8th RhEoVOLUTION Meeting

Time- and space-varying rheologies and strain localization

5-9 October 2026, Sète (France)

Monday October 5th

14h-14h30: Welcome – short presentation/review of the 6 years of functioning of the RhEoVOLUTION project & meeting program

14h30-15h30: Tour de table – 2-minute pitch to introduce her/himself and present main research theme/role in the project, highlighting THE result or question that she or he wishes to discuss in the meeting.

15h30-16h: Coffee break

Ductile strain localization & evolutive rheologies

16h-16h30: Modelling ductile strain localization with evolutive stochastic rheologies - Andréa Tommasi

16h30-16h45: Scaling up ductile strain localization with evolutive stochastic rheologies – Lilou Zeller

16h45-17h15: Clear/not clear exercise

17h15-18h: Coupling between micro- and macro-scale processes in the rheology of complex fluids giving rise to plate tectonics-like behaviors– Anne Davaille & Gianluca Gerardi

18h-18h30: Clear/not clear exercise

18h30-19h: Discussion: Comparison between laboratory data and model predictions

19h30: Diner

Tuesday October 6th

Experimental constraints on the coupling between microstructural evolution and rheology

9h-9h30: Constraining the feedbacks between initial microstructure and texture, dynamic recrystallization, and rheology by experiments with in situ EBSD acquisition on Mg alloys – Thomas Mineau

9h30-9h45: Role of initial texture on strain localization: Experiments with in situ measurement of the strain field and thermal emission on Zn alloys – Andréa Tommasi

9h45-10h15: Dynamic recrystallization and strain localization in ice: constraints from experiments with in-situ follow-up of the strain fields – Thomas Chauve & *Marco Antonio Lopez-Sanchez*

10h15-10h45: Coffee break

10h45-11h45: Clear/not clear & general discussion of the three presentations

11h45-12h15: Grain boundary migration – a critical process for dynamic recrystallization. State of the art and unsolved questions - Jean Furtoss

12h15-14h: Lunch

14h30-15h15: Impact of ice heterogeneity on wave propagation in glaciers. Insights from Planpincieux and Greenland glaciers (ERC REASSESS) - Thomas Chauve & Martin Thiriet

15h-15h45: Discussion : What have we learnt from this work ? Main blocking points ? How to advance ? New experiments ?

15h45-16h15: Coffee break

Texture and anisotropy

16h15-16h45: Modeling texture and anisotropy evolution. What were the RhEoVOLUTION aims, current situation and issues for both olivine and ice - Andréa Tommasi & Maurine Montagnat

17h30-18h: Viscous anisotropy and flow in ice caps - Fabien Gillet-Chaulet

16h45-17h30: R3Ice and its use to simulate the evolution of texture and viscoplastic anisotropy along a streamline in a glacier - Antonin Hilzheber

17h30-18h30: Clear/not clear & general discussion of the two presentations

19h30: Cocktail dinner

Wednesday October 7th - *Feedbacks between fluids and deformation*

9h-9h30: Feedbacks between fluids and deformation – ongoing and future projects at GM - Nestor Cerpa (introduction to projects of Felipe, Michal, Yuan Li, Corentin)

… in a ductile (viscous) world

9h30-10h: Feedbacks between deformation and fluids/melt transport in natural shear zones – A. Tommasi

10h-10h30: Coffee break

10h30-11h30: Literature review on the feedbacks between fluids and deformation in experiments & presentation of ongoing modelling work - Felipe Saez

11h30-12h00: Discussion: How to capture in the numerical models the feedbacks observed in ductile shear zones?

12h-14h: Lunch

… when plasticity kicks in

14h-14h45: Granular dilatancy and related processes – Richard Katz

14h45-15h15: Modeling dyke development with a poro-viscoelastic-viscoplastic continuum approach – Yuan Li

15h15-16h: Clear/not clear & general discussion of the two presentations

16h-16h30: Coffee break

… the source/sink terms

16h30-17h: Effect of deformation on fluid-releasing reactions, focusing on the antigorite breakup – Jose Alberto Padron Navarta

17h-17h30: AI surrogates to model reactions and phase transitions and predict density variations and changes in the fluids/melt content in geodynamical simulations – Nestor Cerpa & Michal Bukala

17h30-18h30: General discussion on Fluids and deformation : Main blocking points ? How to advance ?

19h30: Diner

Thursday October 8th - *Back to anisotropy*

Using AI to model viscous anisotropy

9h-9h45: Using NN to relate elastic and viscous anisotropies in the upper mantle and to model the evolution with strain of the viscous anisotropy – Nestor Cerpa & Andréa Tommasi

9h45-10h30: Using NN to model texture-induced viscous anisotropy of ice - Mohammed El Falaki Idrissi & Olivier Castelnau

10h30-11h: Coffee break

11h-12h: Clear/not clear & general discussion of the two presentations

12h-14h: Lunch

Observations and other modelling strategies

14h-15h: Viscous anisotropy in geodynamical models – Thibault Duretz

15h-15h30: ANR GLaIA: Mesures géophysiques et textures: effet de l'anisotropie sur le comportement des glaciers tempérés – Maurine Montagnat

15h30-16h: Coffee break

16h-17h: Discussion on mechanical anisotropy: Main blocking points ? How to advance ?

- *What are the most effective approaches to express mechanical anisotropy (elastic/viscoplastic) and account for its evolution with strain?*
- *Extending anisotropic descriptions to other properties, like permeability...*
- *Modelling mechanical anisotropy emerging from upscaling – work by Lilou…*

17h-19h: Free time : discussions in smaller groups, rest…

19h30: Diner

Friday 9th October

Modelling strain localization - coupling between scales

9h-10h30: General discussion starting by brainstorming of questions/problems arising in the upscaling – collective search of solutions

10h30-11h: Coffee break

11h-11h30: Roundtable: Take-home message from the meeting

11h30-12h30: Free time for discussions in small groups

12h30: Lunch & departure

Participants

RhEoVOLUTION & D-FOCUS teams

1. Andréa Tommasi (GM)
2. Maurine Montagnat (IGE)
3. Nestor Cerpa (GM)
4. Felipe Saez (GM)
5. Thomas Mineau (GM)
6. Lilou Zeller (GM)
7. Thomas Chauve (IGE)
8. Antonin Hilzheber (IGE)
9. Fabrice Barou (GM)
10. Yuan Li (GM)
11. Corentin Cauffment (GM)
12. Martin Thiriet (IGE)

Invited participants

1. Jean Furtoss (PPrime, FR)
2. Richard Katz (Univ. Oxford, UK)
3. Fabien Gillet-Chaulet (IGE)
4. Thiebault Duretz (Univ. Frankfurt, DE)
5. Filippo Zarabara (Univ. Frankfurt, DE)
6. Dmitrius Moutzouris (Univ. Frankfurt)
7. Anne Davaille (FAST Orsay, FR)
8. Gianluca Gerardi (FAST Orsay, FR)
9. Amandine Le Roy (FAST Orsay, FR)
10. Jose Alberto Padron-Navarta (IACT, E)
11. Michal Bukala (IACT, E)
12. Catherine Thoraval (GM)
13. Mohammed El Falaki Idrissi (ENSAM)
14. Muriel Gerbault (GET, FR)
15. Marguerite Godard (GM) – 07/10
16. Romain Tilhac (GM) – 07/10
17. Lorine Bonnamy (GM) – 07/10
18. Clarisse Kercret (GM) – 07/10

Online

1. Marco Lopez-Sanchez (Univ. Oviedo)
2. Olivier Castelnau (Arts & Metiers, FR)

Same Zoom connection link for all days:
https://umontpellier-fr.zoom.us/j/2705033938
ID meeting: 270 503 3938

Mobile phone:
+33170950103,,2705033938# France
+33170950350,,2705033938# France

Participate with a SIP protocole
2705033938@zoomcrc.com