUBLISHABLE SUMMARY

Comments:

CRYSTAL2PLATE is an EC FP7-funded Marie Curie Initial Training Network coordinated by Dr. Andréa Tommasi from Géosciences Montpellier (UM2), France. It is a coherent training and career development platform for early stage and experienced scientists in Geodynamics, Geochemistry, Petrology, Fluid Mechanics and Seismology composed by 7 European academic institutions: the universities of Montpellier 2 (F), Bristol (UK), Utrecht (NL), and Roma TRE (I), the ETH Zurich (CH), the CNRS (F) and the CISC (E) and 4 associated industrial partners: Rockfield, Oxford Instruments, Schlumberger & Total.

CRYSTAL2PLATE objectives are to provide 10 early-stage researchers, which are engaged in PhD programs in the partner institutions, and 2 junior post-doctoral fellows an experience-based training through cross-disciplinary research projects that combine case studies in target areas with new developments in seismology, geochemistry, laboratory and numerical modelling of the mantle from the mm to the global scale. These multidisciplinary projects aim to answer a key question in Earth Sciences: How does plate tectonics work? From crystal scale processes to mantle convection with self-consistent plates.

CRYSTAL2PLATE started as planned on 1 April, 2009, but the web-based presentation of the network and publicity of the training positions were already effective from early March 2009. The kick-off meeting took place in May 2009 in Montpellier, France. By October 2009, a successful international recruitment process resulted in the hiring of 9 highly qualified ESRs and 1 ER. The 2 remaining positions were filled in March and September 2010. Gender balance of 58% female is above the targeted level of 50% female researchers in ITNs. 9 fellows hold European nationalities (British, French, German, and Italian), 1 comes from Russia, 1 from Australia and 1 from China. Declarations on the Conformity were submitted to the Commission for all 12 appointed researchers and a Consortium Agreement was signed.

In October 2009, the 1st annual CRYSTAL2PLATE workshop, which reunited all network members and 20 external participants, and the 2nd Supervisory Board meeting were hosted in Montpellier. They were followed by a field trip to Lherz in the Pyrenees.

3 short courses: Processing Seismic data using SAC, Textures and Anisotropy, and Thermodynamics numerical modelling using PERPLEX, and a summer school on Thermal Convection in complex fluids were offered in 2010. These courses were followed by CRYSTAL2PLATE fellows and 78 external participants.

Assessment by the Supervisory board in Orsay, France in September 2010 showed that all fellows had made important progress in their research projects and training. Notable successes to date, which have already been presented in major international conferences in Earth Sciences, include:

- Follow-up of the evolution of dynamic topography with time in delamination experiments
- Simulation of supercontinent assembly and dispersion cycles in a 3D spherical convection code
- Evidence for changes in olivine deformation and for melt segregation within the shear plane in peridotites deforming under sub-solidus conditions
- Data on evolution of deformation in a fossil LAB exhumed by continental thinning above a subduction
- A parametric study of the role of shear heating-induced strain localisation on the subduction initiation
- New data highlighting sharp vertical and lateral variations in seismic anisotropy in Sulawesi and Mediterranean subductions.
- Implementation of melting laws and 2-phase flow in a 2D convection code. Integrating the effect of melting on the mantle rheology enhances thermo-mechanical erosion of the lithosphere above plumes.
- Development of a new 3D visualization technique for fluid dynamics experiments
- Rheological characterisation of a new analog material (Carbopol) that, like rocks, has a stress- and temperature-dependent rheological behaviour
- New scaling laws for dynamics of free subduction

The mid-term review meeting took place in Estepona, Spain on 17-18 January 2011:

CRYSTAL2PLATE received an excellent review. It was immediately followed by the 2nd annual

CRYSTAL2PLATE workshop and a field trip to the neighboring Ronda peridotite. Assessment of the fulfilment of the fellows' Personal Career Development plans and of their satisfaction level further evidenced a good functioning of CRYSTAL2PLATE.

For complete details and regular updates visit our website:

<http://www.gm.univ-montp2.fr/CRYSTAL2PLATE/home.html>

The Crystal2Plate coordination team can be reached at crystal2plate@gm.univ-montp2.fr

PROJECT OBJECTIVES FOR THE PERIOD

Comments:

CRYSTAL2PLATE is an EC FP7-funded Marie Curie Initial Training Network coordinated by Dr. Andréa Tommasi from Géosciences Montpellier (UM2), France. It is a coherent training and career development platform for early stage and experienced scientists in Geodynamics, Geochemistry, Petrology, Fluid Mechanics and Seismology. Crystal2Plate brings together 7 European partner institutions, 2 high-technology SMEs and 2 international companies. The network is training 10 doctoral students and 2 junior post-doctoral fellows who have embarked into research work under the guidance of senior scientists from the various partner universities.

CRYSTAL2PLATE objectives for this period were to recruit 10 early-stage researchers and 2 experienced researchers and to provide them with experience-based training through cross-disciplinary research projects that combine case studies in well-chosen target areas with new developments in seismology, geochemistry, laboratory and numerical modelling of the mantle from the cm to the global scale.

These multidisciplinary projects aim to answer a key question in Earth Sciences: "How does plate tectonics work? From crystal scale processes to mantle convection with self-consistent plates" Additional aims were to create a long-term synergy among the CRYSTAL2PLATE partners, which are already leaders in their specific domains, and to structure European research and training capacities in Earth Sciences, increasing their impact and international visibility.

7 work packages define the project workflow for Crystal2Plate and can be regrouped into 3 main categories: Research (WP1, WP2, WP3); Training (Scientific WP4 & Personal and Career WP5); Communication and Management (WP6 & WP7), each with specific milestones (see p. 16-17 of this report) and objectives to be reached for this period as per Annex 1 of the contract.

>RESEARCH (WP1-2-3)

a. 196 person-months for this period (overall target of 408)

Multiple milestones linked to research work and progress

b. 5 milestones for WP1: How to create new plate boundaries: WP1.1; WP1.2; WP1.3; WP1.4; WP1.5

c. 5 milestones for WP2: Plates and convective patterns in subduction settings: WP2.1; WP2.2; WP2.3; WP2.4; WP2.5

d. 2 milestones for WP3: Plates in mantle convection: the global story: WP3.1; WP3.2

TRAINING & PERSONAL CAREER

>SCIENTIFIC TRAINING (WP4)

a. 345 external training days for this period (overall target of 485)

b. 9 milestones mostly in the form of annual workshops 1 and 2 (WP4.1); short courses (WP4.2; WP4.3; WP4.4; WP4.6), a summer school (WP4.7) and a special course (WP4.5); and in terms of assessment of training and satisfaction level (WP4.8; WP4.9)

>PERSONAL AND CAREER DEVELOPMENT ACTIVITIES (WP5)

c. 3 milestones linked to the establishment of a Personal Career Development plan per fellow (WP5.1), evaluation of its fulfilment (WP5.2), and of the level of satisfaction of trainees (WP5.3)

COMMUNICATION & MANAGEMENT

>COMMUNICATION(WP6)

* 7 milestones all linked to dissemination of the network via a web-based presentation (WP6.1); intra-network exchanges and newsletter (WP6.2); outreach activities (WP6.3), updated dissemination list (WP6.4) and its assessment (WP6.5); reports on integration of external students in annual workshops (WP6.6; WP6.7)

>MANAGEMENT (WP7)

* 4 milestones including the project kick-off (WP7.1), recruitment of fellows (WP7.2), various assessment of the network with progress report to the EC (WP7.3), mid-term review report and meeting (WP7.4)

RECOMMENDATIONS FROM MID-TERM REVIEW

Bring industrial partners to an active participation in future training events (2nd period)

WORK PROGRESS AND ACHIEVEMENTS DURING THE PERIOD

Comments:

100% of the CRYSTAL2PLATE recruitment objectives were achieved over the period: 10 early stage researchers (ESRs) and 2 ERs were recruited and started their research as planned (cf. p.22 of this report for full details on recruitment).

All recruited fellows are being provided with advanced experience-based training through C2P collaborative research program which will lead the ESRs to a PhD degree.

In line with Annex 1 of the contract, the following milestones (also on p. 16-17 of this report) and objectives were reached for this period:

RESEARCH (WP1-2-3) - see details on p. 10 of this report.

a. 100% of the target was achieved with 196 person-months for this period (overall target of 408)

Multiple milestones linked to research work and progress:

b. 180% of target achieved on WP1 with 9 milestones achieved compared to expected 5: WP1.1; WP1.2; WP1.3; WP1.4; WP1.5; WP1.6; WP1.7; WP1.8; WP1.10.

c. 100% of target achieved on WP2 with all 5 milestones reached within the period: WP2.1; WP2.2; WP2.3; WP2.4; WP2.5.

d. 200% of target achieved on WP3 with 6 milestones achieved compared to expected 2: WP3.1; WP3.2; WP3.3; WP3.4; WP3.5; WP3.6

TRAINING (WP4) & PERSONAL CAREER (WP5)

>SCIENTIFIC TRAINING (see full details on p. 13 of this report)

a. 99% of target achieved with 342 external training days achieved compared to the period's 345 target (overall target of 485)

b. 100% of target achieved on WP4 with all 9 milestones reached: annual workshops 1 and 2 (WP4.1); short courses (WP4.2; WP4.3; WP4.4; WP4.6), a summer school (WP4.7) and a special course (WP4.5); assessment of training and satisfaction level (WP4.8; WP4.9)

>PERSONAL AND CAREER DEVELOPMENT ACTIVITIES

100% of target reached on WP5 with all 3 milestones achieved: establishment of a Personal Career Development plan per fellow (WP5.1), evaluation of its fulfilment (WP5.2), and of the level of satisfaction of trainees (WP5.3) (see full details on p. 14 of this report)

COMMUNICATION (WP6) & MANAGEMENT (WP7)

>COMMUNICATION

100% of target reached on WP6 with all 7 milestones reached: dissemination of the network via a web-based presentation (WP6.1); intra-network exchanges and newsletter (WP6.2); outreach activities (WP6.3), updated dissemination list (WP6.4) and its assessment (WP6.5); reports on integration of external students in annual workshops (WP6.6; WP6.7) - see full details on p. 20 of this report.

>MANAGEMENT

100% of target reached on WP7 with all 4 milestones reached within the period: project kick-off (WP7.1), recruitment of fellows (WP7.2), various assessment of the network with progress report to the EC (WP7.3), mid-term review report and meeting (WP7.4) (see full details on p. 22 of this report)

RECOMMENDATIONS FROM MID-TERM REVIEW

No new training event took place since this recommendation was made in January 2011, so efforts to bring industrial partners to an active participation in training events will be implemented over the next period.

DELIVERABLES AND MILESTONES TABLE

RECRUITMENT

Recruiting participant	Fellow name	Type of Contract	category	Location of origin	Gender	Family situation	Start date of secondment/recruitment	End date of secondment/recruitment	Working time commitment	Full-time equivalent person-months covered during the reporting period	Declaration of Conformity submitted
UM2	Katherine HIGGIE	A	ESR	UK-United Kingdom	Female	No	05/10/2009	04/10/2012	Full Time	18.0	Yes
Uniroma TRE	Flora BAJOLET	A	ESR	FR-France	Female	No	01/10/2009	30/09/2012	Full Time	18.0	Yes
CSIC	Erwin FRETS	A	ESR	BE-Belgium	Male	No	01/10/2009	30/09/2012	Full Time	18.0	Yes
UU	Sonja GREVE	A	ER	DE-Germany	Female	No	01/10/2009	30/09/2011	Full Time	18.0	Yes
ETH Zurich	Diana DYMKOVA	A	ESR	RU-Russian Federation	Female	No	01/10/2009	30/09/2012	Full Time	18.0	Yes
ETH Zurich	Marcel THIELMANN	A	ESR	DE-Germany	Male	Yes	01/10/2009	30/09/2012	Full Time	18.0	Yes
CNRS-FAST	Anna MASSMEYER	A	ESR	DE-Germany	Female	No	01/01/2010	31/12/2012	Full Time	15.0	Yes
UNIVBRIS	Katherine ADENA	A	ESR	AU-Australia	Female	No	01/03/2010	28/02/2013	Full Time	13.0	Yes
UM2	Roberto AGRUSTA	A	ESR	IT-Italy	Male	No	18/09/2009	17/09/2012	Full Time	18.5	Yes
UNIVBRIS	Jeanette Frances DI LEO	A	ESR	DE-Germany	Female	No	01/10/2009	30/09/2012	Full Time	18.0	Yes
ETH Zurich	Tobias ROLF	A	ESR	DE-Germany	Male	No	01/12/2009	30/11/2012	Full Time	16.0	Yes
CNRS-FAST	M. Zhonghai LI	A	ER	CN-China (People's Republic of)	Male	No	18/08/2010	17/08/2012	Full Time	7.5	Yes

No. of full-time equivalent months covered during this reporting period: 196.0

M - Months

RESR - Researcher

FAC B - Fixed amount contract B (%)

RECRUITMENT																																					
Participants	Early Stage Researchers (ESR)									Experienced Researchers (ER)									Visiting scientists (VS <10)									Visiting scientists (VS >10)									
	Foreseen			Implemented			Difference			Foreseen			Implemented			Difference			Foreseen			Implemented			Difference			Foreseen			Implemented			Difference			
	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B	M	RESR	FAC B				
UM2	72	2	0	36.5	2		35.5	0	0	0	0	0				0	0	0	0	0	0				0	0	0	0	0	0				0	0	0	
UNIVBRIS	72	2	0	31	2		41	0	0	0	0	0				0	0	0	0	0	0				0	0	0	0	0	0				0	0	0	
UU	0	0	0				0	0	0	24	1	0	18	1		6	0	0	0	0	0				0	0	0	0	0	0				0	0	0	
ETH Zurich	108	3	0	52	3		56	0	0	0	0	0				0	0	0	0	0	0				0	0	0	0	0	0				0	0	0	
Uniroma TRE	36	1	0	18	1		18	0	0	0	0	0				0	0	0	0	0	0				0	0	0	0	0	0				0	0	0	
CNRS-FAST	36	1	0	15	1		21	0	0	24	1	0	7.5	1		16.5	0	0	0	0	0	0				0	0	0	0	0	0				0	0	0
CSIC	36	1	0	18	1		18	0	0	0	0	0				0	0	0	0	0	0				0	0	0	0	0	0				0	0	0	
Total	360	10	0	170.5	10	0	189.5	0	0	48	2	0	25.5	2	0	22.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Comments:

RESEARCH WP1-WP2-WP3

Crystal2Plate fellows relocated to their main place of duty. Most of them started their contracts on or around 1 October 2009; 4 students started a bit later (Tobias Rolf: 1 December 2009; Anna Massmeyer: 1 January 2010; Katherine Adena, whose visa request to the U.K. was denied once, was delayed till 1 March 2010; and Zonghai LI: 18 August 2010).

ESRs (Projects 1 through 10) are currently engaged in their 3-year-long project under the supervision of at least two collaborating scientists from different leading research groups while ERs (projects 11 & 12) are engaged in a 2-year research project with one main supervisor. For the period the network totals 196 person-months, representing 48% of the overall planned 408 person-months. The research projects are going as planned.

For this periodic report, the coordinator collected data on the scientific progress made by each student via a template which was completed and returned with attachments when required (cf. attachment 1-All_fellows_1st_Periodic_rpt.pdf). A complete table with full details is attached (cf. attachment 2-1st_Scientific_Periodic_report_table.pdf). Notable successes to date include (WP to which these contributions, which were already presented in international conferences and for which articles are under preparation, pertain are indicated at the end of each §):

>ESR1 (F. BAJOLET): New lithospheric delamination experiments with a follow-up of the evolution of the dynamic topography with time that allow to directly relate mantle flow in response to delamination to the topographic signal => WP3-4

>ESR2 (T. ROLF): (1) Implementation of continental plates in a 3D spherical convection modelling code indicates that the presence of continental plates allows development of plate tectonics at the surface using rheological laws (yield stresses) that are closer to laboratory-derived values. This behaviour depends on the size of continental plates, but not on their surface coverage; larger continental plates favour an episodic behaviour, rather than a plate-like one. (2) Successful modelling of supercontinent assembly and dispersion and of its control on the mantle potential temperature => WP1-2, WP1-7; WP1-10, WP3-5

>ESR3 (K. HIGGIE): Microstructural and petrological evidence for a change in the olivine crystal plasticity (simultaneous activation of [100] and [001] glide) and for melt segregation parallel to the shear plane in natural systems deforming under sub-solidus conditions; correlation between modal composition and olivine texture indicates that the change in deformation depends on the finite strain accommodated in presence of melt. Strong variations in minerals composition data between plagioclase-rich and poor bands, at the mm scale, imply that melt transport takes place essentially parallel to the bands, i.e., parallel to the shear plane and that there is very limited upwards migration of the melt => WP1-5; WP1-7

>ESR4 (E. FRETTS): Field mapping of the structural and lithological variations and detailed microstructural analysis highlight a gradient in deformation conditions and temperature across the Beni Bousera peridotite massif, implying continuous deformation associated with decompression and heating. New data on the deformation mechanisms of garnet, diopside, and enstatite at varying temperature and stress conditions. => WP1-4; WP1-2; WP3-6

>ESR5 (M. THIELMAN): Parametric study of the role of shear heating-induced strain localisation in the initiation of subduction within oceanic plates (along a transform) and at continent-ocean transitions shows that (i) elasticity is a 2nd-order effect for strain localization, (ii) localization at the lithosphere scale does not necessarily leads to subduction initiation, since the shear zones may also evolve into a drip-off instability. => WP1-6; WP1-8; WP1-2

>ESR6 (D. DYMKOVA) Development of the finite difference + marker in cell 2D I2VIS numerical code to simulate porous flow of magmas in a viscoplastic matrix; simple melting and channel instability benchmark tests were successfully performed. A complex melting model with a dependence of temperature, pressure, and water content was also implemented in the code. => WP2-3

>ESR7 (J. DI LEO): New seismic anisotropy data (local S and SKS splitting) for the northern Sulawesi -eastern Philippines region highlighting a complex dynamic system characterized by the interaction of multiple subduction zones and a coherent seismic anisotropy in the transition zone. A more detailed study of the Sangihe Subduction Zone highlights different seismic anisotropy signatures in the upper plate lithosphere and below the slab, but no contribution to the measured anisotropy from the mantle wedge or the slab. => WP2-4

>ESR8 (A. MASSMEYER): Development of a new 3D visualization technique for analysing fluid dynamics experiments and full rheological characterisation of a new analog material (Carbopol) that, similarly to rocks, displays a stress- and temperature-dependent rheological behaviour. Modelling the behaviour of thermal plumes in these Bingham fluids shows that the shape of the plume head and strain distribution in both the plume and surrounding media differ strongly from those observed in Newtonian fluids. => WP1-3; WP3-2

>ESR9 (R. AGRUSTA) Numerical simulations that explicitly integrate the effect of partial melting on the mantle rheology display an enhanced thermo-mechanical erosion of the lithosphere above a mantle plume, even for fast-moving plates. => WP3-6; WP3-2

>ESR10 (K ADENA): Preliminary U-Th data on Cape Verde basalts indicate deep (>90km) melting. =>WP3-3

>ER1 (S. GREVE) Isotropic and anisotropic phase velocity maps for the Tyrrhenian sea highlighting the complex subduction dynamics in this area, which is characterized by disrupted slabs and changes in the orientation of fast Rayleigh wave propagation with depth => WP2-5

>ER2 (Z. LI): Development of a 3D boundary-element method (BEM) in combination with an asymptotic theory of thin viscous sheets to study free subduction. These models allowed deriving scaling laws for the instantaneous sinking speed and the lateral deformation of a subducting slab as a function of the 'bending length' and of a dimensionless 'stiffness' parameter that quantifies whether subduction is resisted primarily by the viscosity of the sheet itself or by that of the ambient fluid. They also provide time-dependent BEM solutions for the evolution of the slab's shape that may be compared to laboratory observations. => WP3-4

INTERNATIONAL CONFERENCES / EVENTS OPEN TO EXTERNAL RESEARCHERS

Event Number	Participant hosting the event	Type of Event	Month when the event took place	Start date of the event	End date of the event	Total number of researchers outside the network attending the event	Total number of researcher days for researchers from outside the network attending the event	Website of the event
3	UM2	Short-course Textures & Anisotropy	15	28/06/2010	02/07/2010	12	59	
6	UM2	2nd CRYSTAL2PLATE workshop	21	19/01/2011	22/01/2011	13	52	
7	UNIVBRIS	3rd CRYSTAL2PLATE workshop	34					
8	Uniroma TRE	4th CRYSTAL2PLATE workshop	46					
2	UNIVBRIS	Short-course Processing seismic data	15	21/06/2010	25/06/2010	12	56	
4	ETH Zurich	Short-course Thermodynamics	16	05/07/2010	08/07/2010	10	40	
5	CNRS-FAST	Summer-school Thermal convection in complex fluids	17	30/08/2010	04/09/2010	11	65	
1	UM2	1st CRYSTAL2PLATE workshop	7	09/10/2009	12/10/2009	20	70	

Total number of researchers outside the network attending the event	Total number of researcher days for researchers from outside the network attending the event
78	342

Planned number of researcher days for researchers from outside the network attending the event: 485

Remaining number of researcher days for researchers from outside the network attending the event: 143

Comments:

TRAINING

Over this reporting period, the C2P fellows and 78 researchers of outside the network attended 6 C2P training events, achieving 342 external researcher days, which represents over 70% of the overall target of 485 for the whole period.

>SCIENTIFIC (WP4.1 through WP4.9)

ANNUAL CRYSTAL2PLATE WORKSHOPS

The first annual Crystal2Plate workshop (WP4.1) took place near Montpellier, France from 9-12 October 2009 and was organized by the coordinator, UM2. A total of 30 students - 10 Crystal2Plate fellows plus 20 students from outside the network - (cf. attachment 3-C2P_Oct09_attendance_sheet.pdf) followed an intensive 3 and ½ days' program of lectures from 10 senior researchers of the network, who are recognized world specialists in the different fields of research involved in the Crystal2Plate network, and a field trip to Lherz, a major mantle exposure site in the French Pyrenees (cf. attachment 4-Oct09_agenda.pdf). Most "external" participants were already engaged in doctoral or postdoctoral studies in the 7 partner institutions. They contributed to the workshop by presenting their ongoing research in posters and by participating to small group discussions on the different CRYSTAL2PLATE projects. More details are available in the coordinator's report on the integration of external students (WP6.6) (cf. attachment 5-report_1st_wksp_integration_external_students.pdf).

The Second annual C2P workshop took place from 19 to 22 January in Estepona, near Malaga, Spain and was organized by the coordinator UM2 with the assistance of Carlos GARRIDO, CSIC Granada; C2P fellows actively contributed to the drafting of the agenda of this 2nd workshop by suggesting and selecting group discussion topics. The workshop comprised a series of lectures by senior researchers of the network, discussions of topics, round-tables for presentation of results of discussion groups, an on-going poster session, and a full-day field trip to the neighboring Ronda peridotite massif (cf. attachment 6-2nd_workshop_FINAL-agenda_&_abstracts.pdf). Scientific questions for the round tables and discussion sections were prepared in advance by internet-based exchanges among the C2 fellows. They focused on the rheology of lithospheric plates and of plate boundaries (WP1-7; WP1-8), the interactions between melts/fluids and deformation at different scales (WP1-2; WP2-2, WP3-3), subduction dynamics (WP2), and on mantle plumes and the lithosphere-asthenosphere boundary (WP3). The 13 external students who participated (cf. attachment 7-2nd_wkshp_scan_signatures.pdf) contributed to the workshop by presenting their current research and results via a poster and by taking an active part in and sometimes leading the discussion group sessions. Additional details can be found in the coordinator's report on the integration of external students (WP6.7) - (cf. attachment 8-report_2nd_wksp_integration_external_students.pdf).

SECONDMENTS: Collaborative research projects lie at the core of this training network. A first set of discussions and scientific exchanges took place in the 1st CRYSTAL2PLATE workshop in October, where the basis of the collaborative work in all projects were discussed in joint meetings with the C2P fellows and the 2 supervisors. In addition to regular exchanges generated by the joint supervision of ESRs by senior scientists (e.g., joint field work in Morocco by Erwin FRETTS, Kate HIGGIE, C. Garrido (Granada), A. Tommasi, J.L. Bodinier, and A. Vauchez (Montpellier); one-month field trip in Cape Verde for Katherine ADENA), secondments (visits of C2P fellows to their secondary institutions) so far represent approximately 7.5 months.

-Erwin FRETTS spent a total of 4 months at Geosciences Montpellier working in collaboration with Andrea TOMMASI on the analysis of the deformation; 45 days of field mapping in Beni Bousera (Morocco);

-Roberto AGRUSTA spent 1 week at ETH Zurich working in collaboration with Dr. Taras GERYA on the numerical modelling of plume-lithosphere interaction.

- Kate HIGGIE spent one week at ETH Zurich learning experimental petrology techniques.

- Jenny DI LEO visited Dr. Manuele Faccenda at ETH Zurich in June 2010 (2-days)

- Anna Massmeyer spent 1 week at Géosciences Montpellier discussing issues on plume dynamics in nature and rheology of mantle rocks with A. TOMMASI, A. NICOLAS, and D. MAINPRICE.

- Marcel THIELMANN started a collaboration with Dr. Rozel in Lyon, France. This is considered an outreach activity as this collaboration is with a researcher who is external to the network.

SHORT COURSES AND THEMATIC SUMMER-SCHOOLS

Over the period 01/04/2009 - 31/03/2011, the following training events were chronologically organised and implemented by the consortium:

-> Short-course on Processing Seismic data using SAC (WP4.6) was organised by Partner 2 (University of Bristol) in Bristol, U.K. from 21-25 June 2010. The course comprised 5 days of lectures and self-driven practicals using the seismic processing code SAC. 11 C2P fellows plus 12 external students attended the event (cf. Attachment 9-Attendance_sheet_Bristol_Jun10.pdf). See the attached agenda for full details (cf. Attachment 10-Bristol_agenda_final.pdf). Evaluation questionnaires on this training event revealed that 90% of participants were SATISFIED to VERY SATISFIED (cf. Attachment 11-Bristol_Training evaluation_Response_analysis.pdf)

-> Short-course on Textures and Anisotropy (WP4.4) was organised by partner 1 (University Montpellier 2) in Montpellier, France from 28 June - 2 July 2010. The course comprised 5 days of lectures and practicals with the objective of acquiring theoretical knowledge on texture development mechanisms and on associated anisotropy of physical properties and practicing measurements & interpretation of both texture and seismic anisotropy data. It was attended by 11 C2P fellows plus 12 external students (cf. Attachment 12-UM2_week1_attendance_sheet.pdf). Full details are in the attached agenda (Cf. Attachment 13-Jun-Jul_Montpellier_agenda1.pdf). Evaluation questionnaires on this training event revealed that roughly 85% of participants were SATISFIED to VERY SATISFIED (cf. Attachment 14-UM2_week1_Training evaluation_Response.pdf).

-> Short-course on Thermodynamics numerical modelling using PERPLEX (WP4.2 & WP4.3). Out of convenience it was decided that this short-course would be organised at UM2 instead of ETH Zurich (Partner 4) as originally planned since all students were already in Montpellier for training. The event took place there on 5-8 July, 2010. The course comprised 4 days of lectures and practicals with the objective of acquiring numerical modelling skills and practicing on Thermodynamics modelling using PERPLEX. It was attended by 11 C2P fellows plus 10 external students (cf. Attachment 15-UM2_week2_attendance_sheet.pdf). See the attached agenda for full details (cf. Attachment 16-Jul_Montpellier_agenda2.pdf). Evaluation questionnaires on this training event revealed that 62% of participants were SATISFIED to VERY SATISFIED (cf. Attachment 17-UM2_week2_Training evaluation_Response.pdf). We believe the decline in satisfaction for this third short course to be linked to 3 factors: this highly technical and complex intensive course took place on the third consecutive training week (we now realize that 3 continuous weeks of intensive training was too demanding) and coincided with a heat wave which made it additionally difficult for everyone.

-> Summer school on Thermal Convection in complex fluids (WP4.7) was organised by Partner 5 (FAST-CNRS) in Orsay near Paris, France from 30 August to 4 September 2010. This intensive summer course comprised 6 days of lectures and practicals. 12 C2P fellows plus 11 external students attended the event (cf. Attachment 18-ORSAY_Attendance_sheet_Sep10.pdf). Full details are in the attached agenda (Cf. Attachment 19-Convection_SummerSchool_Agenda.pdf). Evaluation questionnaires on this training event revealed that 80% of participants were SATISFIED to VERY SATISFIED (cf. Attachment 20-ORSAY_Training evaluation_Response_analysis.pdf).

It is to be noted that the participants' satisfaction rate for C2P courses and summer school remains satisfyingly high with 87% of SATISFIED to VERY SATISFIED responses. (cf. Attachment 21-OVERALL_Training evaluation_Response_analysis.pdf)

The assessment of individual instrument-based and group training (WP4.8) as well as of the fellow's progresses was first performed by the Supervisory Board in September 2011. It is very satisfactory (cf. p 18 of this report).

An evaluation of the fellows' level of satisfaction on the training was also performed; it reveals that globally the fellows' level of satisfaction is (very) high (WP4.9) (cf. Attachment 22-Assessment_fellows_satisfaction_level.pdf). In addition to the above, C2P fellows were invited to complete the on-line satisfaction questionnaire within the framework of the network's preparation to the Mid-Term Review meeting which was scheduled early in 2011 (WP4.9).

PERSONAL & CAREER DEVELOPMENT TRAINING (WP5)

Crystal2Plate fellows have been extremely busy during this first period with network-wide training events. In addition to those group sessions, many of them have taken other courses which are listed below per partner student (cf. attachment 23-1st_Period_List_C2P_workshops_courses.pdf):

->Partner 1:

- Katherine HIGGIE (ESR3): 25h course on "Physics of the Earth Interior" at UM2 (WP4-1); 30h course on "Continuous deformation" at the FORSTERITE workshop in the Pyrenees, 30h course on "Experimental Petrology" at EURISPET workshop in Zurich.
- Roberto AGRUSTA (ESR9): 30h course on "Continuous deformation" at the FORSTERITE workshop in the Pyrenees.

->Partner 2

- Katherine ADENA (ESR10): 2-day courses on "Postgrads who teach" and on "SEM"; one-day course on "First aid" and "Radiation safety training" all at Bristol University.
- Jenny DI LEO (ESR7): one-day course on "Introduction to Fortran90", 8 October 2009 and on "Introduction to R", 6 November 2009; 2-day course on "Teaching and Learning" in January 2010, followed by a one-day "First Aid course", 6 July 2010 all at Bristol University.

->Partner 3 - Sonja GREVE (ER1): 5-day workshops on "Seismic Anisotropy" at IWSA, 12-16 April 2010 in Perth, and on "Inversion theory", 19-25 Sept. 2010, Sardinia. She also benefited from specialized training on surface waves analysis at Utrecht. (WP4.5)

>Partner 4:

- Diana DYMKOVA (ESR6): courses on "Numerical modelling and continuum mechanics" -autumn 2009 - and "Dynamics of mantle convection"- spring 2010- and a one-day class on "Developing a comprehensive skills profile", 28 January 2011, all at ETH Zurich (WP4.3).
- Tobias ROLF (ESR2): courses on "Numerical modelling: theory and applications" and "Atmospheric Physics" fall semester 2010, followed by "Clouds Dynamics" in spring 2011, all at ETH Zurich.
- Marcel THIELMANN (ESR5): courses at ETH Zurich on "Numerical modelling of rock deformation" fall 2009, "Anisotropic behaviour and rheology of rocks" spring 2010, "Dynamics of the mantle and lithosphere" June 2010 (WP4.3). Tutorials on "Using G-Plates" (half day) and on "Emerging numerical techniques for geodynamics" (one day) at the Glade meeting in San Diego, California ; 3-day course on "Presenting science" in March 2011.

->Partner 5:

- Anna MASSMEYER (ESR8): 24 hour-course on "Instability and chaos" by Laurette Tuckerman at Université Paris Sud 11 fall 2010 (WP4.3)
- Zonghai LI (ER2): Weekly class of 1.5h on "Theoretical and computational fluid dynamics" at FAST, Orsay, France (WP4.3).

->Partner 6 - Flora BAJOLET (ESR1): 4-day courses on "Geodynamics of the Mediterranean area" (8-11 February 2010), "Geodynamics of the Apennins" (15-18 February 2010), "Sedimentary basins' tectonic, seismic interpretation and analogue experiments" (12-15 April 2010), and "Crust and lithosphere dynamics" (31 May-4 June 2010) all in Rome (WP4.1).

->Partner 7 - Erwin FRETS (ESR4): 30h course on "Continuous deformation" at the FORSTERITE workshop in the Pyrenees and one-day course on "Safety in the laboratory" at IACT, Granada. He also benefited from specialized courses on mantle deformation processes at UM2 (WP4-1).

LANGUAGE CLASSES:

- French: Kate HIGGIE (80h), Roberto AGRUSTA (50h), Diana DYMKOVA (21h), Anna MASSMEYER (4h weekly since January 2010)
- German: Diana DYMKOVA (90h)
- Spanish: Erwin FRETS (10h)

OUTREACH ACTIVITIES

- Development of scientific collaborations with laboratories external to the network: T. ROLF (coll. N. Coltice, ENS Lyon, F); M. THIELMANN (coll. A. Rozel, ENS Lyon).

4.3.MILESTONES

Milestone no.	Milestone name	Due achievement date from Annex I	Achieved	Actual / Forecast achievement date
1	(WP1, WP2, WP3) multiple milestones partially achieved in Research	31/03/2011	Yes	31/03/2011
2	(WP4.1) 1st Crystal2Plate workshop	31/10/2009	Yes	09/10/2009
3	(WP4.2) Short course Thermodynamics	30/11/2009	Yes	05/07/2010
4	(WP4.3) Acquisition of numerical modelling skills	31/12/2009	Yes	05/07/2010
5	(WP4.4) Short course on Texture & Anisotropy	30/01/2010	Yes	28/06/2010
6	(WP4.5) Seismology & surfaces waves analysis	31/03/2010	Yes	19/09/2010
7	(WP4.6) Short course on Processing seismic data using SAC	30/04/2010	Yes	21/06/2010
8	(WP4.7) Acquiring fluid mechanics modelling skills	31/07/2010	Yes	30/08/2010
9	(WP4.8 & WP1.1;WP2.1;WP3.1) Assessment of individual instrument-based and group training	31/03/2011	Yes	06/09/2010
10	(WP4.9 & WP5.3) Assessment of satisfaction level of trainees	31/03/2011	Yes	31/03/2011
11	(WP4.10) Final assessment of scientific training offered	31/03/2013	No	30/04/2011
12	(WP5.1) Establishment of personal Career Development plan per ESR & ER	30/11/2009	Yes	06/09/2010

Milestone no.	Milestone name	Due achievement date from Annex I	Achieved	Actual / Forecast achievement date
13	(WP5.2) Assessment of fulfilment of PCD plan	30/09/2010	Yes	31/03/2011
14	(WP5.3) Assessment of trainees' satisfaction level	31/01/2011	Yes	31/03/2011
15	(WP6.1) Web-based presentation and publicity of vacant positions	30/06/2009	Yes	18/03/2009
16	(WP6.2) intra-network communication	30/11/2009	Yes	09/10/2009
17	(WP6.3; WP6.4; WP6.5) Establishment & assessment of outreach activities	30/11/2009	Yes	31/10/2009
18	(WP6.6) Report on integration of external students to first workshop	30/09/2009	Yes	30/11/2010
19	(WP6.7) Report on integration of external students at 2nd workshop	31/10/2010	Yes	31/03/2011
20	(WP6.8) Report on integration of external students at 3rd workshop	30/09/2011	No	31/03/2011
21	(WP6.9) Report on integration of external students at 4th workshop	31/01/2013	No	
22	(WP7.1) Kick-off meeting	01/05/2009	Yes	04/05/2009
23	(WP7.2) Recruitment of ESRs/ERs	31/03/2010	Yes	18/08/2010
24	(WP7.3) regular assessment of the network	30/04/2010	Yes	28/04/2010
25	(WP7.4) Mid-term assessment of the network	31/05/2011	Yes	10/05/2011
26	(WP7.5) Final assessment of network	31/05/2013	No	18/08/2010

Comments:

22 were achieved over this first period:

(WP1, WP2, WP3) multiple milestones partially achieved in research (see p. 9 of this report for details)

(WP4.1) 1st Crystal2Plate workshop (all C2P fellows, except ESR10 & ER2 not recruited at that date + 20 external participants) and specialized courses at UM2 (ESR3 & 4)

(WP4.2) Short-course on Thermodynamics (all C2P fellows, except ER2 not recruited at that date + 10 external participants)

(WP4.3) Acquisition of numerical modelling skills (specialized courses at FAST or ETH, ESR2, 5, 6, 8 & ER2):

(WP4.4) Short course on Texture & Anisotropy (all C2P fellows, except ER2 not recruited at that date + 12 external participants)

(WP4.5) Seismology and surface waves analysis training at Utrecht (ER1)

(WP4.6) Short course on Processing seismic data using SAC (all C2P fellows, except ER2 not recruited at that date + 12 external participants)

(WP4.7) Summer school on fluid mechanics modelling skills (all C2P fellows + 11 external participants)

(WP4.8) Assessment of individual instrument-based and group trainings

(WP4.9) Assessment of training and satisfaction level

(WP5.1) Establishment of Personal Career Development (PCD) plan per fellow

(WP5.2) Assessment of fulfillment of PCD

(WP5.3) Assessment of trainees' satisfaction level

(WP6.1) Web-based presentation and publication of vacant positions

(WP6.2) intra-network communication

(WP6.3-WP6.4-WP6.5) Establishment & assessment of outreach activities

(WP6.6) Report on integration of external students to First workshop

(WP6.7) Report on integration of external students to Second workshop

(WP7.1) Kick-off meeting

(WP7.2) Recruitment of ESRs/ERs

(WP7.3) Regular assessment of the network

(WP7.4) Mid-term assessment of the network

4 remain to be achieved over next period:

(WP4.10) Final Assessment of scientific training offered

(WP6.8) Report on integration of external students to Third workshop

(WP6.9) Report on integration of external students to Fourth workshop

(WP7.5) Final assessment of the network

ADDITIONAL INFORMATION

Comments:

STUDENT MONITORING

-> a career development plan was drawn up and signed for every fellow (WP5.1). (cf. attachment 24-ALL_Students_career_plans.pdf).

-> assessment of the fulfilment of the students' PCD plans was performed (WP5.2). Students were asked to complete and return an updated personal Career and Development plan (cf. attachment 25-ALL_Students_UPDATED_career_plans.pdf). These were collected and compared with the original ones. The conclusions are that career planning of the ESRs and ERs is satisfactory and as planned without major deviations. More details can be found in the WP5 coordinator's report (Hanneke Paulssen from UU) (WP5.3) (Cf. attachment 26-Assessment_completion_Career_Plans.pdf)

-> Crystal2Plate fellows continue to regularly submit progress reports on their research to the Scientific Coordinator. The reports include comments from the supervising PI(s) and, as appropriate, recommended corrective action (cf. attachment 27-All_C2P_students_Progress_reports_Apr11.pdf).

-> Additional formal monitoring of each PhD student is performed through a Thesis Advisory Committee (TAC), composed of the ESR's two (2) supervisors plus two (2) experts in the field of research. All TAC compositions have been approved by the Scientific Coordinator (cf. attachment 28-ALL_TAC form acceptation_letters.pdf). Most ESRs have had their first annual TAC meeting. ESR10 who was recruited in March 2010 will be completing her TAC meeting very soon.

-> The assessment of individual instrument-based and group training on each student's research was performed by the Supervisory board (WP4.8 and also task 1 of WP1, WP2 and WP3). An assessment session for all ESRs took place in Orsay, France on 6-7 September 2010, immediately after the summer school. Each ESR presented his/her research (30-minute PowerPoint presentation) and discussed (10-minute Question/Answer session) with the Supervisory Board. The fellow then left the room to give the Supervisory Board members 10 minutes to discuss and assess his/her performance and progress. Full details are available on the agenda (cf. attachment 29-Sep_Orsay_Assessment_final_agenda.pdf). **ALL STUDENTS RECEIVED A FAVORABLE ASSESSMENT EVALUATION** and were confirmed as eligible to continue their research in the programme.

DISSEMINATION ACTIVITIES

Comments:

DISSEMINATION (Cf. Attachment 30-1st_Period_List_Dissemination_conf_publi.pdf)
COMMUNICATION

In line with Annex 1 of the contract, an active communication policy and dissemination of these results have been implemented via the project's website (WP6.4) by Francesca Funicello of Partner 6 (UniRoma Tre) and the coordinator.

Many C2P fellows presented posters at conferences and gave oral presentations Abstracts and PDF of posters are posted on the Crystal2Plate website (WP6-5)
<http://www.gm.univ-montp2.fr/CRYSTAL2PLATE/presentations.html>.

Most C2P fellows have developed a personal webpage which is linked to the network website (WP6.1) <http://www.gm.univ-montp2.fr/CRYSTAL2PLATE/People.html> .

All presentations given during C2P First workshop and the "Texture and Anisotropy" short-course are available on line in PDF format (WP6.6)
http://www.gm.univ-montp2.fr/CRYSTAL2PLATE/Crystal2Plate_1stworkshop.html &
http://www.gm.univ-montp2.fr/CRYSTAL2PLATE/Crystal2Plate_1stworkshop.html

>The C2P fellows have defined the Crystal2Plate e-newsletter's format and a first issue has been produced (WP6.2). Cf. attachment 31-C2P_newsletter_april11.pdf)

> In addition to the conferences listed below, 5 C2P fellows have present their results in the European Geosciences Union Meeting in Vienna this April and almost all of them have planned participations to international meetings in Europe or in the USA this summer. Almost all C2P fellows are also engaged in the preparation of their first PhD-related article, which will be submitted by the end of the summer.

>ARTICLES

- 1 PUBLISHED co-authored journal report for Anna MASSMEYER
- 1 SUBMITTED co-authored article by Katherine ADENA
- 8 articles IN PREPARATION (1 for Jenny DI LEO, 1 for Diana DYMKOVA, 1 for Flora BAJOLET, 1 for Erwin FRETS; 2 for Zhonghai LI; 1 for Katherine HIGGIE; 1 for Roberto AGRUSTA)

CONFERENCES ATTENDED

- > 5 ORAL PRESENTATIONS (by Flora BAJOLET, Jenny Di LEO, Sonja GREVE, Anna MASSMEYER, Marcel THIELMANN)
- > 21 POSTERS PRESENTED

INTERNATIONAL meetings

- # IWSA Perth, Australia 12-16 April 2010 - (oral presentation by Sonja GREVE)
- # EGU, Vienna, 2-5 May 2010 - (posters presented by Diana DYMKOVA, Sonja GREVE, Tobias ROLF and Marcel THIELMANN; oral presentation by Flora BAJOLET)
- # GLADE meeting in San Diego, CA 26-28 July 2010 (poster presented by Marcel THIELMANN)
- # GeoMod conference in Lisbon, Portugal - 27-29 September 2010 (posters presented by Diana DYMKOVA and Marcel THIELMANN)
- # Geodynamics workshop, Muenster, Germany, 6-8 October 2010 (posters presented by Anna MASSMEYER and Tobias ROLF)
- # International Lithosphere Program, Postdam, Germany - 6-8 October 2010 (poster presented by Erwin FRETS)
- # SEG, Houston, TX 18-21 October 2010 (Sonja GREVE attended)
- # EURISPET, Zurich, 20-27 November 2010 (Kate HIGGIE presented a poster)
- # American Geophysical Union, 12-18 Dec 2010 - San Francisco, CA (posters presented by Jenny Di LEO and Zonghai LI)

British Geophysical Association "Postgraduate Research in Progress Meeting 2010 16-17 Sept. 2010 <http://bga2010.gly.bris.ac.uk/> (co-organized by Jenny Di LEO who gave an oral presentation).

NATIONAL meetings

- # Atelier INSU Forsterite, 20-23 October 2009, Pyrénées Ariégeoises, Etang de Lherz (Kate HIGGIE, Erwin FRETTS and Roberto AGRUSTA attended)
- # 70th annual conference of the German Geophysical Society (DGG) in Bochum, Germany 15-18 March 2010 (Sonja GREVE and Tobias ROLF presented a poster)
- # Deutscher Geodynamik Workshop, Muenster, 6. - 8. October 2010 (Anna MASSMEYER presented a poster)
- # Swiss Geoscience meeting in Fribourg, CH, 20 November (Oral presentation by Marcel THIELMANN and poster presented by Diana DYMKOVA and Tobias ROLF)
- # GeoNZ, Wellington, New Zealand - 21-24 November 2010 (Sonja GREVE presented a poster)

LOCAL meetings

- # Journée des Doctorants, MIPEGE, 26-27 April 2010, Orsay, France (Anna MASSMEYER presented a poster)
- # Journée de Dynamique des Fluides sur le Plateau - FAST, Orsay, France (Anna MASSMEYER participated)
- # IDES, Orsay, France, 16-17 November 2010 (Anna MASSMEYER participated)
- # Colloque on Rheology, Rencontre du non-linéaire, Paris, 17 March 2011 (poster presented by Anna MASSMEYER)
- # Journée des Doctorants, 28-29 April 2011, Orsay, France (Anna MASSMEYER gave a talk)

For the NEXT PERIOD, participation of C2P fellows to the following conferences is already planned:

- # EGU, Vienna 3-8 April 2011 - (poster presentations by Flora BAJOLET, Jenny DI LEO, Diana DYMKOVA, Marcel THIELMANN, Erwin FRETTS, Tobias ROLF; oral presentation by Zhonghai LI)
- # Interrelationship between Deformation and Metamorphism in Granada (23-26 May): Erwin FRETTS
- # Gordon Research Conference Interior of the Earth in South Hadley (5-10 June): Roberto AGRUSTA; Katherine HIGGIE; Tobias ROLF
- # Penrose Conference, Deformation Localization in Rocks: New Advances, Cap de Creus, E (29 June-2 July): Katherine HIGGIE;
- # Geological Society Conference Dynamic Topography in London (1-2 September): Flora BAJOLET
- # Viscoplastic Fluids - From Theory to Application in Rio de Janeiro (6-10 November): Anna MASSMEYER

PROJECT MANAGEMENT

Comments:

This periodic report has been prepared according to the following reference documents available on our C2P website

* Guidance notes on project reporting for ITN Marie Curie Actions of the 7th Framework Programmes, version October 2010

ftp://ftp.cordis.europa.eu/pub/mariecurie-actions/docs/itn-reporting-guidelines_en.pdf

* Financial guidelines for Marie Curie Actions version 2.0 May 2011

http://cordis.europa.eu/fp7/mariecurieactions/itn-manage_en.html

* Eligibility of Tuition Fees (ftp://ftp.cordis.europa.eu/pub/fp7/docs/eligibility_of_tuition_fees.pdf)

* Revision on Financial Information for Marie Curie Host-Driven Actions (Category D & E) (PDF doc)

* Grant Agreement 215353 Crystal2Plate, amended Annex 1 and Annexes II-III-IV-V-VI-VII

* Crystal2Plate Consortium Agreement

Methodology

>All partners in the project directly access ECAS, the EU on-line reporting platform using a personal username and password. Financial statements are submitted on-line on FORCE by partners and after validation by the coordinator they are printed, signed and sent to the Project manager. The printed and signed financial statements are then mailed to the European Commission.

>The following information is collected from the partners on a regular basis:

- Regular progress of the research via the quarterly progress reports, deviation from the original plan and corrections taken where appropriate.

- Regular monitoring of the PhD training programme via Thesis Advisory Committee meetings and student progress assessment, PhD retreat, Course evaluation questionnaires, Training evaluation questionnaire, Personal Development Career Plan for each student.

-Information of expenses incurred by each partner with relation with employment of the ESR, including Living & Mobility, Travel, and Career allowance, as well as laboratory expense (category D, E, F and G).

>As far as administration and financial management are concerned, the above information is analysed on a regular basis by the project manager and the coordinator. Any significant deviations from the budgeted figures are discussed and documented with the partners concerned and, should the case happen, actions are taken to correct the situation.

> The Supervisory Board, which is composed by the PIs from the 7 partners, and representatives of the fellows and of the Associated Partners, assisted by the project manager has met on a regular basis to access the ITN functioning and discuss future directions: Kick-off meeting in April 2009, at the 1st C2P Workshop in October 2009, for the Assessment Section in September 2010, and at the 2nd C2P workshop in January 2011.

Crystal2Plate is an EU FP7 Marie Curie-funded Initial Training Network coordinated by Dr. Andréa Tommasi from Géosciences Montpellier (UM2), France. Crystal2Plate brings together 7 European partner institutions, 2 high-technology SMEs and 2 international companies. The network is training 10 doctoral students and 2 junior post-doctoral fellows who have embarked into research work on "How does plate tectonics work? From crystal scale processes to mantle convection with self-consistent plates" under the guidance of senior scientists from the different partner universities. Between 1 April 2009 and 31 March 2011, the following milestones were chronologically reached per Annex 1 of the Crystal2Plate contract (cf. p. 19-24 of Annex 1).

>1. Crystal2Plate started as planned on 1 April, 2009 and a kick-off meeting was organized by the coordinator in May 2009 in Montpellier, France (WP7.1) - cf. Attachment 32-kickoff-agenda.pdf).

>2. An effective web-based presentation of the network was achieved via a dedicated web-site (<http://www.gm.univ-montp2.fr/CRYSTAL2PLATE/home.html>) advertising the positions and supporting the application process (WP6.1).

>3. A successful international recruitment process was launched in 2 phases (WP7.2). To ensure a competitive international recruitment and equal opportunities, advertising started in March 2009 on various internet sites, including Crystal2Plate ITN and partner institutions websites as well as Euraxess and Nature Jobs. Specialised mailing lists were also widely used to advertise open vacancies. Specific adds were placed for the position ER2 that was not yet filled at the end of the 2

recruitment phases. (Cf. attachment 33-C2P_adverts.pdf). Applicants were asked to send 2 letters of recommendations, transcripts, CV. Over 50 complete applications were evaluated by the corresponding Principal Investigator (PI) and interviews were conducted with qualified candidates (cf. attachment 34-All_candidates_recruitment_data.pdf). PIs were asked to complete an evaluation grid for each qualified applicant, stating their preference order (cf. attachment 35-template_Evaluation_grid.pdf). This recruitment process resulted in the hiring of 10 highly qualified ESRs (6 women and 4 men) and 2 ERs (1 woman and 1 man) (WP7.2). The gender balance of 58% female is above the targeted level of 50% female researchers in the project. Overall, 9 fellows hold European nationalities (British, French, German, and Italian), 1 comes from Russia, 1 from Australia and 1 from China. (cf. attachment 36-Final_List_appointed_fellows.pdf)

>4. The pre-financing sum of 1,620,076.80€ received by the coordinator was entirely redistributed among partners.

>5. In October 2009, the 1st annual Crystal2Plate workshop took place in Montpellier, France (Cf. p.11 of this report). Declarations on the Conformity were submitted and hard copies sent to the Commission for all 12 appointed researchers (cf. attachment 37-ALL_C2P_decl_conformity.pdf). Marcel THIELMANN was designated by his peers to act as their representative on the C2P Supervisory Board.

>6. The second meeting of the Supervisory Board took place in October 2009 (cf. attachment 38-Board_Meeting_agenda.pdf).

>7. A Consortium Agreement was signed (cf. attachment 39 -C2P consortium agreement.pdf).

>8. A change of signatory was reported for partner 5 Università degli Studi Roma TRE (cf. attachment 40-UNIROMA_change_signatory.pdf)

>9. To conclude our first year of activity, a first Progress report was submitted on Sesam and sent to the REA in due time.

>10. As planned (WP4.2-WP4.3-WP4.4-WP4.6-WP4.7), 3 short courses and one summer school took place in the year 2010. Full details are on p. 14 of this report.

>11. The assessment of individual instrument-based and group training on each student's research was performed by the Supervisory board (WP4.8) in Orsay, France on 6-7 September 2010 (details are on p. 18-19 of this report). ALL STUDENTS RECEIVED A FAVORABLE ASSESSMENT EVALUATION

All above points (1 through 11) were documented in our second Progress report (cf. attachment 41-Second_progress_rpt_FINAL.pdf)

>12. The mid-term review meeting took place in Estepona (Malaga) Spain on 17-18 January 2011 (WP7-4); the network received an excellent review (cf. attachment 42-Mid-Term_Review_Evaluation_results.pdf).

>13. The 2nd annual C2P workshop took place from 19 to 22 January (WP6.7) with a field trip to Ronda, Spain (details are on p. 13 of this report).

>14. Assessment of the fulfilment of the fellows' Personal Career Development plans (WP5.2) and evaluation of the satisfaction level of trainees (WP5.3) was performed. (details are on p. 18-19 of this report).

>2 changes of authorized signatories were reported by Partner 3 (University of Utrecht) and again Partner 6 (UNIROMA 3)

> We updated the CRYSTAL2PLATE publishable summary. Please refer to Attachment 43-C2P_SummaryReport.pdf.

>15. The C2P network files its First Periodic report to the EC (WP7.4).

ADMINISTRATIVE UPDATES

>A procedure has been implemented for the REMOVAL OF SPECIAL CLAUSE 10 bis from our general agreement.

For the purpose of this periodic report, we tried to comply with the request for third parties (as expressed in Special Clause 10 bis) to file a separate Form C on FORCE. This concerned the 2 French partners who are Joint Research Units: Partner 1 UMR 5243 involves CNRS (PIC 999997930) as third party and Partner 5 CNRS (PIC 999997930), UMR 7608 involves UNIVERSITE PIERRE MARIE CURIE (UPMC) (PIC 999986193).

However, efforts to update the list of third parties on FORCE were VOID since a technical reason makes it impossible for the same institution to be listed under the same contract as BOTH "beneficiary" and "third party".

Therefore, it was jointly decided between the REA and our consortium that removing the Special Clause 10 Bis from the General Agreement was the solution to solve this problem. This decision doesn't affect the consortium much especially since these third parties do NOT receive nor manage any portion of the C2P funding and they were going to file Form Cs in a ZERO EURO amount. To that effect the coordinator has sent a duly signed notification to the EC on behalf of the consortium (Cf. Attachment 44-Signed_notification_removalSC10.pdf)

Although the description of work remains unchanged, the removal of SC10 Bis induced a (minor) change of Annex 1. This amendment was implemented upon approval of the REA via our Project Officer, as indicated in the request for Amendment of Annex 1. Modifications of Annex concern the removal in the document of references to the Joint research units (page 1, asterisks and mentions referring to partners 1 and 5's UMRs have been removed; page 5 and 6 partners are listed but not the institutions involved in the JRU). We send a duly signed hard copy of the notification for this amendment to the REA (Cf. Attachment 45-Notif_amendmt_Annex1_25MAY2011.pdf) together with a PDF of the revised Annex 1 (Cf. Attachment 46-Amended_25MAY2011_Crystal2Plate-215353-AnnexI.pdf).

CHANGE OF SIGNATORIES

Both Partner 3 (University of Utrecht) and Partner 6 (Uniroma 3) reported a change in authorized signatories. An amendment session was completed and submitted on NEF to update the information in the GPFs. Original copy of A2.5 forms with new signature samples were sent for Utrecht and the same is being sent with this report for Uniroma3. (cf. attachment 47-signed_UU_notif_new_signatories.pdf). Original copy of A2.5 forms with new signature samples for Uniroma3 are being sent with this report (cf. attachment 48-Signed_2nd_change_signatories_ROMA3.pdf).

There are NO DEVIATIONS to be reported from planned milestones and deliverables. From a management point of view, the scheduling of short-courses was regrouped in the summer of 2010 to accommodate the lecturers' availability and to optimize attendance by all ESRs (recruitment of the last ESR occurred by month 12). Other than that, the timetable was respected for overall recruitment, holding training events, submitting Declarations on the Conformity for each fellow, completing progress reports on SESAM, organizing the Mid-Term review meeting and compiling the data for our First periodic report.

JUSTIFICATION OF REAL COSTS

For the first reporting period, a total of 64,033.78€ is claimed in Category G, ventilated as follows (cf. attachment 49-Details_CatG_1st_period.pdf):

- * Postage: 99.91€
- * Consumables: 3,131.90€
- * Travel: 19,085.62€
- * Reception: 2,386.66€
- * Computing: 1,107.18€
- * Salary (project manager): 38,222.51€

Salary expenses declared here by Coordinator concern Nathalie Modjeska, who was hired as Project Manager to assist the coordinator in the implementation of the network. Timesheets have been completed and signed (cf. Attachment 50-Scanned_signed_Nat_C2P_Timesheets_1st_period.pdf)

GENERAL REMARKS

Centralized management by the coordinator of the workshops and of the follow up of the fellows' progress proves extremely positive in many aspects. The joint organization of events which are common to all the students induced **COST REDUCTION AND MAXIMUM PROFITABILITY** of invested funds; it also allowed senior scientists of the network to regularly contribute to the training. Although the concentration of the C2P courses in the summer 2010 was demanding for the fellows, the realization of several network-wide activities during their first year of training allowed for fast development of a **STRONG COHESION AMONG THE ACTORS** of the network. We can report, for instance, that C2P fellows actively participated in the preparation of the scientific program of the 2nd C2P workshop, organizing by themselves a lively internet-based discussion to define the themes of the discussion sessions.

The C2P workshops and courses also allowed the fellows to acquire a **COMMON SCIENTIFIC**

BACKGROUND, which is essential to the multidisciplinary collaborations that are a central piece to all C2P projects. From the regular exchange of progress reports and meetings of the Supervisory Board, as well as from animated formal and informal discussions during the C2P training courses, workshops and field trips, additional inter-lab collaborations have spurred spontaneously, exceeding in many cases the original plan drafted in Annex 1.

We also find it worth reporting that the benefits of our C2P network go beyond the reach of our official partners' laboratories. Following their participation to the C2P training events, external participants to C2P training courses and workshops have developed long-standing collaborations with C2P partners. We can report, for instance, an external PhD student, who participated to many C2P trainings in 2009 & 2010, that has just obtained an IOF to develop a postdoctoral project between an Australian University and UM2. In addition, 2 external PhD students and 1 postdoc who participated to the 1st workshop have since then realized 1-3 months stays in C2P laboratories for learning new techniques for their own research projects. C2P fellows are also developing more collaborations with institutions external to the network as they advance in their projects.

For the NEXT PERIOD, it is to be noted that one of our ER has announced that she will be taking a 16-week maternity leave (starting 1 June 2011). By that time she will have achieved 20 months of research. Her 24-month contract, which started on October 1, 2009, will therefore be frozen for 4 months from 1 June 2011 through 30 September 2011 and will resume upon her return on 1 October 2011. Consequently, the ending date of her contract is being postponed to 31 January 2012. The procedure for a change of Authorized representative will be carried out for Partner 2 UNIVBRIS and Partner 4 ETH Zurich.

FINANCIAL STATEMENTS – FORM C AND SUMMARY FINANCIAL REPORT

Comments:

We had reported NUMBERING errors of C2P partners in the ECAS on-line reporting tool: throughout the entire portal, C2P partners are numbered from 1 to 8, with ABSENCE OF partner #5. (1-UM2, 2-Bristol University, 3-Utrecht University, 4-ETH Zurich, 6-UNIROMA3, 7-FAST, 8-CSIC is how they show on the site).

With the assistance of our Project officer and of the Help-desk, we tried to have that corrected so that it reflects the correct number of partners (total of 7 partners in the consortium) and the correct numbering as per Annex 1:

- 1-UNIVERSITE MONTPELLIER 2 (UM2)
- 2- UNIVERSITY OF BRISTOL (UNIVBRIS)
- 3- UNIVERSITEIT UTRECHT (UU)
- 4-EIDGENOESSISCHE TECHNISCHE HOCHSCHULE Zuerich (ETH Zurich)
- 5-CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS-FAST)
- 6-UNIVERSITA DEGLI STUDI ROMA TRE (UNIROMA3)
- 7-CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (CSIC)

Unfortunately despite all our efforts, the numbering remains INCORRECT.

However, to remain consistent with Annex 1, we choose in this periodic report to refer to our partners according to their correct numbering, as appears in the General Agreement (mostly, partner 5 is CNRS-FAST, partner 6 is UNIROMA3 and partner 7 is CSIC - there is NO PARTNER 8).

The overall amount claimed by the consortium for the first period is: 1,346,468.75€

Altogether 7 Form Cs were collected (cf. Attachment 51-ALL_forms_C_C2P_1stPeriod.pdf) and one summary form C compiling all costs for the consortium was produced (cf. Attachment 52-Summary-CRYSTAL2PLATE_FormCs.pdf)

Original hard-copies are being sent along with this report to our Project Office at the REA in Brussels.

For this first periodic report, partners of the consortium have followed the rule of declaration of costs based on flat rates, except for Category G when applicable. Costs claimed in Categories A through C are based on the adjustment of the basic EC rates to every fellow's personal profile and geographical mobility (Cf. Attachment 53-Calculation_details_Fellows_allowances.pdf) and the number of person-months achieved by each fellow. Costs claimed in Category D and E F are based on the 600€ flat rate multiplied by the number of person-months achieved by the fellows. Costs claimed in Category F are based on the 300€ flat rate multiplied by the number of external-researcher days achieved.

Category H represents a maximum of 10% of A+B+C+D+E+F+G per partner, per period.

We point out a few discrepancies in the costs statements compared to EC rates, for which the following explanations were provided by our partners:

Partner 4 - ETH ZURICH

Cat A is ABOVE EC rates by +37,694.31€. The beneficiary indicated that this excess is the result of the exchange rate (this partner is based in Switzerland). They assured us that costs will even out over the course of the 2nd period.

Partner 5 - CNRS-FAST

Cat A is BELOW EC rates by - 497.90€. This partner indicated that this discrepancy is due to the fact that the amount claimed is based on 7.40133 person-months and reflect the exact salary amount in terms of days for this ER whose contract started on 18 August 2010. Figures will even out over the course of the 2nd period.

Cat B is BELOW EC rates by - 2,000€. Payment of the travel allowance did not occur within the first

period due to an overlook. The partner assured that this would be processed as soon as possible and costs in this category will even out over the course of the 2nd period.

Partner 7 - CSIC

Category A is BELOW EC rates by -357€. This discrepancy is due to a reduction in employer's tax rates of 1% which occurred in the Spanish legislation in the past year. Our partner assured us that that this category will be paid in full and that costs will be adjusted over the second period.

CERTIFICATES

List of Certificates which are due for this period, in accordance with Article II.4.4 of the Grant Agreement.

Beneficiary	Organisation short name	Certificate on the financial statements provided?	Any useful comment, in particular if a certificate is not provided
1	UM2	No	Not applicable for the period
2	UNIVBRIS	No	Not applicable for the period
3	UU	No	Not applicable for the period
4	ETH Zurich	No	Not applicable for the period
6	Uniroma TRE	No	Not applicable for the period
7	CNRS-FAST	No	Not applicable for the period
8	CSIC	No	Not applicable for the period

Attachments

45-Notif_amendmt_Annex1_25MAY2011.pdf,
44-Signed_notification_removalSC10.pdf,
43-C2P_SummaryReport.pdf,
36-Final_List_appointed_fellows.pdf,
33-C2P_Adverts.pdf, 32-kickoff-agenda.pdf,
30-1st_Period_List_Dissemination_conf_publi.pdf,
29-Sep_Orsay_Assessment_final_agenda.pdf,
28-ALL_TAC form acceptance_letters.pdf,
27-All_C2P_students_Progress_reports_Apr11bis.pdf,
26-Assessment_completion_Career_Plans.pdf,
23-1st_Period_List_C2P_workshops_courses.pdf,
21-OVERALL_Training
evaluation_Response_analysis.pdf,
20-ORSAY_Training
evaluation_Response_analysis.pdf,
22-Assessment_fellows_satisfaction_level.pdf,
19-Convection_SummerSchool_Agenda.pdf,
18-ORSAY_Attendance_sheet_Sep10.pdf,
17-UM2_week2_Training
evaluation_Response.pdf,
16-Jul_Montpellier_agenda2.pdf,
15-UM2_week2_attendance_sheet.pdf,
14-UM2_week1_Training
evaluation_Response.pdf,
13-Jun-Jul_Montpellier_agenda1.pdf,
12-UM2_week1_attendance_sheet.pdf,
11-Bristol_Training
evaluation_Response_analysis.pdf,
10-Bristol_agenda_final.pdf,
9-Attendance_sheet_Bristol_Jun10.pdf,
8-report_2nd_wksp_integration_external_students.pdf,
7-2nd_wkshp_scan_signatures.pdf,
6-2nd_workshop_FINAL-agenda_&_abstracts.pdf,
5-report_1st_wksp_integration_external_students.pdf,
4-Oct09_agenda.pdf,
3-C2P_Oct09_attendance_sheet.pdf,
2-1st_Scientific_Periodic_report_table.pdf,
1-All_fellows_1st_Periodic_rpt.pdf,
41-Second_progress_reportFINAL.pdf,
40-UNIROMA_change_signatory.pdf,
39-C2P_consortium_agreement.pdf,
38-Board_Meeting_agenda.pdf,
37-ALL_C2P_decl_conformity.pdf,
35-Template_evaluation_grid.pdf,
53-Calculation_details_Fellows_allowances.pdf,
52-Summary-CRYSTAL2PLATE_FormCs.pdf,
51-ALL_forms_C_C2P_1stPeriod.pdf,
50-Scanned_signed_Nat_C2P_Timesheets_1st_period.pdf,
49-Details_CatG_1st_period.pdf,
48-Signed_2nd_change_signatories_ROMA3.pdf,
47-signed_UU_notif_new_signatories.pdf,
46-Amended_25MAY2011_Crystal2Plate-215353-AnnexI.pdf,
42-Mid-Term_Review_Evaluation_results.pdf,
34-All_candidates_recruitment_data.pdf,
25-ALL_Students_UPDATED_career_plans.pdf,
24-ALL_Students_career_plans.pdf,
31-C2P_newsletter_april11.pdf

Name	
Date	
Signature	